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History of Geological
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INHIGEO

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INHIGEO

is

A Commission of the International Union of Geological Sciences

&

*An affiliate of the International Union of the History and Philosophy of
Sciences*

**Compiled and Edited by Barry J. Cooper
INHIGEO Secretary-General**

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and
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April 2009

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President's Message
(April 2009)

Dear INHIGEO Members, old and new,

Enjoy reading this Newsletter!

It is a great pleasure for me to address a few words to all my colleagues from INHIGEO, for the first time after the election of the new Board in Oslo, Norway (August 5-14). As you can read in the following pages, our Commission continues to be very active and stronger each year. Besides new members, who came to contribute decisively to increase our level of expertise, both IUGS and IUPHS praised the work that INHIGEO has been doing in the past year. This is, of course, a reason for joy, but also reminds us of our present responsibility relatively to these institutions.

On the side of IUGS, as Barry Cooper, the Secretary General has already informed you, our Commission was invited to take the task of producing a historical volume to celebrate its 50th anniversary.

As regards the IUPHS, INHIGEO will be responsible for two specific and appealing symposia within the next International Congress of History of Science to be held in Budapest (July 28 – August 2).

But the “cherry on the cake” is the INHIGEO Symposium in Calgary, Canada (DATA), organized by our Canadian colleagues, with George Pemberton in the frontline. Hope to meet many of you there!!!

Silvia Figueirôa

**Secretary-General’s Report
(April 2009)**

It is with great pleasure that I provide you with my first report as INHIGEO Secretary-General. I have been an INHIGEO member since 1989 but it is only by entrusting me with this responsibility that I am learning much more about the Commission’s very significant work.

Before proceeding further, I must acknowledge the fine work of my predecessor Kennard Bork and his President, Philippe Taquet. They have left the Commission in excellent order with meetings firmly scheduled for the next four years, and with membership numbers standing currently at 217 members residing in 47 countries.

I am also delighted to have Silvia Figueirôa as my President. Despite living on different and widely separated continents, with modern communications there is no problem for us jointly dealing with INHIGEO affairs in consultation with the newly elected INHIGEO Board, which has already been highly supportive.

In 2008, INHIGEO members gathered at the 33rd International Geological Congress in Oslo, Norway. Convenors Cornelia Lüedecke and Naja Mikkelsen organised an excellent series of presentations in a symposium entitled “History of exploration in the polar regions” while Jens Morten Hensen and David Oldroyd assembled an extensive series of papers under the banner of “General contributions to the history of geosciences”. In total there were 27 presentations and 8 posters in the INHIGEO symposia. Associated with the IGC, the Commission organised an excellent field trip to the Oslo Fjord, which was saddened only by the shock death, in Greenland, of our scheduled leader, Erik Schou Jensen, two weeks before the event. Please read Mike Johnson’s account of the IGC and associated field trip later in this newsletter as Mike has a wonderful ability both to record the event and to convey the atmosphere of this occasion. During the same period, INHIGEO also held its Annual Business Meeting, the minutes of which are also provided in this newsletter.

For our 2009 meeting, our Canadian colleagues, headed by George Pemberton, have invited us to Calgary, Alberta, in August. The conference will be organised under the twin themes of “The historical development of the petroleum industry” and “The discovery/development of major fossil sites” and arrangements are well advanced. A post conference field trip will visit the beautiful Canadian Rockies featuring the history of geological exploration in association with museums, scenery and a lot more. General costings and accommodation details have already been provided. Conference abstracts are due by 1 June. Registration details have been sent to all members separately. This promises to be an excellent opportunity to see spectacular scenery and experience the development of geology from different perspectives. I look forward to seeing many of you there.

For 5-11 July 2010, our Spanish colleagues are already working diligently to plan an excellent meeting in the Madrid-Almadén-Iberian Pyritic Belt region around the theme: “History of the research of mineral resources”. In addition, there will be pre-conference and post conference field trips. Publication of proceedings will be facilitated by the Geological Survey of Spain.

In 2011, INHIGEO will convene in Toyohashi, Japan, whilst in 2012, we will gather with the 34th International Geological Congress in Brisbane, Australia. Preliminary discussions have already been held at the highest Government level regarding a 50th anniversary meeting to be held in Yerevan, Armenia in 2017 as this would entail returning to our place of birth in 1967.

INHIGEO will need to schedule conferences for the years 2013, 2014 and 2015. Please contact me if you have any proposals that the Board can consider. I presume that the 2016 meeting will be held in Capetown, South Africa, following the decision to hold the 35th IGC in that city.

INHIGEO continues to be very productive in terms of publication. Given special IUGS arrangements with the Geological Society of London, books have been published featuring papers that were presented at the INHIGEO–2006 meeting in Vilnius, Lithuania, and at the INHIGEO–2007 meeting in Eichtstätt, Germany. The Vilnius volume, edited by INHIGEO members Rodney Grapes, David Oldroyd, and Algimantas Grigelis was published in 2008 as Geological Society of London

Special Publication 301 and entitled “History of Geomorphology and Quaternary Geology”. The Eichtstätt volume: “Geology and Religion: A History of Harmony and Hostility” Geological Society of London Special Publication 310, has been edited by our colleague Martina Kölbl-Ebert and has just been released. Its contents are also listed later in this newsletter.

INHIGEO also provides discussions on “Classic Papers in Geology” for the IUGS Journal “Episodes”. Members are asked to reflect upon possible further contributions to this ongoing series, and are invited to contact, with suggestions and offers, our colleague David Oldroyd who co-ordinates these articles.

As already advised, INHIGEO has been asked to facilitate the compilation of a volume dealing with the history of IUGS. Several of you have already offered support for this project and our colleague and co-ordinator, Susan Turner, is working with potential contributors.

INHIGEO’s work continues to be made possible by important support from organisations. Financially we continue to be greatly assisted by annual grants provided by the International Union of Geological Sciences (IUGS). We also are aided by funds supplied by the International Union of the History and Philosophy of Science, Division of History of Science and Technology (IUHST/DHST). Production of our newsletter and support of our annual conferences could not proceed without that much-appreciated help.

The Geological Survey of South Australia and the University of South Australia have also provided me with facilities without which I could not undertake my role as INHIGEO Secretary-General. The University of New South Wales, David Oldroyd’s host institution, also continues to assist greatly through mailing this newsletter.

Barry J. Cooper, Adelaide, South Australia

INHIGEO ANNUAL MEETING FOR 2009
‘Fossils and Fuel’
Calgary, Alberta, CANADA
9–19 August 2009

The 2009 Annual INHIGEO Meeting will be held in Calgary, Alberta, Canada at the University of Calgary Conference Centre from 9-19 August. Please plan to be there.

The theme of the meeting will be “*Fossils and Fuel*” and presentations will focus on the historical development of significant fossil sites and the history of the petroleum industry.

Calgary is ideally situated for this theme since it is one of the major centres of the oil industry in North America and has close proximity to major fossil sites like Dinosaur Provincial Park and the Burgess Shale, both of which are UNESCO World Heritage Sites. 2009 is the centenary of the discovery of the Burgess Shale by Charles Walcott and the centenary of Barnum Brown’s first visit to Alberta, the first step in what became the Canadian Dinosaur Rush.

The 2009 INHIGEO meeting will also coincide with the International Conference on the Cambrian Explosion, 100th Anniversary of the Discovery of the Burgess Shale, in Banff, Alberta, to be held 2-7 August 2009. This will allow researchers who are interested to attend both meetings.

The meeting will facilitate discussion on a wide variety of topics pertaining to the historical development of the petroleum industry and the discovery and development of major fossil sites including:

- The discovery of the Burgess Shale by C.D. Walcott
- The history of Fossil Lagerstätten.
- Palaeontological Conservation
- Barnum Brown and the Canadian Dinosaur Rush
- The historical development of Vertebrate Ichnology
- The history of Dinosaur Provincial Park
- First nations discoveries of large fossil vertebrates.
- Early drilling techniques
- The historical development of early hydrocarbon discoveries
- The history of Oil Sands and other non-conventional hydrocarbon reserves
- The Founding Fathers of the Petroleum Industry
- Petroleum industry’s most significant moments during the 20th century
- Society and oil a historical context

Conference Timetable

9 August:	Registration and Welcoming Reception
10 August:	<i>Morning</i> Registration Welcoming Remarks Keynote lectures - Burgess Shale - Dinosaur Discoveries - Petroleum History <i>Afternoon</i> Talks and Posters
11 August	<i>Morning and Afternoon</i> Talks and Posters
12 August	<i>Morning</i> Glenbow Museum and Archives <i>Afternoon</i> Geological Walking Tour: The Building Stones of Calgary <i>Evening:</i> Conference Supper at Heritage Park, Calgary
13 August	<i>Morning and Afternoon</i> Talks and Posters <i>Evening</i> INHIGEO Business Meeting
14 August	<i>Morning and Afternoon</i> Talks and Posters
15-19 August	Post Conference Field trip within 250 km of Calgary

Conference Papers and Posters

Both oral and poster sessions will be accommodated.
The deadline for both is 1 June 2009.

Fees:

Delegate registration is \$CAN300.00 Canadian plus 5% tax.

It will include a welcoming reception, the conference sessions, coffee breaks and the Western BBQ conference supper. Website <http://www.peopleware.net/index.cfm?siteId=158&eventDisp=INHIGEO> should be used for conference registration and accommodation bookings.

Additional fees will be charged for the mid-meeting fieldtrip (approximately \$30.00 Canadian) and the 5-day post meeting field trip (approximately \$1,900.00 Canadian).

Accommodation:

The University of Calgary provides a variety of accommodation options including:
Off Campus (motel) and on Campus (hotel style, apartment style and traditional) accommodation.

For further details on the field trips and dinner please see the conference circulars or contact Prof. George Pemberton, (University of Alberta) at george.pemberton@ualberta.ca . Additional information will be emailed separately to members.

MINUTES OF THE INHIGEO BUSINESS MEETING 2008

Buskerud Room, Thon Hotel, Norway Convention Centre, Lillestrøm, Oslo, Norway Thursday 7 August 2008

Present: Zoya Bessudnova (Russia), Kennard Bork (USA), Barry Cooper (Australia), Silvia Figueirôa (Brazil), Gaston Godard (France), Greg Good (USA), Jens Morten Hansen (Denmark), Geir Hestmark (Norway), Tatiana Ivanova (Russia), Mike Johnston (New Zealand), Marianne Klemun (Austria), Wolfgang Mayer (Australia), David Oldroyd (Australia), Irena Malakova (Russia), Manuel Pinto (Portugal), Peter Rozsa (Hungary), A.M.Celâl Sengör (Turkey), Gerardo Soto (Costa Rica), Björn Sundquist (Sweden), Yasumoto Suzuki (Japan), Philippe Taquet (France), Susan Turner (Australia), Ezio Vaccari (Italy), Gian Battista Vai (Italy), Toshiro Yamada (Japan), Yusheng Zhai (China), Jiuchen Zhang (China)

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

1. Welcome and Opening

President Taquet opened the meeting at 5.53pm and reported on the wonderful pre-congress field trip to the Oslo Fjord that had superbly organised by our Scandinavian hosts yet was tempered by the tragic accidental death of its planned leader, Erik Schou Jensen, just prior to the event on 14 July 2008.

2. Regrets and Apologies from those unable to attend

David Branagan (Australia), Guillermo Alvarado (Costa Rica), Martina Kölbl-Ebert (Germany), Rodney Grapes (New Zealand), Alan Mason (New Zealand), Simon Nathan (New Zealand), Kenneth Taylor (USA), Bruce Waterhouse (New Zealand).

3. Arrangement of the Agenda

There was no change to the agenda that had been circulated.

4. Minutes of the previous held at Eichstätt, Germany (July 2007)

These were accepted without amendment.

5. Discussion arising from the Minutes

A.M.Celâl Sengör (Turkey) asked for copies of Newsletters 1-23. Irena Malakhova (Russia) agreed to provide. The meeting was advised that Martin Guntau (Germany) has sets of back issues for numbers 1-20 on microfiche, available on request.

6. President's Report

President Philippe Taquet (France) provided a light and entertaining yet comprehensive review of the Commission's activities since the 32nd IGC in Florence in 2004. He concluded that INHIGEO has been extremely active and is held in high regard by the IUGS.

7. Discussion arising from the President's Report

A.M.Celâl Sengör (Turkey) asked about obtaining field guides that had been prepared for past INHIGEO excursions. The Secretary General agreed to arrange this with the incoming office bearers.

8. Secretary General's Report

Secretary General Kennard Bork (USA) provided brief comment on the Commission current activities. These had been reported fully in Newsletter #40. He discussed:

Coming Meetings

INHIGEO meetings are now scheduled in advance until 2012 with meetings planned for:

- a. Calgary, Canada (August 2009)
- b. Madrid - Almaden, Spain (2010)
- c. Toyohashi, Japan (2011)
- d. Brisbane, Australia (2012)

Publications

- a. Dublin (2003). A volume with presentations of this INHIGEO meeting has been superbly edited by Patrick Wyse Jackson (Ireland) and published by the Geological Society of London (GSL).
- b. Vilnius (2006). The proceedings have been edited by Rodney Grapes (New Zealand-Korea), David Oldroyd (Australia) and Algimantas Grigelis (Lithuania) and are also scheduled for publication by GSL in the near future.
(The first copies were made available later in the week at the Oslo Congress)
- c. Eichstätt (2007). Editing of the Proceedings is currently in progress by Martina Kölbl-Ebert (Germany) for another GSL publication.

Reports of INHIGEO meetings as well as articles on classic geological papers and past International Geological Congress continue to be published in "Episodes".

Budget

Satisfactory support continues to be given by the IUGS and IUHPS to enable the Commission to be very active.

9. Discussion arising from the Secretary General's Report

Barry Cooper (Australia) advised that INHIGEO celebrates its 50th anniversary in 2017 and that the suggestion has been made that INHIGEO returns to its birthplace in Yerevan, Armenia for its meeting in this year.

As Editor of "Earth Sciences History", David Oldroyd (Australia) advised that papers presented at the 33rd IGC would be solicited and considered for publication in this Journal.

Barry Cooper (Australia) offered a suggested excursion schedule prepared by David Branagan (Australia) that was suitable to be held in conjunction with the 34IGC meeting of INHIGEO in Brisbane, Australia.

10. IUGS topics

Gian Battista Vai (Italy) explained prevailing concerns about the rewriting of IUGS by laws to include IGC provisions. This matter will be discussed at the IUGS Council meeting on 10 August at which INHIGEO will have "Observer Status".

11. New Members

The Secretary General announced that the following historians of geology had been approved as INHIGEO members according to the accepted INHIGEO election procedures.

AIDA, Nobuyuki	Japan
AZUELA, Luz Fernanda	Mexico
BARRERA, José Luis	Spain
BRYSSSE, Keynyn	Canada
CANDELA, Andrea	Italy
CORSI, Pietro	Italy
GREENE, Mott	USA
INOMATA, Michiya	Japan
KATO, Hirokazu	Japan
KATO, Shigeo	Japan
KELLER, Jörg	Germany
KIM, Kwang-Nam	Japan
MAZADIEGO, Luis F.	Spain
MILLER, Randall	Canada
MININA, Elena	Russia
NORRIS, John	USA
ORME, Antony	USA
REIJERS, T.J.A.	Netherlands
ROWLAND, Stephen	USA
TANKE, Darren	Canada
TOCHINAI, Fumihiko	Japan
TRIFONOV, Gennadiy	Russia

12. Recognition of Honorary Senior Members

The Secretary General announced that the following had been approved by the accepted as Honorary Senior Member of INHIGEO

MARVIN, Ursula	(USA)
BRANAGAN, David	(Australia)

13. Recognition of Incoming Office Bearers 2008–2012

The Secretary General announced that as a result of the recent ballot the following had been elected.

PRESIDENT	Silvia FIGUEIRÔA (Brazil)
SECRETARY-GENERAL	Barry COOPER (Australia)
PAST-PRESIDENT	Philippe TAQUET (France)
VICE-PRESIDENT (Asia)	Jiuchen ZHANG (China)
VICE-PRESIDENT (Australasia/Oceania)	David OLDROYD (Australia)
VICE-PRESIDENT (Europe)	Martina KÖLBL-EBERT (Germany)
VICE-PRESIDENT (Latin America)	Gerardo SOTO (Costa Rica)
VICE-PRESIDENT (North America)	Gregory GOOD (USA)

On the motion of Greg Good (USA), seconded Gian Battista Vai (Italy), the election of new members, retired members and the slate of office bearers for 2008-2012 was finalised unanimously.

14 New Business / Business without Notice

a. INHIGEO Website

The Secretary General reported that INHIGEO does not currently have a functioning website.

It was agreed that this matter needed to be rectified as soon as possible.

A.M.Celâl Sengör (Turkey) suggested that it should be a stand-alone website not attached to IUGS.

The Secretary General advised that Kerry Magruder (USA) might be available to assist in the creation of a new site

b. Non-active INHIGEO members

The Secretary General advised that the delicate issue of inactive members is under consideration by a subcommittee of the INHIGEO Board.

It was noted that there is current provision to remove members through non-voting at election and through lack of personal re-affirmation of interest every four years.

The matter was referred to the Incoming Board for further consideration.

c. INHIGEO representation at IUHPS Budapest 2009

It was noted that the IUHPS will meet in Budapest in July 2009 immediately prior to the INHIGEO meeting in Calgary.

There was a need for the incoming Board to appoint INHIGEO representatives to attend their Council meeting.

d. Virtual Library

Ezio Vaccari reported on the Virtual Library that is being established. It is a safe website where INHIGEO members can lodge their publications.

e. New INHIGEO logo?

Gerardo Soto (Costa Rica) suggested that it might be time to create a new image of INHIGEO by designing a new logo.

There was some resistance to this suggestion and it was agreed such a decision would need to canvass opinion broadly. Barry Cooper (Australia) suggested that it might be possible to present the existing logo in different ways.

f. Historical Bibliography, "Earth Sciences History"

As Editor of "Earth Sciences History", David Oldroyd (Australia) canvassed opinion on the historical bibliography that has been prepared by Gerry Friedman for the Journal over many years and the need for its continuity.

The meeting generally believed that the compilation was highly valuable.

g. Newsletter as pdf

It was suggested that the newsletter could be circulated as a pdf file to those who wanted it. This matter was referred to the Incoming Board.

h. INHIGEO members welcome in Moscow

Irena Malakhova (Russia) welcomed any INHIGEO members to visit Moscow. They can also visit the “History of Geology” website of the Geological Museum in Moscow.

i. Ezio Vaccari (Italy) advised that a summer school was in honour of the late INHIGEO Vice President Nicoletta Morello was in the preliminary stages of planning.

j. Marianne Klemun (Austria) announced that the Annual Meeting of the European History of Science Society will be held in Vienna in September 2008.

k. It was suggested that there should be a biographical sketch of new office bearers in the coming newsletter.

President Philippe Taquet (France) closed the meeting at about 7.45pm after thanking the outgoing Board Members, especially Secretary-General Kennard Bork (USA) for their great support during his term as President as well as the hosts and organisers of the Oslo IGC historical sessions. He concluded by welcoming the incoming Board.

INHIGEO BUSINESS MEETING, CALGARY, CANADA

Thursday 13 August 2009
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: Oslo, Norway (2008)
(* See above in this Newsletter)
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 Canada, 2009

CONFERENCE REPORTS

The International Commission on the History of Geological Sciences (INHIGEO) Meeting Oslo, Norway, with a pre-meeting fieldtrip to Oslo Fiord 1 to 7 August 2008

The 33rd INHIGEO Meeting was held in conjunction with the 33rd International Geological Congress (IGC) in Oslo. A pre-meeting field trip to the 200 km long Carboniferous to Permian Oslo Graben had been planned. However, this was in doubt due to the tragic death in Greenland of the trip co-leader Erik Schou Jensen two weeks before its scheduled start. The Greenland field party that included Erik was caught by a freak wave generated by the calving of a glacier and unfortunately he and one of his companions could not be rescued in time. Despite this, the INHIGEO field trip was run in a modified form due to the efforts of Erik's friends and colleagues at the Geological Survey of Denmark and Greenland: Jens Morten Hansen, Bjørn Hageskov and Birgit Jørgensen, who felt that this was what he would have wished. The Oslo Graben presents an almost unique opportunity to visit a continental rift system and to examine the rocks associated with rifting as well as a sequence of older cover rocks of Lower Paleozoic age down faulted into it. The rocks bounding the rift are dominated by Pre-Cambrian gneisses. As a result of the modern sea invading the rift to form the magnificent Oslo Fiord, access is best achieved by boat.

Those fortunate to participate in the fieldtrip gathered in the hot sun outside of the Central Oslo Railway Station mid afternoon on 1 August. Under the guidance of Birgit Jørgensen, the participants were shepherded to a nearby air-conditioned bus and were soon on the road to Strømstad in Sweden. On the way south the highway crosses rolling country with forests interspersed with cultivations. Even without the magnificent cuttings exposed along the highway it was obvious that this was a land of hard basement rocks that had been recently glaciated and was rising from the sea following the melting of the Scandinavian ice sheet. The rocks are dominated by orthogneiss and with lesser amounts of paragneiss (1.5 to 1.7 Ga), which form major east-west trending synforms and antiforms. In the south the gneisses are intruded by 0.9 Ga granite. On arrival in Strømstad, packed with Swedes on holiday, participants were able to wander around the old town or clamber over the glacially striated rocks enclosing the harbour. In the evening the fieldtrip was up to full strength with the arrival of Jens Morten Hansen, who had chauffeured Ken and Kay Bork from Oslo Airport, and fellow co-leader Bjørn Hageskov. A beautiful sunset heralded a fine day for a boat trip to the archipelago of the Koster Islands.

Next day, in light rain, participants, suitably clad in a variety of hats and coats and clutching umbrellas, assembled on the wharf before boarding two small boats. Fortuitously there was no wind and before the flotilla reached the first stop of Ursholmen, the most southwestern island of any significance in the archipelago, the rain had ceased and the cloud cover had progressively thinned. On the island the most obvious sight after the lighthouse were fields of boulders, sure testament to raised marine beaches. The underlying rocks comprising c.1.6 Ga migmatites and crossed by the impressive north-south trending basaltic 1.42 Ga Koster Dike Swarm. A small museum containing items related to the history of the lighthouses on the island was visited before boarding the boats to examine similar rocks on Tegelholmen. The lack of a wharf and lichen covered gneiss made slippery by the rain resulted in some delicate and intricate footwork before more secure ground was reached.

Weaving north amongst the islands the boats entered Kustersundet, a narrow channel separating the two main Koster islands. Landing at the village of Västra bryggan on Nord-Koster and, after a short walk, the embayment of Basteviken proved an ideal setting for a picnic lunch. With the sun shining a few hardy souls even went for a dip in the shallow waters of the bay. The remainder of the afternoon was spent examining complex folding in the gneiss that was highlighted by prominent dark mafic and light granitic layering. By now everyone was fully appreciative of the huge amount of effort that Bjørn had put in over many years unravelling the geology of the Koster archipelago. In the late afternoon participants boarded in Kustersundet the regular ferry, which after negotiating several narrow passages between the islands, delivered us to Strømstad. After a meal the bus was boarded and took us to a hotel in Moss on a narrow neck of land leading to the peninsula of Jeløya in southern Norway. In contrast to Strømstad, Moss is more off the beaten tourist route but is a thriving industrial town and an important terminal for ferries plying Oslo Fiord.



INHIGEO group at Basteviken. Photo Zoya Bessudnov

Sunrise indicated a fine day but just prior to leaving the hotel a tremendous thunderstorm looked like putting a damper on this. Fortunately the rain stopped and by the time all had walked to the wharf and boarded the *Singe Rink*, the weather was again clearing. The historic *Singe Rink* was built as the official vessel for the Governor of Greenland but was purchased in 1999 by a Danish syndicate who use her for cruising the Nordic coastline. For our cruise the skipper was Synne Hoch, daughter of the fossil bird paleontologist Ella Hoch, her partner Flemming Bruun with an expert crew comprising Alvin and Julian Hoch Bruun and their cousin Sebastian Petersen. By the time the *Singe Rink* reached Mølen Island breaks in the clouds were allowing the sun to shine through. Nevertheless because of the exposed shore, participants were unable to land and instead had to admire 1.4 Ga, Koster equivalent, dikes intruding the Pre-Cambrian basement of the western side of the rift from a distance.

On “Middle Island” conditions for landing were more favourable and a rubber boat conveyed participants to the shore and from the top of the island wide views of Oslo Fiord were absorbed. Underfoot gently dipping Ordovician marls contained sparse fossils, including graptolites, which made a change from the complex basement rocks seen earlier. On the small island of Bileholmen, Silurian cross bedded quartz sandstones, which may have been deposited in a terrestrial environment, are cut by Permian “rhomb porphyry” dikes. Waves generated by a passing squall caused problems while getting everyone back on the *Singe Rink* and contingency plans were put in place if anyone was left ashore. Because of the waves, it proved impossible to land at the next outcrop although the skill of the crew took us within a few metres of the shore in a narrow channel separating the northern tip of Jeløya from Bevøya Island and permitted observation of a Permian landslide deposit before returning to Moss. That evening in our hotel, participants were treated to a discourse from Jacques Touret who has, over the past half century undertaken fieldwork, in Norway. This, along with the fieldtrip notes and commentaries and personal observation, greatly enhanced our understanding of Nordic geology and the story of those who had unravelled its complexities.

The fourth day of the field trip, Monday 4 August, saw the *Singe Rink* departing Moss and it was a short pleasant journey to Revlingen Island where south dipping red breccia, composed of boulders of the rhomb porphyry, represents a Permian scree or fan deposit. At the stop at Rødåsen-Stalsberget on the western coast of Jeløya spectacular flows of the rhomb porphyry are well exposed. Because of a choppy sea and slippery boulders, getting ashore from the dingy was at times challenging, and unfortunately landing on the more exposed Gullholmen Island, off the west coast of Jeløya, with its Permian lava flows and ignimbrites was impossible



Boarding the *Singe Rink* at Bile. Photo: Mike Johnston

. This was partly compensated by the boat sailing close to the coast. In the cliffs of Nebbeason basaltic bombs in the rocks suggested that they were deposited very close to one of the Permian volcanoes in the Oslo Rift. From there it was a case of relaxing as the *Singe Rink* sailed through the occasional squall to a hotel just south of Drøbak sited on banded Pre-Cambrian granitic gneiss forming the basement on the eastern side of the Oslo Rift. That evening, over dinner, participants were formally welcomed by Jens Morten Hansen who was, thanked by Ken Bork and Philippe Taquet, Secretary-General and President of INHIGEO respectively. Jacques Touret drew attention to the French connection with Norway and Kay Bork expressed her appreciation of work done to make INHIGEO meetings such a success.

On the last day with a light breeze and dissipating high cloud the *Singe Rink* made her way north towards to the Drøbak Narrows. The narrows separate the outer and inner Oslo fiords and have developed along the eastern boundary fault of the Oslo Rift. Guarding the narrows on South Kaholmen Island is the Oscarsborg Fortress whose greatest achievement came in April 1940 when its ancient guns sank the German, 11-inch gunned, heavy cruiser *Blucher*. In the Inner Fiord the *Singe Rink* sailed close to the eastern coast, which marks the Nesodden Fault, a normal fault that defines the eastern edge of the Oslo Rift. Within the rift and close to the fault, the picturesque Llidjernet, Kavringen and Suterne islands are composed of well bedded Middle Ordovician sedimentary rocks, cut by sparse dikes that show evidence of deformation. By mid afternoon, in brilliant sunshine, the *Singe Rink* was berthed in Oslo beneath the guns of the Akershus Fortress. In all a great field trip through the beautiful Oslo Fiord, including the unique experience of sailing on the *Singe Rink*. Participants are indebted to the organizers: Jens Morten Hansen, Bjørn Hageskov and Birgit Jørgensen, for persevering with the trip at short notice following the tragic death of Erik Schou Jensen, as well as the skilled seamanship and hospitality of Synne Hoch, Flemming Bruun and the crew of the *Singe Rink*.

IGC and 33rd INHIGEO Meeting

The International Geological Congress (IGC) was held in the huge cavernous Norway Convention Centre at Lillestrøm, some 20 km northeast of central Oslo. Fortunately for the 6000 registrants attending, who were mostly staying in the city centre, the organizers had arranged for free travel on the very efficient NSB rail system. Participants soon discovered that there were two routes to the venue, one direct taking about 12 minutes and another that stopped at a multitude of stations and took three times as long. Papers dealing with the history of geology, commencing with a session on the history of polar exploration, were held on the first two days of the conference. Following a brief welcome from the president of INHIGEO, Professor Taquet, the following papers were presented:



INHIGEO group and crew beside the *Singe Rink* following completion of the fieldtrip on Oslo Fiord.
Photo: Nikita Bessudnov

Papers

6 August 2008

History of Exploration of the Polar regions (IES-05) – G. Hestmark convenor:

David Branagan – Geology and geophysics of Antarctica: The early Australian story.

Marianne Klemun – The Austrian-Hungarian North Pole Expedition (1872-1874): National euphoria and the associated place of science in the advance of the planning of the expedition.

Geir Hestmark – Fridtjof Nansen and Arctic geomorphology.

Greg Good – Roald Amundsen among the magneticians.

Andrea Candela – The Deluge and the Extinct Volcano of the Central Alps.

Tatiana Ivanova – Vladimir Alexandrovich Rusanov – famous investigator of Arctics.

Myth and Geology (IEH-03) – W. Masse convenor:

B. Rappenglueck – The fall of Phaethon: Does this myth reflect an impact (“Chiemgau Impact”) in Bavaria during the Celtic period?

J. Wandersee and R. Clary (presented by James Wandersee) – The geomorphology of pipestone and its implications for geoscience education.

Tiziana Lanza – Sea volcanism in Sicily and Mediterranean myths through the tempest of Shakespeare.

W. Masse – Reconstructing the eruptive history of Kilauea volcano from myths of the Hawaiian volcano goddess Pele.

7 August 2008

General contributions to history of geosciences (IEH-01) –

Chair Jens Morten Hansen:

C. Sengör – What is the use of the history of geology to a practicing geologist?

Paul Mohr – Discovery of the African rift valleys.

Allan Krill – Mobile continents and fixed published opinions.

Stefano Furlani – Domenico Lovisato: the man who divided the continents.

Chair Geir Hestmark

William Berry – John Whitehurst: Geological pioneer.

Ezio Vaccari – The development of lithostratigraphy in the Alpine region during the early 19th century through the work of Giuseppe Marzari Pencati and Pietro Maraschini.

E. Zhang and X. Cao (presented by E. Zhang) – New understandings about the role of the national geological survey of China in Chinese history of science.

Amalie Jo Orme and Antony Orme (presented by Amalie Orme) – Geomorphology of the Pacific railroad surveys of the American west in the 1850s.

Toshihiro Yamada – Monarch and mineral: Bartholin's experiments on Iceland spar and Steno's work compared.

David Oldroyd – William Stanley Jevons (1835-1882) and the coal question: Implications.

Chair David Oldroyd

Paul Hoffman – Did Esmark's (1824) glacial theory impel the discovery of the "greenhouse" effect (Tyndall, 1861), lithospheric isostasy (Jamieson, 1882) and continental drift (Wegener, 1912)?

Geir Hestmark – Into the mountains: Norwegian geology around 1800.

Irina Malakhova – Norwegian geologists as foreign members of the Russian academy of sciences.

Björn Sundquist – Urban Hiärne's geological inquiries in 1694.

Don Hogarth – Zeolites and Swedish dominance in mineralogy from 1756 to 1776.

Chair Ken Bork

Barry Cooper – Geological investigations of uranium in South Australia through the 20th century.

Allan Krill – An electroplate tectonic hypothesis in 1861.

Wolf Mayer – The geological work of the Baudin Expedition in Australia (1801-1803): Discoveries, personalities and legacy.

J. Zhang and Z. Wang (presented by J. Zhang) – China and the International Geophysical Year (1957-1958).

S. Turner and P. Vickers-Rich (presented by Susan Turner) – Women in the IGCP: Contributions to the "Big Geoscience".

Posters

A number of posters covering the history of geology were presented but unfortunately this reviewer, through naivety of large conferences, saw only one of them. By the time the 33rd INHIGEO Business Meeting (see separate report in this Newsletter), held immediately after the session on the second day of IGC, was completed the poster hall had closed and by the next day the posters had been removed. The following posters were listed in the programme in relation to the session on *General contributions to history of geosciences*:

M. Ghorbani, N. Mousvi Pak – Gold in Iran.

L. Oparina – Answer found in the history (has NaCl cubic structure?).

S. Dong, X. Chen, J. Shi and S. Liu – Development and evolution of the geoscience system in the 20th century – Evidence from the statistical analysis of geoscience articles.

G. Soto – Early geological mapping of Central America (1850s-1930s).

S. Mirosław, A. Artemois, B. Julius, H. Bjorn, H. Vit, K. Klaus, P. Mikael, R. Valdas, L. Livio, S. Alexandros, S. Jiri, S. László, S. Viktoria, V. László, T. Robert, P. Olga, K. Joerg, D. Greg, S. Katarzyna, Z. Stanislav, B. Ivan, P. Wojciech and B. Anthony – GEOMIND – Geophysical Multilingual Internet-driven Information Service.

Zoya Bessudnova – Grigory Helmersen's field trip to Schweden und Norwegen in 1845 and associated research.

In all a very enjoyable and instructive INHIGEO Meeting, although it did not have the intimacy that stand-alone meetings have, where most participants are domiciled close to the venue although a number of members did stay in the centrally located, moderately priced, P-hotel. However, the two dry sandwiches that constituted breakfast will not be remembered fondly. Despite being somewhat overwhelmed by the IGC there were compensations: Several INHIGEO members availed themselves of IGC fieldtrips that further complimented what had been seen and learnt on the Oslo Fiord trip, and then there was the wider opportunity to see more of Norway and its neighbours as well as the numerous museums that highlight Norway's contribution to science and exploration, particularly of the polar regions. Participants are grateful for all the work that went into organising the fieldtrip and ensuring that there were two good days of papers and posters dealing with the history of geology.

Mike Johnston, Nelson, New Zealand

SCAR History of Antarctic Research Action Group
“Polar History and Institutionalization of Polar Research
The International Polar Years“
Report on Session 5.7, SCAR/IASC Open Science Conference
St. Petersburg, Russia, July 8th - 11th, 2008

History and institutionalization of polar research during the International Polar Years was the theme of five oral papers and three posters in session 5.7 of the SCAR History of Antarctic Research Action Group during the SCAR/IASC Open Science Conference in St. Petersburg, Russia, on 9 July 2008.

Aant Elzinga (University of Gothenburg, Sweden) gave a very well structured survey of the historical and epistemological changes in polar research as seen through the lens of the four International Polar Years (IPY). Long time series of meteorological and magnetic data of the 1st IPY (1882-1883) gathered in an inductivist mode, provided a base line data set of the Arctic. The 2nd IPY (1932-1933) combined hypothesis-driven research with new Arctic data to test hypotheses on physical processes, while the 3rd IPY (International Geophysical Year 1957-1958) expanded this approach and applied systematic measurements to Antarctica and the upper atmosphere, opening up new avenues for science. Finally the 4th IPY of today includes social and cultural sciences and interdisciplinary as well as bipolar approaches, global modelling and integrative Earth-system science, making it epistemologically systemic, constructivist, realist and predictive.

Cornelia Lüdecke (University of Hamburg, Germany) described the development of trans-Arctic air-routes by airship as an important background factor and context in the case of the 2nd IPY (1932-1933). She demonstrated convincingly that the idea of launching the 2nd IPY actually had its origins in a discussion within the International Society for the Exploration of the Arctic by Means of Aircraft (Aeroarctic) in the latter half of the 1920s during the planning of the expedition with the airship LZ 127 "Graf Zeppelin". The idea was supported by the German Naval Observatory (Deutsche Seewarte) in Hamburg, but not by Alfred Wegener who was just in the process of planning a cross-sectional survey of the meteorological conditions over Greenland by means of aerological measurements at three stations in 1930-1931. Indeed there were three separate programmes in the offing at the time, all of them enjoying the support by the same constituency of the German science community.

Adrian J. Howkins (University of Texas at Austin, USA) examined the US contributions to Antarctic research in the Antarctic Peninsula between 1946 and 1959, when Great Britain, Argentina, and Chile intensely disputed the issue of territorial sovereignty in the region. Using a number of hitherto little known archival sources he brought forward new historical evidence that confirmed how, far from the often told story of a harmonious process in which science lived its own life and singly gave birth to a multinational political regime, the actual historical record reveals mutual entanglements and deep dynamic interaction of science, environment, and politics as important definitive factors in the process that led up to the signing of the Antarctic Treaty in 1959.

Alexander Zaitsev (IZMIRAN, Troitsk, Russia) reported vividly on the US-Soviet exchange programme during the IGY (1957-1958) and its character as well as many interesting events that took place within its framework at two different sites - 1253 km apart - on the Antarctic continent. The one collaborative site was the American station at the Geographic South Pole, the other was the Russian station Vostok at the Geomagnetic South Pole. In the wake of the IGY and thanks to the formation of the new political regime that followed it, involving 12 nations as Consultative Parties, between 1964 and 1986 joint US-USSR programmes were set up and operated at Vostok and McMurdo. This was seen as a significant testimony of the peaceful use of Antarctica under the auspices of the Antarctic Treaty.

The final paper was by Jessica M. Shadian (Barents Institute, Kirkenes, Norway). Her thesis was that since 1882 the global political context has transformed the role of the polar regions in global politics. Taking a long-term historical perspective she interpreted the history of the IPYs and governance of science as examples of a reinvention of politics and science at the Poles in the Post-Westfalian era. A comprehensive analysis of the polar programme of the IPYs, she demonstrated, helps to illuminate a better understanding of the contextual relationship between science and politics. She furthermore discussed questions as, how does the IPY reflect shifting power and authority of scientific knowledge over time?

During the poster session Jason M. Davis (The Ohio State University, Columbus, USA) displayed the development and practice of Antarctic systems of property. He distinguished and characterized three primary models of property ownership (state-controlled, community-managed, and privatized), illustrating the differences with salient examples of assumptions and principles implicit in

different International Antarctic Agreements as well as a case study of how the issue of property ownership was perceived and managed at an Antarctic base.

Julia A. Lajus (St. Petersburg Branch of the Institute for the History of Science and Technology, Russia) described the interplay of internationalism and nationalism in Soviet Arctic research in the period from 1920 and onward into the 1930s. She discussed the controversies among scientists on the issues of international co-operation especially in polar oceanography and meteorology. Especially she considered the 1926–1927 debates around the organization of a joint Soviet-German research enterprise in the Barents Sea, and the character and conditions of Russian participation in international organizations as well as in the course of the 2nd International Polar Year.

Finally Paul A. Berkman focussed on peace and science “in the interest of all mankind”. He presented hitherto unknown documentation from historical archives of the Eisenhower Administration in the USA of the 1950s. These documents reveal that prior to the Antarctic Treaty there was a more general precursor agreement respecting the international use of outer space, an agreement that essentially embodied the same spirit whereby the superpowers were united in the peaceful utilization of international spaces, starting with Antarctica during the Cold War.

A visit of the historic icebreaker “Krassin”, which rescued the survivors of the crashed airship “Italia” in 1928, was a very impressive excursion after the session.

ARTICLE

Johann W. Goethe: On Granite (1784)

Fernando Hacar Rodríguez & Jorge Roldán Cardona “On Granite, according to Johann W. Goethe”. *Revista Cimbra. Madrid*. November-December/2008. pp. 51-55.

To mark the two-hundredth anniversary of the birth of the naturalist and poet J.W. Goethe (1749-1832), the Geographical Studies Institute of Tucuman National University (Argentina) published the first Spanish translation of his essay *Über den Granit* ('On Granite'), written in 1784.

The essay is interesting for a number of reasons, in particular: the historical backdrop against which it was written; the analytical methodology used by Goethe, given that he possessed no formal training in geology but was a consummate scientist and naturalist, capable of developing his own reflections on this plutonic rock at a time when there was no established geological tradition *per se* – a fact that confers on his work even greater merit; and finally, that this is one of the least known works by the author of **Faust** and **The Sorrows of Young Werther**.

Goethe, aware of the diverse types of granite and their individual characteristics, set himself the task of drawing conclusions on the origin of this rock and the matter from which it is formed.

He familiarised himself with the scientific principles of the time, met with specialists, and gradually formulated his own theory on the evolution of nature.

Aware of the virtue of reason, Goethe was not afraid to work in the realm of questions and observations. In his desire to shed greater light on the origin of granite, he worked unperturbed by the possibility of failing to find answers or of making mistakes, since he believed that through observation and carefully documented analysis even mistakes could be of use, as they draw the attention of the perceptive and invite them to seek alternative paths, which ultimately lead to well-founded solutions.

Goethe, in his singular and beautiful essay, **On Granite**, humbly, but with great confidence in his abilities as a scientist and naturalist, undertook to challenge superstition, disprove misconceptions, and put an end to the ignorance surrounding granite that characterised his age. In doing so, he produced a powerful treatise that aimed to unlock the secrets of the origin of granite and the matter from which it is formed.



"...Nature understands no jesting; she is always true, always serious, always severe; she is always right, and the errors and faults are always those of man. The man incapable of appreciating her she despises; and only to the apt, the pure, and the true, does she resign herself, and reveal her secrets. The understanding will not reach her; man must be capable of elevating himself to the highest

Reason to come in to that contact with the Divinity which manifests in the primitive phenomena which dwell behind them and from which they proceed".

Goethe on Science. [7- The primitive phenomem].
Jeremy Naydler. Ediciones Siruela, S.A. 2002.

AWARDS

“Prix Eugène Wegmann” to Martin Rudwick

The Société Géologique de France honoured INHIGEO member Professor Martin Rudwick with its Prix Eugène Wegmann in Paris on 9 June 2008. Below is a translation of his acceptance speech.

Mr President, Ladies and Gentlemen. It is a great honour for me to receive the Prix Eugène Wegmann.

Like that of Eugène Wegmann, my career has straddled the boundary between the earth sciences and their history. I first met Wegmann in 1967, when we both took part in an international conference on the history of geology, which was held at a beautiful spot on the coast of New Hampshire. The book that was derived from the New Hampshire conference - Toward a History of Geology edited by Cecil Schneer - did much to establish the history of geology as a subject for serious research. Wegmann's paper, on A Changing ideas about moving shorelines, was a fine example, and I felt privileged to have met him in person. He was of course already famous for his research on the geology of Greenland, on the interpretation of migmatites, and on many other important topics; but he showed us all that a distinguished geologist could also be a good historian.

I arrived at that conference straight from Washington, where I had been studying fossils at the Smithsonian Institution. I was working on the evolutionary history of brachiopods (later the subject of my first book), and particularly on the evidence for a mass extinction event - a highly unfashionable idea in the 1960s - at the end of the Permian period. But this palaeontological research had led me to a growing interest in the fundamental issues of uniformity and catastrophism with which Charles Lyell had been concerned: in the words of Wegmann's famous paper of 1950, the issues of "Diskontinuität

und Kontinuität in der Erdgeschichte". So my own paper for the New Hampshire conference was about Charles Lyell's fieldwork in Sicily in 1828-29, and its impact on his concept of the vast timescale of the earth's history. As a geologist, I had felt it was important to follow in Lyell's footsteps in the field, and to try to see Sicily and Etna as far as possible through his eyes. Ever since then, I have regarded historical fieldwork as an essential part of research on the history of geology.

When I met Wegmann at the New Hampshire conference, I had recently made a dramatic mid-career move: I had started to convert myself into a full-time historian of the sciences. Some of my former geological colleagues disapproved of this decision very strongly. They told me that it was a waste of my talents to abandon scientific research in favour of history. But I have never regretted my decision, because I believe I have been able to serve the geological sciences most effectively as a historian. Conversely, I know that my first career as a palaeontologist has had a profound and positive effect on my second career as a historian. My hands-on experience of scientific work - not just as a student, but up to the level of teaching others how to do research - is a privilege shared by few other historians of the sciences today, at least in the anglophone world. I do not say this in a spirit of boastfulness, because I regret the fact that my career pattern is now so unusual. I believe that the study of the history of the sciences would be much more valuable, both to scientists and to historians in general, if it were studied more by scholars who share my kind of first-hand experience of scientific research. Certainly I have tried to make all my published work as accessible and interesting to geologists as I hope it is to historians.

I also value your award of the Prix Wegmann because the Société Géologique de France, the oldest geological society in the world apart from the one in London, is based here in Paris. For most of my adult life I have felt that Paris, and particularly the fifth arrondissement, is a little like a second home. The very first topic that lured me into the history of the sciences - even before my interest in the controversies around Charles Lyell - was concerned with the palaeontological work of the great Parisian savant Georges Cuvier, who lived and worked of course near here at the Jardin des Plantes. Like other Englishmen of my generation, I had been taught at school to read French fluently, though not - unhappily - to converse easily in your beautiful language. So I was thrilled to be able to read Cuvier's Recherches sur les Ossements Fossiles in the original. Later, almost every summer in fact, I spent happy weeks working in the archives at the Muséum d'Histoire Naturelle and the Institut de France; and ten years ago I was proud to publish some of Cuvier's great work in English translation for the benefit of historians and palaeontologists who cannot read French. Cuvier's research on the fossil bones of extinct mammals inspired my own research on the functional interpretation of extinct brachiopods and other organisms. At the same time, reading his work led to my growing interest in the sciences of his own time.

Ever since I first studied Cuvier I have tried to be a good European in all my historical research, and to be as international and as multilingual as the sources require. In my recent work in particular, I have found it essential to give equal attention to geological research that was done in all the countries in Europe. In my two volumes Bursting the Limits of Time and Worlds Before Adam, I have tried to trace the evolution of the concept of the historicity of the earth - the sense that the earth has had its own history - during the decades around 1800. In geology, unlike other sciences such as physics, every explanation has to take account of the past (and possible future) of the features being explained: something that we geologists now take completely for granted. But I think it is important to show that it was a major human achievement, comparable to those associated with Copernicus, Darwin and Freud. What was important was not only the discovery of the earth's vast timescale, but even more the discovery of a way to gain reliable knowledge of a deep pre-human past that cannot be observed directly: as Cuvier himself put it, "to know how to burst the limits of time".

In the course of my historical research over many years, I have been greatly assisted by the work of the francophone historians of geology who belong to COFRHIGEO, the Comité Français d'Histoire de la Géologie, and I feel privileged to be one of its foreign members. I was particularly inspired in earlier years by the example of the first president of COFRHIGEO, the late François Ellenberger. His international outlook and multilingual abilities, and his infectious enthusiasm for the history of geology, encouraged me to try to follow a similar path in my own historical work.

In conclusion, I hope I have shown you that I have many reasons to feel proud to be the latest recipient of the Prix Eugène Wegmann.

Martin Rudwick

OBITUARY

Wolf von Engelhardt (1910-2008)

At the end of last year INHIGEO Honorary member Wolf von Engelhardt died at the age of 98 years. By all his INHIGEO colleagues he is remembered as an outstanding historian of earth science, in particular for his fundamental contributions to the study of earth sciences in 18th and 19th centuries. By profession a mineralogist, geochemist, and petrographer – he held the Chair of Mineralogy and Petrography at the University of Tübingen for more than twenty years until his retirement in 1978 – he became interested early also in the history of his discipline. His first major historical work was a German translation (from the original Latin) of Gottfried Wilhelm Leibniz's *Protogaea* (1949), which is still the authoritative edition of this essential text of 17th century earth sciences. The book was the starting point of several further editions and translations of works of the famous German philosopher.

Von Engelhardt's profound knowledge in philosophy, and the history of ideas, enabled him to write (together with Joerg Zimmermann) a comprehensive *Theory of earth science* (1982; English translation by University of Cambridge Press, 1988). In the book an essential discussion of the methodological, and philosophical problems of earth science is presented, and it became a leading text for several young geologists in the 1980s, and 1990s, when thinking about the basic principles of their discipline. Already in 1977, together with his Tübingen colleague Helmut Hoelder (also well known as former INHIGEO member), and following earlier studies on this subject, Wolf von Engelhardt had published a book on the history of mineralogy, geology, and palaeontology at the University of Tübingen from the beginnings until recent times. The book is more than its topic might suggest, i.e. it is actually a comprehensive survey of the history of earth sciences in Germany from the early 19th century until the 1970s.

The central subject, however, of Wolf von Engelhardt's work in the history of earth sciences, were Goethe's mineralogical and geological writings. As one of the chief editors of Goethe's scientific writings by the *Deutsche Akademie der Naturforscher Leopoldina* (see <http://www.leopoldina-halle.de/goethe/goethe.htm>), he compiled a complete edition of Goethe's papers on mineralogy and geology in several volumes, including an extensive and detailed comment. Again, the monumental work - all together nearly 2,500 pages - is more than its topic suggests: it is a detailed discussion of geological knowledge, and geological reasoning in 18th and early 19th centuries. Wolf von Engelhardt was engaged on the Goethe-project until his last year. A further volume, *On science in general*, prepared under his Editorship, will be published in 2009.

Bernhard Fritscher, München

Goulven Laurent (1925–2008)

Our friend Goulven Laurent—a Member of the French Committee for the History of Geology (COFRHIGEO) since 1977, and for which he served as Treasurer for nearly a quarter of a century, and also as a Vice-President—left us on 12 November 2008.

Laurent was born in 1925 near Brest in North Finistère, into a farming family with four other children. He attended the local public primary school where he was noted for his success. He was a very hard worker and continued to be so throughout his career.

He then entered a seminary and studied theology at Angers, following which he chose to teach. In 1960, he was appointed Professor of Geography at the Catholic Institute at Angers. In 1984, he was Director of *Lettres et histoire* and Librarian at that institution. He retired in 1996.

Passionately fond of prehistory, Laurent participated in excavations with Professor Leroi-Gourhan. In his bibliographical work he always consulted works in their original languages. He spoke several languages fluently.

In administration, he was Vice-President of the history section of the *Comité des travaux historiques et scientifiques* (CTHS). He organised a conference on Lamarck at a meeting of learned societies at Amiens in 1994. And he took the initiative for another conference for the bicentenary of the publication of Lamarck's *Philosophie zoologique*, which he organised with Francis Por of Jérusalem in Paris last August, on the occasion of the 20th International Zoological Congress, but which he was prevented from attending because of his illness.



Goulven Laurent (1925–2008)

Laurent defended his thesis in Paris in 1984, with Jacques Roger as chairman of the examining committee. Our colleague, Philippe Taquet, and also the well-known American historian of science Charles Gillispie were members of the ‘jury’. Laurent’s thesis was published by CTHS in 1987 under the title *Paléontologie et évolution en France (1800–1860), de Cuvier–Lamarck à Darwin*. “An interesting topic doesn’t suggest itself; it chooses itself” he wrote in the introduction, to justify his topic choice. He explained that he supported the view that there was not a ‘desert’ between Lamarck and Darwin as so many other authors supposed. On the contrary, he sought to demonstrate, developing a ‘thesis’ in the old sense of that word, that endless discussions had yielded conclusions that tended to show the correctness of Lamarck’s ideas.

“In the course of his expositions”, said Gillispie in his preface to the published version of the thesis, “he [Laurent] sometimes alludes to the interpretations of those whom he called Anglo-Saxon historians, thus joining the two sides of the Atlantic in a union more apparent to French eyes than to English or American, with whose judgements he does not always agree. It is all the more agreeable as one such to be asked to contribute this preface to his wide-ranging and illuminating study. Whatever small differences might remain between us on the indispensability of the principle of natural selection in the “la théorie moderne d’évolution”, there can be no doubt of Goulven Laurent’s success in demonstrating the historical responsibility of Lamarck for the prevalence of transformism among French naturalists in the time of Darwin and after”.

The thesis was in two parts. The first was about the battle of the founders, Lamarck and Cuvier, The second was about their disciples: initially Etienne Geoffroy-Saint-Hilaire, then Etienne Serres, Julien-Joseph Virey, J.-B. Bory de Saint-Vincent, Frédéric Gérard, author of the first exposition of the scientific theory of evolution (in the dictionary of Charles d’Orbigny) Jean-Jacques Omalius d’Halloy and Isidore Geoffroy Saint-Hilaire.

Lamarck’s work in classification fascinated Laurent. No one still reads the seven volumes of *Histoire naturelle des animaux sans vertèbres* (1815–1822) he lamented. At a meeting of INHIGEO held in Neuchâtel in 1998, he gave an exposition of the relative merits of Lamarck and Cuvier in relation to the question of animal classification and concluded in favour of the former. He also presented an account of the role of the analogies, which he had previously expounded in the *Travaux* of COFRHIGEO in 1996. And he also tried to show how Lamarck passed from his philosophy of continuity to the science of discontinuity, while presenting his branching series. It was on this point that he differed from Gillispie. The latter, following the French philosopher Henri Daudin (1926), contrasted Lamarck the taxonomist in *Flore française* (1778) and the *Histoire naturelle des animaux sans vertèbres* with speculative Lamarck of the chemical theories of caloric and of transmutation,

where he bordered on German Nature Philosophy. By contrast, Laurent linked Lamarck's taxonomy and his transformism.

Laurent's other works dealt for the most part with Lamarck and various aspects of transformism. He authored a short work, published by Vuibert in 2001, in which he resumed his plea for the French naturalist. He also co-edited with Jacques Roger a volume, *Articles d'histoire naturelle de Lamarck* (Belin, 1991).

He was also the author of numerous papers, including ones on Constant Prévost, J.-J. Omalius d'Halloy, Ducrotay de Blainville, Louis Agassiz, Albert Gaudry, Father Teilhard de Chardin, Georges Cuvier, Ami Boué, Alphonse Milne-Edwards, Bruguière, Bronn, Lyell, and Geoffroy Saint-Hilaire.

One may also add an exposition at a colloquium on Cuvier in 1982, at Montbéliard; and his participation on the study of Migne's *Encyclopédie théologique*.

Summary bibliography of Laurent's writings:

"Postface", in G. Cuvier, *Discours sur les revolutions de la surface du globe* (C. Bourgeois, 1985).

Paléontologie et évolution en France (1800–1860) De Cuvier-Lamarck à Darwin (CTHS, 1987).

Colloque Jean-Baptiste Lamarck (1744–1829) Amiens 1974 (CTHS, 1997).

La naissance du transformisme. Lamarck entre Linné et Darwin (Vuibert 2001).
(edited with J. Roger) *Lamarck: Articles d'histoire naturelle* (Belin, 1991).

"Lamarck (1744–1829) et la paléontologie", *Eclogae geologicae. Helvetiae*, 1999, 92, pp. 115–121.

'La catastrophisme chez Cuvier et son disciple Elie de Beaumont', in M. S. Pinto (ed.), *INHIGEO Meeting Portugal 2001: Proceedings of the 26th Symposium* (University of Aveiro, 2003), pp. 257–271.

Gabriel Gohau, Paris

(Acknowledgement: I am obliged to Madame Quinquis of Brest for the biographical information in this *hommage*.)

Kenzo Yagi (1914–2008)

At 22h 17m of July 18, 2008, Kenzo Yagi, who was an outstanding experimental petrologist, passed away in Sapporo as a consequence of chronic heart failure. Prof. Yagi understood the importance of the history of geoscience. He has been an INHIGEO Member since 1990, and an INHIGEO Honorary Senior Member since 2004.

Kenzo Yagi, the third son of Mr. and Mrs. Teisuke Yagi, was born September 5, 1914, in the city of Nagano in Japan. His father was a principal in a junior high school and was greatly interested in geology. He frequently went out for field studies in the Nagano province and loved to take young Kenzo along with him. These early experiences made a deep impression on Kenzo and the attraction for geological study was to last for ever. He graduated from the Institute of Mineralogy, Petrology and Economic Geology of Tohoku University in 1938. The same year, he joined this institute as a staff. He was trained in mineralogy and petrology by Professor Shukusuke Kozu. With Kozu, he participated in some major research projects and made an extensive study of the alkali rocks of Morotu district, Sakhalin and Nemuro peninsula, Hokkaido. During this period, evidently as a consequence of his research contributions, he was promoted to an Associate Professor in 1943 and received his DSc degree in 1949. The same year, he was selected as a GARIOA Exchange Fellow (later known as Fulbright Fellow) and he proceeded to the United States of America. Before his departure for the USA, Kenzo was married with the young Nobuko.

In the United States, Kenzo Yagi spent one year at the Colorado School of Mines and then joined the Geophysical Laboratory as a visiting scientist. It was here that he completed the study of the FeO-Al₂O₃-SiO₂ System with J.F. Schairer and the diopside-nepheline system with H.S. Yoder, Jr. and J.F. Schairer. This was his first experimental work and the success he achieved and the satisfaction and fascination it brought about, spontaneously determined the general course of his research for the remainder of his life. His persistent interest in experimental petrology in later years brought him great fame. During his stay in America, Yagi gained many friends and admirers. These included H.S. Yoder, Jr., F. R. Boyd, F. Chayes, W. Schreyer and many others. In the later part of his life, he applied himself

to learn more about the crystallization behavior of alkaline rocks and devoted to experimental study of pyroxene-bearing systems.

After returning from the United States in 1951, Yagi was appointed Professor at the Tohoku University. Subsequently, he was invited to take over as Professor of Mineralogy at the Hokkaido University in 1962, holding this position until his formal retirement in 1978. He established an excellent experimental mineralogy and petrology laboratory in this department and thereafter, concentrated on research and also on the training of students. During the last ten years (1968-1978), he studied many systems involving alkali pyroxenes in order to understand the genesis of nephelinitic magma. On the basis of these works, he proposed a differentiation scheme of nephelinitic rocks and clarified the role of titanium in the evolution of alkali pyroxenes.

Prof. Yagi's broad interests led him to the study of volcanology and meteorites. He made excellent contributions to this field by his studies of volcanoes in northeast Honshu and the Yamato meteorite from Antarctica.



Kenzo Yagi (1914–2008) at Hokkaido University in June 2007

Prof. Yagi was invited to the Geophysical Laboratory as a guest investigator in 1960 and to the University of Pittsburg in 1966 and also to the University of Melbourne in 1975 as a Visiting Professor. He attended many international meetings and sometimes organized them with his boundless energy. He was elected as a member of the Japan Science Council during 1972-1981 working especially on a general plan for promotion of science. He served as the President of the Japanese Association of Petrologists, Mineralogists, and Economic Geologists and also as President of the Volcanological Society of Japan.

The Yagi Volume dedicated to Prof. Yagi on the occasion of his retirement of the Hokkaido University was published from the same University in 1978. The excellent book entitled "Petrology and Genesis of Leucite-bearing Rocks" with A. K. Gupta was published from Springer Verlag, Berlin, Heidelberg, New York in 1980. The Felicitation Volume entitled "Synthetic and Natural Rock Systems" to Prof. Yagi in celebration of his eightieth birthday was published from Allied Publishers Ltd., New Delhi in 1997. This volume was sponsored by the National Academy of Science, India, and many excellent articles were sent from Canada, India, Japan, New Zealand, United Kingdom and USA.

Prof. Yagi was interested in conservation of natural resources and in saving the environment from pollution. He went to Africa to involve himself in the protection of elephants and to Brazil for the cause of a cleaner environment for future mankind. He had a boundless sympathy for the poor and the underprivileged in every part of the world. He served as the President of the Nature Conservation Society of Hokkaido during 1980-1990.

Prof. Yagi was a semi-professional painter. Wherever he went, he was found spending his few moments of relaxation from field or laboratory with a sketchbook and pencil in his hands, sketching objects or scenes of beauty. His sketchbooks amount to 375.

Prof. Yagi had three sons, Teiichi, Takehiko, and Shunsuke. Of them, Takehiko is now studying on high pressure experiments at the University of Tokyo. His wife Nobuko helped her husband in his work by keeping him away from all worries and the hospitality offered by her at their home in Sapporo to people from all over the world was an unforgettable experience.

One of Prof. Yagi's friends once remarked, "If I had the ability, I would make a sculpture of Kenzo Yagi with a hammer in one hand and a painting brush in the other; and he would be gazing at the sky with a broad smile on his face". ----that truly symbolizes his character.

Before closing my obituary for Prof. Yagi, I express my deep condolence and sympathy to his wife, Nobuko. Her address is as follows: 2-5-10 Moiwashita, Minami-ku, Sapporo, 005-0040 Japan

Kanenori Suwa, Nagoya

INTERVIEW

INHIGEO and the research on the History of Geology - An Interview with David Oldroyd, Oslo, Norway, 7–8 August 2008

Jiuchen Zhang
Institute for the History of Natural Science
Academia Sinica, Beijing

Introduction: In the summer of 2008, I met Professor Oldroyd during our attendance at the 33rd International Geological Congress in Oslo. I had previously met him in Beijing when he had given some lectures at the Institute of Natural Sciences of the Chinese Academy of Science, at Beijing University and at the Chinese Geoscience University; and I acted as interpreter. A topic at one of his lectures was the use of non-written sources in the study of the history of geology and this made a strong impression on me.¹ So taking advantage of our meeting the Oslo conference, I conducted an interview with Professor Oldroyd and we had an interesting conversation, as follows.

1 Career

1.1 Early life

Zhang: Could you please tell us something about your early life?

Oldroyd: I was born in 1936 at Luton, which is an ugly industrial town thirty miles north of London; but for my first ten years we lived in a nearby village in the country. When I was a child, my father wanted me to be a doctor. So when I went to senior high school, I had to take the subjects appropriate to be a doctor. I did physics, chemistry, botany and zoology, as I had to do four subjects to get into the university. But the school where I studied (Luton Grammar School) was not at all a good one: the chemistry teacher was competent but bored with his work and therefore idle. The zoology teacher was seriously ill and was often absent. The botany teacher was quite good and the physics teacher was very good. So I thought I was good at physics—though I'm not. Then I thought I should become a physicist, and after a year I changed my programme: I stopped doing botany and started doing mathematics again but I had to do a course that should have taken two years in one year. So my results were not as good as I had hoped (though I passed everything). I stayed an extra year at school to try to improve my marks and get into Cambridge.

Zhang: How about your higher education?

Oldroyd: In 1955, I went to Emmanuel College, Cambridge. (At that time there were about twenty colleges in Cambridge.) When I went to the interview before admission, the Master of college said that there were no places vacant for medicine. But if I wanted to do science, that would be possible. So I said I'd do science. But after I got there, during my first year, I began to think of changing from

physics to chemistry. At high school I'd thought the chemistry teaching was awful (and it was) and I had no special interest in the subject, but in college it was really good (whereas the physics tuition wasn't). So chemistry began to be my preferred subject for a career.

Normally one did three subjects in Cambridge for a science degree: three subjects for two years and one of those subjects for the third year. But one could also do an additional 'half-subject' if you wanted to. So in the first two years, I did geology, which was new to me, and chemistry, physics, and 'half mathematics'. As it turned out, I liked geology a lot, though I also liked the chemistry. I still didn't really know what I was going to do with my life, but I thought there were more job opportunities for chemists. So after two years, I stopped doing the other subjects and just studied chemistry for the third year. Therefore my degree was eventually in chemistry, even though I actually liked geology best, because of the fieldwork.

But I met some problems. One was that I spent most of time playing the cello! And in my last year, my mother got very ill so that in the last week, when I had to take the final examinations, she died of cancer. So I didn't do very well at the examinations. I got a second class, which meant I couldn't then go on to do a research degree.

At that time, there were three kinds of jobs one could do if one didn't want to do national service in the army. One could become a research scientist. One could become a coal miner. Or one could become a science teacher. (These were the three occupations for which there were particular shortages in Britain in the 1950s.) I didn't want to go into the army and unsurprisingly I didn't want to be a coal miner. I wanted to be a researcher, but I couldn't. So I became a high school teacher at John Lyon School in Harrow, in northwest London, and got married.

After two years of teaching, I heard about a Master's degree course in history and philosophy of science, taught by evening classes, at University College, London. It was thought useful for school teachers to know about this (to help bridge what was called the 'two-cultures' gap) and with my strong interest in music I did have a foot in the cultures of both the humanities and science. Also I imagined that if I had a Master's degree that might help advance my career, and maybe I could become a headmaster one day.

So I started to do the course on history and philosophy of science—three evenings a week—at the Department of History and Philosophy of Science at University College. But the teachers there were poor too. The history of chemistry was good and the history of physics, taught by the same lecturer, was reasonable. The history of astronomy was all right (but dull). The history of biology was quite good and somewhat philosophical (but the lecturer never finished the syllabus). And there were a few interesting lectures on the history of geology. The philosophy of science was terrible! Unbelievably bad! So much so that you couldn't really say that overall it was a history and philosophy of science program at all. Anyway, I had to study for three years: two years for lectures and coursework, and one year to do a thesis. We did very few assignments. In fact, come to think of it, I can't recall doing one at all, other than a presentation on a paper from a book of readings on philosophy of science. It was just lectures and then examinations after two years. Learn and regurgitate! You couldn't call it a good course. But we worked quite hard.

1.2 Immigrant to New Zealand

Zhang: It seems your career was going on quite smoothly. What made you emigrate from Britain?

Oldroyd: After I'd been working for four years in England, my wife and I decided to migrate to New Zealand. It was the middle of the Cold War (the Cuban crisis and all that) and things seemed very uncertain in Europe. We didn't have much money in London and we wanted to travel. If we went to New Zealand, their Government would pay for our tickets and furniture removal and find a house for us. We liked the idea and thought it would be an adventure. It was!

So in 1962, we left London. I didn't take the HPS examination in England because we were already on the boat at the time of the examinations. But next year London University sent the 1963 examination papers out to New Zealand. And I had to do the examinations by myself: just one student and one person who made sure that I didn't cheat! I wrote continuously for two days and was pretty tired afterwards. But apparently they passed me all right. After that, I had to do a dissertation. The professor in London said: "we can't provide a supervisor if you're going to write a dissertation. It's your problem".

Zhang: So, you wrote the thesis without a supervisor?

Oldroyd: Yes. I wrote a thesis called "Geology in New Zealand prior to 1900".

Zhang: Why did you choose that topic?

Oldroyd: Well, doing a geological topic ‘justified’ our travelling round New Zealand and having many camping ‘holidays’. There wasn’t much chemistry and physics done in New Zealand in the nineteenth century, except that of Ernest Rutherford (whose work in New Zealand had already been studied to some extent) and I didn’t know anything much about biological subjects. Of course, I didn’t know a great deal about geology either, which was why I kept to the study of the simpler pioneering work of the nineteenth century.

At the beginning, I didn’t know how to do it. Nevertheless I did it. I had to travel around New Zealand and look at the rocks and also work in libraries, at my own expense and with no supervision. And at the end my thesis was passed. I have no idea whether the examiners thought it was a good or indifferent piece of work. But I think it was the first extended study of the history of geology in New Zealand, and it still gets cited occasionally. Writing the thesis was a major part of the adventure of going to New Zealand.

At first I was teaching in Hastings Boys’ High School in the North Island, which was really quite a dreadful place, as I soon discovered. The science laboratories and other facilities were utterly inadequate and the staff members were poorly qualified or lazy. About ten boys were beaten (by teachers) with a cane every day and the only thing that anyone really cared about was rugby football. But after 1966, I moved to another job, teaching chemistry at Christ’s College in Christchurch, which was one of the finest schools in the country, run on the lines of English ‘public schools’. After Hastings, it was a joy to work there, except for the religiosity of the place, which my wife disliked even more than I did! But the science facilities were excellent and so was the music. I could use the Canterbury University library. And I played in the semi-professional Christchurch Civic Orchestra too.

When at last I got my Master’s degree, I thought I might apply to become a university teacher. And just at that time, they were beginning to open up courses in history and philosophy of science in Australia universities and I applied for a vacancy for a lectureship in the School of History and Philosophy of Science at the University of New South Wales. I was the only person who applied who had a higher degree in history and philosophy of science! So I got the job. I was very lucky. It would be impossible today: I had no publications and no teaching experience at university level.

1.3 In Australia

Zhang: You were first a Britisher, then a New Zealander, and finally an Australian. So which nation do you think you belong to?

Oldroyd: International. That is, I don’t really owe any special allegiance to any particular country. All countries have their good and bad points. And some can change enormously over time. For example, Germany is an infinitely better place than it was in the 1930s—better than Britain in many ways, I think.

Zhang: So what happened to you when you got to Australia?

Oldroyd: Well, I went to Australia in 1969. When I got there, the Head of School said: “You must do a PhD”. So I had to think what could I do. The man who examined my thesis in England was an elderly gentleman, Victor Eyles.² So I wrote to him and said I still had no idea about what I might do for a thesis. Then I found an article in a history of science journal by Rhoda Rappaport, which suggested some research topics that could be done in history of geology.³ And some of them seemed feasible. So I wrote to Eyles for further advice. He said: “You should visit a man named Tom Vallance,⁴ who is a professor at Sydney University and is very interested in the history of geology”. So I went to visit Tom. He was an amazing man. He had thousands of valuable books in his house. I was very impressed. It seemed he knew everything and I knew nothing. But he was willing to help me and lent me many books.

My Head of School also said: “You have to get your PhD in five years. If you pass, you can probably get your job permanently; if you don’t, we’ll not be able to keep you any more”. So I sat down and worked. In fact, that PhD examination seemed very easy to me, compared with the Cambridge examinations, which were exceedingly difficult and where you had to do everything in a set amount of time: three hours for a theory exam or six for a practical exam. For a thesis you could take your time, and write things down; so you didn’t have to rely on memory so much. But languages were a problem, as I’d never studied German though I could read French reasonably well. The lack of German made difficulties for me, of course, as much of the early geological literature was written in that language. But fortunately for me many of the major texts were available in English or French translations. I did make some effort to learn German but perhaps I was already too old for that and I was exceedingly busy with my new job.

Anyway, I eventually decided to write a thesis about the history of the relationship between mineralogy and chemistry, where my knowledge of chemical analyses from my days of teaching chemistry would be useful. I finished my thesis in 1974, after a period of study leave in London. Its title was: “From Paracelsus to Häüy: the development of mineralogy in relation to chemistry”. It covered the period from the Renaissance to the beginning of the nineteenth century. Incidentally, Rhoda Rappaport, whose paper in *History of Science* had given me a clue as to where to find a thesis topic, was one of the examiners for my PhD thesis. That was nice!

Of course, I also had to start teaching in Australia as well as writing the thesis. I taught courses, such as the Darwinian Revolution, the history of the philosophy and methodology of science, history of chemistry, etc. And later I worked up a lot of other different things about which I knew very little, such as the relations between art and science, science and ethics, sociology of science. To tell you the truth, I never acquired a great deal of knowledge of these topics. I just ‘borrowed’ information and repeated (and expanded) it year after year, instead of integrating it well with the results of my own research. But I wrote two introductory books on the basis of my teaching. One was called: *Darwinian Impacts: An Introduction to the Darwinian Revolution*.⁵ It was reprinted in 1983 and 1988 and was used by the Open University in Britain. Another was called: *The Arch of Knowledge: An Introductory Study of the History of the Philosophy and Methodology of Science*.⁶ It was reprinted in 1989 and also translated into Italian and Spanish. And a Chinese edition of it appeared in 2008, all these years later.

Zhang: How did you find the time to do your research besides your busy teaching job?

Oldroyd: We’re very fortunate in Australia as they give you six months of study leave after every three years of teaching. One can go anywhere one likes during these periods of leave. It’s a real opportunity for research. I always left Australia and went to stay in different universities in England, getting away from all the entanglements that are inevitable in one’s own university. Also from 1984 to 1985, I was a distinguished visiting scholar at Concordia University, Montreal.

In 1990, I published a book, *The Highlands Controversy: Constructing Geological Knowledge through Fieldwork in Nineteenth-Century Britain*,⁷ based on work done during a period of study-leave, mostly in Scotland. It was very successful and I received the Sue Tyler Friedman Medal of the Geological Society of London in 1994, mostly for that book. Then I received the History of Geology Award of the Geological Society of America in 1999, and after that a Centenary Medal from the Australian Government for my work as an historian of science. I became a fellow of the Australian Academy of the Humanities in 1994, being the first historian of science to be elected to that academy; and later again I became a full Member of the International Academy of the History of Science.

I retired in 1996 and have since had more time to do my research and writing so I have written and published several further books.⁸ In recent years, I’ve also done much editorial work, such as the editor of *Earth Sciences History*, the language editorial work for the *Japanese Association for the History of Geology’s Newsletter*, the *Newsletter* of the International Commission on the History of Geological Sciences and quite a lot of editorial work for *Episodes*, as well as a bit of paid editing. And many, many times I’m asked by non-Anglophones to help them put their papers into good English, or write letters or even school reports (!) for Chinese friends in Sydney.

So from a Science Master, I became a Lecturer, Senior Lecturer, Associate Professor, Head of School, Professor, and so on and so forth. I just kept working and climbed the tree. At the end when I retired, I think I’d reached as far up the tree in my university as I wanted to go. I don’t like university administrative work as it involves battles with people on committees (or sometimes battles with colleagues if you become a head of department and some of their interests conflict with those of the department). It’s been OK!

2. Research on the history of geology

Oldroyd: The task of the geohistorian is to keep an historical eye on an endlessly changing and moving historical frontier and a hinterland that seems to change as historical knowledge and understanding develop. The historian has to try to understand the past and make it intelligible and interesting to others—sometimes specialists and sometimes a more general audience—by writing about that history.



David Oldroyd (centre) with Manuel Pinto (right) and Jiuchen Zhang (left)

2.1 Fieldwork is important for the geohistorian

Zhang: You have travelled to many places during your research. You know, our Chinese scholars haven't done this during our researches on the history of geology. Why do you do fieldwork?

Oldroyd: Besides written sources such as all historians use, I think the observations that historians may make through their own fieldwork can and does contribute towards historical understanding. Local first-hand knowledge can be of supreme importance for understanding texts. It may be very difficult to understand geological problems if one hasn't been to the places where the geological work relating to those problems was originally done. Or one can make mistakes. With first-hand experience you can also make your writing much more lively and illustrate it with your own photos.

As I mentioned, after teaching for three years in Australian universities, we get six months to go somewhere else. And I always went outside Australia to see the places where the geologists I'm interested had done their work. After I retired, I've had more time to get around the world. I don't just wander around with a historically blank mind. I go armed with a problem, furnished in part by study of the relevant published and unpublished written sources. I collect the geological literature of an area for the period that interests me. I try to secure copies of every map, guidebook, textbook, or whatever, that I can lay my hands on. I visit the displays in local museums, and perhaps talk to the curators. I get whatever tips I can from geologists who know the area well.

For example, I took four years to collect material for my book *Earth, Fire, Water and Ice: Two Hundred Years of Geological Research in the English Lake District*. It was a big job. I used that region as a kind of 'lens' through which to focus attention on the histories of different aspects of geology through two centuries. During my first year, I spent a lot of time collecting all of the hundreds of papers that had been written about that area and I made a preliminary visit to the Lake District. In the second year I looked at archives more and collected many old books from second-hand bookshops, and got to know the geology of the Lake District better. The third year I again spent most of the time walking around by myself with guide books and getting to know the local topography and the rocks even better. And in the fourth year I started to interview the geologists who'd worked there and I made tapes of our conversations. So I was able to talk to most of the relevant people still alive today. Without fieldwork, my task would have been quite impossible. The local names in the literature would have defeated me entirely. And the geologists would not have wanted to talk to me unless I already knew something about the geology of the Lakes. But they were most helpful, telling me their memories of events and their side of controversies. Sometimes they were very candid!

Zhang: Why have you done so much research on the history of British geology instead of Australia?

Oldroyd: That's a good question. Well I could do it myself, the way I wanted, in a small area in Britain. I don't need a big exploration team in that quite small country. In Australia, I can do fieldwork in the small area around Sydney. The area of the Sydney Basin is about 1/7th the size of the United Kingdom. So you could take one small area, such as that of the Basin, look around, and write a history of geology for that area. But it's difficult to publish a whole historical book about a small area where the geology is rather uniform (though complex in detail). Who would want to read it? A place where I could do some research similar to that which I've done in Britain is the Hunter Valley, north of Sydney (actually within the Sydney Basin), and a lot of geology has been done there because of its coal deposits. But I don't know that area very well and my friend David Branagan, who did geological research there years ago, has already written much about the history of geology in that area.

And another reason why I've found Britain well suited to what I try to do is that it has excellent maps. (You can buy them in any local shop, unlike in China, as I understand.) The Survey's geological maps are also available to anyone who wants them. And Britain has many small roads and footpaths that make detailed travel easy in six months. Of course, maybe another reason is that I was born in Britain. The Lake District is a most beautiful area. I was a child during the Second World War and my parents sent me to Lake District to escape from the bombs. So I lived there for several years and loved the place. But I wanted to get to know it really well, which writing my book towards the end of my career made possible.

2.2 Originality is important

Zhang: Besides the fieldwork, what else do you think is important during the research of history of geology?

Oldroyd: I think originality is certainly important for the geohistorian, as for other kinds of academic work. Researchers should be independent thinkers and should have imagination and creativity.

I once marked an examination for a Japanese PhD student from Melbourne University. He'd written a thesis on the history of geology in the seventeenth century but he said nothing critical about any other writers who'd written on the topic previously. In fact he didn't really advance knowledge at all. It was just a summary of all the things that had been written previously. I sent it back and said: "there is nothing new in this thesis. You can't just expect to get a doctorate by telling us what we already know. You should say what is good and what is bad about previous work and add to it. And don't be frightened about criticizing your teachers". A year later I received the rewritten thesis. It criticized everybody, and notably what *I* had written! The student followed instructions and obeyed orders. He did it because he was told to do so. Probably his instinct was *not* to be creative or critical. Anyway, he was now looking for faults in what others had done, rather than just saying what they'd done; and he added some new information too. So I cheerfully passed it.

It used to be somewhat like this in Europe hundreds of years ago. The eighteenth-century Swedish botanist Carl von Linné gave lectures to his students. In fact, he *dictated* his latest work to the students. They would write it down, and would study it and learn it. And when they came to the examination they had to show that they knew and understood Linné's ideas quite well or by heart; and they had to 'defend' them against the questions or objections raised by the examiners. (They weren't the students' opinions or ideas, but Linné's.) Otherwise they couldn't get their degrees. This was how it was in the eighteenth century. (Actually a lot of what we know about Linné's later thought comes from what we find in his students' theses.)

And I think in some parts of the world today there are students who aren't encouraged to have original ideas. They learn their master's system and obey their superior's instructions. And they become his 'disciples' and advocates. In the Western world, though it's usual today for a supervisor to suggest a problem to a new research student and also in many cases provide the necessary research funding, there can be—and sometimes are—honest scientific disagreements between supervisors and their students. My impression is that in the East such disagreements or differences of ideas would be unusual. I'm told that the professor in China acts as a 'patron' for his students, and ensures that they get jobs. So getting an influential supervisor is important. But then the students feel the need to support their teachers' ideas, right or wrong. I suppose that happens in the West to some degree, but not to the same extent. However, I can think of a case in Australian geology where a professor's ideas (which weren't mainstream) stayed with his students for many years and are still held by a few. I'm thinking of the late Professor S. W. Carey's ideas on Earth expansion as an alternative to plate tectonics, which he taught for many years at the University of Tasmania. I believe his theory is still upheld by a few of his former students.

On the question of originality, there's also a story about Cambridge (though I'm not really sure whether it's true) that may give an idea about the originality looked for in Western universities. A mathematics examiner preparing the final examination put in a question (or was it questions?) for which he didn't know the answer(s). But maybe the best students could suggest solutions! Or that was what the examiner hoped. I can't imagine that happening in China.

In Russia and China, in the early days of history of science research, historians of geology seem to have been trying to 'glorify' the work done in their countries. Nowadays things have changed somewhat, but the old style still seems to be there to some extent. It could be called 'hagiography' (or 'writing the lives of saints'). There's also what we call 'kings and queens' history—which focuses on the big names and pays no attention to what minor figures did or the interests of (for example) fossil collectors). Hagiography or 'kings and queens' history are no longer thought to be the be all and end all of history of science in the Western world.

Zhang: I agree with you. In fact, Chinese scholars have paid attention to the role of groups of scientists during their historical research in recent years. But it's obviously the case that famous scientists have made many more contributions to science than rank and file scientists. Maybe we should pay more attention to common people in the social history or political history, but in scientific history, famous scientists are really more important than 'common scientists'. Do you agree?

*Oldroyd: Yes, up to a point. But the social system of science doesn't operate just as a result of the work of 'big shots'. So if you only look at them you only get a partial or incomplete view of science and how it functions. And many interesting questions that can be asked about science and society may not get asked if one only looks at the 'big-shots'. Yet in Russia and China, as it seems to me, people still seem to be exceedingly (or excessively) interested in names, dates and places; and honours, distinctions and works accomplished. And I suspect there are rather few *critical* analyses. So (from what I can gather from the small amount of history of science from those countries that has been translated into English), a lot of hagiographical work has appeared there. I don't like hagiography or 'adulation'. We need creative and *critical* work. Of course, the 'kings and queens' of geology are obviously important, but just getting their 'names and dates' right isn't enough.*

2.3 'Whig' historiography and anachronism

Zhang: Your book, Thinking about the Earth, has been translated into Chinese. Your criticism of 'Whig historiography' in the Introduction to the Chinese edition interests me a lot. Could you say something about it here please?

*Oldroyd: Well, that term is often used by historians and especially historians of science but is mostly unfamiliar to scientists. Back in 1931, the English historian Herbert Butterfield published a book called *The Whig Interpretation of History*. He complained that some nineteenth-century historians such as Thomas McCaulay wrote with the general idea in mind that humans and human society *progressed* or got better as time passed. This was the optimistic view of the so-called 'Whig' party in British politics, which McCaulay supported. The Whigs corresponded with the liberal or progressive side of politics and opposed the conservative land-owning party, called the 'Tory' party, who were not too keen on social change.⁹ The thing was that if society *progresses*, then the most recent (or more recent) historians would have the better ideas, and should be able to form the better judgements. The most modern view would be likely to be the best informed and 'the best'. Therefore the Whig historians were inclined to *judge* people and events of the past in terms of the ideas that *they* personally held. So, for example, by the standards of a nineteenth-century liberal (or Whig) historian, the Reform Bill of 1832 was a 'good thing' but slavery was 'bad', having been rejected during the course of the nineteenth century. I personally think that slavery is a bad thing, but possibly if I had lived in the southern states of America in the earlier part of the nineteenth century I would have regarded it as natural and good. Anyway, the Whig historian tends to *judge the past in terms of the present*. He is guilty of historiographical anachronism!¹⁰*

Butterfield was making an important point, for obviously someone of 1830 could not have the knowledge and experience, or the political and social views, of someone of 1900. So if the historiographer of 1900 judges someone of 1830 by the standards of 1900 there is obviously something wrong with his historiography—as there would be if a film maker made a film about the Roman Empire and had the actor representing Julius Caesar wearing a watch!

Zhang: You mean that Whig historiography is a 'bad thing' for political or social history?

Oldroyd: By and large, 'yes', though it's surely desirable to know modern views in some cases. For example, the earliest voyaging explorers of the New Zealand coastline did not know whether Banks

Peninsula (as it's now called) was an island or a peninsula. If you are writing about those voyagers' explorations it obviously helps to know whether the land mass is in fact an island or a peninsula.

But *do* we make progress in society or morality? Perhaps we do, or perhaps we don't! So the answer may not be clear-cut for social history. But leaving that aside, it seems clear to me that we *do* make progress in science. We do have more scientific knowledge now than in the past. And scientists recognise this and they commonly think that the latest ideas are the best, and can be used as a kind of 'yardstick' to judge previous work. So a common way of writing history of science has (at least in the past) been to judge things according to the knowledge of the present and write about past science accordingly. Thus, in geology, James Hutton was represented as a 'good' geologist; Abraham Werner was 'bad'. Why? Because Hutton's ideas were closer to those held today than were Werner's. Similarly, for a Whig historian, in chemistry Lavoisier was 'good', Priestley 'bad'; or in biology Darwin was 'better' than Lamarck. Some of the earlier work in history of geology was anachronistic or Whiggish in this kind of way. A good example was Charles Gillispie's book *Genesis and Geology* (1951/1959).¹¹ That was the first book I ever read in history of geology, and I thought it was great fun. Supporters of what is now superseded science, such as Richard Kirwan or Jean-André de Luc, were treated by Gillispie as benighted obscurantists, while James Hutton or John Playfair were given very favourable treatment. I now realise that it would have been better for Gillispie to have tried to understand, and explain to his readers, how and why Kirwan and de Luc thought as they did.

Nationalism can also be unhelpful in science historiography. Archibald Geikie's very influential *Founders of Geology* (1897) gave a negative view of the German Werner and a favourable view of the Scotsman Hutton. I doubt not that this opinion was written under the influence of the struggle for political and intellectual supremacy in Europe that culminated in the disaster of World War I.

So Whig historiography and anachronism are linked. They are best avoided, but they can sometimes slip through unconsciously. Think about the innocent little word 'still'. For example, someone might write: 'Harold Jeffreys still opposed continental drift until the 1970s'. This suggests that he ought to have known better! But that is a judgment that might be made by a *later* writer, *after* most people have accepted continental drift or plate tectonics. One needs to look out for solecisms like that and try to avoid them. The more interesting or important question would be why Jeffreys thought as he did in the 1970s.

2.4 Internal and external historiography; social history of science; an 'inverse cube law'?

Zhang: Can you please say something about different 'styles' for writing the history of science? Can historians do 'objective' research?

Oldroyd: Well, on the first point, much of the earlier history of science was undertaken by trying to reconstruct what scientists had done or thought in their laboratories, in their studies or in the field. For example, one might try to discover *how* William Harvey arrived at the idea of the circulation of the blood, or *how* Isaac Newton arrived at his inverse square law, perhaps trying to reconstruct their thought processes as they did what they did. This approach tends to give rather little attention to the social context within which a scientist operates. We call this 'internalist' historiography.

Obviously it can be very important. If one knew, or could somehow reconstruct, what was going through Newton's mind when he arrived at his law, or when Wegener arrived at the idea of continental drift, that would indeed be a valuable contribution. But these 'great men' (two 'kings' in their own way) obviously worked at a particular time and place, and if we want to know what happened when they made their scientific breakthroughs one will presumably need to know something about the social context in which they functioned. This could include the national/political and economic environment; the ideas about religion that obtained at the time; the social circumstances (e.g. wartime or peace); or the ideas picked up from the people around the scientist that we may be interested in. For example, as an extreme case I once read a book that argued that Albert Einstein developed his theory of relativity in mechanics because the people in his social circle as a young man believed that there were no absolute truths in morals or ethics. A person should be judged good or bad according to the values prevailing at the time. This we call moral or social relativism. And the idea was that this supposedly carried over to Einstein's physical theory.

Could the social environment somehow have produced a relativistic scientific theory? If it did, or if we look for such connections, then we would be working as 'externalist' historians, or what are sometimes called 'social constructivists'. On that view, scientific theories bear the mark of the social formations in which they are developed. For example, one sometimes hears of 'bourgeois science', 'Nazi science', 'Jewish science', or 'Marxist/Leninist science', for which the Lysenkoist biology of the

1930s would be a prime example. I talked a while back about different outlooks or approaches of history of science in Communist and Western/capitalist countries. Such differences are to be expected if you are a 'social constructivist'. But who is to say which approach is 'better'? Maybe it depends on which society prevails in the struggle for existence? Suppose the Germans had won World War II and Nazi science, society, and historiography had prevailed. Would that mean that Einstein's relativity theory (a 'Jewish science' in the eyes of some Germans during the Nazi period) was wrong? Surely not!

Personally I think that both internal and external factors are involved in most scientific work; and some people argue that the internal/external dichotomy is unwarranted. If you accept what is sometimes called the 'strong programme' in the sociology of knowledge¹² (and apply it to the historiography of science) one is left with an uncomfortable 'relativism', where nothing can be known to be true for sure. This question of relativism has got a lot of people stirred up in the last quarter of a century or so! So-called 'positivists' have reacted with anger against the work done in the sociology of knowledge, suggesting that if the social context can really determine the content of scientific knowledge then one might, for example, have a particular society where people believed in an 'inverse cube' law of gravitational attraction. But this of course is a *reductio ad absurdum*!¹³ Nevertheless, there have been cases where political pressure has produced a particular form of science, such as Lysenkoism in Stalin's Russia. The trouble was of course that the Soviet agriculture was ruined for a time and people starved.¹⁴ Perhaps you had something similar in Mao's time in China, when 'proletarian' science and technology flourished; and again people starved. Fortunately that phase didn't last.

In history of geology a few attempts have been made to relate the form of geological science to the social formations in which geology developed. For example, the notable geohistorian Martin Rudwick, under the influence of the Edinburgh sociologists of knowledge in the 1970s, sought to relate four 'cognitive styles', as he called them, to four different kinds of social formation. For example, Survey scientists, who worked in a formalised hierarchical social structure with 'routinised' work practices, were said to be much concerned with the minute classification of strata and subdivision of time. Or, by contrast, independent scholars like Charles Lyell might form broad, grand, and original geological ideas.¹⁵ However, Rudwick has told me that he later gave up that line of enquiry, coming to the conclusion that it was not leading anywhere useful. Nevertheless, I found the idea interesting; and Rudwick himself continues to emphasise the social background to geological work. In his recent book, *Bursting the Limits of Time* (2005), he emphasizes the idea that the emergence of historical geology at the end of the eighteenth century was part and parcel of the movement at that time called 'historicism', when people tried to understand things by examining their history. (Why is a country the way it is? Because of its specific history, which makes it different from other countries. In Australia, for example, South Australia is said to have a different character from the other States, as it was never a convict colony.)

Now to go back to your question about historical objectivity, I do think there are certain knowable facts—for example that Charles Lyell published a book entitled *Principles of Geology*, and the first of its three volumes was published in 1830. But other things are much less certain, such as whether Geikie was in fact motivated by nationalistic considerations in his discussions of Hutton and Werner; or whether the advent of sea-floor spreading theory can correctly be ascribed to the outcome of investigations motivated by military interests. So, as there may never be conclusive evidence about such matters, or the role of 'external' factors in the history of science, I don't think there can ever be a 'definitive' history of geology. There will always be changing and shifting interpretations and perspectives, and in consequence the work of a historiographer (or historian) of science is something like the work of an artist. It's a kind of 'art form'. But this 'artistic' work should rest on a foundation of correctly ascertained facts.

3. The role of INHIGEO

Zhang: Could you now say a few words please about INHIGEO (The International Commission on the History of Geological Science)?

Oldroyd: Well, INHIGEO is a long-standing Commission of the International Union of Geological Sciences (IUGS) and an affiliate of the International Union for the History and Philosophy of Science, Division of History of Science (IUHPS (DHS)) and its activities are funded by these two bodies.

3.1 A brief introduction

Oldroyd: The idea of establishing INHIGEO was proposed by the Soviet geologist I. I. Gorsky, at the 22nd International Geological Congress meeting in Delhi in 1964 and the Commission was formally founded at a meeting of the IUGS in Yerevan, Armenia, in 1967. INHIGEO initially had thirty-one members from sixteen countries: Australia, Belgium, Czechoslovakia, Denmark, East Germany, France, India, Japan, New Zealand, Poland, Spain, Sweden, The Netherlands, Britain, the United States and the Soviet Union. The founding President was Professor V. V. Tikhomirov from the Soviet Union; the Vice-President was Professor R. Hooykaas from The Netherlands; and the Secretary-General was Professor K. Maslankiewicz from Poland. Tom Vallance was the chief Australian representative. All Members except Tikhomirov and Hooykaas were professional geologists with a strong interest in the history of geology, rather than professional historians of science. Some of them were among the most distinguished scholars in the post-war emergence of interest in study of the history of geology. Others are now largely forgotten, so far as work in the history of geology is concerned. At present, the INHIGEO's officers include the President, the Secretary-General, and five Vice-Presidents from different parts of the world. Each country in the world can have up to eleven Members. The original Commission had a single Member for each country and a number of Corresponding Members (up to ten as I understand), who supplied information about their activities to their Member, who passed it on to the Secretary-General. So formerly there was a 'two-tier' system.

The chief goal of the Commission has been, and is, the promotion of international co-operation in the study of the history of the geosciences. So it established an annual *Newsletter*, giving information about work done in the history of geosciences in different countries. Today it also organizes useful symposia in various parts of the world, and conducts valuable field excursions, which make it possible for participants to study localities or sites of major importance in the history of geology. The proceedings of these meetings are published in various forms, and some substantial books have been produced as an outcome of the conferences.

Like academies more generally, INHIGEO is a self-perpetuating body. It conducts its elections to fill positions, both for the Executive Board every four years and for the general membership every two years. At present, INHIGEO has about 200 members coming from about forty countries worldwide. It's the only truly international body for the study of the history of geology.

Most of INHIGEO's administrative work is done by the Secretary-General. I think there are four qualifications that he or she should have for this rather onerous position: one is time; two is English ability; three is enthusiasm; and four is the knowledge of the subject. (I'm not giving those criteria in order of importance.) If he or she has access to a free mailing system, as some of us do, that is a huge additional advantage to the Commission.

3.2 Changes to INHIGEO

Zhang: When did you become an INHIGEO member?

Oldroyd: I became an INHIGEO Member in 1994, when my Australian friend David Branagan was President and the annual meeting was held in Sydney. David was kind enough to nominate me at that time. But I soon found that I was also nominated for the position of Secretary-General, and (with a good deal of help from my predecessor Ursula Marvin) I produced my first *Newsletter* in 1996, which was the year I retired; so it gave me a new thing to occupy me during the early years of my retirement. I served two terms, or eight years. Afterwards I was asked to stand for President but I thought it better to let someone else do the job. I suspected I might still be trying to run everything if I became President!

Zhang: Are there some notable changes for INHIGEO during these years?

Oldroyd: INHIGEO has changed gradually over the years. I have heard that in the early days there was much quarrelling between the Americans and Russians. It was part of the Cold War, which thus extended right down into our little corner of academic world. I don't know any details, but I understand that the Russians and the Americans argued a lot about who was to be President, etc. Thankfully that has all died down now. And today there are many more people who are primarily historians of science in the Commission than used to be the case. In the early days the membership was largely geologists who had an interest in the history of the earth sciences—like my friend in Sydney, Tom Vallance, now sadly deceased. Today there are a number of professional historians of science also.

Before 1991, each country had, as I said, one Full Member and up to ten Corresponding Members. But at a meeting in Dresden that year, it was decided to abolish the distinction between Full

and Corresponding Members. So at present, each country has up to eleven Members, all of equal status. Eleven is OK for some countries, but it has caused pressure for some others, such as Germany when East and West became one country. But the break-up of the Soviet Union allowed new Members to be elected for places such as Uzbekistan. Eleven Members is probably hardly enough to accommodate all the good historians of geology in the US and perhaps also in Japan. In other parts of the world such as India, the Middle East, and Africa, INHIGEO cannot find sufficient Members.

Nowadays, INHIGEO has much more connection with Russian members. Some Russian scholars lost their position because of the limitation of eleven Members. For example, Irena Malakhova lost her position after the Dresden meeting but she has come back again because there is now room for her, with the establishment of new countries out of the old USSR, and we are pleased to see her return.

Another change is that English has now become the document language of the INHIGEO *Newsletter*, and our Japanese colleagues also publish their English edition newsletter too. At the beginning, INHIGEO's newsletters were published in Russian and English. Unfortunately, some of the older Members in INHIGEO can't speak English, so we never hear from them. But now nearly all Members are English speakers and that language is almost a prerequisite to be a useful Member, or get anything out of what INHIGEO has to offer. As for many other international bodies, all correspondence is conducted in English and all papers at its conferences are presented in English, as are the *Proceedings*. So far as I know people don't seem to mind. (But perhaps they do?!)

3.3 INHIGEO's significance

Oldroyd: INHIGEO has taken quite an active role in research in the history of geology. It also uses its influence to encourage the preservation of archives and sites of special geohistorical interest and importance, such as the historically important obsidian deposits in the Lipari Islands in the Mediterranean. Or my opinion was sought about the nomination of the extremely important locality of the Glarus Thrust in Switzerland as a World Heritage Site. (I believe the nomination was successful.)

Zhang: *The members of INHIGEO come from different countries (cultures), and, broadly speaking, they come from two difference research fields: one from geology, another from social sciences, such as history. As the cultural background and research methods are different, how does INHIGEO take a positive role to 'blend' them together?*

Oldroyd: Well, I think INHIGEO's meetings and publications provide the opportunity for people from the 'two cultures' to interact. The historians of geology who come from the social sciences can learn a lot from the practical 'know-how' and experience of the geologist-historians; and the scientist-historians can learn from the more socially-oriented historians about the *kinds* of questions that can be asked by historians over and above who did what, when, and where. 'Why questions', if you like. And perhaps they may come to realise some of the problems of 'Whig historiography' for example. For myself, I have consorted more with geologists than with historians of science since my retirement; and I think I am the better for that! As just a small example of the utility of INHIGEO, I have recently got to know about some very early geological survey work done in eastern Siberia at the end of the eighteenth century. I should never have heard of that without the help of INHIGEO correspondents. Yet it is important to know that that work was going in such a place at that time (for commercial reasons). I wish I had known about it when I wrote *Thinking about the Earth*.

Zhang: *As a non-governmental organization, could you tell us the advantages and disadvantages in promoting the study of history of geology (i.e. comparing with the government-supported institutes (or academies). INHIGEO, of course, lacks strong financial support and full-time staffers.*

Oldroyd: What you say is right. But, as I see it, the role of INHIGEO is to *co-ordinate* work that is being done world-wide. It is not an employer. It is not an Academy proper. It cannot *conduct* research, but it can certainly encourage it and to some extent facilitate it. And it brings like-minded people together. That seems to me to be very worthwhile. The annual conferences are, of course, organised by people in the host countries, but that means that, over time, the work gets shared around, and we have the opportunity to visit other countries and get to know their 'geo-environments' and archives, their societies, and their particular problems and interests. It can be a global learning experience therefore.

Zhang: *I still remember you said in your book, Thinking about the Earth, that the book chiefly describes the history of geology in the English-speaking world. Because of the language barriers, it's really difficult, or impossible, to write a book covering every corner of the world. Do you think it's possible that one day a book including each culture's history of geology could be written? If it is, what could INHIGEO do at present for this 'great book'?*

Oldroyd: Well personally I think INHIGEO is too diffuse a body to attempt to write a general history of the geosciences, and, in any case, ideas about it keep changing. Such a job would be impossible to accomplish and there would be tremendous linguistic problems. Also, as I hinted previously, I don't think there can ever be a *definitive* history of anything. Nevertheless, through its excellent annual conferences, which have in several cases formed the basis of good books, I think INHIGEO does do really useful work. And now that I'm editor of *Earth Sciences History*, I find it absolutely invaluable to have a network of friends and colleagues round the world with similar interests to help me. In fact, you could say that my circle of colleagues has grown enormously since I retired—from the University of New South Wales to the whole world. I'm a fortunate man!

Endnotes

1. 'Non-written sources in the study of the history of geology: pros and cons in the light of the views of Collingwood and Foucault', *Annals of Science*, 1999, 56, 395–415.
2. Victor Eyles (1895–1978), a former officer of the British Geological Survey, and in his day the leading and senior historian of geology in Britain, and an authority on economic geology (see *Isis*, Vol. 69 (1978), pp. 592–594). He and his wife Joan Eyles, who was one of the early authorities on the work of William Smith, created a huge private collection of early geological books.
3. R. Rappaport, 'Problems and sources in the history of geology, 1749–1810', *History of Science*, 1964, 3, 60–78.
4. Thomas Vallance was an igneous petrologist and associate professor in the Department of Geology and Geophysics at Sydney University. A friend of the Eyles's, he too amassed an enormous collection of rare books, on geological topics and the history of exploration. And he wrote extensively on the history of Australian geology. He intended to work on this material full time after his retirement, but tragically died of cancer only two years after he left Sydney University. So his ambitions were never fully realised.
5. *Darwinian Impacts: An Introduction to the Darwinian Revolution*, NSW University Press, Kensington; Open University Press, Milton Keynes; Humanities Press, Atlantic Highlands, 1980.
6. *The Arch of Knowledge: An Introductory Study of the History of the Philosophy and Methodology of Science*, N.S.W. University Press, Kensington; Methuen & Co., London and New York, 1986.
7. *The Highlands Controversy: Constructing Geological Knowledge through Fieldwork in Nineteenth-Century Britain*, University of Chicago Press, Chicago and London, 1990.
8. *Thinking About the Earth: A History of Ideas in Geology*, Athlone Press, London; Harvard University Press, Cambridge (Mass), 1996; *Sciences of the Earth: Studies in the History of Mineralogy and Geology*, Ashgate Variorum Series, Aldershot and Brookfield, 1998; *Earth, Water, Air and Ice: Two Hundred Years of Geological Research in the English Lake District*, The Geological Society, London, 2002; *Iconography of the Lisbon Earthquake* (with J. T. Kozák and V. S. Moreira), The Geophysical Institute of the Academy of Sciences of the Czech Republic, Prague, 2005; *Geological Cycles: A Historical Perspective*, Greenwood Press, Westport, 2006. Also two edited books: *The Earth Inside and Out: Some Major Contributions to Geology in the Twentieth Century*, The Geological Society, London, 2002; and (with Rodney Grapes and Algimantas Grigelis), *History of Geomorphology and Quaternary Geology*, The Geological Society, London, 2008.
9. The Tory Party still survives, and so does the Liberal Party, but their old nickname of Whig is now no longer used.
10. History is 'what happened' in the past. Historiography is 'the writing about' the past. The two are often 'conflated' but it's quite helpful to make the distinction. It might be better if we called people historiographers rather than historians, but the word 'historian' is so well entrenched that this is unlikely to come about.
11. C. C. Gillispie, *Genesis and Geology: A History in the Relations of Scientific Thought, Natural Theology, and Social Opinion in Great Britain, 1790–1850*, Harper & Brothers, New York, 1959.

12. It has the following four tenets, as enunciated by the Edinburgh sociologist of science David Bloor in 1976: 1. *Causality*: it examines the conditions (psychological, social, and cultural) that bring about claims to a certain kind of knowledge; 2. *Impartiality*: it examines successful as well as unsuccessful knowledge claims; 3. *Symmetry*: the same types of explanations are used for successful and unsuccessful knowledge claims alike; 4. *Reflexivity*: it must be applicable to sociology itself. (The last principle implies that the ideas of the sociologist of knowledge are *themselves* the product of the social environment, and therefore have no certainty or absolute foundation.)
13. But I have read that the people in New Guinea classify humans and cassowaries together in their particular way of classifying living things! That surely seems mighty strange to us and, I suppose, it somehow reflects the social beliefs of the New Guinea Highlanders.
14. So in a way there was a kind of horrible empirical test of both Lysenkoism and Marxism/Leninism.
15. See: M. J. S. Rudwick, 'Cognitive Styles in Geology' in M. Douglas (ed.), *Essays in the Sociology of Perception*, Routledge & Kegan Paul, London, 1982, pp. 219–241.

FORTHCOMING MEETINGS

XXIII International Congress of History of Science and Technology 'Ideas and Instruments in Social Context' Budapest, Hungary 26–31 July 2009

INHIGEO is an Affiliate of the International Union of the History and Philosophy of Sciences (IUHPS) and we are joining them at their major international conference in Budapest next July under the General Theme: "Ideas and Instruments in Social Context".

The XXIII International Congress of History of Science and Technology will be supported by the Hungarian Government, the Hungarian Academy of Sciences, the Budapest City Council, the Federation of Technical and Scientific Societies and other local institutions and organisations.

Two Special Symposia are being organised by INHIGEO members. These are

- S-70 '*Spacing earth history*': *Geological and paleontological sciences in cultural contexts from 17th to 20th centuries*.
Convenors: Bernhard Fritscher, Miklos Kazmer (Germany/Hungary)
- S-96 '*Seeing and Measuring, Constructing and Judging: Instruments in the History of the Earthsciences*'
Convenors: Ana Carneiro, Marianne Klemun (Portugal/Austria)

Many regular symposia also involve the earth sciences especially:

- S- 40 '*Pioneering Ideas and Methods in the History of Earth Sciences*'

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**. INHIGEO Annual Meeting for 2009
'Fossils and Fuel'
Calgary, Alberta, CANADA
9–19 August 2009**

The 2009 Annual INHIGEO Meeting will be held in Calgary, Alberta, Canada at the University of Calgary Conference Centre.

The theme of the meeting will be “*Fossils and Fuel*” and will focus on the historical development of significant fossil sites and the history of petroleum industry.

Further details are given near the front of this newsletter. Additional information will be emailed separately to members. Please contact Prof. George Pemberton, (University of Alberta) at george.pemberton@ualberta.ca for additional details.

**Von Humboldt’s legacy after 150 years
IAGA, Sopron, HUNGARY
23–30 August 2009**

The year 2009 marks the 150th anniversary of the death of Alexander von Humboldt (1769–1859), the renowned German natural philosopher. The event will be celebrated at a special session to be held at the International Association for Geomagnetism and Aeronomy (IAGA) 11th Scientific Assembly, to be held in Sopron, Hungary, from 23–30 August 2009.

This session of invited talks focuses on von Humboldt’s contributions to geomagnetism and aeronomy, including his influence on Gauss’s studies, his role in the establishment of the Magnetic Union, and work on catalytic function for the birth of solar-terrestrial physics. In addition, speakers will examine broader topics surrounding von Humboldt, such as “generalists versus specialists” in science and the evolution of a scientific reputation over time. Contributed talks will be given in an associated poster session.

The *Convener* is Edward W. Cliver, Air Force Research Laboratory, AFRL/VSBXS, 29 Randolph Rd., Hanscom AFB, MA 01731-3010, USA; tel: +1-781-377-3975; fax: +1-781-377-3160; e-mail: edward.cliver@hanscom.af.mil His *Co-convener* is Wilfried Schröder, Geophysical Institute, Germany (<Geomoppel@t-online.de>).

More details can be found at the web site: <http://www1.iagasopron.hu/index.html>

**A Century of *Diplodocus* in Bologna
'International Conference on Vertebrate Palaeobiography'
Giovanni Capellini Museum of Geology and Palaeontology
Bologna, ITALY
28–29 September 2009**

In the autumn of 1909, a complete skeleton of *Diplodocus carnegiei* was put on display in the Giovanni Capellini Museum of Geology and Palaeontology of Bologna. The plaster cast specimen was the gift of Andrew Carnegie. In honor of that occasion, the museum will host an ‘International Conference on Vertebrate Palaeobiogeography: Tethys, Mesogea, and the Mediterranean Sea’ on 28 and 29 September 2009. An exhibit of Italian dinosaurs will be on display from 6 September through 31 December 2009.

For additional information, please see <www.museocapellini.org> or contact Dr. Federico Fanti, Department of Earth and Geoenvironmental Sciences, University of Bologna (Alma Mater Studiorum), Via Zamboni 67, I-40127 Bologna, Italy (<federico.fanti@unibo.it>).

**10th Cultural Heritage Symposium on
Mining, Metallurgy, and Geosciences: Libraries—Archives—Collections
29 September – 2 October, 2009
Freiberg, GERMANY**

Organised by the University Library at Freiberg and the Staatsarchiv/Bergarchiv of Freiberg. Please contact for further details Erbe2009@ub.tu-freiberg.de; Angela.Kiessling@ub.tu-freiberg.de; peter.hoheisl@sta.smi.sachsen.de .

Symposium topics:

- Scientific redactions as an unused resource
- Collection and indexing of manuscripts on Mining, Metallurgy and Geosciences
- Collection and indexing of unpublished works in scientific redactions
- Role of libraries, archives, and museums in the diffusion of information in the electronic age
- General topics

**1st International Applied Geological Congress 26-28 April 2010
Mashad, IRAN**

**Theme: Exchanging of Idea and knowledge with “New Directions of Investigations in
Geosciences, including, Geology, Mining Geology, Natural Hazard,
Geotourism, Geomedicine, Archeogeology**

Organized by Department of Geology, Faculty of Sciences, Islamic Azad University - Mashhad Branch (IAUMB), Mashhad-Iran 26-28 April 2010.

Web site: <http://www.iagc.ir> <<http://www.iagc.ir/>>

Email: info@iagc.ir <<mailto:info@iagc.ir>>

The congress theme will also visit the cultural heritage of Iran

**INHIGEO Annual Meeting for 2010
History of Mining and Mineral Resources.
Almadén-Iberian Pyritic Belt, SPAIN
5-11 July 2010**

This will be held in Madrid-Almadén-Iberian Pyritic Belt (Spain) with the conference event being held from 5 - 11 July 2010.

A pre-conference field trip will held to the historical mining district of Linares (Pb-Cu) and Rodalquilar Mine (Au), Andalusia (1-3 July).

A post-conference field trip wuill be held around the Iberian Range, Navajún pyrite mines and dinosaur icnites (13-15 July).

A volume of conference papers will be edited by the Spanish Geological Survey.

Further details will available by the end of 2009.

BOOK REVIEWS

Where did the Science of Geology Originate?

Gian Battista Vai and William Cavazza (eds), *Four Centuries of the Word Geology: Ulisse Aldrovandi 1603 in Bologna/Quadricentenario della parola geologia: Ulisse Aldrovandi 1603 Bologna*, Minerva Edizioni, Bologna, 2004.

Gian Battista Vai and W. Glen E. Caldwell, *The Origins of Geology in Italy*, The Geological Society of America, Special Paper 411, Boulder, 2006.

These two sumptuously illustrated publications go a long way towards establishing that the science of geology had its origins in *Italy*, not Britain, France, or Germany. As its title suggests, the first book (with parallel English and Italian texts), prepared for the 32nd International Geological Congress held in Florence in 2004, focuses chiefly on the work of the Italian late Renaissance polymath Ulisse Aldrovandi (1522–1605), but also on the soldier, oceanographer and hydrographer Luigi Marsi(g)li (1658–1730). Some nineteenth-century work by Giovanni Capellini (1833–1922) and early geological surveys in Italy are also given attention. The second book is somewhat broader in scope, covering, for example, Italian gemmology, Agricola and Italian mineralogy, geological knowledge evidenced in Italian Renaissance paintings, the work of Kircher and Steno, a good deal more on Aldrovandi and Marsili, the work of a little-known poet and naturalist Mattia Damiani, the Italian travels of Gregory (son of James) Watt, the investigation of which yielded a significant though hitherto unknown geomap of Italy, Arduino's ideas on the classification of mountains, Brocchi's mapping of Rome, and the work of the little-known nineteenth-century Pisan geologist Leopoldo Pilla (1805–1848), who died in the street battles of the 'year of revolution'.

Many historians argue that geology emerged as a science towards the end of the eighteenth century, when the study of the Earth became 'historicized' (e.g. Rudwick, Gohau) or when it received significant input from industrial and agricultural investigations and developments and from the use of fossils for the identification and tracing of strata and the development of geomaps on biostratigraphic principles (e.g. Torrens). Most people differentiate geology from the study of 'theories of the Earth'. In Rudwick's view, the emergence of the use of the word 'geology', deployed in 1778 by the Swiss naturalist Jean-André de Luc to refer to theories of the Earth (thus making a distinction from cosmology) but soon thereafter taken up by others in the sense that we give to the word today, signalled the emergence of the science of geology as we understand it. While aware of this 'conventional' understanding, Gian Battista Vai, a geology professor from the University of Bologna, wishes to emphasise the much earlier usage of the term *giologia* (or *geologia*) by his polymathic Bolognese predecessor Ulisse Aldrovandi, Professor of Natural Philosophy—with responsibility for studies of fossils, animals, and plants, and especially the latter with his work on the University's botanic garden.

Vai has studied the Aldrovandi archives in Bologna, including Aldrovandi's will (1603), in which he bequeathed his museum and his huge collection of specimens to the Bologna Senate, for the use of the University. Photographic copies of the pages of the handwritten document are reproduced and small sections are transcribed and translated. A key passage was the statement that his *Syntaxis rerum naturalium* was to be printed "in three separate volumes, Minerals and Fossils, Plants, and Animals . . . and also the *Giologia* [*sic*], or *de Fossilibus*; then the *Botanologia*, and [the] *Zoologia*" (Vai and Cavazza, p. 70). This was the only use of the word *Giologia* in the whole manuscript, but Vai sees it as an indication of "the birth of a new discipline". His reasons are that there was increasing interest in things dug from the ground (partly due to the construction boom in Italy at that time) and that these objects were being displayed in the new museums that were then springing up in various parts of the country. So it was appropriate to give their study a name, analogous to those used for the study of animals and plants.

But does the coining of this new term mark the appearance of something that we might recognise as geology? Well, yes and no. The study of things dug from the ground was seemingly emerging as an independent topic, worthy of the attention of the natural philosopher and designation by a new word. A vast number of things could be dug up, inspected, described, figured, named, classified, and put on display, and in this process bringing order to the multitude of objects that might be observed and studied in the natural world. Their study could, *by the standards of the day*, be regarded as 'scientific'. A binomial system of naming and classification was also deployed by Aldrovandi,

foreshadowing that of Linnaeus by many years. Also, the visibility of small objects was enhanced by the use of lenses.

In the collection, description, and classification of things, one can see similarities to the proposals of Francis Bacon, and Vai regards Aldrovandi as one of his precursors. But there is, I think, at least one big difference. Bacon collected information, and classified it, but with the intention of *excluding* possible explanatory hypotheses and proposing new ones (such as the suggestion that heat is a form of motion), moving science forward by what we call a hypothetico-deductive process. But Aldrovandi was still harking back to Aristotle, whose science was directed at finding—on the basis of taxonomic procedures—the ‘essential definitions’ of ‘kinds’, from which (hopefully) new propositions might be deduced for further enlightenment or use. That tradition deployed logic rather than experimentation, though Aristotle, Aldrovandi and Bacon could all reasonably be called empiricists.

In his book *The Order of Things (Mots et les choses, 1966)*, the French philosopher Michel Foucault represented the worldview of Aldrovandi as *essentially different* from that of modern science or modern ways of thinking. In his *Musaeum metallicum*, for example, Aldrovandi considered minerals according to their synonyms, definitions, origins, nature and properties, varieties, mode and place of occurrence, uses, historical references, (supposed) sympathies and antipathies, mysteries, moral qualities, mythical significance, occurrence in dreams, symbols, and lapidati (‘the stoned’). It would appear that his ‘knowledge system’ was quite different from that of modern science. So Aldrovandi’s *geologia* must have been categorically different from our geology, or even that of de Luc. So we are involving ourselves in anachronism if we take the word (in itself) as an indication of the emergence of ‘geology’. In fact, Vai specifically refers to Foucault’s work in his paper on Aldrovandi in the Vai and Caldwell volume and intimates that his ‘system of knowledge’ was quite different from those of the seventeenth and succeeding centuries. Nevertheless, Vai legitimately sees Aldrovandi as marking a significant step forward in science. He saw value in acquiring empirical knowledge (albeit in a ‘jackdaw’ fashion), systematising it, naming, describing, and figuring objects, and putting them on public display, in what is regarded as the world’s oldest natural history museum. Direct observation could supplant and expunge erroneous descriptions. So even though he may sometimes seem credulous (to us), Aldrovandi did try to report the most reliable information available. He was a critical observer, even though he had to accept, *pro tem*, some fabulous descriptions. His illustrations or figures were of a high order for their time. His ‘geological’ collections are admirably described and illustrated by Carlo Sarti in Vai and Cavazza’s volume. Undoubtedly he was interested in things dug from the earth and wanted to systematize knowledge of such things. But, I think, there’s a good deal more to geology than that.

The figure of next importance in these two volumes is, as mentioned, Luigi Marsili. He was, I think, more of a modern than was Aldrovandi, and he made important contributions to cartography, both on land and below the surface of the sea. Thus Marsili is remembered for his studies of rivers (notably the Danube), and he made a close study of the area of the Bosphorus. He travelled extensively and drew good topographic maps, though his representation of mountain ranges was schematic, making use of the ‘mole-hill’ convention. He took soundings in the Mediterranean in the *Golfe de Lion*, and discovered and charted the quite sharp boundary off the coast between shallow of the continental shelf and the deeper water of the oceanic slope. This matter is well discussed in a paper by Renzo Sartori (in Vai and Cavazza).

And according to Marabini and Vai (also in Vai and Cavazza), probably some time before 1717 Marsili produced the world’s oldest geological map in a sketch of the sulphur mining area in the Cesena Hills in Emilia-Romagna, fairly near Bologna. (See Figure 1.) Not only that, in his investigation of this area Marsili produced a stratigraphic (lithological) column, a profile of a quarry face showing the different strata, figures of sections showing unconformities, and sections showing strata represented by different colours, suggesting that he was making correlations between strata some distance apart. Elsewhere he figured complex fold structures.

Perhaps even more remarkable are Marabini and Vai’s findings about Marsili’s ideas about the internal structure of the Earth. A manuscript of 1728 reveals that Marsili supposed that the inequalities between the depths of the seas and the heights of the mountains were produced on the Third Day of Creation by God’s willed action (see Figure 2).

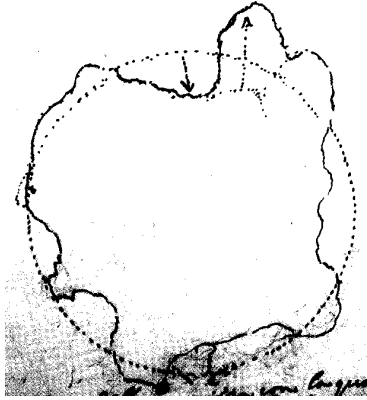


Figure 2.
Sketch by Marsili showing a supposed downward force on the Earth's surface producing the elevation of a mountain range and formation of an ocean basin (Vai and Cavazza, 2003, p. 198 and Vai and Caldwell, 2006, p. 121). In his MS, Marsili suggested that the process was "similar to what . . . happens . . . if you insert a fist into the middle of . . . [a] pasta[:] it produces a lateral squeezing and a rim rise[s] equal to the size of the fist" (Vai and Cavazza, 2003, p. 104)! Truly the hand of God must have been at work! It was a convenient way of accounting for tectonic uplift.

A second sketch (Figure 3) suggests the presence of 'mountain roots'.

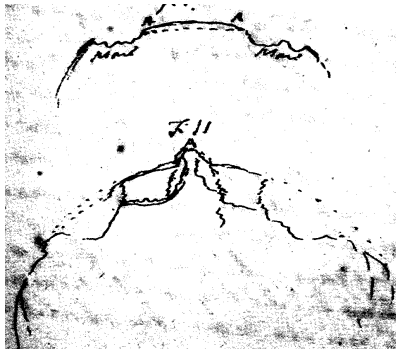


Figure 3.
Sketches by Marsili, hinting at the idea of 'mountain roots' (Vai and Cavazza, 2003, p. 198).

And this notion is suggested more definitely in another sketch from the same manuscript (Figure 4).

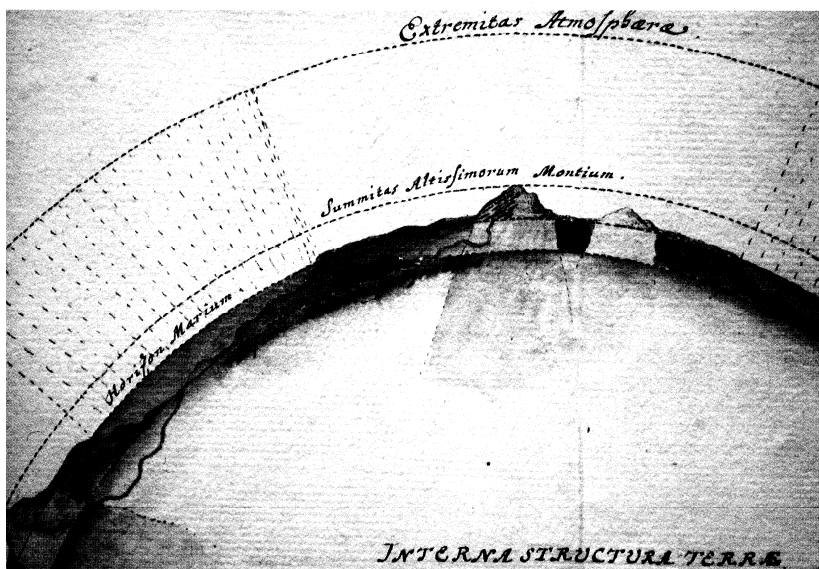


Figure 4.
Marsili's representation of the internal structure of the Earth (Vai and Cavazza, 2003, p. 199, coloured in original).

Vai suggests that these drawings give “embrional hint[s]” of the idea of isostasy. This is, I suggest, a rather ‘presentist’ view of the case. Nevertheless, Figure 4, at least, does indeed give a ‘hint’ of there being some kind of supporting structures below mountain ranges. And given Marsili’s interest in maritime matters—and hence presumably the idea of buoyancy—he may have had a notion akin to the phenomenon that was later given the name isostasy. Vai, I think, would like a Bolognese to have been the first to have such notions, but we must beware of anachronism!

Mention should also be made here of Marsili’s work in topography and archaeology, discussed in a paper in the Vai and Caldwell volume by Carlotta Franceschelli and Stefano Marabini. They give some interesting and important biographical details about Marsili and reproduce some of his topographical sketches and sections of strata. His maps were not based on accurate and detailed survey work but they were of notable clarity and ‘style’. He made significant contributions to the study of the Romans’ history, in part through his study of their artefacts, their units of measurement, and their work on canals and bridges. In this way we see a coming together of interests in archaeology and the Earth, and—as has been suggested by Rudwick and others—this confluence of interest was very likely one of the factors that led to the ‘historicizing’ of the study of the Earth and hence the emergence of historical geology. But in Marsili this fertilization of interests occurred much earlier than Rudwick credits in his *Bursting the Limits of Time*, where Marsili is not mentioned.

I have focused on what are to me particularly interesting Bolognese personalities in the two volumes here under review, but the books contain much besides to interest the geohistorian. Members of INHIGEO should notice particularly the excellent papers by the late Nicoletta Morello, who did so much work for the Commission, organising two meetings in Italy and editing the massive *Volcanoes and History* volume (1998). Morello offers us a fine exposition of ‘The Birth of Stratigraphy in Italy and Europe’ in the Vai and Cavazza volume and a paper on ‘Steno, the Fossils, the Rocks, and the Calendar of the Earth’ in Vai and Caldwell. In the first of these papers it is interesting to see how the history of stratigraphy looks when viewed from the south of the Alps. The figures considered are Descartes and Steno, Borelli and Scilla, Vallisneri and Moro, Arduino and Werner, Brongniart, and Catullo. No mention of Woodward, Guettard, Desmarest, de Luc, Hutton, Smith, etc.; and hardly a mention of Cuvier. Werner is considered (as said), but special emphasis is given to the Italian responses to his ideas. I think this Mediterranean perspective is much to be welcomed as a counterweight to the usual Anglo–French versions of events. I don’t say that Morello’s selection is necessarily *the* correct one. But I do believe that her offering can provide a more ‘rounded’ account of the matter, and will help present a more correct overall perspective in future synthetic accounts of the topic. In the Vai and Caldwell volume Morello also discusses ‘Agricola and the Birth of the Mineralogical Sciences in Italy and the Sixteenth Century’.

Steno is also the object of attention by the Japanese scholar and INHIGEO friend, Toshihiro Yamada, who has made the Danish/Italian the subject of an acclaimed PhD dissertation in Japan, mastering Latin in the process, and I suppose other European languages as well (Italian, French, Danish?). Yamada has dug down to the sources of some of Steno’s ideas, and in his paper in the Vai and Caldwell volume he argues persuasively that one can find evidence that Gassendi and Kircher were both very important, though this has hardly been noticed previously (to my knowledge). Specifically, Yamada mentions how the young Steno transcribed texts by Gassendi into his notebooks. It has been usual to mention the influence of Descartes on Steno, but it appears that the influence of Gassendi may have been no less important, even if he did not accept his atomism. (In fact, I suggest, so far as Steno’s ideas about the Earth were concerned, it mattered little whether one was a corpuscularian or an atomist, whereas for Descartes the corpuscularian doctrine was essential to his ‘just-so’ story about the origin of the solar system and of the Earth and its strata.)

For Kircher, Yamada argues persuasively that some of Steno’s basic ideas derived from the perhaps unlikely source of the ‘baroque’ writings of the prolific Jesuit writer, from his book on magnets and magnetic phenomena (*Magnes sive de magnetica arte*) for ideas about the formation of crystals, and from his better known *Mundus subterraneus*, with its notion of a ‘geocosm’, which could be investigated in a quasi-mathematical manner. And for Steno that was a warrant for studying the microcosm (humans) in a mathematical manner (in his anatomical investigations). As Yamada puts it:

Steno and Kircher had common goals in planning a wholesale geoscientific system or “economy”—the Kircherian geocosmic system on the one hand and Steno’s general considerations about solids within solids on the other. Moreover, they tried to resolve the problem of the formation of earthy things in this setting, i.e. by developing a theory of the Earth. In particular, Steno used the Kircherian idea of magnetic action in the formation of mineral crystals (Vai and Caldwell, p. 78).

Thus Steno is shown to have drawn from ideas of the seemingly disparate sources, Gassendi and Kircher, as well as Kircher.

Three other papers in particular attracted my attention in the Vai and Caldwell volume. My polymathic Sydney friend, the former INHIGEO President David Branagan, writes on ‘Geology and the Artists of the Fifteenth and Sixteenth Centuries, Mainly Florentine’. As is well known, the art of that period was chiefly religious in character, *but* it had a fresh and new ‘naturalism’ about it, such that one can often see features of geological interest in the backgrounds of the paintings. Some work has already been done on trying to identify the localities where the rocks that are depicted in the Florentine art may have been located, particularly with regard to Leonardo. Branagan refers to the cyclical bedding of sandstones and shales found near Florence, and draws our attention to paintings where such outcrops are seemingly depicted. He is not the first to do this, but I find it noteworthy that someone from the antipodes should be doing work of this kind, and offering such beautiful illustrations.

I should also say something about the work of two other friends: Hugh Torrens and Ezio Vaccari. Back in 1993, Vaccari produced what I take to be the definitive work, *Giovanni Arduino (1714–1795)*, including reproductions of his field notes and sketches and his famous hand-drawn drawing (1758) of the mountain range to the side of the Agno Valley near Vicenza, which area inspired his famous subdivision of strata into Primary, Secondary, and Tertiary strata, with a fourth group that might have been called Quaternary (but wasn’t). I had the opportunity to look at the relevant hills from a bus during the INHIGEO excursion in Italy in 2004, but time was running short, the visibility was not good, and I can’t say that I learnt as much from that part of the trip as one might do simply by examining Arduino’s sketch. And unfortunately, because of my inability to read Italian, Vaccari’s text is a ‘closed book’ to me. However, in his paper ‘The “Classification” of Mountains in Eighteenth Century Italy and the Lithostratigraphic Theory of Giovanni Arduino (1714–1795)’ all is now made clear, with a careful explanation of how the famous MS section can be interpreted, how the classification was arrived at, how Arduino’s theory ‘worked’, and how an important part of the profile may be related to modern opinion—from which one can see considerable ‘simplification’ (ignoring recumbent folding) made it possible for the mining engineer Arduino to arrive at his quite simple taxonomy of the Earth’s strata.

The famous section clearly embraced the dimension of time as well as structure and it was the product of a lithological analysis. This supports Torrens’s contention that the technical men were sometimes as important as gentlemanly savants in the emergence of the science of geology (even if that term had not arrived at its modern meaning in Arduino’s day). And secondly it shows that a ‘geohistory’ could be written in lithological terms, as well as with the aid of fossils. Arduino was doing work that might be described by the terms ‘structural’ and ‘geognostic’. Thus, it seems to me, the ‘history’ of the mountains of the Agno Valley was being written without the aid of fossils (though organic remains were reported in the Secondary and Tertiary stratigraphic units. So I am much pleased to have what appears to be a synopsis in English of the most important features of Vaccari’s Italian book of 1993.

If we look to what might be achieved by lithological investigation, we can also turn to Torrens’s account of the visit to Italy by Gregory Watt in 1801–1802, in the company of William Maclure, who later was one of the founders of American geology, or perhaps *the* founder.

Watt was interested in the contemporary debates about the aqueous or igneous origin of basalt. Despite having the advantage of extensive fieldwork in volcanic regions in Italy, and conducting fusion experiments on his return to Britain, he remained undecided on this ‘big question’ as he died quite young of tuberculosis. But what was of greater interest to me is Torrens’s discovery* and reproduction of a coloured but primitive ‘geological’ map of most of Italy. It was drawn up on the basis of lithologies, with no less than forty-six different rock units identified by different colours, ‘markings’, and symbols. (Some of the information was derived from the first-hand observations of Watt and Maclure and some from their reading of the observations of other investigators.) The result was a remarkable piece of work. But what kind of map was it?

* In the Watt house at Dowdowlod in Wales, he has informed me. The Watt map was, through Torrens’ effort, eventually transferred to the Watt archive in Birmingham.

Torrens (Vai and Caldwell, p. 192) says that a map can be called ‘geological’ if it uses colour, toned shading, or different patterning to discriminate “properly geological and not merely lithological” entities; and if it is provided with a key showing the order of the strata. (And ideally there should be an accompanying section.) That leaves open the question of whether it is a temporal or a structural order that is required, and whether a map with a key that clearly displays the structural order, and hence, by courtesy of the principle of superposition, the temporal order, can be regarded as a geological map even if it uses only lithological (not palaeontological or ‘Smithian’) criteria.**

In the particular case of the Watt map, I don’t think these niceties are specially important or relevant. The map has no accompanying section and there is no very clear structural or temporal order among the forty-six lithological types that are represented in the key, though perhaps there is a kind of Wernerian ‘gradation’ since the list of rock types begins with granite, and proceeds through syenite, schistus, etc., through limestones, gypsum, sandstone, coal, etc., to clay and marl (I can’t decipher the word for the final item in the key). But various ‘trapps’ and basalts are listed between the limestones and the sandstones. So I agree with Torrens in thinking that the map may best be regarded as “merely lithological” or “proto-geological”. But we have seen that the word ‘geology’ had been introduced by then, so I suppose that, by the standards of its day, it *was* a geological map. Even so, the term ‘proto-geological’ seems quite appropriate, though one should say, perhaps, that it is *our* notion of geological that is in play here if we refuse it the denomination of ‘geological’.

The issue is worth consideration, given that the slightly later map of the United States by Maclure and Samuel Lewis (1809) was very similar in character to the Italian map and accompanied a paper by Maclure in the *Transactions of the American Philosophical Society* entitled ‘Observations on the Geology of the United States, Explanatory of a *Geological Map*’ (emphasis added). Maclure’s ideas were avowedly Wernerian in that paper. This means that the term geological had ‘caught on’ in the English-speaking world, even for those whose interests were primarily structural or lithological. So we may be being anachronistic if we prefer to call maps such as Watt’s or Maclure’s proto-geological (or geognostic). It may be noted that the map of the Paris Basin by Brongniart and Cuvier in the 1822 edition of their *Description géologique des environs de Paris* was titled ‘*Carte géognostique des environs de Paris*’. Yet, as is well known, their work was based upon biostratigraphic considerations. It would seem, then, that the workers of the early nineteenth century were not too worried about the distinction between ‘geognosy’ and ‘geology’. A lithological/Wernerian map could be called ‘geological’; or what we would call a ‘biostratigraphical’ or ‘geological’ map could be called ‘geognostic’. And what Rudwick calls a map based on ‘enhanced geognosy’ (structure + fossils), such as those of William Smith, was called a ‘Delineation of Strata’ by Smith himself. But at that time it could (I think) have equally well been called a ‘geognostic’ or a ‘geological’ map. So perhaps historians of geology are perhaps getting a bit overexcited about the geology/geognosy issue. It may well concern us more today than it did at the time!

Two other papers attract my particular attention and I shall have to leave the rest, merely saying that they are all interesting and worthwhile. A paper in Vai and Caldwell—‘Giovan Battista Brocchi’s Rome: A Pioneering Study in Urban Geology’—by Renato Funicello and Claudio Caputo deals in an interesting way with the cartographic work on the city of Rome by the architect and engraver Giovan Battista Nolli (1692–1756), issued in 1748 on a scale of 1:3,000 and again in a smaller version the same year. The authors then go on to discuss the use by Brocchi of a posthumous version of this detailed map as the cartographic base for his ‘geological’ (lithological, but called by him ‘geognostic’) map of Rome, issued in 1820. Much of the terrain was covered by buildings, still standing or decayed, but Brocchi used a “solid iron drill” to help get down to the rocks below, so he had a notion of the detailed topography, the surface exposures, and some idea of the sub-surface rocks. On this basis, he was able to draw fifteen illustrative sections, which show how much ‘historical geology’ could be inferred from lithological evidence—though Brocchi did also report fossil finds and he was able to distinguish fresh-water and marine organisms. He could also correlate certain alluvial deposits with flooding recorded in historical times. Further, he was able to identify flow structures in some of the ‘pyroclastics’ (as we would say), recognising them as water-transported volcanoclastic sediments, not directly deposited volcanic ashes. Thus quite a lot of geohistory could be deduced from the empirical evidence without recourse to fossils.

** One may suspect that Torrens may require the deployment of palaeontological data for correlation of strata for a map to qualify as ‘geological’, which would mesh with the role that he ascribes to William Smith in the history of geology, his point being that Smith’s work could have *utility* in that it made possible either the *correlation or differentiation of strata of similar lithologies* and could provide temporal correlation for rocks that might be widely separated in space. However, today everyone would agree that a geological map can be compiled for areas that are quite devoid of fossils, so the word ‘geology’ has expanded well beyond the bounds that might be exerted by the requirement of biostratigraphic correlation.

The last paper I'd like to consider here describes a paper by another friend: Pietro Corsi's studies of the immensely complex history of geological survey work in Italy in the nineteenth century (in Vai and Cavazza). Investigating this topic is clearly an arduous task because of the rather chaotic and scattered archives, resulting in part at least from the country's confused and troubled political history during that epoch. The paper starts by gently chiding me for stating in my *Thinking About the Earth* (1996) that the Italian Survey was founded in 1877. This may have been a typing or transcription error, the 'received' date (as stated on the Survey's own website) being 1867.^{***} But, Corsi shows from his digging in the archives that the roots of the Survey actually go deeper than that. In the 1840s there were proposals emanating from Pisa for a collaborative effort to produce a geological map of Italy; but local rivalries and individual "attempts to beat the competition" frustrated the good intentions. Later opinion was that in 1860 Iginio Cocchi and Felice Giordano moved towards, or proposed, founding a Survey; but the proposals were not immediately taken up. There were different 'models' on offer: establishing a National Geological Institute as in Austria; placing the Corps of Mining Engineers in charge of a Survey; or somehow synthesising the efforts of academic or amateur geologists to produce a country-wide map.

In the event, although the Mining Engineers were perhaps the strongest claimants to be charged with running a new Survey, the Minister of Agriculture, Industry and Commerce, Filippo Cordova, took up the third of the three 'models' in 1861 when a Royal Decree was drawn up for instituting a national geological survey with a steering committee (*Giunta*) of leading Italian geologists to get the project moving. But its efforts were impeded by the continuing rivalries between Tuscan and Piedmontese factions.

The *Giunta* met in Florence in September 1861, but, by Corsi's account, it was seriously factionalised and there was considerable grandstanding, with personal ambitions heavily involved. In the event, the academic geologists carried the day against the mining engineers and the mineralogist/crystallographer/industrialist Quintino Sella was named to head the new project. But Sella became Minister of Finance, and because of the parlous state of the finances of the newly unified country (1861) the whole project was largely shelved until 1867, when Cordova returned to political power and put Cocchi in charge. (This, then, is the date that the present Survey's website gives for the establishment of the Survey.) But Cocchi did not last long, in the face of opposition from Sella, and the operation was soon moved from Florence to Rome in 1873 (the capital having moved from Florence to Rome in 1871), where Giordano (representing the mining engineers' faction) took over in 1877. But even then it had a troubled history, with great financial constraints, and after Sella died in 1884, the Government seemingly lost interest in the project and finances were further squeezed until the twentieth century. Thereafter, two world wars were anything but helpful.

One must conclude, then, that the Italian Survey had a number of false starts and it is hard to say when it really did begin. But Corsi's detailed investigations throw much new light on what happened and we can look forward to further contributions from him; and from his relatively recent appointment to the Chair of History of Science at Oxford University (on which we congratulate him) much may be expected. But I may mention that his paper in the Vai and Cavazza volume is so detailed for the early history of the 'proto-Survey' that it is rather difficult to read, and people may find his later, more general, account in *Earth Sciences History* (2007) more useful. Both papers lead us to the conclusion that the tangled political situation that persisted in Italy for much of the nineteenth century, coupled with acrimonious personal and regional rivalries, was anything but conducive to the smooth operation and progress of a Survey. And sorting out the details of what happened, with an incomplete documentary record, is a historian's nightmare!

It may well be, then, that the rather unfortunate history of geological research in the excessively politicised context of nineteenth-century Italy has obscured the earlier pre-eminence of Italian geology for non-Italian historians of geology. But after reading these two excellent books I suggest that one may justifiably conclude, as the title of the Vai and Caldwell volume urges, that the origins of geology (however understood!) are indeed to be found in Italy.

David Oldroyd, Sydney

^{***} *Mea culpa!* On first reading Corsi's comment I thought, the problem was that I'd made a typing or transcription error. However, as I gave Felice Giordano as the founder of the Survey, I realise that, more seriously, I failed to take into account all the 'pre-history' of the Survey, which Corsi's work is now exposing. Even so, it appears that rather little was actually achieved before 1877, and before then Cocchi (appointed 1867) was in charge of a dysfunctional organisation. Before that, Sella (named Head in 1862) was even less successful in getting the Survey up and running. And Corsi (2007) tells us of yet earlier attempts by Cocchi and Giordano in the 1850s to initiate a national Survey, which unfortunately came to nothing. There was even a 'private' geological map of Italy published in Paris in the 1840s by the military man Giacinto Ottavio Collegno di Provana and exhibited in Milan in 1844.

Geological correspondence from 19th century Italy and its significance

Pietro Corsi, *Fossils and Reputations. A Scientific Correspondence: Pisa, Paris, London, 1853-1857*.
Pisa, Edizioni Plus - Pisa University Press, 2008, 411 p. ISBN 978-88-8492-564-0

Collecting, editing and publishing scientific correspondences is a practice of great importance in the history of science, although it often requires several years of research as well as the painstaking work of transcription and interpretation, which is not always adequately acknowledged within the historiography. These studies on correspondences are particularly needed in order to understand and evaluate the role of a still little known scientific community such as that of the earth scientists in mid-19th century Italy. Now Pietro Corsi offers a new and fresh look on some significant figures of the history of Italian geology, through the analysis of an impressive number of manuscripts, letters and other printed primary sources.

Since the early 1990s Corsi has reconstructed the correspondence between Giuseppe Meneghini (1811-1889), who was appointed professor of geology and mineralogy at the University of Pisa in 1849, and his pupil Igino Cocchi (1827-1913), as well as with other geologists, especially after the discovery of a large collection of geo-mineralogical manuscripts at the University of Pisa. The research work continued in the archives of the Italian Geological Survey in Rome and later was completed by the study of almost 2000 letters addressed to Cocchi and purchased by Fausto Barbagli. The result is a book which includes a basic introduction by the author, followed by the detailed edition of a selection of 129 letters sent or received by Cocchi and Meneghini (with the exception of a letter from Alessandro Spada to Charles Lyell) and finally by a comprehensive bibliography of primary and secondary sources. The letters are fully published in their original language (Italian, rarely French or English), with many explanatory footnotes by the editor, while several drawings of fossils and geological sections have been effectively inserted as small pictures in their original place within the letters.

Apart from the most relevant bulk of correspondence between Meneghini and Cocchi, other writers and addressees include Italian geologists Cesare D'Ancona, Alessandro Ferrero della Marmora and Paolo Savi, as well as the French paleontologist Philippe Edouard Pouillet de Verneuil and Charles Lyell. Although the locations of the major group of letters are mentioned by Corsi in the introductory pages (Department of Earth Sciences of the University of Pisa; private collection of Fausto Barbagli), there is not a precise indication of the placement and/or of the possible classification (if any) related to each letter: however, the lack of this information does not affect the pleasant reading of a lively correspondence, which is based in particular on the scientific experiences gained by Cocchi in Paris and London between 1854 and 1857.

While Professor Meneghini remained in Pisa, in some way confined in a sort of 'provincial' dimension far from the main European geological debates, his young pupil Cocchi undertook travel to the 19th century European capitals of geology and paleontology, Paris and London, where he attended the meetings of the local geological societies and acquainted himself with some distinguished scientists. As in the case of other geologists, who had travelled to Paris during the first decades of the 19th century, particularly from northern Italy, Cocchi also recognized the influence of French academic science, accepting most of its coeval trends. Consequently, the role of Alcide d'Orbigny - whose paleontological classification was praised by Meneghini in his taxonomic work, but at that time was scarcely approved in Paris - was drastically reconsidered and reduced by Cocchi. On the other hand, a public discussion on eruptive rocks and metamorphism in Tuscany caused a disagreement with Élie de Beaumont, while instead, during the stay in London, Cocchi established good relationships with Richard Owen and Charles Lyell. It is also interesting to point out the careful approach shown by Cocchi and Meneghini towards Darwin's *Origin of Species*.

Within the correspondence between the Italian geologists we recognize not only the progress of the geological training of Cocchi, but also some interesting descriptions of the advanced scientific milieus of amateurs and academics, as found in Paris and London, from the point of view of a "cultivated outsider" (as defined by Corsi). It may seem that, through Cocchi, Meneghini had tried to obtain international recognition of his work in progress on the complex geology and paleontology of Sardinia. And certainly, according to Corsi, at the end of his long European experience Cocchi "had gained a reputation for himself in Paris and London, had formed important friendships and had established an impressive network of personal and institutional contacts" (p. 54). Although the two Italian geologists did not pursue these contacts during the 1860s, when the Italian community of Earth scientists seemed to adopt a sort of 'isolationism' toward foreign colleagues, the

results of these five years of intense scientific correspondence should not be underestimated. On the contrary, Corsi's valuable work has provided new elements and incentives for further research, in order to achieve a clearer and more detailed picture of the social practices of geology in 19th century Italy.

Ezio Vaccari, Varese

Extensive Historical study from Russia

Zoya A Bessudnova *Geological Research at the Moscow University Natural History Museum, 1759–1930*. Nauka, 2006, 246 pp. Moscow (in Russian)

In 2006, the Moscow publishing house *Nauka* (Science) published a 246-page book by Zoya A. Bessudnova entitled *Geological Research at the Moscow University Natural History Museum, 1759–1930* as No. 32 in its series 'Sketches on the History of Geological Knowledge'. The author is a geologist and Senior Researcher in the Department for the History of Geology of the Vernadsky State Geological Museum of the Russian Academy of Sciences, and a member of the International Commission on the History of Geological Sciences (INHIGEO). She has written several monographs on the history of the Earth sciences, including about twenty works published abroad. The book is a product of the author's long researches on the history of the first Natural Science Museum in Moscow and is devoted to the 250th anniversary of the Lomonosov Moscow State University.

In the introductory section, the author calls attention to numerous publications devoted to the history of the formation of natural sciences at Moscow University and, in particular, of geology. The role of the scientific studies carried out in the Natural History Museum, and the importance of the Museum's catalogues as a source of scientific information remained little known for a long period. Therefore, an overall objective of the author was a thorough presentation of the role of the Imperial Moscow University Natural History Museum in various aspects of geological science.

On getting acquainted with this book, first of all, the reader will be agreeably surprised by the impartiality of the author's statements, and the care with which she generalizes the data and draws conclusions from them. From the outset, the author did not feel obliged to accept this or that traditional or received point of view. Archival materials, which have shed new light on historical events, the formation and development of geology in the Museum, and the roles and contributions of individual scientists at different stages of the Museum's researches provided the basis for her monograph. For this purpose Dr Bessudnova has studied museum catalogues compiled in different years and the annual reports on the activities of the Museum in various archives, analyzed new data, most of which has been found for the first time by the author. A brief review of the Moscow University Natural History Museum was produced as a result, which allows one to track in time the dynamics of the formation of collections and the compilation of the catalogues and so revealing the role of particular scientists in the development of scientific studies of the Museum.

One can state with confidence that Bessudnova's analysis has reduced the number of blank spots in our knowledge of the history of Museum, has changed ideas about the contributions of certain scientists to developments in particular scientific directions, and has demonstrated the importance and fundamental nature of the scientific studies undertaken at the Moscow University Natural History Museum.

The structure of the book also allows the reader to trace, on the one hand, the history of the formation of the Museum's collections and exhibits, their scientific value and use in education, and the degree of participation of particular experts in the compilation of the catalogues. Additionally, the contributions of the Museum scientists in the development of the major branches of geological science are described. These two directions in the work of the Museum are, in Bessudnova's opinion, organically related, as many collections are the actual materials collected during Museum employees' field studies. At the same time, the collections themselves were the objects of practical and theoretical study.

The author offers a periodization of the history of geological and mineralogical studies in the Museum, distinguishing both 'periods' and 'stages'. In fact this periodization as a whole corresponds to the periodization of the history of geology at Moscow University and also has features in common with the periodization of the history of geological sciences as now accepted.

The first stage (1759–1806) was the period of the foundation and formation of the Moscow University. Geology was not yet formed in Russia as an independent science. During this first period, Moscow University operated under the charter and the curricula established by two outstanding educators: Mikhail V. Lomonosov and Ivan I. Shuvalov. Elements of geological knowledge were taught in the Natural History part of the Medical Faculty where, according to the charter, “the Professor of Natural History shall demonstrate different classes of minerals, grasses and animals at lectures”.

Bessudnova further calls attention to the remarkable tradition of endowments, which operated in the early years of Moscow University. This was started by two well-known Ural industrialists, the brothers Demidov, who offered collections of minerals that formed basis of the Museum’s exhibitions.

In 1804, this led on, in accordance with the University’s new charter, to the creation of a Chair in Mineralogy and Rural Economy in the Physical and Mathematical Faculty—in effect the first Chair in the Earth Sciences. Also, as a result of an endowment by Paul Demidov, the Demidov Chair of Natural History was established and a fine Mineralogical Cabinet (Museum), curated by Professor Grigori I. Fisher, was organized.

The second stage was, then, ‘Fisher’s time’. His classification of minerals was flexible and took new scientific developments into account. Abraham Gottlob Werner and René-Juste Haüy ideas served as the basis of classification. Fisher was engaged not only for the description of minerals and compilation of catalogues. He began field studies in the Moscow region and made a collection of fossils, which became the Museum’s first paleontological collection. He published a textbook *Oryctognosy* (*Mineralogy*) and gave practical instruction to students using the Museum mineral collection.

The next stage identified by the author (1841–1866) was the period of the remarkable Russian scientists and founders of the Moscow school of geologists: Gregory E. Shchurovsky and the outstanding paleontologist Carl F. Rouillier. This stage was characterised by the large regional geological studies of Professor Shchurovsky, as a result of which the Museum acquired its first regional collections of minerals and fossils from the Ural Mountains and the Altai region of Central Asia. Shchurovsky’s expeditions to the Urals and the Altai region and his study of the Moscow region enabled him to consider a large range of problems of regional and general geology, mineralogy, hydrogeology, the formation of ore deposits, and stratigraphy. Shchurovsky worked against a background of radical developments in geology, and if one studies his works chronologically a remarkable sketch of the history of geology is revealed, because the problems treated by this gifted researcher included the most important geological issues of this period.

The paleontological studies of Professor Rouillier, and his geological studies of the Moscow region, also became widely known. But Bessudnova has noted an unknown side of Rouillier’s studies—the work in the Museum, where he compiled a catalogue and described and classified the Museum’s paleontological collections, many samples of which were acquired by Rouillier.

The stage covering the second half of the nineteenth century (1867–1890), corresponds to the ‘classical’ or ‘evolutionary’ stage of geology’s development, following the introduction of the use of the polarizing microscope in the study of rocks. However, it is believed that the Moscow University petrographers did not accept this innovation immediately. In the Museum, as the author writes, mineralogical and petrographic studies at this stage were linked with the name of Professor Mikhail A. Tolstopyatov. Unfortunately, the contributions of this scientist have not received appropriate recognition. But having analyzed Tolstopyatov’s works, Bessudnova rejects the received opinion of the scientific community. She shows the originality and importance of Tolstopyatov’s studies in experimental mineralogy, genetic and dynamic crystallization, and crystallogenesis, and that the beginnings of the detailed study of meteorites in the Museum were due to him. Tolstopyatov’s paper about the development of scientific views on the nature and composition of meteorites later laid a foundation for the study of the meteorite specimens in the Mineralogical Cabinet. He also made a remarkable collection of natural crystals, which subsequent study yielded much valuable information on crystal morphology and the conditions of minerals’ formation.

The following section of the book is devoted to a new period (1891–1930) of developments of museum business and geology as a whole. The application of new physical and chemical methods of analysis, the wide scope of geological, stratigraphic and paleontological studies in Russia under the aegis of the ‘Geological Committee’ (Geological Survey of Russia), the discovery of a radio-activity and the first determinations of absolute ages all influenced the activities of the Museum.

At this time, the development of geological studies in the Museum basically went, according to the author, in two directions: lithological-stratigraphic and physical-chemical. The leaders in the first direction were Academicians Alexey P. Pavlov and his wife Mariya V. Pavlova. The results of their work on the Russian Platform (Plain) in many respects defined the general direction of the further geological studies of this region, and in many respects they stand recognized to this day. In 1926, in

recognition of their high scientific merits, the Moscow University Geological–Paleontological Museum was named after Alexey P. Pavlow and Mariya V. Pavlowa.

In 1890, Vladimir I. Vernadsky, recently returned from scientific training in France, was, on Pavlow's recommendation, appointed Keeper of the Mineralogical Cabinet at Moscow University, and then, after the death of Professor Tolstopyatow, he started to lecture on mineralogy and crystallography. This celebrated scientist in many ways 'defined' the basic directions for the subsequent development of mineralogy and crystallography at Moscow University. Bessudnova describes Vernadsky's statements and the memoirs of his disciples, emphasizing that Vernadsky gave great value to museum's collections, and considered that they should not lie as a 'dead cargo', but should be a subject of active researches. Owing to Vernadsky's authority and reputation and his extensive scientific contacts, the collections of the Museum were considerably replenished and enlarged.

The book also stresses the substantial contribution given to the development of crystallography by Professor Georgy [Georgi or George] V. Woolf (1863–1925), who developed a theory of crystal growth and suggested new techniques for drawing crystals by means of so-called 'Woolf [or Wulff] grid' (stereonet or net: see http://en.wikipedia.org/wiki/Stereographic_projection#cite_note-4) and made X-ray analyses of crystal structures. The work also showed the first steps of the mineralogical–petrographic study of the Museum's collections, associated with the name of Swiss-trained Professor Nikolay N. Smirnov, who held the Chair of Petrography at Moscow University from 1918 to 1930.

In concluding this review, it should be said that Bessudnova's main focus is that the general development of the Museum's life was defined not only by the state of development of geology and by various social 'shocks', but primarily by people. As shown in the work, these were outstanding persons, uncommon scientists, who were united by their devotion to science. The author convinces us of this by publishing rare photos of scientists, portraits of the many keepers of the Museum, and the reports of the meetings of the Moscow Society of Naturalists.

The Appendices, which include histories of the Paul G. Demidov Collection of modern corals and Count Nikolay P. Rumyantsev's mineral collection (the latter was engaged in collecting records of Russian history), have independent value. Bessudnova describes in detail the complex way in which Rumyantsev's collection passed from one museum to another. Chiefly owing to the efforts of Vernadsky, this rich collection was transferred for temporary storage to the Mineralogical Cabinet of Moscow University in 1900 and is now currently held in the Vernadsky State Geological Museum.

In the third Appendix, the author shows the difficulties involved in the construction of the Museum's building, and its ownership by different agencies at different times down to 1996, when the halls of the Vernadsky Museum were opened to visitors. In conclusion, the book lists the published works emanating from the Mineralogical Cabinet of the Moscow University under Vernadsky's direction. The list collected by Nikolay I. Surgunov, covers the time range since 1896–1911 and will be of great value to bibliographers and historians of science.

The author's biographic dictionary, which contains brief biographies of the Moscow University scientists involved in the formation of the Museum's collections, will help readers orient themselves in the large list of surnames occurring on pages of the monograph. The second Appendix should be especially noted. It is devoted to a biography of the first director of the Imperial Moscow University Natural History Museum, Johann Gotthelf Fisher von Waldheim (= Grigory Ivanovich Fisher) whose life, uncommon abilities, and creative potential were devoted to the service of Russia. The manner of writing of the text reveals the author's sympathy and admiration for this remarkable man. A mere list of his teachers and colleagues—who included Abraham Gottlieb Werner, Leopold von Buch, Alexander von Humboldt, Johann Wolfgang von Goethe, Georges Cuvier, Geoffroy Saint-Hilaire, Jean Baptiste Lamarck, Adolphe Brongniart, René-Juste Haüy—allows one to recognize the breadth of Fisher's views. A number of significant events in the establishment of geology and natural science in Russia were associated with Fisher's name. The Imperial Moscow Society of Naturalists was founded in 1805 under his initiative: the first scientific society in Moscow. In the same year, and in many respects owing to his efforts, the Moscow University Natural History Museum was opened for 'young scientists' and for the general public. Fisher was elected a Corresponding Member of the Imperial Academy of Sciences. Mainly due to his efforts, the Museum's collection, wrecked by the War of 1812, was recreated. Fisher was one of those foreign scientists invited to the Moscow University, who found a second homeland in Russia.

The author has taken care to make the book interesting to both experts and the general reader. Overall one can say that Dr Bessudnova has managed to create a brief popular (which is an advantage) history of the establishment and development of geological ideas in the Natural History Museum of Moscow University, and has demonstrated the notable accomplishments of the people whose talents

and careers were associated with the Museum. The book is well written, admirably produced, and will be informative and interesting to a wide range of readers. The recent growing interest in the history of Russian science allows one to hope that this book will make a significant contribution to the study of the history of geology and, moreover, will expand our knowledge and understanding of the role of Russian geologists in this history.

Anatoly Ryabukhin, Moscow

Changing Ideas about Time

Pascal Richet, *A Natural History of Time*, translated by John Venerella. Chicago and London: University of Chicago Press, 2007, 471 p. Originally publication: *L'âge du monde: À la découverte de l'immensité du temps*. Éditions du Seuil, 1999. US\$29.00.

In his career as a geophysicist, Pascal Richet has concentrated primarily on the deep Earth, thermodynamics, and silicate glasses. He is a senior researcher at the Institut de Physique du Globe in Paris. In *A Natural History of Time*, however, Richet casts his eye instead at the discovery of time, primarily in the Judeo-Greco-Christian West. This is a 'popular' book for the scientifically literate, located somewhere between a strictly scholarly or scientific treatment and the sort of book one might find in an airport book stall. I do not mean by this to condescend. This is a difficult niche to fill and Richet generally succeeds.

Richet clearly has read widely and synthesizes from fields as diverse as biblical criticism and geochemistry. He incorporates the 17th century study of antiquities and fossils alongside the history of astronomy, cosmology, nuclear physics, and geochronology. He is well familiar with classic considerations of the birth of a sense of geological time by Claude Albritton, Paulo Rossi, Stephen Toulmin and June Goodfield, Stephen Brush, Martin Rudwick, and Francis Haber. He does not consider the issues regarding time raised by relativity and modern philosophy of science, but these would be out of place in a popular historical account focused on the realization of geological time.

Although I enjoyed the early chapters on Greek notions of natural cycles, the eternity of the cosmos, and their sense (or lack of a sense) of history, I am not enough of a scholar of antiquity to evaluate his arguments here. I tend to think of this time period as so alien to modern concerns that I lose my grounding. This is, for me, even truer of the ancient Egyptians and Hebrews. So while I leave evaluation of the early chapters to other readers, my own interest begins to come alive in the 17th century. As a historian of science, I like to have more text to chew on. The 17th century certainly provides that! Richet discusses René Descartes' theory of the earth, Edmond Halley's ideas on the saltiness of the oceans, and Isaac Newton's consuming interest in chronology (both biblical and civil/natural). The chapter on the study of fossils will be perhaps especially interesting to readers of this newsletter. After a quick survey of Avicenna and Leonardo da Vinci, Bernard Palissy and Agricola, Richet turns his attention to Robert Hooke, Nicholas Steno, John Ray, and John Woodward. The chapter "Nature's Admirable Medals" provides a succinct, lively account of the understanding of fossils and minerals before the beginning of geology.

The most surprising chapters, though, are those that dig deeply into the history of 20th-century physics to lay the foundation for isotopic dating techniques. The chapters "The Pandora's Box of Physics" and "The Sun, the Earth, Radioactivity – and Kelvin's Death" bring fresh perspectives to very familiar episodes in the history of physics. To look at Becquerel and the Curies, Kelvin and Rutherford, with the point of view of geology and geophysics allows Richet to place these researches in an important context that is still open for much more historical investigation. I strongly recommend a close reading of these chapters to historians of geology more familiar with paleontology and stratigraphy.

As for the apparatus of scholarship, it is here, but in a muted form so as not to impede the non-scholarly reader. Although there are a few explanatory footnotes, most of the notes occur at the rear of the volume, organized by chapter, page, and key phrase. Scholars prefer a bit more convenience in tracking out the sources of statements, but this system offers a useful compromise. Richet also lists suggested further reading in a second appendix, organized by chapters, in addition to a lengthy bibliography. Lastly, he includes a useful list of "Influential Students of Time," organized alphabetically, with suggested biographies and other readings. The breadth of the book is again indicated by this list, which begins with Albertus Magnus, Giovanni Arduino, Aristotle, and Svante Arrhenius and includes James Croll, Arthur Holmes, and Friedrich Georg Houtermans. Readers will not always agree with the author's interpretations, but Richet always challenges and intrigues.

Greg Good, College Park, MD, USA

Biographic monograph of eminent Polish geologist of the Enlightenment period

Zbigniew Wojcik: *Stanislaw Staszic*. Editor: Institute of Technology of Exploitation, Radom, 2008, pp.476 (in Polish, English summary).

In 1999 the Association of Alumni of the Academy of Mining and Metallurgy in Cracow has edited Z. Wojcik's book "*Stanislaw Staszic – promotor of science and economy*". It was a biography of this prominent Polish exponent of the Enlightenment epoch: novelist, philosopher, geologist, activist in state administration and patron of culture. The reviewed monograph should be considered as continuation of the former book, considerably enriched and differently constructed. Its essential motive is the *curriculum vitae* of this townsman (underprivileged class at that time). Being uncommonly clever, Staszic chose the priesthood. After monastic school he studied for three years (1779-1781) in Collège Royal in Paris, where he made contact with the eminent French authorities on natural history.

Fascinated by Buffon's treatise *Les époques de la nature*, he translated it into Polish and published it in 1786 in Warsaw, reediting this monograph in 1803 in Cracow and again in 1816 in Warsaw. Buffon's treatise was for him a guide-book for his geological studies in Central Europe. The results of his observations, documented by a map and geological cross-section (from the Carpathians to Baltic Sea), Staszic was presented in the monograph "*On geology of the Carpathians and other mountains and lowlands of Poland*", published in 1815. Staszic took into account the achievements of his predecessors, particularly those of J. Ph. Carosi and B. Hacquet. Moreover, following A.G. Werner's neptunistic theory, Staszic interpreted the evolution of the territory situated on the northern side of the Carpathians.

The main merit of Staszic's social and political activity in the years 1807-1826 was the creation of a foundation for a tertiary education system, including the formation of the Mining Academy in Kielce. In his system, he employed outstanding Saxon miners and geologists, most notably, J. B. Pusch, later the author of the monograph "*Geognostische Beschreibung von Polen so wie der übrigen Nordkarpathenländern*" (1833-1836).

The comprehensive new Staszic monograph presents a panoramic view of development of geology at the end of 18th and begin of 19th century. Its significant advantage, important at least for readers familiar with Polish language, is a rich set of reprints of selected works, among which there is the early edition of a treatise of 1806, later included into Staszic's monograph "*On geology of the Carpathians etc...*", and a sheet of the geological map, published in 1815.

The reviewed book is lavishly illustrated and was edited and published as a volume of the "*Library of Polish Science and Technique*" series. The explanations of enclosed reprints are limited to formal description of the source. Lack of essential comment on these texts obliges the interested reader to analyze very attentively the biographic part of this monograph.

In summary, it is concluded that this is the last, most detailed and exhaustive biography of Stanislaw Staszic. It is very beautifully edited and most importantly, probably the final result of Zbigniew Wojcik's many years in researching the life and achievements of this eminent many-sided scientist who was also highly recognized for his political, social and cultural attainments during the Enlightenment period in Poland.

Wojciech Narebski

Studies on geology and mining in Polish territory in the first half of 19th century

Andrzej J Wojcik,: *West Mining District. The drafts from history of geological and mining activity in the Kingdom of Poland*. Polish Academy of Sciences. Institute of History of Science, Warsaw 2008, pp.330 (in Polish, English summary).

Mining traditions on Polish territory extend back to the Neolithic age. The main period with development of modern mining commenced in the second half of 18th century when, apart from rock salt and iron ore, pit-coal and later galmei were exploited. At the begin of 19th century the mining industry was concentrated predominantly in the Polish Highlands, where also schools of advanced learning (University in Cracow and Mining School in Kielce) were located, educating geologists and miners for this industry.

The Polish Kingdom was formed after the Vienna Congress in 1815. Within its territory there was only small fragment of high country with ore deposits. This refers, first of all, to the environs of Dabrowa where fairly rich coal beds occur and galmei deposits near Olkusz.

In the years 1816-1824 the mining industry in this region was administered by S. Staszic (1755-1826), founder of the Mining Academy in Kielce (1816) and author of mining law (1818) which was not introduced *de jure*. The exploitation area was divided into three districts: western, eastern (both in highlands) and northern – in the Polish Lowland (exploitation of saline waters and brown coal).

A. Wojcik's book, following from his previous publications on the history of mining and geology in Polish territory in the first half of 19th century, presents in a comprehensive manner, the organization of mining districts (with a list of clerks detailed for the first time), as well as biographies of eminent mining clerks and engineers (Fryderyk Krumpel, Marcei Krolikiewicz, Jozef Cieszkowski, Hieronim Labecki, Maksymilian Strasz, Jan Marian Hempel).

Among the discussed problems, particularly important is Hempel's "*Geognostic map of the Coal Basin in the Kingdom of Poland*" (1856). It was published in 18 coloured sheets at a scale 1:20 000, being the most precise map of that time in Poland.

After the Vienna Congress many Saxon miners lost their work in their home country, a part of which was incorporated into Prussia. These miners were utilized by Staszic who has employed them in mining industry and higher technical schools. More gifted graduates of these schools were sent by him to supplementary studies at the Bergakademie in Freiberg and other West European technical universities.

Consequently, the reviewed book is presenting also the international character of mining and geological relations in central and western part of Europe. Lack of more detailed data on Polish-Russian relations at that time is due to the difficulties in obtaining the necessary materials from archives of the Russian Federation.

Zigniew Wojcik & Wojciech Narebski

James Hector Begins to Get his Due

Simon Nathan and Mary Varnham (eds), *The Amazing World of James Hector*, Awa Press, Wellington, 2008.

It's likely that not too many people outside Australasia and Canada (and perhaps Scotland) have heard of James Hector (1834–1907), but he was undoubtedly New Zealand's most influential scientist in the nineteenth century (excluding of course Ernest Rutherford, whose main reputation was made in Canada and Britain).

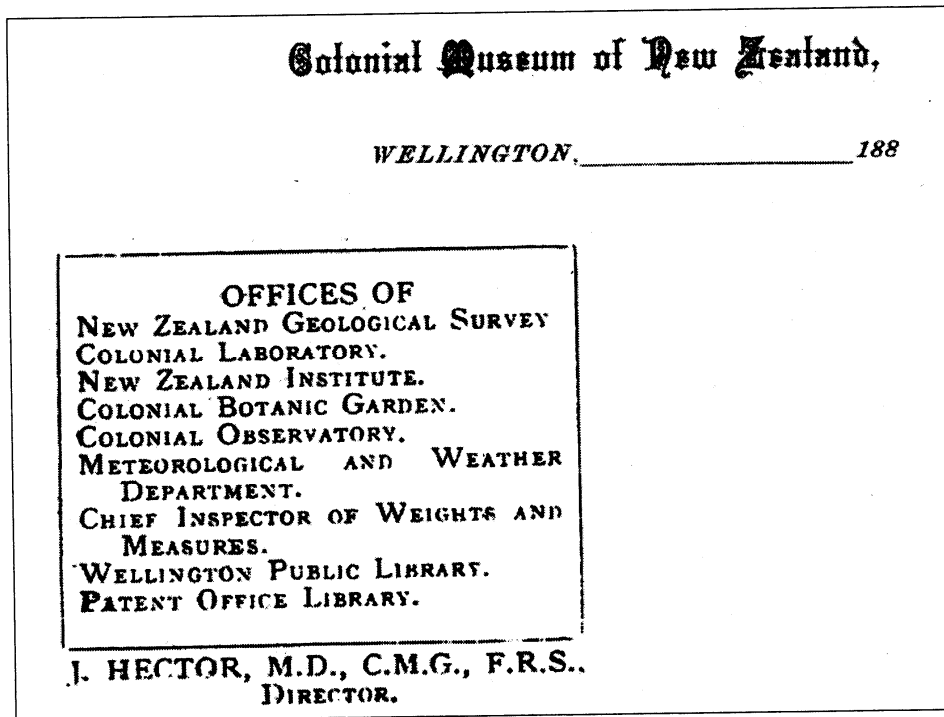
Hector was a medical student at Edinburgh but also studied geology and botany 'on the side'. With these mixed accomplishments he was selected, on the recommendation of Roderick Murchison, to serve as surgeon, naturalist and geologist on the Palliser expedition, which was charged with a finding suitable route for a railroad to get through the Canadian Rockies to the West Coast. This was accomplished successfully in 1858 through the famous Kicking Horse Pass. It was in fact Hector who got kicked, and history relates that a grave had already been dug for him when he showed signs of life; and eventually he made a full recovery. He must have been made of sturdy stuff. On his return, Hector was further recommended by Murchison to conduct a geological survey of Otago Province in the South Island of New Zealand, which he did most successfully from 1862–1865, following which he was appointed in 1865 to establish the new Geological Survey of New Zealand centred in the capital, Wellington, which began to take over from the several Provincial Surveys, which had been operating before then. Hector thus quickly became situated at the top of the New Zealand geological tree, though there was considerable rivalry between him and Julius von Haast in Canterbury, who also had arboreal ambitions, and to a certain extent with F. W. Hutton in Otago, both men who were also of great ability and 'pluck'.

But it was Hector who came to hold the dominant position nationally, perhaps because he was based in the capital, but also because of his enormous capacities, both scientific and administrative. For not only did he set the NZ Geological Survey on a course that was to lead to its future achievements and successes, with the initiation and early implementation of a national mapping programme but he also did work in botany, zoology, meteorology, the establishment of the national New Zealand Mean Time, and the Colonial Botanic Garden in Wellington, the foundation of New Zealand's tertiary education system, the editing for many years of the *Transactions and Proceedings of the New Zealand Institute*—the country's first successful scientific journal, which later morphed into the *Journal of the Royal Society of New Zealand*, as the Institute itself evolved from its foundation by Hector in 1867 to the Royal Society of New Zealand. In addition to all that, Hector was responsible for New Zealand's displays at several international exhibitions and when appointed to the directorship of the Geological Survey he was also charged with establishing the country's Colonial Museum in Wellington which also became responsible for the national observatory (though Hector was not an astronomer). The size of his

'empire' from the 1880s can be judged from his letterhead, reproduced from one of Nathan's essays entitled 'Running the Show':

It remains to me a minor miracle that one man could achieve so much, especially given the fact that in his early years in Wellington he continued to undertake extensive geological fieldwork and had to train up new staff, as Henry De la Beche had earlier done in Britain. In the end, it all proved too much for Hector and he came in for considerable criticism for not keeping the Museum up to world standards (or anything like). A lot of the problems had to do with money. With the gold rush in Otago, and smaller ones in Nelson and the Coromandel Peninsula, New Zealand enjoyed early affluence, but with the decline of gold revenues there was a recession in New Zealand (and elsewhere) in the 1880s and her economy didn't really recover until the transport of frozen meat to Europe became well developed.

To some extent, Hector's career reminds me of that of his contemporary and fellow countryman and geologist, Archibald Geikie. He too ran a geological survey, successfully at first, but in his later years becoming unpopular as he gathered too many reins in his hands; and he too came in for criticism for his administration and excessive dominance of the scene (but after his retirement he went on to become President of the Royal Society of London).



With so many sides to Hector's career it requires a polymathic historian to write a full biography of the man. And, as I understand, one of the editors of this small volume, INHIGEO Member Simon Nathan, is undertaking this task. It is well that a geologist should do so, for it was Hector's geological map-work and his establishment of the beginnings of the understanding of New Zealand's geology that was his major technical achievement, whereas a good deal of the rest was work of an administrative character, though he did make important contributions to the study of cetaceans for example. But as indicated above, Hector's later years were not really crowned with glory and he began to attract considerable criticism, especially for the state of the Museum. He had too many reins in his hands, and quite possibly there was a sigh of collective relief from the country's small scientific community when he passed from the scene. The *Transactions of the New Zealand Institute* didn't even publish an obituary of him until 1923! But his significance has been recognised in more recent years and a one-day symposium was held in 2007 in the modern museum in Wellington, to commemorate the centenary of his death. *The Amazing World of James Hector* reproduces the papers presented on that occasion. The authors were well chosen and cover the various aspects of Hector's career that I have mentioned

above. Either they are all naturally good writers, or the editing has been notably skilful. Or perhaps both!

I have a special interest in Hector, as over forty years ago I wrote a really amateurish MSc thesis on geology in New Zealand in the nineteenth century when I was a young migrant to the country. I knew almost nothing about New Zealand, its geology, its history, or how to write history. But for some reason the work was accepted back in London (at UCL—where, I suppose, the kindly examiners knew even less about the topic than I did, so I got away with it).

At that time, there was little history of science being done in New Zealand. But times have changed, and I see that one of the contributors, Francis Reid, has recently completed a PhD in History and Philosophy of Science at Cambridge on Hector and The New Zealand Institute. Thus has history of science developed for ‘antipodean’ topics. It is excellent to see such a transformation. The other contributors seem to be no less well informed in their topics, and I look forward to seeing Simon Nathan’s future synthesis of what is undoubtedly a very big topic, such as Hector’s stature in early New Zealand science. It will have to be a large book.

David Oldroyd, Sydney

An Extraordinary Australian Geologist

Kristin Weidenbach, *Rock Star: The Story of Reg Sprigg - An Outback Legend*, East Street Publications, Hindmarsh, SA 5007, Australia.

When the South Australian geologist, Reginald Claude Sprigg (1919–1994), passed away, I was inclined to write, in an obituary, that he was “a legend in his own lifetime” (Cooper, 1995).

The appearance of this new 333-page biography by Kristin Weidenbach, which is targeting the popular market, confirms that the legend lives on. Sprigg stands out amongst Australian geologists, so much so that over the fifteen years since his death, Australians have experienced Sprigg Symposia, Sprigg Lectures, the creation of a Sprigg Medal, the discovery of a Reg Sprigg Oil field, and even proposed naming of a mineral: ‘spriggite’. During his lifetime there was already the genus *Spriggina*, whilst the coastal region of South Australia was adorned with the Sprigg Submarine Canyon and Sprigg Inlet.

Who was Reg Sprigg and why is he so highly regarded? In brief, Sprigg’s contributions covered a wide spectrum of the earth sciences. He was a major contributor to palaeontology, marine geology, petroleum exploration, regional mapping, uranium mining and geological conservation, at the international, national and local scale. It was Sprigg who discovered the Ediacara fossil fauna, which today forms the basis of what is now the internationally recognised Ediacaran Period; whilst at the same time beginning systematic regional mapping in Australia.

Reg Sprigg also requested a naval survey that revealed, for the first time, Australia’s offshore submarine canyons. Moreover, his direct effort led to the discovery and development of new uranium deposits and new petroleum resources. His petroleum exploration included exceptional submarine geological mapping that has never been repeated while his commercial acumen created two significant Australian petroleum companies of the modern era: Santos and Beach Petroleum.

Later in life, Sprigg became a committed conservationist and successfully established his own ecotourism resort at Arkaroola in South Australia’s remote Flinders Ranges, at a time when Government was not at all interested.

Why write another book about Reg Sprigg? One is entitled to ask this question, given that Sprigg wrote and published two volumes about his life, as well as numerous historical papers with autobiographical aspects. He even had two papers published in *Earth Sciences History*.

In reading Weidenbach’s book, the answer is revealed. There is simply much more to say about Sprigg and his time. Her effort is supported by new information obtained from many personal interviews with those who worked with him. Furthermore new documentary evidence is discussed, such as Sprigg’s previously secret file from the Australian Security Intelligence Organisation (ASIO), which resulted in his removal from Government uranium investigations for security reasons. In brief, ASIO regarded Sprigg as Australia’s foremost uranium expert, yet in 1943/44 he had been briefly Secretary of the “Australian Association of Scientific Workers” an organisation later perceived as a loose band of communist sympathisers.

This volume features the many significant aspects of Sprigg’s extraordinarily productive life in an easy flowing, coherent and readable narrative. In addition, it brings Sprigg’s life story to a fitting

conclusion, not available in previous works. In this regard, his personal and successful support for Beach Petroleum against the IRL (Independent Resources Limited) Group are considered, as well as his remarkable friendship with the internationally renowned nuclear physicist (and South Australian Governor), Sir Mark Oliphant, which led to substantial written correspondence. The latter provides the best example of Sprigg's life-long, ability to mingle comfortably and to create close relationships with leaders across the professional, commercial and political spectrum.

As biographer, Weidenbach has an advantage in not having known her subject personally, yet she has had full access to Sprigg's personal files and surviving family as partner to Sprigg's son Doug. With this opportunity she has been able to provide a detached, yet empathetic, perspective. As such, her book highlights the human side of Sprigg, which has had an affect on so many Australians, and which has contributed to the continuing professional affection held for him.

From this human perspective, we learn that after starting work with the Geological Survey of South Australia in 1944, Sprigg "worked alone, dangling on ropes in mine shafts up to 50 metres deep". Other early field experiences in desert areas are also graphically described from Sprigg's personal diaries. Later, there was his agonising decision to leave the Government employment in 1954, and the economic necessity of liquidating all other assets to support his Arkaroola ecotourism enterprise in 1973. The participation of his wife and children in petroleum exploration during 1962 whilst pioneering the first east-west crossing of the Simpson Desert demonstrates Sprigg's unique way of creating essential family cohesion, whilst the forsaken opportunity of great profit during Australia's 1969 Nickel boom reflects his "moral repugnance" to exploiting the stock market.

The geology in this volume is assessed correctly, but in a relatively cursory manner. Historians will also struggle to find the exact sources of all the information. I assume that much is in personal family files and diaries. However it is the portrayal of an amazing man and his times that are important here. There are innumerable words and phrases that enhance our impression of Sprigg. We hear of his "precocious" adolescence, his "natural inquisitiveness" and "agile mind", as well as his "confidence and geological single-mindedness", "voracious appetite for activity and endeavour" and "knack of inspiring you and arousing your curiosity". Such attributes help us to better understand the 'phenomenon' that was Sprigg.

Rock Star deserves to be read because it portrays how an Australian geologist of the modern era started humbly, succeeded wonderfully, and gained the highest regards of the geological profession in the process.

Barry Cooper, Adelaide

Reference

Cooper, B. J. 1995. Obituaries: Reg Sprigg (1919-1994) – A legend in his own life time. *The Australian Geologist* 94: 73–74.

BOOK NOTICES

Geology and Religion: A History of Harmony and Hostility

Geological Society of London Special Publication 310

Edited by M Kolbl-Ebert

The proceedings of the INHIGEO meeting held at Eichstatt in 2007 have now been published.

The contents include:

Introduction

Geology and religion: a historical perspective on current problems, M Kölbl-Ebert

Jean-André de Luc (1727–1817): an atheist's comparative view of the historiography, D R Oldroyd

From mythological approaches towards the European Enlightenment

Water and Inca cosmogony: myths, geology and engineering in the Peruvian Andes, L F Mazadiego, O Puche & S A M Hervá

Explanations of the Earth's features and origin in pre-Meiji Japan, P Barbaro

The providence of mineral generation in the sermons of Johann Mathesius (1504–1565), J A Norris

Earthquakes as God's punishment in 17th- and 18th-century Spain, A Udías

The idiom of a six day creation and global depictions in Theories of the Earth, K V Magruder
 The fossil proboscideans of Utica (Tunisia), a key to the 'giant' controversy, from Saint Augustine (424) to Peiresc (1632), G Godard
 Flood conceptions in Vallisneri's thought, F Luzzini

The Flood and the age of the Earth

Discussing the age of the Earth in 1779 in Portugal, M S Pinto & F Amador
 On the Earth's revolutions: floods and extinct volcanoes in northern Italy at the end of the eighteenth century, A Candela
 Scheuchzer, von Haller and de Luc: geological world-views and religious backgrounds in opposition or collaboration? C Schweizer
 Biblical Flood and geological deluge: the amicable dissociation of geology and Genesis, M J S Rudwick
 'Our favourite science': Lord Bute and James Parkinson searching for a Theory of the Earth, C L E Lewis
 Cuvier's attitude toward creation and the biblical Flood, P Taquet

Geology within 'religious' organizations

Jesuits' studies of earthquakes and seismological stations, A Udías
 'Red and expert': Chinese glaciology during the Mao Tse-tung period (1958–1976), J Zhang & D R Oldroyd

Geological clerics and Christian geologists

Adam Sedgwick (1785–1873): geologist and evangelical, M B Roberts
 Some nineteenth- and twentieth-century Australian geological clerics, D Branagan
 Geological observations by the Reverend Charles P. N. Wilton (1795–1859) in New South Wales and his views on the relationship between religion and science, W Mayer
 Franz X. Mayr, the spiritual father of the Jura-Museum, G K Viohl
 Religious convictions as support in dangerous expeditions: Hermann Abich (1806–1886) and Heinrich Barth (1821–1865), E Seibold & I Seibold
 Reverent and exemplary: 'dinosaur man' Friedrich von Huene (1875–1969), S Turner

Evolution

James Buckman (1841–1884): the scientific career of an English Darwinian thwarted by religious prejudice, H S Torrens
 Franz Unger and Sebastian Brunner on evolution and the visualization of Earth history: a debate between liberal and conservative Catholics, M Klemun
 Geology and Genesis in nineteenth- and twentieth-century Italy: a preliminary Assessment, E Vaccari

History of creationism

Natural theology in the eighteenth century, as exemplified in the writings of Élie Bertrand (1713–1797), a Swiss naturalist and Protestant pastor, K B Bork
 The reception of geology in the Dutch Reformed tradition: the case of Herman Bavinck (1854–1921), D A Young
 From the beginning: faith and geology at evangelical Wheaton College, S O Moshier, D E Maas & J K Greenberg
 Theodicic creationism: its membership and motivations, R A Peters

Theology and creationism

The history of the doctrine of creation; a Catholic perspective, M Ostermann
 An Anglican priest's perspective on the doctrine of creation in the church today, M B Roberts

Translation into French of two short works by Johann Jakob Scheuchzer

Scheuchzer, Johann Jakob, *Les Fossiles Témoins du Déluge*, translations by Geneviève Bouillet, edited with commentary by Jean Gaudant, Presses de l'École des Mines, Paris, 2008, 163 pp. Collection Histoire, Sciences, et Sociétés. €25. Paper. ISBN 978-2-35671-009-3.

The distinguished Swiss physician-naturalist Johann Jakob Scheuchzer (1672–1733) became a convert to the explanation of ‘figured stones’ as the remnants of living things, and to the biblical Deluge as the agent of their demise and preservation, at about the time he was producing a Latin translation (published 1704) of John Woodward’s *Essay toward a Natural History of the Earth ... with an Account of the Universal Deluge, and of the Effects that it had upon the Earth* (1695).

This volume presents two of the short treatises through which Scheuchzer furthered his advocacy of this theory. They are translated here for the first time into French from the original Latin by the late Geneviève Bouillet (1917–2006). Jean Gaudant provides two dozen pages of historical commentary, and a large number of footnotes explicating details seen in the texts. Each Scheuchzer text is presented with facsimile of the original and with French translation on facing pages. Also included for each text is a contemporary prospectus, in German, with French translation.

The first of the two texts is *Piscium Querelae et Vindiciae* (1708), or *Grievances and Claims of the Fishes (Doléances et revendications des poissons)*. Reproduced along with the 36–page text are the five plates, reduced in size from their original fold-out format. The clever conceit of this composition gives voice to the fossil fishes who, as if in a legal proceeding or ‘trial,’ demonstrate the errors of those who unjustly deny their having really existed as living animals and as witnesses of the Deluge. The second and shorter text is *Homo Diluvii Testis* (1726), or *The Man who Witnessed the Flood (L’Homme témoin du Déluge)*, in 16 pages of text and two plates. Here Scheuchzer describes as human the famous vertebrate fossil from the rich quarries at Oehningen (located between Konstanz and Schaffhausen), later demonstrated by Cuvier to be the remains of a giant salamander.

This constitutes the first translation of *Piscium Querelae et Vindiciae* into any modern language. That by itself would be sufficient reason for welcoming this book as a useful contribution to scholarly study of early earth science. It has the further merit, however, of making transparent how Scheuchzer’s standing as a ‘progressive’ on the issue of the derivation of fossil objects was securely tied to his conviction in the reality of the biblical Deluge. As Gaudant remarks, a strictly linear development is found neither in Scheuchzer’s intellectual growth nor in the period’s scientific treatment of the fossil question.

Kenneth L. Taylor, Norman, Oklahoma

Globale Geologie und ihr Einfluss auf das Denken von Eduard Suess: Der Katastrophismus-Uniformitarianismus-Streit

(Global geology and its influence on Eduard Suess’ thought: The catastrophism-uniformitarianism controversy)

by A. M. Celâl Şengör

This book by an INHIGEO member will be published in the Spring 2009 in the new journal *Scripta Geohistorica* published by the ‘Grazer Universitätsverlag’ under the *aegis* of ‘Zentrum für Wissenschaftsgeschichte an der Karl-Franzens-Universität Graz’. The editors are: Bernhard Hubmann, Elmar Schübl, Johannes Seidl.

The abstract is as follows:

Eduard SUESS’ lifework consisted of an attempt to reconcile a CUVIERian world, in which organisms in large areas and in short time scales vanished as a result of recurring global catastrophes, with a LYELLian world, in which there were neither great catastrophes nor truly global events. SUESS believed that in a world with no global events it was impossible to explain why global stratigraphy was possible, i. e. why the subdivisions of the geological timescale erected in Europe were also usable everywhere else. While working on the stratigraphy of the Vienna basin in the beginning of his career, he noticed that dislocation events had little influence on the life of the local biota, whereas sea-level changes affected it profoundly. He early believed that it was the sea-level changes that caused the main transitions in the geological time-table. While attempting a correlation of the Neogene deposits in the Vienna basin with those in southern Russia and west-central Asia, he became aware that the Viennese deposits could be traced horizontally into their correlatives in southern Russia. He reasoned that such long-distance persistence of marine beds with no obvious signs of deformation could only be observed not because the underlying continent had been upheaved, but because the sea-level had fallen. SUESS argued that no mechanism of continental upheaval could leave the beds so intact as he thought he could document.

If global sea-level change was governing the nature of global stratigraphy, what was governing global sea-level change? SUESS became impressed with the argument of Constant PRÉVOST that oceanic subsidences must lead to regression and if oceans are filled with sediment transgression must ensue. He felt that if in a limited region an oceanic subsidence occurred because of the radial component of the contraction of the earth, this must enlarge the capacity of the ocean basins in the entire world and must result in global regression. To pursue this line of thought, he started undertaking global tectonic and palaeogeographic studies in the later sixties of the 19th century. His two tectonic works, *Die Entstehung der Alpen* (1875; The Origin of the Alps) and *Das Antlitz der Erde* (1883-1909; *The Face of the Earth*: English edition 1904-1924), that inaugurated modern tectonic research, were written to combat the theory of primary vertical uplift of the lithosphere and to show that earth behaviour was dominated by thermal contraction that expressed itself in radial subsidence, forming ocean basins, cauldron subsidences and rift valleys and tangential shortening, giving rise to orogenic belts.

The Making of the Geological Society of London
Edited by Cherry L.E. Lewis and Simon J. Knell
Special Publication Geological Society of London
(due for release, June 2009)

Founded in 1807, the Geological Society of London became the world's first learned society devoted to the Earth sciences. In celebration of the Society's 200-year history, this book commemorates the lives of the Society's 13 founders and sets geology in its national and European context at the turn of the nineteenth century. In Britain, geology emerged as a subject in its own right from three closely related disciplines – chemistry, mineralogy and medicine – disciplines that reflect the principal professions and interests of the founders. The contents of the volume is as follows:

Chapter	Author
Preface	Cherry Lewis
Introduction	
1 The road to Smith: how the Geological Society came to possess English geology	Simon J. Knell
The Founders	
2 Doctoring geology: the medical origins of the Geological Society	Cherry Lewis
3 Chemists get down to Earth	David Knight
4 Comte de Bournon	Gordon Herries Davies
5 George Bellas Greenough's 'Theory of the Earth' and its impact on the early Geological Society.	Martina Kölbl-Ebert
6 Dissenting science: the Quakers among the founding fathers	Hugh S. Torrens
The Status of geology	
7 The early Geological Society in its international context	Martin J. S. Rudwick
8 Geology beyond the Channel: the beginnings of geohistory in early nineteenth-century France	Phillipe Taquet
9 The rise of geology as a science in Germany around 1800	Martin Guntau
10 Light and shadow: the status of Italian geology around 1807	Gian Battista Vai
11 Scientific institutions and the beginnings of geology in Russia	Victor E. Khain & Irena G. Malakhova
12 A story of things yet-to-be: the status of geology in the US in 1807	Julie R. Newell
The Nature of geology	
13 Military men: Napoleonic warfare and early members of the Geological Society	Dr Ted Rose
14 Practical geology in the Geological Society in its early years	Leucha Veneer

15	Geology at the crossroads: aspects of the geological career of Dr John MacCulloch	Alan J. Bowden
16	John Playfair on Schiehallion 1801-1811	John R. Smallwood
17	Picturesque ruin and geological antiquity: Thomas Webster and Sir Henry Englefield on the Isle of Wight	Noah Herringman
18	The Geological Society and its official recognition, 1824-1828	Patrick Boylan
19	Facts and fancies: the Geological Society of London and the wider public, 1807-1837	Ralph O'Connor
20	The Geological Society on the other side of the world	David Branagan
21	The status of women and the first female Fellows	Cynthia Burek
	The Bicentenary	
22	A year to remember	Ted Nield
23	Walk with the Founding Fathers	Martin Rudwick
24	Dine with the Founding Fathers	Richard Moody
	Appendix	
I	Geological Inquiries (1808)	Geological Society
II	First English translation of the Preface to Comte de Bournon's Treatise on Mineralogy (1808)	Comte de Bournon

NOTES AND QUERIES

World History of Science Online (WHSO) project

IUHPS is pleased to announce the launch of the new web site for the World History of Science Online (WHSO) project. WHSO, which is sponsored by the Division of the History of Science and Technology within the International Union for the History and Philosophy of Science (DHST/IUHPS), will create a free sustainable online resource for the worldwide community interested in the history of science and technology in all its richness and diversity. The website address is <http://www.dhst-whso.org/whso.htm>.

Gavan McCarthy, Senior Research Fellow and Director of the University of Melbourne eScholarship Research Centre, and his team at Melbourne have completed the revisions to the website so that it is now searchable and easily expandable. This means that we are now able to accept new submission from contributors around the world. Our first goal is to populate this website with as many links and as much descriptive material as possible regarding ongoing activities in history of science bibliography and archiving. We, of course, want to focus on and link to digital, online, and free bibliographical and archival indexing efforts, but we would also like to know about any relevant bibliographies and archival indexes that are available, regardless of whether they are in print or online, and whether they are freely accessible or not.

To that end, I would like to request that each of you send us notices about any efforts that you know of that are relevant to our mission. We are interested in both primary source bibliographies of scientists and their work as well as secondary source bibliographies about the history of science and technology. National and regional bibliographical and archival resources are especially important to us. The language of the source material does not matter, but we would like the access information in English if at all possible.

Eventually, we expect to be able to implement a meta-search capability to the site so that we can link directly to the data of online resources, thereby creating a major centralized finding aid for historians of science and technology. The accumulation of knowledge about existing resources is thus our first immediate step in that direction.

If you know of relevant resources, please send suggestions to both me, at Stephen Weldon s.weldon@dhstweb.org, and Ailie Smith, at ailie.smith@unimelb.edu.au. We would like as much of the following information as possible, specifically: (1) name of resource; (2) its scope, purpose, and nature; (3) most relevant URL address; (4) contact information for any individuals associated with the project. If you are not able to provide all of that information, please give us what you know. Also please forward this message to other interested parties.

I look forward to your help and participation. Thank you,

Stephen Weldon
Chair, Governing Board, World History of Science Online
Bibliographer, Isis Current Bibliography, History of Science Society
Assistant Professor, History of Science, University of Oklahoma

Launch of the Journal “*Geoheritage*”

Geoheritage will be the first ever peer-reviewed journal dedicated to all aspects of inanimate natural heritage – geo(morpho)logical heritage – following rising awareness of these subjects in society, amongst conservationists, geoscientists and a growing public.

Geological heritage is here understood in a broad sense, integrating all subdisciplines such as geomorphological, stratigraphic, palaeontological, mineralogical and landscape heritage, amongst others, as well as the places and materials connected with geoscience and its progress. The journal will publish papers on scientifically important geosites, their characterisation and assessment. Key topics for papers also include geosites (at all scales), their science and conservation, interpretation and use, geodiversity, educational links, geotourism and geoparks

The *Geoheritage* journal is an international journal dedicated to promoting heritage conservation, and 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, training 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, training 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 and Year of Planet Earth;

The journal will publish research papers, review articles and short notes, as well as comments on papers already published in this journal or elsewhere. Occasionally, concise meeting reports and news of interest to the scientific, geoconservation, environmental and educational community will be published. As the official journal of the European Association for the Conservation of the Geological Heritage (ProGEO) (and its national groups) and GEM and other partner organisations, *Geoheritage* will regularly publish the proceedings of the partner’s international symposia.

The journal addresses geologists, biologists, geographers and landscape architects, environmental geologists, planners and officials dealing with nature conservation, museum workers, archivists and curators, science historians, specialists in town & country (spatial) planning, environmental impacts, geotourism, and secondary teaching, as well as faculty staff, graduate and post-graduate students. The founding Editors are Jose Brilha (University of Minho, Portugal) and William A.P. Wimbledon (Countryside Council for Wales/University of Bristol, United Kingdom).

COUNTRY REPORTS

Australia

1. Earth Sciences History Group, Geological Society of Australia Inc.



(www.gsa.org.au/specialgroups/eshg.html)

The Earth Sciences History Group moves to Western Australia

At the July 2008 meeting of the Australian Earth Sciences Convention (AESC) in Perth, a new Committee consisting of John Blockley and colleagues from the Western Australia Division took over the running of the ESHG. The outgoing Melbourne Committee (headed by Bernie Joyce) and the incoming WA Committee have been active over the last few months working towards a smooth changeover.

The ESHG Business Meeting, and the changeover

The handover took place during AESC 2008, at the Business Meeting of ESHG. Doug McCann of the Melbourne Committee and David Branagan, who attended the previous Business Meeting in Melbourne in November 2007, were present to facilitate the handover.

Earth Sciences History at AESC 2008 in Perth

Although there was not a separate History session in Perth, papers by ESHG members David Branagan (NSW), Doug McCann (Victoria) and Barry Cooper (South Australia) were presented, and John Blockley helped arrange for the 'Camels, Cars and Compasses' exhibition of old maps and artifacts, originally put together by Angela Riganti in Kalgoorlie, to be displayed at the Convention venue.

ESHG Newsletter No. 39

The final newsletter produced by the Melbourne Committee included:

- o A colour cover—a first for the AESC! A Gerard Krefft watercolour drawing of the cliffs on the River Murray at Merbein (on the border between Victoria and New South Wales), introduced a note by Charles Lawrence on the geology of the site where William Blandowski worked in 1857.
- o Inside the newsletter were other colour images, including a photo of the outgoing Melbourne Committee at an early-2008 Committee meeting.
- o A well-illustrated article by Doug McCann on the work of the Silesian naturalist, geologist, and explorer, William Blandowski (1822–1878), a founder of the Geological Society of Victoria.
- o An article by R. K. Johns on the story behind his *History and Role of Government Geological Surveys in Australia*, published in 1976.
- o and finally a copy of the ESHG Chair's report to the Council meeting in Perth.

Farewell from the Committee in Victoria

The ESHG Committee had been in Melbourne since late in 2002, a period of five and a half years. Regular meetings were held, particularly during the preparation for the Conference in late-2007.

Four Newsletters have been published from Melbourne: No. 36, No. 37, No. 38 and No. 39. A new series of Email News has been set up, and Nos 1 to 6 have been sent to members. We have set up a web site for the Group, on which we use the original logo, supplied by Barry Cooper, and regular reports have also appeared in *The Australian Geologist*. The ESHG is in a healthy state financially, and with a growing membership, now some eighty members.

The retiring Committee members are Bernie Joyce (Chair), Guy Holdgate (Secretary), Roger Pierson (Treasurer) and Doug McCann (Newsletter Editor). We have had both a busy and rewarding time, and at the AESC 2008 meeting in Perth, we handed over to John Blockley and other WA ESHG members and wished them well.

ESHG Grants

Following the late-2007 conference, and discussions on how to improve the Group's archives, bring its history up to date, and encourage members to publish research on the history of the earth sciences in Australia, the ESHG Committee at its meeting in Melbourne on 13 June 2008 discussed and approved the following grants:

- o Royal Society of NSW, via President John Hardie, to assist with the publication of Roy McLeod's Archibald Liversidge volume (as proposed by David Branagan at the ESHG 2007 Business Meeting). \$500.00.
- o Doug McCann, to undertake an additional study of the history of the ESHG to update the Group's history from its last write-up fourteen years ago. \$750.00.
- o Doug McCann, to undertake the archiving of all ESHG material, including creation of a pdf scanned version of most items (Newsletters, Minutes, etc.), and to send to the Basser Library in Canberra all past copies of Newsletters, Minutes, etc. \$750.00.
- o Ruth Pullin, for assistance in the publication in the *Melbourne Art Journal* of her thesis work on von Guérard (as presented at the recent ESHG conference), and also to help in the thesis production. \$500.00.
- o Charles Lawrence, for assistance in writing up a 'History of Groundwater in Australia' (as presented at the recent ESHG conference). The costs will also assist in interviewing of key persons interstate. \$500.00.

Other grants:

- o Douglas McCann: towards expenses in Perth to attend the GSA Council meeting, and the ESHG Business meeting, and taking part in the handover of the ESHG committee to WA, in lieu of other ESHG Committee members unable to attend. \$200.00.
- o David Branagan: towards expenses to attend the GSA Council meeting in Perth, and the ESHG Business meeting, and taking part in the handover of the ESHG committee to WA. \$200.00.

The new WA Committee and the future

We look forward to a future conference in Perth, Kalgoorlie, or elsewhere in Western Australia. This conference might be held in 2010, before the INHIGEO meeting planned for Australia in 2012 in association with the IGC in Brisbane that year.

And now that we have begun using colour in the ESHG Newsletter (in the most recent issue), we note how it shows signs of becoming a journal, as happens with the newsletters of similar specialist groups. We might increasingly use the Email News for news, and the Newsletter could then become the basis for a journal of papers, reviews, obituaries and occasional notes such the new *Earth Sciences History Online*, No. 1 in this latest Newsletter.

Other ESHG news

Two conference volumes emanating from the ESHG conference held in Melbourne in December 2007 are still available for sale. These are: Pierson, R. R. (ed.) 2007. *The History of Geology in the Second Half of the Nineteenth Century: The Story in Australia, and in Victoria, from Selwyn and McCoy to Gregory—1853 to 1903*, Earth Sciences History Group conference, Thursday 29th November to Saturday 1st December, 2007. Volume of Short Papers, Special Publication No. 1, Earth Sciences History Group, GSA Inc., Melbourne, Victoria. 70pp.; and Holdgate, G. R., 2007. *Creswick Deep Leads Goldfields Tour 'Buried Rivers of Gold'. Saturday 1st December, 2007*; Earth Sciences History Group, Field Guide Series No. 1, Earth Sciences History Group, GSA Inc., Melbourne, Victoria. 29 pp. (including Appendix 1: Joyce, Bernie. 2007. *Volcanoes of the Creswick Deep Leads Region in the Western Uplands of Victoria*, pp. 17–29.) Copies at \$10 each, plus postage, may be obtained from: The Secretary, Earth Sciences History Group, GSA Inc. The address of the current Secretary is available on the ESHG web site.

2. Individual Reports

Carol Bacon continues her interest in the history of Tasmanian geology, and continued work on a history of mines and mining in Tasmania.

David Branagan has had another busy year with a variety of interesting research. A paper in long gestation (with co-researcher) D. T. Moore (UK) was published on the 1820s rock collection gathered around the Australian coastline (ca 1820) by P. P. King and A. Cunningham, and described in 1826 by W. H. Fitton. A paper on the Russian oil publicist, Captain E. de Hautpick, also appeared, and a third was published (early research on the Cenozoic of Australia) in the INHIGEO volume for the

Geological Society of London *History of Geomorphology and Quaternary Geology*, edited by Grapes, Oldroyd and Grigelis.

The Australian Contribution to Antarctic geophysical and geological work was presented at the INHIGEO session of the 33rd IGC, Oslo. Preliminary results of research on the Jesuit seismologist, E. F. Pigot were presented at the Australian Earth Sciences Convention in Perth in July, and some days were spent examining historic sites named for British geologist, such as Murchison and Greenough in Western Australia, named by the explorer George Grey (1812–1898). Research results concerning the first Australian marble quarry, near Goulburn, were presented in October at the Australasian Mining History Association's meeting in Queenstown, Tasmania. This paper has now been submitted for publication.

A paper presented on Australian 'clerical geologists' at the Eichstätt meeting of INHIGEO was accepted for publication in the Proceedings volume and will appear early in 2009. So too will the paper on the long-standing Antipodean connections with the Geological Society of London, being published by the Society for the bi-centenary of the Society in 2007. A paper, with T. G. Vallance (deceased 1993) named as co-author, on previously unpublished letters and memoranda of the Reverend W. B. Clarke (1798–1978), based on work left uncompleted by Vallance, was completed and will also be published early in 2009.

Obituaries on the geophysicist, Dr L. Drake S. J. (1931–2007), and the chemist Dr Edmund Potter (1923–2005) were prepared for the Royal Society of New South Wales.

Final revisions were made to the brief biographies of geologists C. S. J. Mulholland (1903–1984) and K. G. Mosher (1913–1990) for the forthcoming volume of the *Australian Dictionary of Biography*.

On a brief visit to Britain following the IGC meeting in Norway some research was carried out on Alfred Selwyn's early career (1845–1852) in Wales, part of continuing research for a biography of Selwyn.

During the year presentations were given to historical, scientific and community groups on the life and work of T. W. Edgeworth David.

Barry Cooper has continued his work on the history of uranium with presentations at several conferences including the INHIGEO symposium at the 33rd IGC in Oslo, Australian Earth Sciences Conference in Perth and the International Uranium Conference in Adelaide. Two significant papers have also resulted from this research. These are:

- 'Sedimentary Uranium in South Australia: A History of Early Exploration and Discovery in the Frome Embayment', *Applied Earth Sciences (Transactions of the Institutions of Mining and Metallurgy: Section B)*, 2008, 117, 37–50.
- "Bragg, Mawson and Brown, and the Early History of Uranium in South Australia" submitted to the *Transactions of the Royal Society of South Australia*.

Also published during the year has been 'Classic Paper: C. H. Pander's (1856) 'Introduction to Conodonts', *Episodes*, 2008, 31, 431–436 (with W. C. Sweet).

Reviews of historical books completed during the year include:

- 'Geologists' Travel': a review of P. N. Wyse Jackson (ed.), *Four Centuries of Geological Travel: The Search for Knowledge on Foot, Bicycle, Sledge and Camel*, Geological Society of London, Special Publication 287, London, 2007. In: *Metascience*, 2008, 17, 517–521.
- Book Review: Kristin Weidenbach, *Rock Star: The Story of Reg Sprigg, An Outback Legend*, forthcoming in *MESA Journal, Quarterly Journal of Primary Industries and Resources South Australia*.

Current research has focused on:

- The contribution of early Australian geologists to the current 'Snowball Earth' theory.
- History of South Australian uranium in the immediate post World War II period.
- The history of discovery of the so-called "Big Gully Lagerstätte" on South Australia's Kangaroo Island.
- The early history of South Australian building stones.

A wider record of historic building stone use is ongoing with compilation of a photographic database of stone use in human culture. With respect to building stone, Barry is also working with the International Association for Engineering and the Environment via its 'Commission C-10 Building Stone and Ornamental Rock' to develop the designation of 'Global Heritage Stone Resource'.

Bernie Joyce has been particularly active as Chair of the Earth Sciences History Group (see report above). Bernie also published a book review “Four Centuries of Geological Travel: The Search for Knowledge on Foot, Bicycle, Sledge and Camel. Book Review” *Episodes* Vol. 31 (4), 2008, pp. 450-451.

Homer Le Grand has joined the editorial board of *Earth Sciences History*.

Wolf Mayer published a paper on the early geological investigations of the Pleistocene Tamala Limestone in Western Australia, which appeared in the Geological Society Special Publication, No. 301. His contribution to the INHIGEO meeting at Eichstätt on the geological work of the Reverend Charles Wilton in New South Wales is due to be published in another Geological Society Special Publication in March of this year. He also contributed an article on Wilton and his pre-emigration geological investigations in West Sussex, for publication this year in a thematic issue of the *Journal of Sussex History*, to coincide with the 150th anniversary of The Geologists’ Association.

Early last year Wolf submitted an article on the geological work of François Péron in Australia, which will be published this year by the *Muséum d’histoire naturelle* in Le Havre. In August, he attended the IGC in Oslo and presented a paper on the geological investigations of the Baudin expedition to Australia in 1801–1803. He is currently preparing an article on this topic for submission to *ESH*. He is also involved in the Baudin Project, which aims to translate and eventually to publish all of the documentation relating to the Baudin expedition to Australia.

David Oldroyd took over the editorship of *Earth Sciences History* from Patrick Wyse Jackson (Ireland) in 2008 and a large part of his time during the year was devoted to this work. However, the overlap of his activities for HESS and INHIGEO made his task much easier because of the worldwide contacts that he has built up with INHIGEO Members over the years. He also does much editorial work for the IUGS journal *Episodes* and for *Metascience*.

In 2008, David was pleased to see the publication of his GSL volume, co-edited with Rodney Grapes (NZ) and Algimantas Grigelis (Lithuania), *History of Geomorphology and Quaternary Geology*, which contains an article by him on the studies of the river systems of the Sydney Basin by the geomorphologist T. Griffith Taylor. He also worked on two papers for the GSL volume on geology and religion, edited by Martina Koelbl-Ebert, which will appear in 2009. In 2008, he published five book reviews, articles on Hutton and Wadia in the *New Dictionary of Scientific Biography*, and an obituary of the Australian geologist, environmentalist and polymath, George Seddon, in the *Proceedings of the Australian Academy of Humanities*. A Chinese translation of his old book on the history of the philosophy of science was published in Beijing. Also, David collaborated with the philosopher of science Brian Ellis (La Trobe University) on a chapter on the history of history and philosophy of science studies for a volume on the history of philosophy in Australasia.

In collaboration with Jens Hansen (Denmark) David organised a symposium of miscellaneous papers on the history of geoscience for the 33rd IGC in Oslo. This was well attended and was generally considered a success, but David’s predictions about an impending economic collapse *due to* ‘peak oil’ were quickly falsified by the events that followed in the next few months! Or was it the dramatic oil price rise of 2008 that pricked the economic bubble?

Susan Turner worked a little on the history of oil discovery in the North West Shelf of Australia for the *GeoExpro* magazine in early 2008.

The chapter co-authored with David Oldroyd, on the history of discovery of Precambrian fossils found by Reg Sprigg and colleague Dennis Walter, and their international acceptance and importance is due to be published in the University of Chicago Press book, *Paleontology at the High Table; A Science Matures* (Ruse, M. & Seposki, D. eds in 2009).

Sue’s work on the history of Australians in UNESCO: IUGS International Geoscience Programme continued this year with a look at the role of women in IGCP, presented at the INHIGEO symposium at the 33rd IGC in Oslo in August. She continued to work on the history of women, this year focussing with Professor Dr Hans-Peter Schultze (now Kansas) on the life and times of early vertebrate palaeontologists, Drs Elga Mark-Kurik and Valentina Karatajute-Talimaa, which will be published in 2009 (Schultze, H-P. & Turner, S. in *Acta Zoologica*). Work also began with Professor Cynthia Burek (University of Chester) on women (both very dead and alive) in the history of “saurian” research (dinosaurs et al.) for a chapter in a Geological Society of London (GSL) book on that theme that emanated from a symposium held by HOGG (Moody, R., Buffetaut, E., Martill, D. & Naish, D. eds *Dinosaurs and other Extinct Saurians - a Historical Perspective*). This international meeting investigated had particular emphasis on dinosaurs, known and forgotten

personalities, major discoveries and expeditions. The programme also debated the introduction, and acceptance of major theories or principles associated with the greater understanding of dinosaur taxonomy, palaeobiology and evolution. Authors will also probe a cultural theme; exploring the role of artists and animators and the influence they have on our perception of dinosaurs over the last 180 years or more. The programme included presentations from many countries including Britain, France, Germany, Denmark, Portugal, Hungary, Russia, Canada, and the U.S.

Sue's work on the lives and times of Heber A. Longman, former Director of the Queensland Museum and Baron Friedrich Hoyningen-von Huene, 20th century dinosaur doyen of Universität Tübingen, has led to a review of the scientific and religious philosophy of the two men that will be published in Martina Kölbl-Ebert's Symposium GSL volume, *The Historical Relationship of Geology and Religion*, due in early 2009.

Prompted by discussions with Prof. Dr Wolf-Ernst Reif (Tuebingen), who is working on a book on Darwin's methodology, Sue spent some time reading through Darwin's first edition checking both his index against the text and trying to "rediscover" his unpublished bibliography for *The Origin* [results placed on her website www.paleodeadfish.com].

Publications

Turner S 2008. Dorothy Hill in Koertge, Noretta, ed. *New Dictionary of Scientific Biography*. Detroit: Charles Scribner's Sons, Vol. 3, pp. 315-320. January

Turner, S. (with help from Joan Beattie) 2008. Joan Crockford Beattie D.Sc. In Wyse Jackson, P.N. & Spencer Jones, M. eds *Annals of Bryozoology* 2, 421-425.

Turner & Vickers-Rich 2008. Women in IGCP: Contributions to "Big Geoscience". INHIGEO General session. 33rd IGC Oslo, Aug 6-14 2008, IEH01221L, p 99.

Publications in press

Schultze, H.-P., Turner, S. & Grigelis, A. 2009. Great Northern Researchers: Discoverers of the earliest Palaeozoic vertebrates. – In, Forty Years of Early Vertebrates: papers from the 11th International Symposium on Early and Lower Vertebrates. *Acta Zoologica*, Supplement to volume 89. (Stockholm): XXX–XXX

Turner, S. 2009. Reverent and exemplary: 'dinosaur man' Friedrich von Huene (1875-1969). In: Kölbl-Ebert, M. (ed.) *Geology and Religion: Historical Views of an Intense Relationship between Harmony and Hostility*. The Geological Society, London, Special Publications, 310, 223–242. DOI: 10.1144/SP310.23 0305-8719/09/\$15.00 # The Geological Society of London 2009.

Turner, S. & Oldroyd, D. 2009. Reg Sprigg and the Discovery of the Ediacara Fauna in South Australia: Its Approach to the High Table. 254-278. In Ruse, M. & Seposki, D. eds *Paleontology at the High Table; A Science Matures*. University of Chicago Press.

Austria

The Austrian group or Austrian Association for the History of Earth Sciences is formed by members of the Austrian Geological Society, members of the Mining History Association for Austria, the Austrian Society for History of Science, the Austrian Mineralogical Society, the Austrian Paleontological Society and individuals or institutions. Financial support is determined by the conference participants and by generous grants from the Austrian Geological Society and the Austrian mining industry. Not insignificant is the contribution of the Federal Geological Institute, which enabled the printing of abstracts and proceeding journals.

The Austrian Association for the History of Earth Sciences in Austria sees itself as the Austrian National Committee of INHIGEO and is an active leader in the International Symposium on cultural heritage in the mining industry - and Earth Sciences Libraries - Archives - Collections.

Under the somewhat complicated-sounding title of "From Paracelsus to Brown Stingl / Hejl / Pestal, Earth Sciences Research in Salzburg during the course of the centuries" the 7th Meeting of the Working Group was held in the city of Salzburg, at the University of Salzburg, in the Blue Room of the science faculty. The following lectures were given:

Angetter, Daniela: *Paracelsus und die Terra Mystica*.

Cernajsek, Tillfried und Johannes Seidl: *100 Jahre Österreichische Geologische Gesellschaft, vormalig Geologische Gesellschaft in Wien. Zur Problematik einer Vereinsgeschichtsschreibung und ihrer Methoden*.

Cernajsek, Tillfried und Johannes Seidl: *Die geologische Karte von Südbayern von Ami Boué: eine weitere Ergänzung zur Kenntnis über den Nachlaß von Boué an der Geologischen Bundesanstalt.* [Dieser Vortrag musste 2007 in Eichstätt im verlaufe des INHIGEO-Meetings entfallen, da der Erstautor plötzlich erkrankte].

Flügel, Helmut: *Abraham Gottlob Werner und der „Workshop“ von Schemnitz 1786.*
Gottschling, Peter: *Bedeutende Wissenschaftler aus Niederösterreich. Josef Stiny, Forstingenieur und Ingenieur.*

Gruber, Alfred und Hauser, Christoph: *Zum 100. Geburtstag von Georg Mutschlechner <19. März 1908 – 19. Dezember 1999>.*

Grunert, Patrick: *Auf dem Weg nach oben: Die Jahre 1850 – 1852 im Leben von Lukas Friedrich Zekeli.*

Hauer, Katrin: *Über die Wahrnehmung, Deutung und Bewältigung des großen Mönchbergsturzes.*

Hobiger, Gerhard: *Die Entdeckung von Cäsium und Rubidium von G. Kirchhoff und R. Bunsen.*

Hubmann, Bernhard: *Robert Schwinner <1878-1953> und sein Lehrbuch der physikalischen Geologie.*

Klemun, Marianne: *Zwischen Beruf und Berufung. Karl Erenbert von Molls <1760-1828< Berufsvisionen in politischen Umbruchzeiten.*

Lewandowski, Klaus: *Der „vergessene“ Bergbau im Oberpinzgau.*

Lintner-Potz, Angelika: *Jugend- und Studienzeit des Gustav Tschemmaks, Edler von Seysenegg.*

Lobitzer, Harald: *Die Erforschung des Gosau-Vorkommens von Rußbach am Paß Gschütt vom 18. Jh. Bis heute.*

Minina, Elena: *History of Rudolph Hermann's mineralogical collection.*

Norris, John A.: *The Role of Mineral Exhalations in Paracelsus' Theory of Mineral Generation and Miners's Diseases.*

Onuzi, Kujtim: *Bergrat Dr. Hermann Veters <31.07.1880 – 6.10.1941>. Der große Forscher zur Geologie Albaniens.*

Papp, Josef: *Die Mineraliensammler! Philosophen – Partner der Erdwissenschaftler – Naturschützer.*

Pertlik, Franz und Pertlik, S.: *Zur Geschichte einer periodischen, regionalen, naturwissenschaftlich orientierten Zeitschrift von überregionaler Bedeutung.* [Die Vortragenden sprachen über die Zeitschrift „Der Karinthin“].

Rolshoven, Marianne: *Das fürst- und erzbischöfliche Kabinett und die mineralogischen und petrographischen Sammlungen von St. Peter in Salzburg.*

Schramm, Josef-Michael: *Die geologische Kartierung des Landes Salzburg und die Köpfe, die dahinter stehen.*

Schübl, Elmar: *Zur Institutionalisierung der Erdwissenschaften an Universitäten der Habsburgermonarchie 1848 – 1918.*

Schweizer, Claudia: *Die Situation des böhmischen Bergbaus im Vormärz.*

Seidl, Johannes: *Von der Geognosie zur Geologie. Eduard Suess <1831-1914> und die Entwicklung der Erdwissenschaften an den österreichischen Universitäten in der zweiten Hälfte des 19. Jahrhunderts.*

Şengör, Celâl A.M.: *Eduard Suess und seine Theorie der Orogenese*.

Strehlau, Jürgen: *Pioneering Ideas on the Relationship Between Rock Deformation and Tectonic Earthquakes presented in 1878 by Albert Heim <1849-1937>*.

Svatek, Petra: *Hugo Hassingers Beitrag zur geologischen und morphologischen Erforschung Ostösterreichs unter besonderer Berücksichtigung des südlichen Wiener Beckens*.

The local organization was in the capable hands of our Salzburg colleague Wolfgang Vettters (grandson of the geologist Hermann Vettters). He designed volume of abstracts and organized a field excursion to nearby Bavaria. Here, the natural - and mammoth - Museum in Siegsdorf, district of Traunstein, was visited. Following that, a profile in Old Tertiary along Bavarian River Traun was traversed, which around 1830 Murchison and colleagues had already examined and described. On the way to the obligatory lunch stop outcrops of Molasses were examined along the road. In the afternoon the group returned to Salzburg country, where the Obertrumer lakes were visited. As a matter of course there was a tour into the Obertrumer brewery and then a trip to the geological outcrops in Old Tertiary of Mattsee and the surrounding area. To connect the session Wolfgang Vettters led the meeting participants to the Salzburg Residence in the so-called Toscana tract. Here in the Sala Terena, the map room aroused much interest and enthusiasm. In the course of the final business meeting the report of long-time chairman Tillfried Cernajsek was accepted. Johannes Seidl has now been appointed as Chairman.

The outgoing chairman Tillfried Cernajsek suggested during the final session the establishment of a memorial plaque for Hermann Vettters (1880-1941). This suggestion will be presented to the Board of the Austrian Geological Society. In addition, Josef - Michael Schramm, University of Salzburg, suggested the design of for a stamp featuring Hermann Vettters. At the initiative of DI Barbara Vecer a memorial tablet was ceremoniously placed at the former home of Gejza Bukowski von Stolzenburg (1858-1937), a Polish-Austrian geologist, on the occasion of his 150th Birthday on 14th April 2008 in Vienna, 3rd, Hansalgasse 3. Bukowski studied Geology and Palaeontology at the Vienna University under the Professors Eduard Suess and Melchior Neumayer. Although he had written a dissertation, and this was also accepted, he didn't earn his doctorate! This occurred only with his graduation into the Geological Institute, for which he had been active in different countries of the Austro—Hungarian monarchy. In 1918 he left together with his wife Catherine Vienna and joined the services of the Polish Geological Institute, where he remained actively until his retirement in 1926. A small working group consisting of Prof. Celâl A.M. Şengör, Johannes Seidl, Tillfried Cernajsek and Barbara Steininger dealt intensively with the translation of the only biography of Eduard Suess, which had been written by V. A. Obrutchew and M. Sotina 1937 in Russian language. Mrs Steininger made the difficult translation. This translation was revised and provided with appropriated comments. This work is supported by the Federal Geological Institute in their published reports and is also available online.

In Austria, published literature on the history of the Earth Sciences is collected and recorded by the Library of the Federal Institute of Geology. The titles may be examined on the home page of the Federal Geological Institute (<http://www.geologie.ac.at/>). In addition, records the Austrian Historical Bibliography (ÖHB) collects also works from the history of Earth Sciences (<http://www.wg.uni-klu.ac.at/oehb/>).

Daniela Angetter, Tillfried Cernajsek and Johnnes Seidl

Belarus

Scientific Conferences

During the second half of 2008 the Institute of Geochemistry and Geophysics was removed from the Belarusian National Academy of Sciences, and placed with the Belarusian Research Geological Exploration Institute of the Department of Geology.

On 8 -9 December the Institute organized an International Scientific Conference devoted to the 90th anniversary of academician A.S. Makhnach. More than 100 specialists from the research institutes and universities of Belarus, Russia, the Ukraine, Lithuania, Latvia and Poland took part in the Conference. A Belarusian geologist, a doctor of geology and mineralogy, academician Alexander Semyonovich Makhnach (8.12.1918–2006) graduated from Minsk Pedagogical Institute and undertook post-graduate study at Moscow State University. Subsequently he worked at the

Institute of Geology of the Belarusian National Academy of Sciences. In 1973–1986 he was a vice President of the Belarusian National Academy of Sciences, and from 1986 - a member of the Presidium of the Belarusian National Academy of Sciences. In 1972 A.S. Makhnach was honored as a Belarusian State Prize Winner. He became an honorary member of the Russian Academy of Sciences (1992). Academician Alexander Semyonovich Makhnach was the author of scientific works on the lithology and geochemistry of Proterozoic, Devonian and ancient residual soils as well as a specialist in tectonics. He participated in the exploration and discovery in Belarus of potassium deposits, oil fields, iron ore deposits and shale oil fields.

Jubilees

It has been 75 years since the birth of a distinguished Belarusian geologist, leading research officer of the Institute of Geochemistry and Geophysics of the Belarusian National Academy of Sciences, Vsevolod Bordon. In 2009 he became the Director of the Mineralogical Museum of the Belarusian Research Geological Exploration Institute.

Memorable dates.

It has been 175 years since the birth of the first investigator of the East Siberia geology Alexander Chekanovsky (1833–1876) who was a graduate of Derpt University in 1856. A mountain-ridge in North-West Yakut and the top of a mountain ridge Khamar-Daban were named after A.Chekanovsky.

It has been 150 years since the birth of Leonard Yachevsky (1858–1916). L.Yachevsky graduated from St. Petersburg Institute of Mines (1883), carried out field investigations in the Urals and in Siberia. From 1909 he was a member of the Mining Scientific Committee in St. Petersburg.

It has been 125 years since the birth of Stanislav Kontkevich (1883–1951). He graduated from Freiberg Mining Academy, worked in mines in Poland, in his latter years was Director of iron ore mines in Chenstokhova, professor of the Krakow Mining Academy.

It is also 100 years since the birth of Doctor of Geology and Mineralogy, Professor Valentin Shcherbina (1908– 1976). He graduated from Kharkov University in 1933, and then worked in the Ukraine, Kazakhstan and Kirgizia and from 1955 – in the Institute of Geology of the Belarusian National Academy of Sciences. In 1956 V.Shcherbina became a corresponding member of the Belarusian National Academy of Sciences.

In addition, it is 100 years since the birth of Moisey Chernenko (1908–1965). M. Czernenko graduated from Dnepropetrovsk Institute of Mines and was a well-known reporter of the main newspapers of the USSR. A peak in Antarctica on the Land of Queen Maud (3630m) has been named after him.

Valeri Ermolenko, Minsk

Bolivia

In the middle of the year the Manquiri S.A. Mining Enterprise commenced as a subsidiary of the American Coeur d'Alene Mines Corporation and initiated the San Bartolome Project. This consists of treatment of colluvial and alluvial materials (locally called "pallacos" and "sucus") and also leveling and tailings (of previous operations) that are located at the periphery of the Cerro Rico of Potosi. The enterprise is, at the present time, producing dore silver in a modern cyanide plant with stirring or shaking tanks. The mining activity will not affect the morphological structure of the Cerro nor the condition of those areas, declared as World Heritage by UNESCO in 1988. This project represents a new strategy of local and national socio-economic and environmental development. For this purpose the Manquiri Enterprise formed a partnership with the Mining Cooperatives that operate at the Cerro Rico and with the Bolivian Mining Corporation, owner in part of the mining concessions of the area. Their plant is going to process around 8000 tons each day of loose materials when the plant reaches its full capacity, with silver productions at six million troy ounces of dore silver. This plant is located on the south part of the Cerro, where, with this new investment, there has been continuous silver production for 465 years and is still considered as one of the largest silver deposit in the world.

De Re Metallica Magazine is a journal of the Spanish Society for the Defence of the Geological and Mining Heritage that is published in Madrid-Spain. In the numbers 10-11 (January to December) my paper has been published entitled: "On the commercial routes and the intangible mining heritage". Historic trade routes to Spain for the transportation of precious metals (gold and silver) from Bolivia are presented. They provided for all types of materials, tools, food and goods arriving from the

over the world to the Imperial Villa de Potosí. Also, topics related to the intangible heritage (festivals and other entertainment, local foods, and worshiped virgins and Andean “deities”) are discussed.

On 4-5 March, a conference with the theme “Historical Heritage of the Independence” was held in the city of Sucre-Bolivia. It was sponsored by the National Committee of the Bicentenary, the House of Liberty and the San Francisco Xavier and Andina Simon Bolivar Universities. Each representative of the nine States of Bolivia presented a paper about the Heritage of their region. I was asked by the committee to discuss: “El Cerro Rico de Potosi”. The activities of: geology, mining, metallurgy were shown at various stages in history and with ore production technology namely: a) 1544-1825, the age of the silver in the Colony: at the beginning with an open pit work followed by later underground operations. Initially the melting process using native technology was utilized with the subsequent introduction of the process of amalgamation in boxes. b) 1825-1885, the age of the republican silver and the transition to the production of tin; as far exploitation is concerned. The methods continued to be primitive and similar to those used previously. Leach processing for silver and copper was later introduced whilst in pyrometallurgy the first attempts involved construction of melting furnaces for ores grades of tin and the introduction of gravity concentration for tin (sluices, hand jigs, shaking tables). c) 1885-1985, the tin age, large enterprises emerged together with the barons of tin (Patiño, Hochschild and Aramayo), the methods of cut and fill were introduced with shrinkage and block caving; during the processing, gravimetric plants of great capacity (provided with diverse types of pinched sluices and cones, jigs, shaking tables, tilting frames, overturning tables, heavy medium separation, Dyna Whirlpool separator, Humphreys spiral concentrator, Reichert cones, Bartles-Mozley concentrator, Bartles cross-belt separator) and mills with native technology (stone mills, jiggers, maritals, turf washers or a sort of buddles); in the pyrometallurgy private and state smelting appeared. d) 1985 up to the present time, distinguished by the production of silver, two plants were installed for this propose, using heap leaching; again the members of the cooperatives used traditional methods to exploit complex sulfurous ores of silver-zinc and lead-silver-zinc that are treated by means of flotation plants. We have already mentioned that a modern technology utilizing hydrometallurgy, by means of stirring and cementation of silver with zinc powder (the Merrill-Crowe process) is now being utilized.

Carlos Serrano, Potosi

Brazil

General remarks

During 2008, the Brazilian INHIGEO members continued their activities, attending meetings, publishing, improving the Graduated Program on Earth Sciences Teaching and History, at the Institute of Geoscience, UNICAMP. Although no specific meeting on History of Geology took place in Brazil in the last year, Brazilian INHIGEO members maintained their interdisciplinary work, playing active roles in congresses and symposia of Geology, History, History of Sciences and Science Education, in which they present to broader audiences their scientific production on History of Geological Sciences.

Scientific Conferences

On 5-14 August 2008, Oslo, Norway, the 33rd International Geological Congress "Earth System Science: Foundation for sustainable development" was held. Silvia F de M. Figueirôa, attended the Congress and presented the poster “Coping with Tropical Nature: Guilherme de Capanema (1824-1908) and droughts in Brazil”, continuing her interest in the contribution of the Brazilian community of geologists and engineers in the 19th century.

19-21 August, Mariana, Minas Gerais, Brazil - in the 2^o *Seminário Nacional de História e Historiografia*, Maria Margaret Lopes gave a talk at the conference on the topic “As ciências naturais no século XIX: já não tão novas visões historiográficas” [Natural sciences in Brazil in 19th century: the (not so much) new historiographical views].

26-31 October, Curitiba, Brazil - in the 44^o *Brazilian Geological Congress*, both Pedro Wagner Gonçalves and Silvia Figueirôa made presentation on historical themes.

26-29 October, Rio de Janeiro, Brazil – in the 11th *Seminário Nacional de História da Ciência e da Tecnologia*, Maria Margaret Lopes promoted the launch of her book “El Desierto em uma vitrina. Museos e historia natural en la Argentina, 1810-1890.” (especially on the History of Paleontology) co-authored with the Argentine researcher Irina Podgorny.

Publications

Figueirôa, Silvia. “A Repartição Geral dos Telégrafos e o trabalho de Guilherme Schüch de Capanema (1824-1908) em Geociências”. In: Almeida, Marta; Vergara, Moema de Rezende. (Org.). *Ciência, história e historiografia*. 1^a ed. São Paulo e Rio de Janeiro: Via Lettera e MAST, 2008, v. único, p.125-135.

- Figueirôa, Silvia. "Batedores da ciência em território paulista: expedições de exploração e a ocupação do sertão de São Paulo na transição para o século XX." *História, Ciências, Saúde-Manguinhos*, v. 15, p. 763-777, 2008. (English version in: <http://www.scielo.br>)
- Figueirôa, Silvia. "História, Filosofia e Divulgação do conhecimento geológico". In: 44º Congresso Brasileiro de Geologia, 2008, Curitiba. *Anais do 44º CBG - O Planeta Terra em nossas mãos*. Curitiba: Sociedade Brasileira de Geologia, 2008. v. 1. p. 707-707.
- Gonçalves, Pedro W. "La prospección minera en el Siglo XVIII: el legado de James Hutton (1726-1797)". *Contenidos*, San Luis - Argentina, p. 1 - 3, nov. 2008.
- Gonçalves, Pedro W.; Carneiro, Celso D. R. "La danza de los continentes en el tiempo geológico". *Enseñanza de las Ciencias de la Tierra*, v. 16, p. 107-116, 2008.
- Lopes, Maria Margaret. "Cenas de tempos profundos: ossos, viagens, memórias nas culturas da natureza no Brasil". *História, Ciências, Saúde-Manguinhos*, v. 15, p. 615, 2008. (English version in: <http://www.scielo.br>)
- Lopes, Maria Margaret. "Trajetórias museológicas, biografias de objetos, percursos metodológicos". In: Almeida, Marta; Vergara, Moema de Rezende. (Org.). *Ciência, história e historiografia*. 1ª ed. São Paulo e Rio de Janeiro: Via Lettera e MAST, 2008, v. único, p. 305-318.
- Podgorny, Irina; Lopes, Maria Margaret. *El desierto en una vitrina. Museos e historia natural en la Argentina, 1810-1890*. Editorial Limusa, Grupo Noriega Editores, México, D.F. 2008.
- Silva, Clarete P.; Figueirôa, Silvia; Newerla, Vivian B.; Mendes, Ma. Isabel P. "Subsídios para o uso da História das Ciências no Ensino: exemplos extraídos das Geociências". *Ciência e Educação* (UNESP), v. 14, p. 497-517, 2008.
- Varella, Alex G.; Figueirôa, Silvia. "Textos em contexto: comentários às experiências de Manuel Ferreira da Câmara com a obsidiana da Ilha de Kandia". *Revista da Sociedade Brasileira de História da Ciência*, v. 6, p. 57-70, 2008.

Maria Margaret Lopes, Sao Paolo

Canada

Canada is looking forward to welcoming INHIGEO members to Calgary in 2009. With three new members, we have a more substantial report than usual.

Canadian Earth Science Anniversaries in 2008

(Based on Gerard Middleton's "Timetable of Canadian Geology" in *Proud Heritage*).

150th Anniversaries

- First producing oil well, dug (not drilled) at Oil Springs Ontario.
- Fraser River Gold Rush began in British Columbia.
- Hilary Meinhardt Bauerman was appointed by Roderick Murchison as geologist for the British Boundary Commission surveying the boundary between British Columbia and Washington Territory.

50th Anniversaries

- National Research Council gave first grants for geological and geophysical research in Canadian universities.
- First glacial and metallogenic (for uranium) maps of Canada published.

Kenyn Brysse

First, as a new member, I would like to express my excitement at joining INHIGEO. I am delighted to be part of this organization and look forward to meeting other members at the Calgary meeting.

Publication

In 2008 I published a paper called "From weird wonders to stem lineages: the second reclassification of the Burgess Shale fauna," in the journal *Studies in History and Philosophy of Biological and Biomedical Sciences*, (September 2008): 39, 298-313.

Current Projects

I also completed my Ph.D. in History and Philosophy of Science at the University of Toronto (dissertation title: *The Burgess Shale: A Cambrian Mirror for Modern Evolutionary Biology*), and began work as a Postdoctoral Research Associate at Princeton University. My postdoctoral work examines the history of ozone depletion science and scientific assessments.

Ernst HammPresentations

I presented a paper, 'Mennonites, Exchange and the Promotion of Science,' at Connecting Disciplines, the Three Societies Conference (History of Science Society, British Society for the History of Science, Canadian Society for the History and Philosophy of Science), Keble College, Oxford, 4-6 July 2008. I also served on the Program Committee for this meeting.

Current Projects

I am continuing my work as Book Review Editor of *Isis: An International Review Devoted to the History of Science and Its Cultural Influences*.

Randall MillerUrban Geology

Many of the activities undertaken in 2008 built upon work conducted over the previous five years as part of a Community University Research Alliances (CURA) project funded by the Social Sciences and Humanities Research Council of Canada. The project, which ended in 2008, was a partnership between the University of New Brunswick and the New Brunswick Museum, to examine the city of Saint John, New Brunswick, as an 'Industrial City in Transition'. While many of the 25 or more research projects dealt with urban and rural planning, art and literature, I conducted two projects to look at the local history of geoscience investigation and its impact on the city. One project examined 'Geology and The Natural History Society of New Brunswick' and a second 'The Geological Environment, Geotourism and the Conservation of Geological Heritage'. During the five years of the CURA project (2004-2008) there were numerous conference and public presentations and field trips about the history of geoscience in the city. History based field trips in 2008 included tours for diverse groups (Association of Professional Engineers and Geoscientists of New Brunswick; New Brunswick Heritage Branch; New Brunswick Society of Retired Teachers; Saint John Naturalists Club). Along with colleagues I published a number of papers in 2007 including descriptions of Gesner's Museum of Natural History, Sir Charles Lyell's visit to Saint John, and the work of palaeobotanist Marie Stopes in Saint John. During 2008 I have been working to transfer some of the research into a more public format, one of the first examples being a building stone tour of the city's historic uptown. The book project received funding from the 2008 Canadian Geological Foundation grant competition and also from the Architects' Association of New Brunswick. The book will be published early in 2009 (Miller, R.F. and Hughes, G.K. *Rebuilt in Stone. Geology and the Stone Buildings of Saint John, New Brunswick*. New Brunswick Museum, Saint John, 32 p. 2009.).

Conference Presentations

- Miller, R.F. Geotourism in Saint John, New Brunswick. Atlantic Geoscience Society 34th *Colloquium and Annual Meeting, Abstracts, Atlantic Geology* 2008. 44, 27.
- Miller, R.F. Geological Tourism. Fundy Region Tourism Conference, St. Andrews, New Brunswick, March 27. 2008.
- Miller, R.F. Geoheritage in New Brunswick, Canada. *Geological Association of Canada/Mineralogical Association of Canada Annual Meeting 2008, Quebec, Abstracts Vol.* 2008.33, 114.
- Miller, R.F. A proposed 'Saint John-Fundy region' Geopark in eastern Canada. In Escher, H., Hartling, J.W., Kluttig, T., Meuser, H. and Mueller, K. (eds.), *Proceedings 3rd International UNESCO Conference on Geoparks*, June 2008, Osnabruck, Germany, 81-82.
- Miller, R.F. Geology, History and Geological Tourism: Saint John, New Brunswick in Atlantic Universities Geologic Conference Field Trip Guidebook, October 24-26, 2008. Fredericton, New Brunswick.

Geoconservation

One of the outcomes of the research has been a proposal to the local community to consider developing a geological park that could become part of the UNESCO Global Geoparks Network. The city's rich history of geological investigation is one of the highlights of the story. A community working group has been preparing an application and in June 2008 we made a presentation at the 3rd International UNESCO Conference on Geoparks in Osnabruck, Germany concerning 'A proposed "Saint John-Fundy region" Geopark in eastern Canada'.

Another project completed in 2008 was the preparation of documents to nominate 12 fossil sites for addition to the New Brunswick Register of Historic Places. The sites were chosen based on their palaeontological significance, but also for their history in the development of science. They include the place in Saint John where the first Precambrian fossil was described (Archaeozoon acadense), the historic 'Fern Ledges' fossil site where Sir J.W. Dawson, George F. Matthew, C. Fred Hartt and Marie Stopes all worked, and the site of the first Cambrian trilobite discovery in North America. Although 1,000 places are included on the New Brunswick Register, only one had been listed for its geological significance. The fossil sites will eventually be nominated to a national list of historic places. (See Historic Places Newsletter Landmarks, Winter 2009 at <http://www.gnb.ca/0131/historicplaces/index-e.asp>. One of the big stories from eastern Canada for 2008 was Joggins, Nova Scotia being awarded UNESCO World Natural Heritage Site Status on July 7th, 2008. The Joggins Fossil Cliffs have long been recognized as a geological site of outstanding value. The World Heritage Committee added Joggins to the list of UNESCO World Natural Heritage Sites at its annual meeting in Quebec City. Dr. John Calder from Nova Scotia Department of Natural Resources has been one of the leaders in developing the UNESCO application for Joggins. In addition to the UNESCO award, a new 13-thousand square foot Joggins Fossil Centre has opened to tell the story of the site (<http://jogginsfossilcliffs.net/>). Leading up to the nomination there were a number of papers about Joggins. A recent paper about the history of the site is Calder, J.H. "Coal Age Galapagos": Joggins and the Lions of Nineteenth Century Geology. *Atlantic Geology* 2006. 42, 37-51.

The 2008 Geological Association of Canada / Mineralogical Association of Canada meeting in Quebec City included a symposium titled 'Our Geological Heritage'. Meeting abstracts can be found at <http://www.gac.ca/activities/>. Allan Donaldson (*Geoscience Canada* 2008, 35: 49-50) is editing a series of papers based on the symposium. The first by Murray Gray was published in 2008 (Gray, M. 2008. Series: Geoheritage 1: Geodiversity: A New Paradigm for Valuing and Conserving Geoheritage. *Geoscience Canada* 2008. 35, 51-59).

Gerard V. Middleton

Publications

As far as I know, my article about Adams' work in petrology and his experimental studies of the physical properties of rocks at high pressures and temperatures is still in press in a special issue of *The Compass*, edited by Dan Merriam. A CD including slide shows and an extensive archive of digital photos of Ancaster township (Ontario) stone houses has been prepared and will soon be available for purchase from the Ancaster Historical Society.

Presentations

In March 2008 I delivered a paper on "The use of Whirlpool Sandstone (Silurian) as a building stone in southern Ontario" at the NE Geological Society of America meeting in Buffalo NY.

Field Excursions In cooperation with Nick Eyles, Bob Watson and Nina Chapple, I have been preparing a field excursion to the Niagara Peninsula for the joint Geological Association of Canada/ American Geophysical Union Meeting in Toronto in May, 2009. I hope, if we have enough registrants, that the Guidebook will be published: it will include information about history of stone construction in the area, in houses, manufactories, and the Welland canals.

George Pemberton

George is chair of the INHIGEO conference planning committee.

David Spalding

Publications

Items published during the year include three reviews for *Earth Sciences History*: Heather Robertson's *Measuring Mother Earth* (a biography of Canadian geologist Joseph Burr Tyrrell); Thomas Rich and Patricia Vickers-Rich's *A Century of Australian Dinosaurs*; and Phillip Manning's *Grave Secrets of the Dinosaurs*. I also completed revision of Bill Sarjeant's paper on "The Earliest Discoveries" for the forthcoming new edition of *The Complete Dinosaur*, to be published by Indiana University Press (no date of publication has been announced).

Current Activities

During 2008 I began preparing a keynote presentation on the Canadian Dinosaur Rush of 1909-1917, for the 2009 INHIGEO conference. During this period, teams from two major museums competed for several years to collect dinosaurs along the Red Deer River of Alberta, while various shorter term activities were undertaken by other institutions and individuals. I have been researching this period in dinosaur history for nearly three decades, and have written about it in three books and several papers, but there is still much to do before the history is fully understood. Extensive published information about this interesting episode now includes first-hand accounts by the two principal figures (Brown, Sternberg), biographical studies of Sternberg (Riser, Rogers), narrative accounts of the rush (Colbert, Gross, Russell, Spalding), many books and papers on the dinosaurs discovered, and examinations of specific aspects of the story (Spalding, Tanke). Archival data is becoming more accessible, and it is now possible to read pertinent reports and field notes from distant repositories on the web. Interesting questions remain unresolved, such as the transfer of preparation technology, and the politics of collecting and conservation among the public, institutions, and government representing regional, national and international interests.

I am also making preparations to lead a five-day field trip in conjunction with the conference, which will visit key dinosaur, oil and gas sites, and parts of the Rocky Mountains, and will allow exploration of a number of themes including first nations knowledge of geology, glaciation, and plate tectonics.

During the year I was appointed to the editorial board of *Earth Sciences History* and the board of the History of Earth Sciences Society.

Darren Tanke

As a new INHIGEO member, I should perhaps tell a little about myself. I have been a field collector and laboratory preparator (work title: Technician II) of mostly Late Cretaceous dinosaurs at the Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta, Canada since starting as a volunteer fresh out of high school in 1979. I have had a long interest in paleontology history, but did not actively pursue research and writing in this field until 2001 when the fortuitous discovery of a lost dinosaur quarry began my research into the 1916 sinking of the SS Mount Temple and her Albertan dinosaur cargo in the mid-Atlantic after she was attacked by a German surface raider (see my website on this fascinating story: www.ssmounttemple.com). This research led to multiple spin-off historical projects which continue to the present. I'm a strong proponent for recording current history now, so as to make work easier and especially accurate for future historians. 2008 was a particularly busy year for me on the earth science history front.

Presentations

In early May, I attended the Dinosaurs and Other Extinct Saurians - A Historical Perspective conference in London, England. This was put on by HOGG (History of Geology Group). There I made an oral presentation on the SS Mount Temple sinking and a poster (with Philip J. Currie, University of Alberta) on History of the Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta, Canada.

Publications

In August, I published a short article entitled: History of Dinosaur and Other Fossil Discoveries in the Huxley, Alberta Area: 1983-2007. This appeared in Peterson, M., ed. Our Huxley Heritage. Huxley Historical Society, Huxley, Alberta. 2008. Volume 2.

Two biographical articles were published in the Bulletin of the Alberta Palaeontological Society on Harold Lowe and John Poikans. These were men who made important scientific contributions but as simple field and/or lab workers, their contributions to science are largely forgotten or overlooked. I am now working on a biography of artist and collector Hope Johnson, and plan on writing more in the “Remember Me” series as some of the more dedicated amateur collectors and professional colleagues pass on, or on some of the lesser known “blue collar” types involved in Alberta’s earlier paleontology history. References to the above publications are:

Tanke, D.H. Remember Me: John Poikans (1919-2007)- The Alberta Government's First Palaeontology Technician. *Bulletin of the Alberta Paleontological Society*. 2008. 23, 4-10.

Tanke, D.H. Remember Me: Harold D.R. Lowe (1886-1952)- A Forgotten Name in Early Albertan Vertebrate Palaeontology History. *Bulletin of the Alberta Paleontological Society*, 2008 23, 10-40.

My *Ceratopsian Discoveries and Work in Alberta, Canada: Historical Review and Census*, reported by Dave Spalding on page 71 of the INHIGEO newsletter #40, was revised and expanded to 486 pp and submitted for the new horned dinosaur book *New Perspectives on Horned Dinosaurs:: The Royal Tyrrell Museum Ceratopsian Symposium* being published in the fall of 2009 by Indiana University Press; this history article is to appear on a CD-ROM which will be included with the book. The work is dedicated to the late Rene Vandervelde (May 12, 1935-April 7, 2006) the man who “invented” the process of making crushed, yet gem quality fossil ammonite shell into Alberta’s gemstone “Ammolite.” Also to appear in that book will be my paper: *Lost in Plain Sight: Rediscovery of William E. Cutler’s Missing Eoceratops*. This article explores the now solved mystery of a partial horned dinosaur skeleton collected in 1919-1920 and long believed to be in Canada but lost. The author found it safe and sound at the Natural History Museum in London, England in 2005! Thus ends one of Alberta’s most enduring palaeontological mysteries.

Current Projects

I’m now editing and reviewing a chapter on an upcoming book on Barnum Brown of the American Museum of Natural History regarding his work in Alberta, Canada.

I have a number of paleontology history articles in preparation. These include several papers on the history of helicopter use in Alberta to lift dinosaur skeletons out of remote or rugged places. The first lift was in 1967. I have now acquired 8 mm film footage of the event. I am researching fieldwork done by William E. Cutler in Alberta in 1914, plus the first attempt of a biography on this mystery man (if any INHIGEO members have information on him please contact me!) following discovery of W.E. Cutler’s 1919-1920 field camp and artifacts therein.



MODEL OF THE 1912 SCOW “MARY JANE”

Proposed Re-enactment of the Voyages of the 'Mary Jane'

Another field project, long in planning, is a 2010 re-enactment of the 1910-1914 expeditions which floated down the Red Deer River on large flat-decked and flat bottomed "scows." These scows were used as floating base camps. The 2010 expedition will try to reenact what life and conditions were like for the early collectors such as Barnum Brown and Peter Kaisen of the American Museum of Natural History (New York) and the Sternberg family (working for the Geological Survey of Canada, Ottawa). Over a period of three months, we'll float down the river, establishing base camps along the way and search for fossils. A detailed 1:12 scale model of the c1912 American Museum of Natural History scow "Mary Jane" was presented at the Dinosaur Research Institute's (www.dinosaurresearch.com) annual dinner fundraiser in Calgary, Alberta in early November. This model elicited and excited a positive response from members of the public in attendance. The 2010 expedition will try to mimic the conditions that the early crews had. The scow will be 1:1 scale to the original ones and will be fully equipped with antique tools, stove, icebox, desk, various equipment and other gear. It will be essentially a floating museum. One aspect of modern technology we will try to avoid on the trip is plastics, which are regrettably, so prevalent in today's society it is difficult to recreate the trip without them, but we are winning. I had a table display of the 1:12 scale model of the c. 1912 scow at the March 2009 Alberta Paleontological Society meetings in Calgary. At that meeting a large and generous donation towards construction of the 2010 scow was realized.

Computer Communication

I now have a Wikipedia page (www.wikipedia.com; English-language version); type "Darren Tanke" in the search box, and scroll down for a full list of my publications. I have pdf's for many of these articles. If any interest INHIGEO readers, please email me at work (darren.tanke@gov.ab.ca) or home (dtanke@hotmail.com) requesting title(s) wanted and I'll be glad to send them out either as a pdf or on paper. I'm also involved in the online Facebook social network (www.facebook.com) and administer a group entitled "Vertebrate Paleontology History" (223 members as of 1 April 2009); "*Dinosaur Hunting by Boat in Alberta, Canada: A 2010 Centennial Expedition*" (in regards to the scow trip noted above); "*William E. Cutler (1878-1925); Contract Paleontologist*"; as well as some other, more specialized paleontology-related groups. A non-Facebook internet page for the planned 2010 scow reenactment will likely be set up in 2010 and will use the same title as the Facebook group noted above.

David A.E. Spalding, Pender Island
(with inputs by all Canadian members)

China

1. Establishment of Din Wenjiang research association

On 30 October 2008, the Xu Xiake Society held a meeting and academic workshop in Nanjing to establish the Ding Wenjiang Research Association. There were more than 50 scholars nationwide attending the meeting, nine of whom gave lectures about their recent research on Ding Wenjiang. As a branch association of Xu Xiake Society, the Ding Wenjiang Research Association will promote related research with the support of the Nanjing Geological Museum and the municipal government of Taixing, the hometown of Ding Wenjiang.

2. Celebration of 110th anniversary of the birth of late Academician Professor Xie Jiarong

A forum in celebration of the 110th anniversary of the birth of the late Academician Professor Xie Jiarong was held on 31 December by the Ministry of Land and Resources in Beijing. Minister Xu Shaoshi, Academicians of the Chinese Academy of Sciences (CAS), Professors Sun shu, Li Desheng, Li Tingdong and Zhai Yusheng and experts in the geological academic circle together with Professor Xie's son, Academician Professor Xie Xuejing attended this forum.

Professor Xie was the major pioneer of studies into the geology of ore deposits and the founder of economic geology in China. He was the first to prospect ore deposits by using geological principles and

was the earliest to utilize exploratory grids in exploring ore deposits achieving major success with them. In 1946, the Bagongshan coal field was also discovered by careful exploration work conducted by Professor Xie. This region has become an important energy resource base along the mid-lower reaches of Yangtze river in China.

3. 20th Annual Meeting of the History of Geology Section of the Geological Society of China(HGGSC)

The Annual Meeting of HGGSC was held at the China University of Geosciences (Beijing) on 14—15 November. Academician Professors Wang Hongzheng, Ma Zhongjing, Li Tingdong, and Zhai Yusheng and another 68 delegates attended the meeting. The major topic of this meeting was “The history of regional geological surveys in China and its social, economic and cultural effects”.

The 12 May 2008 Wenchuan earthquake disaster (Ms=8.0) raised great concerns in Chinese geological circles. In order to meet this need Academician Professor Ma Zhongjing, Director of the Disaster Reduction Committee of the State Council of China, gave the keynote address entitled “A brief on huge disasters and disaster reduction in China”. He listed the 8 kinds of common disasters that have occurred in China in recent times and listed earthquakes as the most frequent one. He provided an analysis on the major cause of the Wenchuan earthquake and a review on the development of earthquake prediction research in China since the 1961 Xingtai earthquake in Heibei province. In addition he considered the prospects for future earthquake prediction.

Professor Wang Mili gave a detail report about the discovery and exploration of the potassium salt ore-deposit in Lop-nur in Xinjiang Autonomous Region.

During the 2-day meeting there were 27 oral presentations which can be grouped into 3 categories:

- 1) Summary histories of regional geological surveys and experiences;
- 2) Research on prevention and reduction of geological disasters;
- 3) Important personnel in the history of modern geology in China.

The contents of these new investigations are considered significant for future ore prospecting and geological education in China.

In the year 2009, China will celebrate the 60th anniversary of the foundation of the People’s Republic. It is also the 100th anniversary of the founding of the Geology Department of Peking University, the 120th anniversary of the birth of the famous geologist Professor Li Siguan(J.S. Lee), and the 120th anniversary of the birth of the founder of the geological scientific undertakings of China, Professor Weng Wenhao. The HGGSC will concentrate on the study of the history of geological disciplines and the history of geological science education in China since 1949.

Publications:

Pan Yuntang, The life of Liu Dongsheng, Beijing: Xinhua Press, 2008.

(Note: Academician Professor Liu Dongsheng is the “father of loess”, famous Quaternary geologist and environmental geologist and the laureate of “The Chinese National Supreme Award for Science and Technology “ in 2003)

Song Guangbo, Chronicle of Ding Wenjiang’s life, Harbin: Heilongjiang Education Press, 2008.

Ouyang Zhesheng, Collections of DingWenjiang, Changsha: Hunan Education Press, 2008.

Zhai Yusheng, You Zhendong , Beijing

Costa Rica

Gerardo J. Soto has served as Vice-President for Latin America since 2004. He was re-elected in 2008 during the 33rd International Geological Congress (IGC) in Oslo in August. His duties have included frequent communication with regional members of INHIGEO. Cooperation with the Board in its business has been active throughout 2008.

Soto presented a poster during the 33rd IGC in the session IEH-01 “General contributions to history of geosciences” (Soto, 2008 a). Soto & Alvarado (2008) published a memorial paper that focused on the 50-year geological career of G. Escalante, mentioning his contributions to the history of Geology. Soto also published two articles in a local newspaper on subjects related to the geological

teaching for primary and secondary school students and on a recent symphony dedicated to volcanoes (Soto, 2008 b, c). These popular accounts of Earth Science topics included elements related to history of geology.

INHIGEO member Guillermo E. Alvarado worked as chairman of the scientific committee for the 9th Central American Geological Congress, held in San José, Costa Rica, in July 2-4. Two papers were presented on the history of Geology, by Soto (2008 d) and Lücke & Alvarado (2008).

During the 9th Central American Congress of History (San José, July 21-25), a session on history of science, called “Geonaturalia”, dealing with the history of geography and natural history in Latin America was held. New INHIGEO member from Mexico, Luz Fernanda Azuela, was among the organizers. Three papers related to Costa Rica were presented by Díaz & Solano (The scientific career of Prof. Paul Biolley Matthey and his contribution to the development of natural history in Costa Rica (1886-1908)), by Mora & Peraldo (Application of recent history with a down-focus for the reconstruction of effects of seisms on society) and by Peraldo (The history of science understood from the historical processes). A book related to the project “Geonaturalia” was published in July, edited by Celina Lértora, from Argentina. Four chapters related to the earth sciences in Costa Rica appeared in the book, by Díaz (2008), Goebel (2008), Peraldo (2008) and Solano (2008).

On July 22, the Karl Sapper Colloquium on the History of Geology and the Cátedra Gabriel Dengo, invited Luz Fernanda Azuela, new member from Mexico, who presented a lecture on *La Geología en el siglo XIX en México: entre aplicaciones prácticas y la investigación básica* [Geology in 19th century in Mexico: between practical applications and basic research].

On November 21, the Italian Foreign Committee in Costa Rica awarded its *Premio Italia* [Award Italy] in Science and Technology to the late Prof. Cesar Dondoli (in memoriam). He was the founder of the Central American School of Geology at University of Costa Rica, and one of the most prolific geologists in the second half of the 20th century in Costa Rica.

Revista Geológica de América Central, edited by G.J. Soto, published two special issues on the history of geology, with Giovanni Peraldo as Guest Editor. They are the numbers 36 and 37, corresponding to 2007, and include ten papers on the subject, nine old works that have been transcribed or translated and commented, and 3 historical maps (see lists below).

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- 1) Introducción (Giovanni Peraldo)
- 2) La geología, vista desde la filosofía (Luis Camacho)
- 3) Temblores documentados para el periodo colonial de Costa Rica (Giovanni Peraldo & Walter Montero)
- 4) El Dr. Paul Schaufelberger, un pionero de la geología del siglo XX de Costa Rica (Giovanni Peraldo, Jonathan Chinchilla & Teresita Aguilar)
- 5) El legado científico del licenciado geómetra Pedro Nolasco Gutierrez (1855-1918) (Ronald Díaz, Flora Solano & Giovanni Peraldo)
- 6) Los fenómenos celestes en Costa Rica: aerolitos, bólidos y lluvias de estrellas (1799-1910) (Flora J. Solano, Ronald Díaz & Mario Fernández)
- 7) Publicaciones del principio del siglo XX sobre las minas de oro en Costa Rica (Siegfried Kussmaul)
- 8) The Gold Mines of Costa Rica. Engineering and Mining Journal, 1902
- 9) Geology and Development of Aguacate Mines, Costa Rica. The Mining World, 1907
- 10) Mineral Resources of Costa Rica. The Mining Journal, 1914

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- 1) Introducción (Giovanni Peraldo)
- 2) Los primeros catálogos de fuentes termales en Costa Rica realizados por el naturalista alemán Alexander von Frantzius en 1862 y 1873 (Asdrúbal Vargas & Guillermo Alvarado)
- 3) Las fuentes termominerales en Costa Rica I (Die warmen Mineralquellen in Costa Rica) (Alexander von Frantzius, translation by Asdrúbal Vargas & Siegfried Kussmaul)
- 4) Las fuentes termominerales en Costa Rica II (Die warmen mineralquellen in Costa Rica) (Alexander von Frantzius, translation by Asdrúbal Vargas & Siegfried Kussmaul)
- 5) El carácter pionero de los trabajos de Heinrich Fischer (1875, 1881, 1882) sobre los jades sociales en la geoarqueología de Costa Rica (Luis Hurtado de Mendoza, Guillermo Alvarado & Oscar Lücke)
- 6) Informe sobre un número de esculturas de piedra de Costa Rica (Bericht über eine Anzahl Steinsculpturen aus Costa Rica) (H. Fischer, translation by Oscar H. Lücke & Guillermo E. Alvarado)
- 7) Las raíces filosóficas y físicas de las hipótesis sobre sismología desarrolladas por el Ing. Luis Matamoras. Una influencia de las corrientes aristotélicas y feijonianas a inicios del siglo XX (Giovanni Peraldo & Jorge A. Amador)
- 8) Dinámica interna del Globo: Investigaciones sobre una nueva teoría de la causa de los temblores (Luis Matamoras, transcription by Giovanni Peraldo)
- 9) Comentario sobre William M. Gabb: legado y contribuciones inéditas y olvidadas (Percy Denyer & Oscar H. Lücke)
- 10) On the Geology of the Republic of Costa Rica (William M. Gabb, transcription by Oscar Lücke, & Viviana Gutiérrez)
- 11) La investigación de W.M. Gabb en Talamanca y la situación cartográfica en Costa Rica, año 1877 (translation by Siegfried Kussmaul)
- 12) Geographical map of Alexander von Frantzius (1)
- 13) Geographical map of Alexander von Frantzius (2)
- 14) Physiographical map of William M. Gabb.

Czech Republic

In 2006-2007 **Jan T. Kozák** initiated an historical project among several INHIGEO members following "re-discovery" of an early geological map of Central and Eastern Europe produced in 1806 by S. Staszic (*see the contribution by Čejchanová and Kozák in INHIGEO meeting, in Aichstätt 2007*). Staszic's maps were assessed in two particular research papers during 2008. J. Kozák, together with Polish and Lithuanian colleagues of INHIGEO, published studies in *Zeszyty Staszicowskie* and in *Geologija*. A third paper is expected to appear in *Episodes* in spring 2009.

J. Kozák, with Czech, Swiss and Italian colleagues, also published two papers on the 1908 Messina earthquake in *Geologia* and in *Studia Geophysica et Geodaetica* during 2008. In *Studia Geophysica et Geodaetica* he also presented a paper concerning historical facts about the Krakatoa volcano eruption in 1883. J. Kozák published an article about the Visp earthquake in 1855 in *Special monograph* edited by *Meghraoui and Stucchi* with *SPRINGER*.

During 2008 J. Kozák and A. Čejchanová organized discussion about the role of Central European naturalists and geologists at the end of 18th century in the process of the creation of early geological maps there. Czech, Lithuanian, Polish and Australian INHIGEO colleagues took part in these consultations. J. Kozák formulated a proposal for a project, which will analyse, properly classify and value the contribution of Central European geological-cartographical outputs in the period 1790-1820. This project has gained promoters in the associated countries and a detailed project proposal with final goals will be formulated at a meeting of the engaged researchers in Krakow, Poland, in August 2009.

In 2008 **Miloš Zárýbnický** presented three lectures on the topic of active formation and protection within museums, especially museums of mining. One lecture was presented at Banská Bystrica, Slovakia in 2008 and second at the meeting of "Mining Příbram", in October 2008, Příbram, Czech Republic. M. Zárýbnický also took part in a history of mining rescue work on the occasion of cross-border Czech- German meeting of historians of mining (in Mikulov, southern Moravia, Czech Republic). He also prepared an exhibition of the Czech – Polish mining rescue work here. M. Zárýbnický is the chairman of the civic association *Hornická matice Slezsko Moravsko Česká (Silesian, Moravian and Czech Commission on the History of Mining)*. He participated together with the executive council in the protection and documentation of historical and other landmarks (including publicity for tourism) in the Czech Republic and Poland. At present he works on a synthesis of his earlier archeological research on stone mills and the plant for crushing crude tin (16th century Horní Slavkov and Krásno in western Bohemia). He has finished the first part of studies on the history of silver (localities Tarnovskie Góry – Bytom, Silesia in Poland).

In 2008 **Josef Haubelt** published the book "Mozart - Kouzelná flétna Sarastro" [Mozart - The magic flute Sarastro] as a co – author in the second edition. In this book J. Haubelt provided a biography of Ignaz Edler von Born (1742-1791) a significant Austrian mineralogist and metallurgist from second part of 18th century, who was born of noble family at Karlsburg/Alba Iulia, in Transylvania (today Roumania).

Horwath, P., Haubel, J., Mozart - Kouzelná flétna Sarastro; Very Important Person Books, Prague 2008; 218 pp., 2th edition; pp. 152-198 chapter 8: Genio Bornii.

Alena Čejchanová continued her cooperation with the Czech Cartographical Society and took part in its scientific meetings (workshops on the history of the mining, geodesy and cartography, in December 2008, at the National Technical Museum, Prague). She also organized workshop on the history of cartography and geological mapping by the Czech Geological Survey (CGS). A. Čejchanová published a set of postcards with historical geo-science map reproduction related to Bohemia and Moravia. These maps comprise part of the historical archive collections of CGS. The set contains, among others, an unique map "*Geognostische Charte von Böhmen*" by Franz Riepl from 1814 and an unknown map by Joachim Barrand "*Carte de la colonie d'Archiac et des environs de Ržepora*" from 1870.

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Jan T. Kozák, Prague

France

In 2008, the French Committee on the History of Geology (COFRHIGEO) was greatly saddened by the death of Goulven Laurent who was both our Vice-President and our Treasurer. He died in October in Brest and his obituary notice was read by our President in December, during our general assembly (See obituary notice in this newsletter).

Following routine practice, the Committee held three meetings at which nine contributions were presented. These were:

- Lemoine, M., 'La découverte des océans disparus : une aventure scientifique du XX^e siècle.'
- Groessens, E., 'Quelques pionniers de la géologie officielle et la création d'un Service géologique de Belgique.'
- Poirier, J.-P., 'Sur l'histoire de la sismologie.'
- Rudwick, M.J.S., 'Geology without Genesis or taking seriously the 'geological deluge' of the early nineteenth century'
- Medioni, R., 'Philibert Russo (1885-1965), pionnier de l'exploration géologique du Maroc.'
- Gaudant, J., 'John Woodward (1695) et Johann Jakob Scheuchzer (1708) : l'irruption du Déluge dans l'interprétation des fossiles.'
- Gohau, G., 'Hommage à Goulven Laurent (1925-2008).'
- Montenat, C., 'Albert de Lapparent (1839-1908) : les paradoxes d'une carrière.'
- Gaudant, J., 'Albert Gaudry (1827-1908), paléontologue darwinien ?'

In June, we especially enjoyed hearing Martin Rudwick, who visited Paris to receive the Eugene Wegmann Award of History of Geology, an award which is usually conferred every four years by the Société géologique de France. Martin acknowledged the French Société in a perfect French, explaining that he had been first a palaeontologist specialized in brachiopods before turning his interest to the history of geology. An English translation of his speech can be found elsewhere in this newsletter.

In September, a meeting was organized in Nantes, his native city, in honour of our president, Gabriel Gohau. Several members of our Committee were invited to speak on this occasion.

Finally, two books were published in 2008 by the 'Presses de l'Ecole des Mines'. One, '*Géologues et Paléontologues, de la passion à la profession*' was edited by Jean Gaudant. It consists of ten biographical articles on French geologists and palaeontologists.

The second one : '*Johann Jakob Scheuchzer : les fossiles témoins du déluge*' was prepared by Jean Gaudant. It consists of two translations into French by Geneviève Bouillet (1917-2006) of two original papers published in Latin three centuries ago : *Piscium Querelae et Vindiciae* and *Homo diluvis testis*.

Jean Gaudant, Paris

Germany

Meetings

The German working group on the "History of Earth sciences" held a meeting on September 27 at the University of Darmstadt adjoining the annual meeting of the German Society for the History of Medicine, Science and Technology. Within the general topic of the meeting, *Science, medicine, and technology in a (post)colonial world*, the German group presented a session on "Measuring the Other: Discourses of earth science as colonial practice". Papers were given by Heinz Peter Brogiato (Leipzig), Susanne Pickert (Berlin/Munich), and Bernhard Fritscher (Munich); Marianne Klemun (Vienna) enriched the session with her comment.

On May 15, a memorial colloquium was held at the Technical University Bergakademie Freiberg, under the auspices of its president, Prof. Dr. Georg Unland, celebrating the 100th anniversary of the geologist and mining engineer Prof. Dr. Friedrich Stammberger (1908-1978). Stammberger, who had to emigrate to Moscow in 1933, came back to Germany (GDR) in 1954, where he belonged to the staff of the States Geological Commission. His numerous papers related mainly to economic geology. The memorial colloquium has been attended by about 90 participants; the papers are intended to be published in "Geohistorica" (see below).

Publications

In 2008, again, the German INHIGEO members presented various publications. Following a meeting of the German working group for the history of geological sciences in 2005 on the history of geology in the former German Democratic Republic, i.e. following a first volume with papers of this meeting (*Zur Geschichte der Geowissenschaften in der DDR*, eds. O. Hartmann, M. Guntau, W. Pälchen:

Schriftenreihe für Geowissenschaften No. 16, 2007, pp. 421), a second volume is now “under construction”, intended to be published in 2009. These publications, all by geologists formerly working in various positions in the GDR, are valuable documents of geoscientific work under the peculiar economic and political conditions of the former German socialist state.

A further project, finished in 2008, was a reprint-edition in several volumes of the Collected works of the famous German geologist Leopold von Buch (1774-1853), edited with an introduction by Bernhard Fritscher. The edition belongs to the well-known *Historia Scientiarum*-series of Georg Olms Publishers, a series of reprints of classical texts in natural sciences, and the humanities (Leopold von Buch: *Gesammelte Schriften* [Berlin 1867-1885]. 4 vols. in 5 pts. With an introduction newly edited by Bernhard Fritscher. Reprint: Hildesheim: Georg Olms Publishers 2008, pp. LXXVIII + 3298, 99 figs. on DVD in vol. 1). Von Buch’s works, a longstanding desideratum of most libraries in the world, are now easily accessible in print.

Martin Guntau published a paper entitled *On geological knowledge in the periods of physico-theology, and enlightenment* (in: *Von Aufklärung bis Zweifel. Beiträge zu Philosophie, Geschichte und Philosophiegeschichte*. Festschrift für Siegfried Wollgast. Abhandlungen der Leibniz-Sozietät der Wissenschaften. Ed. by G. Banse, H. Hoerz und H. Liebscher, Berlin 2008, pp. 87-95), and Rudolf Daber a study on *Critical thoughts on the geological reality of the evolution of the biosphere* (in: *Zeitschrift für geologische Wissenschaften* 36, 2008, no. 1-2, pp. 61-74), based on a lecture given on November 11, 2007 at the “Leibniz-Sozietät der Wissenschaften” in Berlin. Martina Koelbl-Ebert was busy with the proceedings of the Eichstaett meeting (to be available in spring 2009), and Cornelia Luedecke with numerous lectures, papers, and meetings all over the world.

Further Activities

Finally, it might be mentioned that currently in Germany three journals are associated with papers, reviews, and news concerning the history of earth sciences. The current issue of the *Nachrichtenblatt zur Geschichte der Geowissenschaften* (no. 18, 2008, pp. 157), edited by the working group for the history of geological sciences of the German Society for Earth Sciences is to be obtained (the price is 10.00 Euro) from Dr. Oskar Burghardt, Taubenstraße 47, D-47800, D-47899 Krefeld-Bockum. The *Geohistorica* journal (no. 3, 2008, pp. 80, 5.00 Euro) of the “Berlin-Brandenburgische Geologie-Historiker Leopold von Buch e.V.” can be ordered via Dr. Peter Kühn, BBGH L. von Buch e.V., Landsberger Allee 130, 3.06, D-10369 Berlin). And the latest issue of *Geohistorische Blätter. Internationale Zeitschrift für das Gesamtgebiet der Geschichte der Geologischen Wissenschaften* (11, 2008, nos. 1-2, pp. 150, several figs. and tabs., 20.00 Euro) can be obtained from “Verlag für Geowissenschaften Berlin, Dipl.-Geol. Ulrich Wutzke, Rebhuhnwinkel 42, D- 6356 Ahrensfelde. The help of the German members of INHIGEO in the compilation of above report is much appreciated.

Bernhard Fritscher, Munich and Martina Koelbl-Ebert, Eichstaett

Geophysics

During 2008, **Wilfried Schröder** has been involved in preparations for the historical sessions at International Association of Geomagnetism and Aeronomy (IAGA) conference in Sopron, Hungary to be held in 23-30 August 2009. Historical sessions will be held on von Humboldt’s legacy after 150 years and History of geomagnetic observations and indices. Further details at www.iaga2009sopron.hu

In 2008, Wilfried published the following articles in “Beiträge zur Geschichte der Geophysik und Kosmischen Physik”.

- “Johann Fabricius and the discovery of sunspots”
- “Who first discovered Solar wind?”
- “Natural Science and Religion”
- “The scientific relations between Hans Ertel and Ernst-August Lauter”
- “Biographical Notes (Sydney Chapman and Bernard Saint-Guily)”

Wilfried also edited this Journal.

Wilfried’s colleagues in the Society of the History of Geophysics and Cosmical Physics have also been very active. Professor Giovanni Gregori has completed a major monograph entitled “Climate and atmospheric electrical circuit – The electromagnetic coupling between solar wind and earth”. It will consider the change in paradigm following the launch of the space age in 1958, and its effect on the classical earth science disciplines with the resulting profound change in the available observational database. Karl-Heinrich Wiederkehr worked on the Gauss-Observatory. Holger Filling studied the nature of ancient star and sun observations. Dr Rainer Burghardt, Thomas Scalk and Ernst Kunst studied the historical background in various fields of theoretical physics.

Wilfried Schröder, Bremen-Roenebeck

Hungary

Activities this year were organised under the auspices of the International Year of the Planet Earth and focused, above all, on one of Hungary's greatest treasures: the thermal and medicinal waters.

On 5 May, the Hungarian Geological Society, the "For Diósgyőr" Foundation and the Miskolc University organized a conference at Lillafüred spa near the town of Miskolc (NE Hungary), on the history and actual state of karstic thermal waters, in commemoration of the geologist Ferenc Pávai-Vajna (1886-1964). A memorial in his honour was inaugurated later (in November).

A two-day conference was held at Berekfürdő spa (NE Hungary), to celebrate its 80th anniversary. A special exhibition was dedicated to the 300-year history of the Tusnad medicinal water (Transylvania, Romania).

The main aspects of these two meetings were highlighted in November, on the Day of the Water, in Budapest, at the headquarters of the Hungarian Academy of Sciences. ("Past, present and future of the thermal and medicinal waters of Hungary"). INHIGEO member Irma Dobos presented the history of exploration and utilization of thermal and mineral waters of the Carpathian Basin, from Roman times through to the 16-17th century Turkish baths -- some of which remain in operation in Budapest --, up to the present day. Systematic exploration and chemical analyses commenced in 1763. Mapping of mineral waters began in the 19th century (F.J. Deutsch, J. Bernáth, K. Chyzer). Deep drilling for thermal water started in 1865 (Vilmos and Béla Zsigmondy). The first inventory of artesian waters was completed in 1896. Károly Than's characterization of mineral water by means of ionic equivalents has been in use ever since. In the 20th century balneology was rapidly progressing. -- At present almost 2,000 sites of thermal waters are known in the Carpathian Basin. In Hungary, medicinal wells number about 80,000.

The best known and most extraordinary geological nature protection site, the Calvary Hill at Tata, was 50 years old. This anniversary was celebrated jointly by the Hungarian Geological Society and the Budapest University. The 26 ha protected area is situated 30 km NW of Budapest. The quarry, as an open-air Geological Museum, displays a South Alpine condensed Mesozoic sedimentary sequence ranging from the Upper Triassic Dachstein Limestone to the Lower Cretaceous (Aptian) sandstone. Rather remarkably, it includes also a Neolithic chert mine that has yielded valuable archaeological finds.

It was also 150 years ago since the scientific study of the world famous Kaba meteorite began. This meteorite contains organic matter, and is held by the Calvinist College in the town of Debrecen. An international team is currently engaged in its investigation.

The 5th Annual St George's Day Bauxite Meeting was arranged, in cooperation with the Museum of Aluminium Industry in the town of Székesfehérvár. On this occasion, its theme was the history of laboratory investigation of bauxites in Hungary.

The 140 year old and very prestigious journal of science popularization, "Természet Világa" (World of Nature) published a special issue on the occasion of the International Year of the Planet Earth. Among other topics, J. Haas, President of the Hungarian Geological Society, summarized the role played by the Society in the scientific community of Hungary. J. Tardy and I. Szarvas discussed the history and actual state of the protection of geoscientific treasures.

Senior Member and former Secretary General of INHIGEO, Endre Dudich, published an article entitled "Earth and Heaven -- Geology and Theology: -- an evolutionist Hungarian prelate in the early 20th Century". It presents and comments on a 490 page book published in 1902 "Earth and Heaven" written by Ottokár Prohászka (1858-1927), Professor of Catholic Theology, an early predecessor of P. Teilhard de Chardin. (In 1905, O. Prohászka was appointed Bishop of Székesfehérvár) Important points from this reference are:

Nature by itself is a mighty divine revelation.

The world is created by God, it comes from Him, and is going to return into Him, but is not identical with Him.

The evolution of matter is superbly compatible with the Christian vision of the world.

The story of "six days of creation" in the very first chapter of the Bible represents no obstacle to evolution.

On the contrary, it recommends the idea that the world came into being by inherent forces, not by repeated acts of creation.

The evolution of matter and its becoming suitable to sustain life is a process of necessity.

The Earth, including also its flora and fauna, is an evolutionary system.

The cause of evolution is not the environment, not some at random variation, not the natural selection.

These external circumstances only exert a pressure to awaken the inherent plasticity and to validate eventual direction of changes.

Evolutionary “jumps” are due to the inevitable catastrophes that occurred during Earth’s history.

The human soul marks the beginning of a new world.

On other planets other living beings, other intelligent beings might have developed.

We need unbiased faith and unprejudiced science.

Please keep in mind the date: 1902 (not 2002). Unfortunately, it was published only in Hungarian...

In 1908 the University of Debrecen re-launched its journal “Föld és Ember” (Earth and Man) which appeared regularly between 1921 and 1931. One of the members of the editorial board, INHIGEO member Péter Rózsa, published in number 3-4 of 2008 a critical review of R.Townson’s (1762-1827) work “Travels in Hungary” (1793).

Another remarkable event was the 175th anniversary of the birth of Andor Semsey (1833-1923). The greatest Maecenas of Hungarian science, A. Semsey was a wealthy landlord who offered the entire income of his vast estates to support and promote Hungarian science, mainly in the field of geology, mineralogy and palaeontology, but also of zoology and ethnography. Under the auspices of the Hungarian Academy of Sciences, in cooperation with several scientific institutions and cultural societies, celebrations were held all over the country, A. Semsey conducted a rather puritan style of life, while he donated incredible sums to support science and scientists. His slogan was: “After all, the state cannot do everything. It is the responsibility of individuals and of the society to support it in its cultural efforts.” Two important books were published:

-- J.Pozsonyi: History of the family Semsey 125 p., Debrecen 2002

-- J.Hála, G.Papp, J.Pozsonyi (eds): Andor Semsey Commemorative Volume. 215.p., Debrecen 2008 (with an English abstract). – Part I: a selection of A. Semsey’s scientific publications and correspondence., Part II: papers presenting various aspects of A. Semsey’s life and activities.

Teresa Póka, Budapest

Ireland

Early in the year both Gordon Herries Davies and Patrick Wyse Jackson contributed to two separate episodes of the programme ‘Goldilocks World’ on RTE Radio, Ireland’s national broadcaster. Gordon spoke on the work and history of the Geological Survey of Ireland while Patrick recalled the variety of building materials used in Dublin, and discussed the fossils on display in the Geological Museum in Trinity College. In April Patrick attended the Geological Society of America North-Central Section meeting in Evansville, Indiana where he gave a talk on the history of research on *Archimedes* a distinctive spiral-shaped Mississippian bryozoan. In June he delivered a Burlington House Public Lecture on the history of geochronology, and he gave a similar talk to the annual conference of the Open University Geological Society held in London in July. Paul Mohr has been working on a book ‘Africa Beckoning: Discovery of the African Rift System’ which he has just been published.

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Patrick Wyse Jackson, Dublin

Italy

During the summer Ezio Vaccari, Gian Battista Vai and Stefano Marabini attended the International Geological Congress in Oslo (6-14 August), presenting papers and posters at the session "General contributions to the History of Geosciences" organized by INHIGEO: Vaccari presented a paper on "The development of lithostratigraphy in the Alpine region during the early 19th century through the work of Giuseppe Marzari Pencati and Pietro Maraschini", while Vai and Marabini (with S. Mariani) presented the poster "The early history of Monte Castellaccio Geopark at Imola (Bologna, Italy)". Vai and Marabini also presented the poster "Geoarcheological map of the Po plain near Imola (Northern Italy)" at the session "General contributions to Geoarcheology".

While in Oslo, Gian Battista Vai took the opportunity to invite the assembled to the Centennial celebration of '*Diplodocus carnegiei*' Bologna 1909 - 2009 that will be held in Bologna at the Museo Capellini with the major activities in September 2009. The celebration includes:

- (1) International Conference on Vertebrate Palaeobiogeography and Continental Bridges across Tethys, Mesogea, and Mediterranean Sea, 27 September to 29 September 2009
- (2) First Exhibition on Italian Dinosaurs from 6 September 2009 to 11 January 2010
- (3) A Field Trip to Villaggio del Pescatore near Trieste, visiting the Cretaceous excavation quarry of the famous hadrosaur named 'Antonio'. For additional information visit the site www.museocapellini.org or contact federico.fanti@unibo.it.

In August, Claudia Principe took part to the Congress of the International Association of Volcanology, Chemistry and the Earth's Interior (IAVCEI) in Reykjavik (Iceland), where she presented a paper on "Geological mapping and chronostratigraphy of Monte Somma".

A project to develop an international summer school in the history of geology, dedicated to the memory of Nicoletta Morello (1946-2006), former Italian member and vice-president of INHIGEO, was also presented by Ezio Vaccari in Oslo and Claudia Principe in Reykjavik. They hope to be able to collect the necessary financial support in order to organize in Italy the first session of the school at the end of the summer 2010.

Early in September, Ezio Vaccari took part in the symposium "Geological State Surveys: Geological Maps as acts of synthesis and as evidence of different 'styles of thinking'?" organized by Marianne Klemun within the 3rd International Conference of the European Society for the History of Science in Vienna. He presented a paper on the following topic: "The origins of state geological mapping in Italy: internal traditions and external influences in the development of a visual language in the 19th century". Later in the same month he was invited to attend the meeting in honour of Gabriel Gohau, "Pour une histoire de la géologie" in Nantes (France), where he gave a talk in French on the 'theory of mountains and mines' of Spirito Benedetto Nicolis di Robilant (1724-1801).

Finally, Ezio Vaccari was also invited to present a paper on “The “Classification” of mountains in the Alpine Region during the 18th century” at the session T207 “Alpine concepts in geology and the evolution of geological thought” of the 2008 Joint Meeting of the Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM.

At the end of 2008, under the guidance of Ezio Vaccari, Ph.D. students Francesco Luzzini and Francesco Gerali completed a three-year Ph.D. at the University of Bari, with research projects respectively on the geological works of Antonio Vallisneri (1661-1733) and the figure of the 19th century geologist Giovanni Capellini (1833-1922).

Andrea Candela submitted his book *Alle origini della Terra: i vulcani, le Alpi e la Storia della Natura nell'età del viaggio scientifico* [On the origins of the Earth: the volcanoes, the Alps and the history of nature in the age of scientific travel], to be published by Insubria University Press, Varese, in 2009. He also published the paper “Ricerche di archeologia mineraria nell'area occidentale delle Prealpi Lombarde: scenari di conservazione e riqualificazione del «paesaggio culturale»” [Studies of mining archeology in the western Lombardian Pre-alps: conservation and recovery of a “cultural landscape”]. *Geostorie*, 16, 2008, n.1, 77-128.

Petro Corsi edited the correspondence of Italian geologists Iginio Cocchi and Giuseppe Meneghini in the book *Fossils and Reputations. A scientific correspondence: Pisa, Paris, London (1853-1857)*. Pisa, Edizioni Plus - Pisa University Press, 2008, 411 p.

Claudia Principe continued her researches in the history of volcanology and published (with Luigi Marini) the paper “Evolution of the Vesuvius magmatic-hydrothermal system before the 16 December 1631 eruption”. *Journal of Volcanology and Geothermal Research*, 17, 2008, 301-304.

Ezio Vaccari completed the edition of the selected letters of Giovanni Arduino (*Lettere di Giovanni Arduino (1714-1795), geologo*, a cura di E. Vaccari. Conselve, Edizioni Think ADV, 2008, 240 p.) and published two papers: “Antonio Vallisneri, Luigi Ferdinando Marsili e la «struttura de' monti»” [A. Vallisneri, L.F. Marsili and the «structure of mountains»], in *Antonio Vallisneri. La figura, il contesto, le immagini storiografiche*, edited by D. Generali, Firenze, Olschki, 2008, 391-432 and “«Volcanic travels» and the development of volcanology in 18th century Europe”. *Proceedings of the California Academy of Sciences*, 59, 2008, supplement I, n. 3, 37-50.

Gian Battista Vai published (with P. Casadio Pirazzoli, S. Marabini, G. Bolognesi and F. Merlini) the introduction [Prologo] to G. Morico, *Gli scavi di Scarabelli a S. Giuliano di Toscanella: un inedito secolare*. Volume a cura del Comitato Promotore delle Celebrazioni Scarabelliane, Imola, Giornalisti Associati “Giuseppe Scarabelli”, 2007, 11 and the review “New theory of the Earth”. *Episodes*, 31, 2008, 452-453.

A book in memory of Nicoletta Morello, edited by Ezio Vaccari, with the title *The Deluge, the Mountains and the Fossils. Studies in the History of the Earth sciences in memory of Nicoletta Morello*, with papers from a symposium on “Geology and Deluge” as well as some of Nicoletta's unpublished writings translated in English, is in preparation and will be published by Insubria University Press (Varese) by the end of 2009.

Ezio Vaccari, Varese

Japan

The Japanese Association for History of Geological Sciences (JAHIGEO) held three meetings in 2008. The first meeting was held in Hokutopia, Tokyo on 26 June; The second meeting at Akita University on 2 September; and the third, serving as the annual meeting, was at Hokutopia on 23 December.

The main presentations at the first meeting were by (1) Yo Uesugi on “ History of geological and topographical studies on Mt.Fuji ” and (2) Toshio Kutsukake on “Kukai's scientific and geological viewpoint”. Kukai (774-835AD) was a founder of the Shingon sect of esoteric Buddhism, and was an important man who was interested in geology, mining and civil engineering in the modern sense.

For the second meeting at Akita University, lectures were presented by (1) Takahiko Maruyama on “History of the Institute of Mining Geology, Akita University” and (2) Shintaro Hayashi on “55 Years History of the Society of Geoscience Education in Akita Prefecture”. Akita has been famous for its petroleum and metals production. Akita Mining College, a predecessor of Akita University was founded in 1910, following the Bergakademie, Freiberg.

At the third meeting at Hokutopia, two lectures were given by: (1) Toshifumi Yatsumimi on “The Shanghai Science Institute in relation to the initiation of geochemical study in Japan”; (2) Iwao Kobayashi on “ Natural history of the Shinano River ”. The Shanghai Science Institute was the research institute for natural and medical sciences, founded in Shanghai, China in 1931 and was closed in 1945.

Ietake Okada (1904-1970) published “The geochemistry” in 1930 in Japanese and it was one of the pioneering geochemical works in Japan.

Two meetings of the History of Geosciences Study Group were held by younger members of the Association at Aogaku-kaikan, Tokyo on 22 March, and at Waseda Service Garden, Tokyo, on 15 June, 27 September and 20 November. In March, Toshiaki Osada spoke on “Fumio Tada’s life and contribution to geography” and Satoshi Kazama on “Retranslation trial of Martin Rudwick’s ‘The meaning of fossils’”. Fumio Tada (1900-1978) was a geographer famous for his pioneering work on neotectonics. In June, Hiroo Mizuno lectured on “On the problems of environment and natural resources on the earth”. In September, Manabu Yoshioka spoke on “On Takeaki Enomoto’s contribution to Japanese geology after his stay in Netherlands.” Enomoto (1836-1908) was a statesman interested in geology and mining in the Meiji era (1868-1912). He was one of the founders of the Tokyo Geographical Society founded in 1879. In December, Toshiyuki Shimazu lectured on “Geographical surveys by the Bureau of Geography in the Ministry of Interior research work in a Government office”.

Jiro Tomari published a book “Rejection and acceptance behaviour to plate tectonics in Japanese Geological Society” (Tokyo University Publishing Co.) in July. Michiko Yajima published a book “Memory of fossils, dating back the history of paleontology” (Tokyo University Publishing Co.) in October.

The annual meeting of INHIGEO was held during the session of the 33th International Geological Congress on 7 August in Oslo. Yasumoto Suzuki and Toshihiro Yamada attended and, at the meeting, 6 Japanese historians of geology were approved as new INHIGEO members.

A meeting of the Administrative Committee for the INHIGEO 2011 was organized by 14 INHIGEO members in Tokyo on 15 September with discussions on the symposium theme, excursion route, general plan and other matters. The symposium venue is likely to be Aichi University situated at Toyohashi City, Aichi Prefecture in central Honshu.

In 2008, the Japanese Association for History of Geological Sciences issued its Bulletin Numbers 30 and 31 (in Japanese) and the JAHIGEO newsletter Number 10 (in English).

An honorary member of INHIGEO, Professor Kenzo Yagi passed away at the age of 93 on 18 July 2008.

Yasumoto Suzuki, Ichikawa & Michiko Yajima, Tokyo

Lithuania

Lithuanian INHIGEO members, Prof. Algimantas Grigelis, Dr. Gailė Žalūdienė, and Prof. Algirdas Gaigalas have worked actively on the history of geological sciences of Lithuania in 2008.

First at all, the project entitled “*The State of Geological and Mineralogical Sciences in Central and Eastern Europe at the Turn of the 18th Century as Documented by the Earliest Geological Cartography*” has continued in 2008. Project participants Dr. Jan Kozák, Prof. Algimantas Grigelis, Dr. Leonora Živilė Gelumbauskaitė, Prof. Stanisław Czarniecki, Prof. Zbigniew Wójcik, and Prof. Wojciech Narębski have published papers on Staszic’s scientific and cultural heritage, one of them in the peer-review journal *Geologija* (Vilnius). An international symposium on „*Stanisław Staszic’ geology of the Central and Eastern Europe*“ has been organized in the Lithuanian Academy of Sciences in Vilnius, 13-14 May 2008. Reports were presented by Dr. Kozak, Prof. Narębski & Prof. Wójcik, and Prof. Grigelis.

Prof. Grigelis took part in the annual conference SCIENTIA ET HISTORIA held in Vilnius, 28 May 2008, where he presented a report entitled „*Known and unknown Stanisław Staszic – geologist, educationist, philosopher*“. The ongoing ‘*Staszic project*’ was also discussed by A. Grigelis at a meeting with the Vice-President INHIGEO Prof. David Oldroyd in Helsinki, Finland, 17-18 August 2008.

Academician Grigelis, re-elected Chairman of the Section on Geosciences of the Lithuanian Academy of Sciences, also represents the Academy of Sciences on the National Committee for ‘*The International Year of Planet Earth*’, declared by the United Nations during 2007–2009. Prof. Grigelis is Editor and Publisher of *BALTICA: International Journal on Earth Sciences of the circum-Baltic States* [indexed in THOMSON ISI and WEB OF SCIENCE].

Prof. Gaigalas, President of the Lithuanian Nature Society, organized an Annual Meeting of the Society, held on 27 February 2008. He published several papers on history of geology and 16 biographies on Lithuanian scientists in the *Universal Lithuanian Encyclopaedia*, vol. XIII-XIV, Vilnius, 2008 (in Lithuanian).

Prof. Grigelis took part in collecting papers and reviewing procedures of the Proceedings of the INHIGEO 31st International Conference held in Vilnius in 2006, entitled *History of Quaternary*

geology and geomorphology. The collected papers, with a *Preface* by Prof. Grigelis, have been published in 2008 in a Special Publication of the Geological Society of London.

A meeting of the Lithuanian Ignotas Domeika Society, led by Prof. Grigelis, the President of the Society, was held in the Vilnius University Library on 2 April 2008. Dr. Gailė Žalūdienė, Secretary of the Society, presented a report “*Geological maps of Ignotas Domeika in the context of 19th century Central Europe geological mapping*”. In 2008 two significant books appeared on Ignotas Domeika “*My travel: Memoir in exile. Vol. II*” (Vilnius; in Lithuanian), and “*Ignacy Domeyko: Bibliography*” (Krakow; in Polish).

Prof. Grigelis published a scientific analysis of Academician Vytautas Gudelis’ books on geology and geography of the Baltic Sea, its nature, origin and environment.

Dr. Žalūdienė together with Prof. Gediminas Motuza and Mgr. Eugenija Rudnickaitė have compiled a memoir book on prominent geologist, palaeontologist and stratigrapher entitled “*Stasys Žeiba - war pilot and geologist*”, published in 2008 at the Vilnius University.

Prof. Grigelis participated in the 14th World Lithuanian Symposium on Arts and Sciences held on 26-30 November 2008 in Lemont, Chicago, Illinois, USA, where he presented a report on Lithuanian geoscientific research programmes of the Baltic marine geology.

Prof. Grigelis together with Prof. Hans-Peter Schultze and Dr. Susan Turner prepared bio-bibliographic study on the great northern researchers of the earliest Palaeozoic vertebrates Elga Mark-Kurik (Tallinn) and Valentina Karatajūtė-Talimaa (Vilnius) to be published in *Acta Zoologica*, Stockholm.

Books

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Mexico

As a recent member of INHIGEO, Luz F. Azuela has been trying to locate graduate students working in the history of geology. As a result, she is currently in touch with Lucero Morelos, whose thesis will provide new insights on the biographies of three Mexican geologists of the nineteenth century. Also working on the same field, the graduate student Luis Sánchez Graillet, has recently completed his Master's research on the history of Petroleum geology.

During 2008, the following papers were read at scientific conferences held in Mexico:

- On 23-25 June, Zacatecas' Autonomous University and the National Society of Geography and Statistics hosted the XVIII Congreso Nacional de Geografía (Eighteenth National Geographical Congress). During two sessions on the History of Geography, Azuela and Morelos read two papers on the History of Geology. The first, written with the assistance of Sabás and Smith, dealt with the presence of Geography, Geology and Natural History, in nineteenth century culture in Mexico. The second, was about geological cartography in the nineteenth century in Mexico.
- On 10-12 September, Guadalajara's Autonomous University organized the Second Meeting on the History of Science in Mexico's West. Azuela read a paper on History of Science theory and Morelos read another, on one of Mexico's more prominent geologists of the nineteenth century: Mariano Bárcena.

During a visit to Costa Rica, Azuela was invited by Gerardo Soto to give a lecture in the School of Geology. The lecture was titled *Geology in Mexico during the XIXth Century: Between Practical Development and Basic Research*.

Azuela is directing a research program on Geography and Natural History in Mexico, which includes geographical and geological surveys in the nineteenth century.

The Geophysical Institute, of the Autonomous National University of Mexico and the Autonomous University of Michoacan are currently organizing a meeting to celebrate the 250th Anniversary of Volcan's Jorullo birth in Michoacan, Mexico. The meeting will be held from September the 27th to October the 4th, 2009. See <http://www.geofisica.unam.mx/vulcanologia/jorullo/>

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AZUELA, Luz Fernanda, "La geología en México en el siglo XIX: un estudio de caso sobre las relaciones entre la ciencia y el poder", in Lourdes Alvarado y Leticia Gómez Puente (eds.), *Cátedras y catedráticos en la historia de las universidades e instituciones de educación superior en México*, vol. III, Colección Digital, Instituto de Investigaciones sobre la Universidad y la Educación, México.

Luz F. Azuela, Mexico D.F.

Netherlands

Symposium Alexander von Humboldt in Holland (1800 – 1900)

The Committee for the History of the Earth Sciences of the Royal Netherlands Academy of Arts and Sciences will organize on 3 April 2009 a symposium on *Alexander Von Humboldt in Holland (1800 – 1900)*.

In the same year as Darwin's *On the Origins of Species* was published (1859), the German scientist and traveler Alexander von Humboldt died at the age of ninety. As Darwin was to dominate much of the life of science during the second half of the nineteenth century, so Von Humboldt had been an icon of science in the first half of the century. His contributions to the earth sciences, including physical geography and biogeography, as well as to natural history in general, were highly respected both in Europe and elsewhere. He also became famous for his explorations of Latin America and Russia, and the way in which he mingled scientific analysis and esthetic description in his travel reports was highly attractive both to the scientist and the general reader. Especially his five-volume *Kosmos* (1845) was a brave attempt to unify the various branches of scientific knowledge in a form accessible to a wider public.

Already in the beginning of his career Von Humboldt visited the Netherlands and during the rest of his long and productive life, he maintained close ties with this country. He fundamentally

influenced the scientific policy of King William I, was instrumental in establishing research institutions in the Dutch East Indies and through the many translations of his book deeply influenced the way in which science was represented in the Netherlands. Studying the relationships of Van Humboldt with the Netherlands may therefore throw new light on an often neglected or misrepresented period in the history of science in the Netherlands.

KNGMG 2012 centennial and a book on the history of Geology

The Royal Geological and Mining Society of the Netherlands (KNGMG) will celebrate its centennial in March 2012. At this occasion the Society intends to publish the book “Dutch Earth Sciences – Development and Impact”. Work on the book by a large number of authors and co-ordinators is now well underway. The book, to be written in English, will cover all aspects of geology and mining in the Netherlands and former Dutch territories overseas, from the generation of early knowledge and early surveys, through the development of mining and geology departments at Dutch universities and their ups and downs, until the global impact of Dutch research and the key persons instrumental in achieving these results, and industrial activities related with natural resources at the surface and subsurface at land and under the sea. The treatment of this vast amount of subject matter is not purely historical but rather in a narrative account to give foreign and national readers a documented impression of developments from the 16th century till present.

Exhibition, Symposium and Historic Excursion Plans - 2012

There are plans, further to be worked out and reported next year, to organise in the summer of 2012 an exhibition, dedicated to “The History of Geology in The Netherlands” in Teylers museum in Haarlem. This museum dating back to 1784 is the oldest museum in the Netherlands. It is for a large part dedicated to Natural Sciences and in many respects it is a museum of musea. Parallel to this exhibition there are also plans for a symposium and a geological-historical excursion in the Netherlands and Belgium More details next year.

Publications

Frederik van Veen (f.r.vanveen@gmail.com) has been honoured by the two-yearly Old Leiden Prize for his essay “Old Geologists and their connection with Leiden University”. The essay was published in the Yearbook 2008 of the Historical Society Oud Leiden. The essay discusses the following geologists: Nicolaus Steno (1638-1686), Johannes le Francq van Berkhey (1756-1812), Willem Bilderdijk (1756-1831) Winand Staring (1808 -1977) and Pieter Harting (1812-1885).

Tom Reijers (tjareijers@hetnet.nl) will present a paper: Origin of Geology in the Netherlands (1780-1839) at the XXIII International Congress of History of Science and Technology (ICHST) in Budapest, Hungary 28 July-2 August 2009:

Tom Reijers, Anderen

New Zealand

2008 has seen two important books on 19th century New Zealand geologists, plus a major monograph on New Zealand geology, published. Graham Bishop’s biography of Alexander McKay (1841-1917) *The Real McKay, the remarkable life of Alexander McKay, geologist* was published by Otago University Press. McKay immigrated to New Zealand from Scotland and after mining on the goldfields gained employment as a fossil collector, first for Julius von Haast (1822-1887) at the Canterbury Museum and then with James Hector at the Geological Survey. With no formal training in geology he became New Zealand’s leading field geologist in the latter half of the 19th century. Unencumbered by European doctrine, McKay from his own observations recognised transcurrent (strike-slip) faulting, being amongst the first in the world to do so, and that the mountains of New Zealand were not old landforms but were in fact geologically very young and still growing. He remained throughout his career a prolific discoverer of fossils.

The second book titled *The Amazing World of James Hector*, edited by Simon Nathan and Mary Varnham (see review in this Newsletter), encompasses a series of papers presented at a symposium held in 2007 on the centenary of Hector’s death. Sir James Hector (1834-1907), another Scot, gained his reputation as geologist and doctor to the 1857-1860 Palliser Expedition to western Canada where he was nearly fatally injured at Kicking Horse Pass. After three years as Otago Provincial Geologist in New Zealand, in 1865 he became the inaugural Director of the New Zealand Geological Survey and a lot more besides. The various papers thoroughly summarise all aspects of

Hector's life. In addition, Simon Nathan continues researching a biography of Hector concentrating on his career as a geologist.

During the year under the editorship of Ian Graham the Geological Society of New Zealand, in conjunction with GNS Science, published *A Continent on the Move – New Zealand Geoscience into the 21st Century*. This 377 page, lavishly illustrated book contains some 89 articles written by over 120 authors. It marks the half-century of the Geological Society of New Zealand, which was achieved in 2005. As well as providing summaries of the current state of earth sciences in Zealandia, there is a considerable amount of information on the history of geology in New Zealand. Another easily accessible source of data on New Zealand geology is the on-line encyclopedia Te Ara: <http://www.rsnz.org/publish/other/te-ara.php> of which Simon Nathan was science editor, as well as contributing a number of articles.

During the year the University of Auckland held a two-day meeting on *Ferdinand Hochstetter and the Contribution of German-speaking Scientists to New Zealand Natural History in the Nineteenth Century*. This marked the 150th anniversary of the arrival of Ferdinand Hochstetter (1829-1884) in New Zealand on board the Austrian research vessel *Novara*. On arrival, Hochstetter coincidentally met up with Julius Haast, then visiting Auckland as an immigration agent. The symposium attracted a large number of overseas participants, mostly from Austria. It is anticipated that the papers presented will be published in a special publication. At the Geoscience'08 Conference in Wellington, late in the year, a number of papers were included honouring Hochstetter and Haast. Leonore Hoke, Mike Johnston and Sascha Nolden are preparing an account of the work of Hochstetter and Haast in Nelson in 1859.

The Geological Society's Historical Studies Group, through its editor Tony Hocken published two issues of its journal during the year (35 and 36). Members of the group are continuing research into a variety of topics.

Mike Johnston, Nelson

Poland

The activities of several institutions in Poland are devoted to professional studies in the history of geosciences. The most important are: Museum of the Earth of the Polish Academy of Sciences (Archival and Historical section), State Geological Institute (Museum), Institute of History of Sciences of the Polish Academy of Sciences, and the Polish Academy of Arts and Sciences (Commission on the History of Science). The latter groups almost all our historians of geosciences. Papers on this subject are published mainly in the "Polish Geological Review", "Quarterly Journal of the History of Science and Technology", "Annales Societatis Geologorum Poloniae" and in "Studies of the Commission on the History of Science of the Polish Academy of Arts and Sciences". In general they are written in Polish with an English summary.

The Stanisław Staszic Museum in Pila organizes every year international sessions devoted to this outstanding geologist of the Enlightenment period. The presented lectures are published in the periodical "Staszic Fascicles". In its last issue, four papers were devoted to the history of geosciences:

S. Czarniecki – Feliks Drzewinski and his handwritten supplements to "Introduction to mineralogy of 1816" (the first Polish handbook of mineralogy).

A.J. Wojcik - Marcei Krolikiewicz – first professor of mining in the Academic Mining School in Kielce.

J. Mikuszewski and Z. Wojcik – On the geologic-cartographic workshop of Stanislaw Staszic.

S. Czarniecki, A. Grigelis J. Kozak, W. Narebski & Z. Wojcik – "Carta geologica totius Poloniae, Transilvaniae, et partis Hungariae et Valachiae" by S. Staszic and its importance for European geology and geological cartography.

The same international Czech-Lithuanian-Polish team (S. Czarniecki *et al.*), supplemented by L.T. Gelumauskaite, have published in the Lithuanian journal "Geologija (Vilnius)" a paper entitled "The first large geological map of Central and Eastern Europe (1815)". During preparation of these papers the professional friendly help of David Oldroyd was very important. He contributed significantly to the idea of initiating large-scale international studies on geological cartography in Central Europe before 1820. A preliminary meeting of initial team of historians interested in this problem will take place in summer 2009 in Cracow.

Some studies in the history of geological sciences in Central Europe were carried out by geoscientists of the State Geological Institute, notably by N. Graniczny, J. Kacprzak, H Urban, F. Krzywiac and others. This Institute has organized a Polish-Slovakian conference on “Geological maps of the Tatra Mts.”. Historical lectures were delivered by K. Piotrowska & Z. Wojcik (geological maps), J. Chowaniec (hydrogeology) and M. Kohut (regional geology) and published as a supplement in the “Polish Geological Review”.

Research activity of A.J. Wojcik was devoted to interdisciplinary problems of geology and mining in the first half of 19th century, initially in the SW part of the contemporary Kingdom of Poland. Particular attention was paid to Polish-German relations. The final results of these studies was presented in a monograph entitled “West Mining District: The Drafts from histories of geological and mining activity in the Kingdom of Poland” (reviewed in this volume). Moreover, his activity was also devoted to the protection of monuments of mining technology and ancient documentation of mining and geological works in Poland.

R. Tarkowski, working for several years in cooperation with P. Daszkiewicz, research worker at the Museum of Natural History in Paris, is studying French-Polish geological connections. They have published papers on eminent geoscientists J.E. Guettard (a full biography is also in preparation), R.J. Haüy, K. Jelski (explorer of South America) as well as on geological studies of Poland published in the Parisian “Journal de Géologie” in the years 1830-1832. Moreover, R. Tarkowski, W. Brochwicz-Lewiński and G. Melendez have been studying the correspondence of S.S. Backman with J. Siemiradzki, Polish researcher of Jurassic ammonites.

Other Polish historians of geosciences are continuing their studies on scientific problems initiated in previous years.

J. Skoczylas’ studies were devoted to the identification of rocky building materials used in the past for architectural purposes both in Polish territory and in cultural Mediterranean range.

A. Grodzicki is continuing research into the history of gold mining in Lower Silesia, based on large-scale studies of ancient German materials.

Z. Wojcik has published a further paper on Polish explorers of Siberia. It is devoted to Zygmunt Węglowski, who accompanied Aleksander Czekanowski on his expedition to the Arctic Ocean.

S.W. Alexandrowicz prepares detailed biographies of eminent Polish geologists. In 2008 he has published papers on the geological activities of Mieczysław Klimaszewski and Marian Książkiewicz, as well as on the achievements of coworkers at the Physiographical Commission of the Academy of Arts and Sciences. In addition, in special broadcasts of Cracow radio devoted to eminent scientists, he has presented the CV’s of several outstanding Polish geoscientists: Alojzy Alth, Jan Czerski, Benedykt Dybowski, Mieczysław Limanowski, Ludomir Sawicki and Stanisław Zareczny.

The Museum of the Earth of the Polish Academy of Sciences, created from the Society of the Museum of the Earth (formed in 1932), has celebrated the 60th anniversary of its status as a state scientific institution. On this occasion a valuable book was published in Polish, entitled “Bibliography of publications of members of the Society of Museum of the Earth (1932-1948) and of workers and coworkers of the Museum of the Earth (1948-2007). Almanac of exhibitions of the Museum of the Earth (1948-2007)”. This monograph documented the significant scientific output of historians of science associated with the Museum of the Earth in Warsaw.

Zbigniew Wojcik, Warszawa & Wojciech Narebski, Krakow

Portugal

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- _____ and Luís Teixeira Pinto, 'Paul Choffat (1849-1919) e as Comissões Geológicas', in Rogério Bordalo da Rocha, João Pais, José Carlos Kullberg, Maria Luísa Ribeiro (eds.), *Paul Choffat na Geologia Portuguesa*, Lisboa, Universidade Nova de Lisboa/ Instituto de Engenharia, Tecnologia e Inovação, 2008, pp. 63□75.
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- _____ and Isabel Malaquias. 'Chemistry and Metallurgy in Portugal in the Eighteenth Century – The Cases of Gold and Silver' in José Ramon Bertomeu-Sanchez *et al.* (ed.) *Neighbours and Territories. The Evolving Identity of Chemistry. The 6th International Conference on the History of Chemistry*, Louvain-la-neuve, Mémosciences asbl, 2008, pp.529–544.
- Telles Antunes, Miguel, 'Octávio da Veiga Ferreira: Uma Visão Pessoal no Contexto do seu Tempo, in J. L. Cardoso (coord.), *Homenagem a Octávio da Veiga Ferreira/Estudos Arqueológicos de Oeiras*, Oeiras, Câmara Municipal de Oeiras, 2008, Vol. 16, pp. 155□159.

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- Amorim da Costa, A. M., 'Política e Economia na Reforma Pombalina da Universidade de Coimbra', *Memórias e Notícias*, 2008, 3 (Nova Série), 271□276.
- Andrade, António S. and Manuel S. Pinto, 'De Feijó a Bebião: a Geologia de Cabo Verde entre as Viagens Filosóficas e as Expedições Científicas', *Memórias e Notícias*, 2008, 3 (Nova Série), 367□373.
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- Leitão, Vanda, 'Levantamento Geológico de Portugal Continental: as Primeiras Comissões Geológicas de Portugal', *Boletim de Minas*, 2007, 42, 9□56.
- Mota, Teresa S., 'A Questão de Goa: a Cartografia Geológica ao Serviço dos Interesses Coloniais do Estado Novo', *Memórias e Notícias*, 2008, 3 (Nova Série), 329□335.
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- Telles Antunes, Miguel, 'On a Remarkable Eighteenth-century Topographic and Geological Model in Coimbra (Portugal): The Ceramic Model of the Buarcos Coal Mine in its Early Exploitation Stages', *INHIGEO Newsletter*, 2008, 40, 25□27.

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- _____, 'D. Duarte: Homem de Transição nos Alvores do Experiencialismo'. (Academia Portuguesa de História, Lisboa, Portugal, 30 April 2008; talk).
- Andrade, António S., 'Cabo Verde e as suas Rochas: uma Perspectiva Histórica'. (Presented at the IX Congresso de Geoquímica dos Países de Língua Portuguesa. Praia, Cabo Verde, 2-7 March 2008).
- _____, 'A Geologia e a Dança: da Deriva Continental à Tectónica de Placas'. (Biblioteca Municipal, Ovar, Portugal, 31 March 2008; talk).
- _____, 'A descoberta do Tempo Geológico'. (Museu de Arqueologia D. Diogo de Sousa, Braga, Portugal, 14 June 2008; talk).
- Carneiro, Ana, 'Paul Choffat (1849-1919) e as Comissões Geológicas'. (Reitoria da Universidade Nova de Lisboa, Lisboa, Portugal, 28 November 2008; talk).
- _____, and Teresa S. Mota, 'Tracing Geological Boundaries: Different Approaches to Fieldwork and Map-making in the Portuguese Geological Survey (1857-1974)'. (Presented at the III International Conference of the European Society for the History of Science (ESHS), Styles of Thinking in Science and Technology. Viena, Áustria, 10-12 September 2008).
- Catalá-Gorgues, Jesus and Ana Carneiro, 'Los Inicios de la Carta Geologica de Europa'. (Presented at the X Trobada d'Historia de la Ciència i de la Tècnica da Societat Catalana d'Historia de la Ciència i de la Tècnica, Institut d'Estudis Catalans, Universidade de Lleida, España, 13-15 November 2008).
- Mateus, Octávio and Miguel Telles Antunes, 'Landmarks in the History of Dinosaur Palaeontology in Portugal'. (Presented at the Congress "Dinosaurs – A Historical Perspective". London, U. K., May 2008)
- Telles Antunes, Miguel, 'Vítimas do Terramoto de 1755 no Convento de Jesus (Academia das Ciências de Lisboa)'. (Presented at the Museu da Ciência da Universidade de Coimbra, 31 October 2008).

*Miscellaneous*Exhibition

Ana Carneiro and Miguel de Magalhães Ramalho organized a public exhibition on 'Nery Delgado (1835-1908), Geólogo do Reino', at the Museu Geológico, Lisbon (from the 1st October 2008 to the 31st March 2009).

Archives

1800 old maps of the archives of the former Geological Survey of Portugal (Laboratório Nacional de Engenharia e Geologia/ Instituto Nacional de Engenharia, Tecnologia e Inovação, LNEG/ INETI) may be seen at <https://geobiblio.ineti.pt/psqsimp-asp?base=MAPAS> .

INHIGEO Oslo

Several Portuguese INHIGEO members attended the INHIGEO meeting held in Oslo (International Geological Congress).

Manuel S. Pinto , Aveiro

Russia1. Meetings

1.1. International meetings

Four INHIGEO members from Russia (Z. Bessudnova, T. Ivanova, I. Malakhova, and N. Yushkin) have visited Norway as participants of the 33th Session of the IGC. Z. Bessudnova, T. Ivanova, I. Malakhova took part in the 4-day pre-congress excursion (Oslo Fjord). For the Session on the History of Exploration of the Polar Regions T. Ivanova made a presentation on Vladimir Rusanov – a Russian Arctic explorer; Z. Bessudnova showed a poster on Grigory Helmersen's field trip to Scandinavia. I.

Malakhova was also among contributors with the paper about Norwegian geologists as foreign members of the Russian Academy of Sciences.

N. Yushkin organized a Symposium on the “Role of the Russian Academy of Sciences in geological studies and mineral resource exploration of the Russian Arctic (Timan – N. Urals – Novaya Zemlya)”. It was held during the “IV Northern Social and Environmental Congress and Arctic Science Summit Week” (Syktyvkar, the Republic of Komi, March-April, 2008).

The “International Conference on the History of Science and Technology” was held during November in Moscow. I. Malakhova and Z. Bessudnova as members of the Organizing Committee took responsibility for the Section “History of Geology” that was held in the Vernadsky State Geological Museum of the Russian Academy of Sciences.

About 50 papers were presented, with Z. Bessudnova (‘Geological Excursion of G. Helmersen in Sweden and Norway in 1845’), G. Khomizuri (‘Geotectonic Ideas in the Ancient and Medieval China’), E. Minina (‘Geological Studies of the Count G. Razumovsky’) among them. The paper ‘History of Geology at the 33rd Session of the International Geological Congress (August 6-14 - Oslo, Norway)’ was presented by I. Malakhova as part of the panel session at the Conference.

1.2. National meetings

INHIGEO members presented three papers at the annual meeting of the Institute of the History of Science & Technology RAS (Moscow, May, 2008) – on geology and religion in antiquity (G. Khomizuri), and about two foreign members of the Russian Academy of Sciences - ‘Ch. Zipser as a foreign member of the Russian Academy of Sciences’ (Z. Bessudnova) ‘Louis Duparc’s Studies in the Urals’ (E. Minina).

2. Publications

New books published on the history of geology are as follows:

- “History and methodology of geosciences” (V. Khain, A. Ryabukhin, A. Neimarck);
- “Geological history of the Moscow region in the collections of the Museum of Natural History of the Russian Academy of Sciences (I. Starodubtseva, A. Sennikov, et al.);
- “Veterans: the history of oil and gas industry” (collective works);
- “The Imperial Academy of Sciences at the end of the 19th century” (E. Basargina).

3. Other activities

Two new representatives from Russia (E. Minina and G. Trifonov) were elected as members of INHIGEO in 2008.

During 2008 the new quarterly international journal ‘*The History of the Earth Science*’ has been initiated by the Institute of the Physics of the Earth (Russian Academy of Sciences, Moscow). I. Malakhova and G. Khomizuri are members of the editorial board. All four issues have been published in the late 2008-early 2009.

Papers by I. Malakhova (on the history of the British-Russian scientific relations and on the 200th anniversary of the first Geological Society in London) and E. Minina (about a Russian collection of minerals in the Lausanne Museum) have been published in the first issue.

The Department for the History of Geology of the Geological Museum has commenced involvement in the Program of the Russian Academy of Sciences “Virtual Library Scientific Heritage of Russia” and took responsibility for all geological data. Currently works (with biographical data, lists of publications, portraits, archive information, etc.) on scientists, such as M. Lomonosov, P.S. Pallas, V. Severgin, A. Inostrantsev, F. Loewinsson-Lessing, A. Pawlov, A. Borissyak, A. Fersman, et al., are available in Russian with some original publications in French and German , see for example

<http://nasledie.enip.ras.ru/ras/view/publication/browser.html?clear=true&perspective=popup&id=42070884>

INHIGEO members are most welcome to the Department’s Web-page *HiGeo at*

<http://higeo.sgm.ru/eng/>

Irena G. Malakhova, Moscow

Spain

The International Year of the Earth Planet has been celebrated in Spain with many scientific activities as well as events for the general public.

The INHIGEO membership from Spain continued to work within the larger "Commission for the History of Geology of Spain", which was supported by the Spanish Geological Society (SGE). The Commission has a membership of 180, 50 members of which are non Spanish. Its members receive regularly information about the Spanish activities in the History of Geology and the most relevant information concerning INHIGEO. Two new numbers of the "Bulletin of the Commission for the History of Geology of Spain" have been published (numbers 31 and 32) and they can be obtained in the web page of Commission (www.aepect.org/SGE-historia_geologia/ and www.aepect.org/SGE-historia_geologia/documentos-pdf).

The "IX International Congress on Geological and Mining Heritage" was held in Andorra (Teruel) from 25-28 September 2008. For further information, contact jm.mata@cdl.cat

The "V European Symposium on Historical Mining and Metallurgy in SE Europe" was held in Leon (Spain) from 19-21 June 2008. For further information contact v.simposio.mineria@unileon.es

The Congress of GeoCritica (Barcelona University) celebrated "Ten years of changes in the world, in the geography and in the Social Sciences, 1999-2008" on 26-30 May 2008. For further information (see: www.ub.es/geocrit/menu.htm).

A very interesting book about the mines and minerals of Aragon have been published (see: <http://milksci.unizar.es/miner/minespana/mineraragon.html>)

Professor Jorge Ordaz (Oviedo University) has created a very interesting website about the connections between geology and literature. This can be located at <http://jorgeordaz.blogspot.com>.

Luis Felipe Mazadiego and Octavio Puche Riart have also promotes an historical exhibition in Otero de Herreros (Segovia), in July-August, 2008.

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Leandro Sequeiros, Granada

United Kingdom

Wegmann Prize 2008.

It is as pleasure to record that, in addition to the previous honours given to Professor Martin Rudwick for his work as a historian of geology, he has now been awarded the Prix Wegmann for 2008 by the Geological Society of France. The address by INHIGEO member Dr. Gabriel Gohau, in which particular note was taken of Rudwick's book, *Bursting the Limits of Time. The Reconstruction of Geohistory in the Age of Revolution* (University of Chicago Press, 2005) may be seen at: <http://sgfr.free.fr/prix/RapportWegmann08.pdf>. (As noted below, the sequel to this major work has just been published). The prize is named in honour of the Swiss-born historian of geology, Eugène Wegmann (1896-1982).

Other news

Mike Taylor (National Museums Scotland, Edinburgh) has been preoccupied with curatorial duties for much of the year, especially work to do with auditing and moving the collections in advance of the complete clearance of the Royal Museum. This has however led to discoveries in the fossil plant collections, and a paper with his former colleague Lyall Anderson (now working on the Darwin geological collection at Cambridge) on the 19th century collector Charles Peach. As well as Peach's fossil plant collections in the Museum (which include some very strange palaeo-herbarium style mounts of Carboniferous plants free of matrix on glass), the paper includes fresh information on his life

and work arising from newly catalogued MSS at the National Library of Scotland (acquired from the Royal Society of Edinburgh), and the newly computerised Scottish records of births, deaths, marriages and wills on www.scotlandsppeople.gov.uk (a superb resource for the historian, which includes Hugh Miller's will as a demonstration example:

<http://www.scotlandsppeople.gov.uk/content/help/index.aspx?r=546&1151>). Anderson and Taylor gave papers on this, and on their parallel work on the Hugh Miller Collections, at the Geological Curators' Group's meeting in Dublin in December 2007; their Peach paper is now in press (see below), and the Miller paper is being prepared for publication as one of several exploring the history of curation, usage and dispersal of the Miller Collections at Edinburgh and Cromarty (and now also Australia for MSS!). They very much enjoyed taking part in the "Hugh Miller: Local Hero" event for the Bicentenary of the Geological Society of London, with the National Trust for Scotland and the "Friends of Hugh Miller", at Cromarty in April. The day before, the formal launch of the Scottish Fossil Code appropriately enough took place there at Cromarty (<http://www.snh.org.uk/fossilcode/>). To quote Scottish Natural Heritage, the Code (which Anderson and Taylor helped to develop) "produced with assistance from palaeontological researchers, land managers, collectors and others with an interest in Scotland's fossil heritage, provides advice on best practice in the collection, identification, conservation and storage of fossil specimens found in Scotland. The Code also aims to enhance public interest in the fossil heritage of Scotland and promote this resource for scientific, educational and recreational purposes". Continuity and change indeed: the launch took place, with the help of local schoolchildren, on the very foreshore where Miller made his famous discoveries of Old Red Sandstone fishes which encouraged so many to collect fossils

A piece of good news: the Geological Curators' Group is beginning to make back numbers of its journal *The Geological Curator* (formerly the *Newsletter of the Geological Curators' Group*) freely accessible on its website: <http://www.geocurator.org/> This contains many useful articles and snippets to do with the history of the science, especially relating to collections.

Following elections to the Committee of The History of Geology Group (HOGG) of the Geological Society of London, the current Chair is Dr. Alan J. Bowden, Curator of Earth Sciences, National Museums Liverpool (alan.bowden@liverpoolmuseums.org.uk); the Secretary is Leuchea Veneer of the Department of Philosophy, University of Leeds (phllv@leeds.ac.uk) who is working on her PhD, with a thesis on *The Place of Utility: Provincial Geology, 1790-1850*; the Treasurer is Dr. Beris Cox (beris.cox@btinternet.com). Current HOGG committee members include INHIGEO members Hugh Torrens and Martin Rudwick. HOGG application forms, and copies of the *HOGG Newsletters* for 2007 and 2008, may be downloaded from the Group's website:

<http://www.geolsoc.org.uk/gsl/groups/specialist/hogg>. Recent meetings consisted of a conference, held in conjunction with The Dinosaur Society, on *Dinosaurs (and other extinct saurians) – A Historical Perspective*, held on 6-7 May 2008 with subsequent fieldtrips to the Isle of Wight and Dorset Coast (see *HOGG Newsletter* 33 for details of the talks) and a meeting, organised in conjunction with The Yorkshire Geological Society, on *William Smith, John Phillips and The Rotunda Museum, Scarborough* [Yorkshire], held at Scarborough on 17-19 October 2008 (see *HOGG Newsletter* 34 and <http://www.yorksgeolsoc.org.uk/Circulars/547.pdf> for abstracts of the talks). As a follow-on from the celebrations of the 200th anniversary of the Geological Society of London in 2007, members of HOGG also held a *Founder's Dinner* on 13 November 2008 at Le Meridien Hotel in Piccadilly, London. This was preceded by a talk at the Geological Society by Hugh Torrens on 'William Smith and the search for raw materials 1800-1820.'

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- Taylor, Michael A. 'Review. R. Owen, On the nature of limbs. A discourse [facsimile reprint of 1849 edition with introduction by R. Amundson, K. Padian, M. P. Windsor and J. Coggon],' *Archives of Natural History*, 2008, 35, 371-372.
- Torrens, Hugh S. 'Geological Pioneers in the Marches,' *Proceedings of the Shropshire Geological Society*, 2008, 13, 65-76 [available via: <http://www.shropshiregeology.org.uk/sgspublications/Proceedings/2008>].
- Torrens, Hugh S. 'A Saw for A Jaw: Mary Anning's Ichthyosaur [at the Geological Society, London],' *Geoscientist*, 2008, 18 (12), 18-21 [available via: <http://www.geolsoc.org.uk/gsl/geoscientist/features/page4691.html>].

Richard J. Howarth, London.

United States

The **History of Geology Division of the Geological Society of America** sponsored or co-sponsored five technical sessions at the 2008 Annual GSA meeting in Houston in October. These sessions were (1) Breakthroughs in paleontology during the past century, (2) Alpine concepts in geology and the evolution of geological thought, (3) History of the influence of religion on geology and geology on religion, (4) Historical links between soil science and geology, and (5) a general session on the history of geology. The 2009 GSA meeting will be in Portland, Oregon, October 18-21. Technical sessions involving the history of geology will include the following: (1) Geoheritage, geoantiquities, and geomorphosites, (2) Fifty years of hydrogeology in GSA, (3) Darwin, geology, and evolution, (4) Pacific Rim influences on geologic thought and history, and (5) a general session on the history of geology. This year's recipient of the History of Geology Division's Mary C. Rabbitt Award for scholarly contributions to the history of geology was Gregory Good. Among many other accomplishments, Greg served as Editor of "Earth Sciences History" from 1998 to 2004.

Victor Baker, Vice-Chair of the GSA History of Geology Division, and Book Review Editor for [Earth Sciences History](#). This year I did some archival work on (1) field notes from the 1920s research of J Harlen Bretz (held by University of Chicago Special Collections) in regard to the "Spokane Flood" and the origin of the Channeled Scabland, and (2) interactions of Charles S. Peirce of the U.S. Coast Survey with various geologists in the late 1800s (papers at the Institute for American Studies, Indiana University Purdue University at Indianapolis). I also completed work on my article "Charles S. Peirce and the Light of Nature," which will be published this year in Gary Rosenberg's edited volume [Scientific Revolution in Geology from the Renaissance to the Enlightenment](#) (Geological Society of America Memoir 203).

My 2008 publications with history of geology content included the following:

- Baker, V.R., 2008, The Spokane Flood debates: Historical background and philosophical perspective, in Grapes, R., Oldroyd, D., and Grigelis, A., editors, History of Geomorphology and Quaternary Geology: Geological Society of London Special Publication 301, p. 33-50.
- Baker, V.R., 2008, Bagnold, Ralph Alger, in Koertge, N., editor, New Dictionary of Scientific Biography, v.1: Thomson Gale, Detroit, p. 154-157.
- Baker, V.R., 2008, Bretz, J Harlen, in Koertge, N., editor, New Dictionary of Scientific Biography, v.1: Thomson Gale, Detroit, p. 393-397.
- Baker, V.R., 2008, Paleoflood hydrology: origin, progress, prospects: Geomorphology, v. 101, p. 1-13. (DOI: 10.1016/j.geomorph.2008.05.016)
- Baker, V.R., 2008, Geological history turned upside down (review of Worlds Before Adam by Martin J.S. Rudwick): Nature, v. 454, p. 406-407.
- Baker, V.R., 2008, Review of The Chronologers' Quest: The Search for the Age of the Earth by Patrick Wyse Jackson: Earth Sciences History, v. 27, p. 307-309.
- Baker, V.R., 2008, Review of Protogaea by Gottfried Wilhelm Leibniz: Earth Sciences History, v. 27, p. 309-311.

Kennard B. Bork concluded his four-year service (2004–2008) as INHIGEO Secretary-General. At the annual meeting of INHIGEO, conducted at the 33rd International Geological Congress (Oslo, Norway; August 2008), Ken was pleased and honored to turn over the Secretary-General duties to Dr. Barry Cooper (Australia). In the course of January through August 2008, Ken edited *INHIGEO Newsletter No. 40* (distributed in May 2008), and performed the various financial and correspondence duties of the office. He extends large thanks to all members of INHIGEO who contributed to the newsletters and to the ongoing work of the Commission during the past four years. Final editing of a paper on “Natural Theology in the eighteenth century, as exemplified in the writings of Élie Bertrand (1713–1797), a Swiss naturalist and Protestant pastor” occupied a slice of time in 2008. The paper is a chapter in a book, edited by Martina Kölbl-Ebert (Eichstätt, Germany), on Geology and Religion: Historical Views of an Intense Relationship between Harmony and Hostility. The volume is scheduled to appear in 2009 as Special Publication 310 of the Geological Society of London. In October '08, Ken attended the Southern Historical Association meeting in New Orleans, Louisiana, where he served as Commentator for the European History Section session on “Old Bones and New Worlds: Reinterpretation in the History of Science.” He continues as a member of the editorial board of Earth Sciences History.

Robert H. Dott is chasing paperwork through the labyrinthine process to place a site (a road-cut) in the Baraboo Hills, WI on the U.S. National Register of Historic Places with hope of eventually gaining National Historic Landmark Status. This requires a geological timescale, it seems.

Greg Good received the Mary C. Rabbitt Award from the History of Geology Division of the Geological Society of America in 2008. He published:

- Appalachian Rivers Suite: Three National Park System Rivers in West Virginia, Administrative History of New River Gorge National River, Gauley River National Recreation Area, and Bluestone National Scenic River, National Park Service. (With A. Lynn Stasick.)
- Between Data, Mathematical Analysis, and Physical Theory: Research on Earth's Magnetism in the 19th Century, Centaurus: An International Journal of the History of Science and its Cultural Aspects, 50:290-304.
- “S. Keith Runcorn,” New Dictionary of Scientific Biography, ed. Noretta Koertge, 8 vols. (New York: Thomson-Gale), 6:298-302.

He served as Associate Editor for Geology and Geophysics for the New Dictionary of Scientific Biography (2008) and on the Steering Committee of the Earth and Environmental Sciences Forum of the History of Science Society. Greg continues on the editorial board of Earth Sciences History and is the Vice President for North America of INHIGEO. He also began a new position as Director of the Center for History of Physics, American Institute of Physics.

Mott Greene has been appointed Affiliate Professor of Earth and Space Sciences at the University of Washington, and published an article on “Writing Scientific Biography” in the Dec. 2007 number of Journal of the History of Biology. He is interested in seeing proposals for short books aimed at undergraduates for the series Johns Hopkins Introductory Studies in the History of Science, that he co-edits. Books on any aspect of earth sciences are most welcome.

Léo Laporte presented a talk at the Paleontological Society Centennial Symposium, "Breakthroughs in Paleontology," Geological Society of America, Pardee Keynote Session, Houston, entitled, G. G. Simpson and the Neo-Darwinian Revolution. Abstract at Geological Society of America web site, http://gsa.confex.com/gsa/2008AM/finalprogram/abstract_142478.htm (Text and slides are also archived on the GSA web site.)

Kerry Magruder published four articles:

- "Thomas Burnet, Biblical Idiom, and 17th-Century Theories of the Earth," in Jitse M. van der Meer and Scott Mandelbrote, eds., Nature and Scripture in the Abrahamic Religions: Up to 1700, Brill's Series in Church History, no. 36 (Leiden: Brill, 2008), 2 vols., 451-490.
- "The Idiom of a Six Day Creation and Global Depictions in Theories of the Earth," in Martina Kölb-Ebert, ed., Geology and Religion: Historical Views of an Intense Relationship between Harmony and Hostility, Geological Society of London Special Publications, no. 310 (London: The Geological Society, 2009), 49-66.
- "Understanding a Contested Print Tradition: Bourguet's Mosaic, Platonic and Aristotelian Theories of the Earth," The Compass, forthcoming special issue devoted to the history of geology (will appear with an imprint date of December 2008).

Kerry also presented a paper at the annual meeting of the Geological Society of America, Houston, Texas, 10/8/2008: "Geology and Ancient Wisdom: The Enigma of John Whitehurst." Kerry continued to add images related to the earth sciences (including many portraits) to the image galleries of the History of Science Collections located at <http://hsci.ou.edu/galleries/>. These are print quality images available without charge. Kerry hosted six visitors on Mellon Travel Fellowships to the History of Science Collections, including scholars from Slovenia, Australia, Brazil and Germany. Projects related to the history of the earth sciences are ideal candidates for these fellowships (described at <http://hsci.ou.edu/images/Mellon/>).

Clifford M. Nelson continued to prepare the fourth volume, covering 1939-1961, of the narrative-analysis history of the U.S. Geological Survey begun by the late Mary C. Rabbitt. He is also compiling a narrative chronology and bibliography for the proposed fifth volume, treating 1961-1982 and ending with the transfer of the USGS Conservation Division to become the nucleus of the Interior Department's new Minerals Management Service. Cliff's 'The USGS-AASG Connection' appeared in: Cobb, James C. (ed.), *American Association of State Geologists Centennial History: 1908-2008*, Dallas, Texas, 2008, 27--38. Cobb is the State Geologist of Kentucky and the AASG's Historian. Cliff's 'The Sixteenth International Geological Congress, Washington, 1933,' accepted for publication by *Episodes* in December 2007, remained in press as 2008 ended.

Sally Newcomb presented a paper at the annual meeting of the Geological Society of America titled "Richard Kirwan (1733-1812) again" which was a continuation of her investigation of Kirwan's work. For this she listed his papers in sequence and put them in the general categories for which his work was noted. Her major activity was seeing her book into publication with GSA: The World in a Crucible: Laboratory Practice and Geological Theory at the Beginning of Geology. It is currently in press and should be available in 2009.

Julie R. Newell presented the conference papers:

- "David Dale Owen: Antebellum *American Geologist*." North Central Section, Geological Society of America, Evansville, Indiana, 24 April 2008.
- "Genesis and Geology in America: The Cooper—Silliman—Stuart Debate, 1829-1839." Geological Society of America, Annual Meeting, Houston, TX, 7 October 2008.

Society Duties: Immediate Past Chair, History of Geology Division, Geological Society of America, 2008; coordinated prize committee activities; organized and chaired division session, "The Legacy of New Harmony, Indiana and Other Topics in the History of Science and Technology," at North Central Sectional Meeting (April); chaired the division general session at the annual meeting in Houston, TX (October); Chair, History of Science Society; Committee on Education; July 2007-June 2008; Associate Editor, *Earth Sciences History*, January 2002-present.

John A. Norris attended the international Chymia conference of the history of alchemy and chemistry, which was held at El Escorial near Madrid in September 2008. The main purpose of his attendance was to promote interest in the Rudolphine Alchemy project. This project, which is being spearheaded by the Institute of Art History in Prague (part of the Czech Academy of Sciences), and which John is helping

to organize, is to culminate in exhibits, publications, and a small conference in autumn 2010. Mineralogy and mining around the time of the reign of Rudolph II (1583–1612) will be among the themes of the project. Additionally, John's article "The providence of mineral generation in the sermons of Johann Mathesius (1504–1565)," has recently appeared in Martina Kölbl-Ebert (ed.) Geology and Religion: A History of Harmony and Hostility, The Geological Society of London, 2009.

Antony Orme, University of California, Los Angeles, reports publication of the following papers related to the history of geology:

- Orme, A.R., 2007. Clarence Edward Dutton (1841-1912): soldier, polymath and aesthete. In: Wyse-Jackson, P.N. (ed.) Four Centuries of Geological Travel. Geological Society, London, Special Publications, 287, 271-286.
- Orme, A.R., 2007. The rise and fall of the Davisian Cycle of Erosion: prelude, fugue, coda, and sequel. Physical Geography, 28, 474-506.
- Orme, A.R., 2008. Pleistocene pluvial lakes of the American West: a short history of research. In: Grapes, R.H., Oldroyd, D., and Grigelis, A. (eds.) History of Geomorphology and Quaternary Geology. Geological Society, London, Special Publications, 301, 51-78.

In addition, two papers extend the understanding of important pluvial lake systems in California whose recognition during the early twentieth century was associated with the seminal work of Hoyt Gale on saline minerals in former lakes along the Owens River system, and of David Thompson on water resources of the Mojave Desert. These papers are:

- Orme, A.R. and Orme, A.J., 2008. Late Pleistocene shorelines of Owens Lake, California, and their hydroclimatic and tectonic implications. In: Reheis, M.C., Hershler, R., and Miller, D.M. (eds.) Late Cenozoic Drainage History of the Southwestern Great Basin and Lower Colorado River Region: Geologic and Biotic Perspectives. Geological Society of America Special Paper 439, 207-225.
- Orme, A.R., 2008. Lake Thompson, Mojave Desert, California: the late Pleistocene lake system and its Holocene desiccation. GSA Special Paper 439 (as above), 261-278.

Antony Orme and Amalie Jo Orme are presently evaluating the significance of geological findings during railroad surveys in the American West during the nineteenth century. They presented on "The Geomorphology of the Pacific Railroad Surveys of the American West in the 1850s" at the 33rd International Geological Congress in Oslo, Norway, in August 2008.

Alex Ospovat sends his greetings. At 86, he is not as active as he has been. However, he writes: "INHIGEO has been and will continue to be the wonderful organization. It has always been and I hope it will never cease to be. To all my friends in INHIGEO I send my kindest regards and wish you continued success in all you do."

Ken Taylor reports that he published The Earth Sciences in the Enlightenment: Studies on the Early Development of Geology (Aldershot, UK, and Burlington, VT, USA: Ashgate Publishing), a volume in the Variorum Collected Studies Series.

Davis A. Young has published:

- Origin of the American Quantitative Igneous Rock Classification: Part 1, Earth Sciences History, 2008, 27, 188-219.
- The Bible, Rocks and Time: Geological Evidence for the Age of the Earth, Inter Varsity Press, Downers Grove, IL, 2008. The first five chapters constitute a summary of the history of geology in relation to the age of Earth for lay audiences (with Ralph F. Stearley)

Greg Good, College Park MD

Uzbekistan

In 2008 the 90th Anniversary of National University of Uzbekistan, named after Mirzo - Ulugbek - the first higher educational institution in Central Asia, was widely celebrated. An international conference devoted to this event with the theme "Role of the National University in development of system of higher education and science in Uzbekistan", was held on 22-23 August in Tashkent. In the associated publication totaling 500 pages, an article by the Chairman of State Committee of Geology of Uzbekistan, N.G.Mavlyanov, characterized the condition and prospects of development for geology in Uzbekistan (p. 289-296). In an article by the Dean of the Geological Faculty, H.D.Ishbaev, the role and place of the university in the development of geological branch in Central Asia was considered (p. 194-

200). Details of collections from universities, Natural History Museums from Oslo (Norway), Adelaide (Australia), Saint Petersburg, VSEGEI, etc were also given.

In the book “Scientific Schools of National University named after Mirzo – Ulugbek” (344 p., in Uzbek) articles about formation and development of the Central Asian scientific schools majoring in mineralogy and geochemistry (E.A.Dunin-Barkovskaya), lithology and stratigraphy (V.I.Troitsky, H.Chinikulov); Uzbekistan hydro-geology (N.T.Tahirov), petrology (R.I.Koneev) were presented. In the collection “University in my life” (256 p., in Uzbek), papers by senior lecturers from the Faculties of Geology (A.Dzhuliev), Mineralogy and Geochemistry (O.Kushmuradov) are included. As part of this event Special Issue 3 of Bulletins of NUUZ (132p.) was also published, which opened with an article by Rector G.I.Muhamedov. In it, the history of faculties was considered in detail (Geology by H.D.Ishbaev, p. 26-30) together with unique photos of the scientists, many of whom became President of the Academy of Sciences (A.S.Sadykov, T.A.Sarymsakov, M.S.Salahitdinov, T.D.Djuraev).

In connection with the Anniversary, a Decree from the President of Uzbekistan, I.A.Karimov acknowledged many lecturers, among whom were the Professor of the Faculty, V.I.Troitsky, who was elected in 2008 an Academician of the Russian Academy of Natural Sciences (RAEN), and received “Mehnat shukhrati” award, and Senior Lecturer of Faculty of Modern Geodynamics, Kh. Chinikulov, who received the “Shukhrat” medal.

To commemorate the 80th-anniversary of German - Russian Pamir expedition of 1928 an international symposium was devoted to “Change of climate and evolution of landscape in mountains of the Central Asia and adjoining basins: past, present and future”. It was held in Tashkent in the Goethe Institute under the direction of Professor of Bayreuth University, W. Zech (Germany). Sixty scientists from seven states participated in the meeting including Germany, Russia, Japan, Kirghizia, Kazakhstan, Tadjikistan. Employees from the Laboratory of Glacial Geology of Institute of Geology and Geophysics who actively participated included Kh.M.Abdullaev ASRUZ. For this event the following monograph (83p) was published “Mountain Glaciations, Climate, Drainage” bringing together papers by a suite of authors including: Kh.A.Toichiev, A.A.Ni, A.A.Tikhanovskaya, M.A.Petrov, I.G.Tomashevskaya, Yu.N.Lesnik. With long-term study of evolution of glaciation, the reduction of glaciers can now be confirmed. However the question of global warming remains open. The contribution of atmospheric and tectonic impacts on the process of glaciation is not completely understood. The primary goal of the symposium was the consideration of the dynamics of the high mountains in Central Asia, which reflected the growing strength of research into geological structure. In the 1928 expedition to Pamir only one geologist (Lyudwig Noth) participated, now 20 experts in geosciences are involved. Research into global change of climate has shown concurrence of a trend in the Pamirs, Africa, Siberia and Latin America. Results of study of sedimentation processes of Aral sea have revealed a younger age - Middle Holocene, that is well correlated with archeological data and the age of ancient habitation 4,000 -7,000 years. The papers were also published in English, (221 p.) with color illustrations and portraits of researchers.

The State Committee of Geology of Uzbekistan (Chairman N.G.Mavlyanov) has published an “Atlas of Minerals, Fauna and Flora of Uzbekistan” in 2 volumes: Volume 1 - Paleozoic, (471p.); Volume 2 - Mesozoic and Cenozoic, (199p.); with tables, in three languages: Russian, Uzbek, English, dedicated to the 80th-anniversary of Geological Service.

A major project was the creation of geological open-air garden – a museum. The Geological Museum (Director Dr R.A.Umurzakov), which opened in 1988 and contains 32,000 exhibits also accomplished major scientific - educational work. Attendance in 2008 was 52,850: including 42,000 school children, 8,300 students, 250 foreigners, 2200 individuals 2200. Tours in the Russian, Uzbek, Arabic and French languages were carried out. Broadcasts on the history of geology, outstanding researchers of the past, stone exhibits at the museum, their properties (medical, poisonous etc.) are regularly carried out. Long-term researches of geological group under R.G.Yusupov's management resulted in the proposal of the new mineral, mavlyanovite; recognition of a new type of precious metal mineralization and publication of the first textbook on “Gemmology” in CIS countries. In collaboration with British researchers, confirmation of uzbekite, first proposed in 1923, as independent mineral was carried out. It is a tradition to immortalize in names of minerals outstanding geologists for example zussite (1983), khamrabaevite (1981).

The International Conference “Global correlation of Lower Devonian carbonate and clastic sections” was held from 25 August – 3 September 2008 at Kitab, the State Geological Reserve, created in 1979, and managed by Director U.D.Rakhmonov. Thirty eight experts participated in this event from the foreign states including Great Britain, Germany, France, Spain, Czech Republic, Poland, Belgium, Switzerland, USA, Tadjikistan, Iran, Russia as well as 16 experts from Uzbekistan. The reserve has now hosted excursions from 27 and 28 international geological conferences. The name of reserve has also been used for a new conodont genus *Kitabikus*. Complementing the conference is a guidebook of

the excursion published by Siberian Branch of the Russian Academy of Science, Novosibirsk (99p. in English) as well as a video film about the associated global stratotype in English and Russian language editions (museum, R.A.Umurzakov).

Through the initiative of the State Committee of Geology of Uzbekistan, State Museum and Ministry of Public Education, the “Best Young Geologist” Olympiad has been organized and more than 7000 schoolchildren have participated. During the Final (4th) round, held at the Zolotinka children's camp in the Samarkand region, 12 winners were recognized. As part of this event published materials (31p.) and video film were produced. At the State Museum a “Geologist Day” was also organized. This brought together members of various clubs, the “Veteran of geology” as well as the “Young geologists”.

At the Institute of Geology, Petroleum and Gas Deposits (IGIRNIGM) the preparatory work for 50th Anniversary celebration, to be held in October 2009, was carried out (V.I.Sotiriadi). In their Journal “Geology and Mineral Resources” (Issue N6) are published materials discussing the problems of abiogenic and organic origin of oil and gas. Authors of articles have discussed the history of investigations: O.P.Mordvintsev (p. 43-49) considered research by the Austrian geologist K.Angerger, as well as the differing Russian and American views on the genesis of oil-and-gas deposits with involvement by H. Hedberg. Preferring the abiogenic nature of many oil and gas areas of the world, A.V.Kirshin (p. 49-52) traces a history back to the ancient Greek scientist and philosopher Strabon who presented reasons explaining of organic origin of oil and gas.

A large number of papers in this journal were dedicated to the individual contributions of geologists. B.A.Beder's 100th Anniversary recognizes one of the most prominent geologists of Uzbekistan, an expert in hydromineral resources of Central Asia, who opened more than 30 deposits of iodine - bromine minerals for industrial use as well as thermal waters. He was also the author of more than 400 papers describing the hydro-geological indicators of oil and gas, providing recommendations on the use of oil field waters and advising on the protection of ground waters from depletion and pollution. D.B.Dzhamalov's 75th Anniversary recognizes an expert in neotectonics and geodynamics, who was head of the “Stratigraphy, Paleontology and Tectonics Laboratory” in the Institute of Geology and Geophysics named after Kh.M.Abdullaev. H.Uzakov's 75th Anniversary recognizes an expert in the field of regional geology, senior researcher in the Institute of Mineral Resources State Committee of Geology of Uzbekistan. He led studies on Pre Mesozoic basement and co-authored many maps. I. Djuraev's 60th -Anniversary recognizes an expert in ore deposits who also co-ordinated research in the field of geology.

Geological sciences in Uzbekistan also experienced several losses. During 2008 the following have passed away. F.A.Usmanov (1935-2008) - Academician of As RUz, Member of New - York Academy of Sciences in geology and computer science, honored worker of science, the founder of mathematical geology, member of the International Association of Mathematical Geology, Vice-President of National Committee of Geologists of Uzbekistan; T.M.Voronich (Matsokina) (1921-2008) - outstanding geologist in metallogeny, the author and editor of many metallogenic maps, researcher of lithium deposits that have no analogues elsewhere in the world; I.M.Golovanov (1933-2008) – specialist in the field geology of ore deposits and metallogeny, winner of the State premium, specialist on copper in Uzbekistan, the founder of a school focusing on the search and estimation of ore deposits on the basis of their modeling, contributor to geodynamic metallogeny of Central Asia; S.D.Morozov (1939-2007) - the outstanding expert on lithology and paleogeography.

Works on the history of geology in Republic in many respects are promoted by L.N.Lordkipanidze's annual personal contacts with scientists of Moscow: Department of History of Geology of the V.I.Vernadsky Geological Museum of the Russian Academy of Science (I.G.Malahova, Yu.Ya.Solovieva, G.P.Homizuri, Z.A.Bessudnova), Institute of Earth Physics (V.I.Ulomov, A.Ya.Sidorin), IIET (V.A.Shirokova, O.A.Sokolova), GIN (A.E.Shlezinger), VNIGNI (V.S.Shein), veterans - colleagues of V.V.Tihomirov (V.G.Gerbova, L.B.Panjutina), RAEN (Academician I.N.Stepanov).

Lora Lordkipanidze, Tashkent

Venezuela

Activities

In May 2008 Bulletin 39 of *Geos* published the abstracts of the thirteen historical papers presented in the VI Venezuelan Symposium for the History of Geological Sciences, during the IX Venezuelan Geological Congress, 2007. Each Bulletin also includes a DVD containing the PowerPoint presentations of all such papers. Meanwhile Rogelio Altez has edited all these papers which will be published in 2009 in book form. Please see the Venezuelan 2007 Report for the titles of the papers.

Prof. Franco Urbani has completed the manuscript of his book "*La Cordillera de la Costa de Venezuela: Evolución de su conocimiento geológico desde el siglo XVI al XXI*" (The Venezuelan Coastal Range: Evolution of its geological knowledge from XVI to XXI centuries, 268 p.), which was presented to the National Academy of Engineering and Habitat. He will be recognized as Academician, after his presentation during the first quarter of 2009.

A group of professors at the "Universidad de Los Andes" (Mérida City, Venezuela) led by Professor Jaime Laffaille, have been very active in the organization of the VII Venezuelan Symposium for the History of Geological Sciences and the V Venezuelan Symposium in Historic Seismology. This has involved several organizational meetings and preliminary field inspections in order to arrange the schedule for a two days field trip being planned during the event. The Symposium will take place from 25 to 27 June 2009.

Awards

Geologists José Antonio Galavís and Hugo Velarde received the coveted Gumersindo Torres Award of the Venezuela Society of Petroleum Engineers on 15 July 2008, for their classic 1967 paper on the Orinoco Belt field. It had been discovered in 1936, but given the nature of the extra heavy oil and natural bitumen and with the technology of the times, it was a disappointment for three decades. They demonstrated that the accumulation was a single, immense field, where over three fourths of the petroleum concentrates in the main producing areas and that the Oficina and Merecure formations were the source rocks. There was a pronounced density segregation from the centre of the basin (Maturín) to the edge of the Guayana Archaic shield. Galavís and Velarde were remarkably accurate with their preliminary estimate of volume in place, 110 milliards cubic metres (700 milliards barrels). MD Gumersindo Torres was the Minister who in 1920 raised national awareness of the need to develop Venezuelan oil for the benefit of the country.

Anthropologist and Historian Rogelio Altez, also President of the Venezuelan Society of History on the Geosciences, was awarded the Biennial Award for a University Book (Social Sciences) for his book titled *El Desastre de 1812 en Venezuela: sismos, vulnerabilidades y una patria no tan boba* (The 1812 Disaster in Venezuela: Seismicity, Vulnerabilities and a not fool nation, 522 p.). In this work, Altez presents a comprehensive historical investigation on the independence process and the occurrence in that context of the most destructive earthquake in Venezuelan history. In that research, several hypotheses about the seismic intensities, macroseismal epicentre and tectonic behaviour are presented by the author. His interpretations also renew an historical debate about the earthquake, which originate from Humboldt's work and have continuity with other scholars, including Wilhelm Sievers, Günther Fiedler and many others.

Rogelio Altez (Estado Vargas) & Franco Urbani (Caracas)

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April 2009

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