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INHIGEO Newsletter No. 43

(Published in May 2011 covering events generally in 2010)

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"INTERNATIONAL COMMISSION ON THE HISTORY OF GEOLOGICAL SCIENCES"
April 2011

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President's Message
(April 2011)

Dear Members, old and new,

As anyone may notice, our Newsletters get thicker every year, testifying for the vitality of the history of geological sciences in dozens of countries. This year there is no difference, as you will have the pleasure to read in the following pages.

Our INHIGEO colleagues from Spain successfully organized the annual conference, the 35th, including fieldtrips, in past July, and more details can be found inside.

This year we shall meet in Toyohashi, Japan in August 2011, to discuss the exciting subject of "Visual Images and Geological Concepts". The Second Circular has now been posted at www.inhigeo-jp.org, where you can also find all current news on our 2011 meeting. The terrible recent geological events in North Japan do not interfere with previous plans, and the local Organizing Committee is very active with the preparations. As they say on the website: "*Participation of every member to the conference gives the courage to Japan! We look forward to meeting you in Toyohashi*". Colleagues, let's go and do our part!!

The plans for 34 IGC Brisbane 2012 are going on successfully. Details of the INHIGEO symposia, convenors and the pre-conference field trip have now been decided. And they appear in the Second Circular recently released.

On 21 February 2011, at the UNESCO Headquarters building in Paris, the celebration of IUGS 50th anniversary took place. Professor Jaques Touret and Dr Jean Gaudant kindly agreed to officially represent INHIGEO at the ceremony, amongst other 200 others who were there.

Unfortunately, we do not have only good news. On 15 January 2011 died Professor Manuel Carlos Serrano Pinto, from Aveiro, Portugal. Manuel was INHIGEO President from 2000-2004 and was especially involved in the organisation of a most successful conference held in Portugal in 2001. An obituary may be found inside. In addition we regret also to have to report the deaths of two Honorary Senior Members, Professor Masae Omori (Japan) and Professor Alexander M. Ospovat (USA).

Enjoy the reading!

Silvia Figueirôa

Secretary-General's Report
(April 2011)

Dear Members

The past year has been another successful one for INHIGEO and an unexpectedly busy time for me as Secretary General. INHIGEO also welcomes a group of 22 new members from countries as diverse as Argentina, Armenia and Papua New Guinea. As of April 2011 INHIGEO has 233 members from 47 countries.

In July 2010, INHIGEO members enjoyed a delightful gathering in Spain for their 35th conference under the theme of "History of Research in Mineral Resources". A Special INHIGEO volume of *De Re Metallica* was issued prior to the meeting, an abstract volume was published for registrants whilst a volume of expanded conference papers is being published subsequently by the Geological Survey of Spain. Please be sure read to Mike Johnson's account of the meeting and associated field trips later in this newsletter as Mike has provided a superb record. During the conference, INHIGEO also held its Annual Business Meeting, the minutes of which are also provided in this newsletter.

For our 36th INHIGEO Conference our Japanese colleagues are planning our meeting at Aichi University in Toyohashi City, Aichi Prefecture, Japan, 2–10 August 2011. The theme of symposium will be "Visual images and geological concepts including the history of geological images, vulcanology, seismology and tectonics." The conference is being planned at an unexpectedly difficult time for Japan following the recent earthquake and tsunami so I hope that INHIGEO members give special consideration to support our Japanese colleagues in their time of need.

In August 2012, INHIGEO members will meet in Brisbane, Australia as part of the 34th International Geological Congress in Brisbane, Australia. As an INHIGEO Secretary General based in Australia I have assumed responsibility as "Theme Convenor: History of Geology" for this meeting together with President Silvia Figueirôa as "International Co-convenor".

After discussions amongst Australian INHIGEO members, coupled with input from the wider geological profession, the following historical symposia topics are being offered in the Second Circular with Australian INHIGEO members (in brackets) as Convenors.

- Biographical studies of eminent geologists: A symposium in honour of D.F. Branagan (David Oldroyd)
- The early history of continental drift: A centenary tribute to Alfred Wegener (1912) (H. E. Le Grand, A.G. Krill)
- Major achievements in 20th century geology (C.A. Bacon)
- Geology in tropical regions: a history (E.B. Joyce)
- Geologists, resource exploration and development: an historical perspective (K.G. McQueen)
- General contributions in the history of geology (B.J. Cooper)

The symposium on continental drift has originated from an independent proposal to the 34IGC organisers by Allan Krill (Norway) and I have strongly supported its addition to the INHIGEO programme. Australia's indefatigable INHIGEO Past President and Honorary Senior member, David Branagan, has also proposed a pre-conference field trip, independent of the 34IGC organisation that traverses from Sydney to Brisbane. Members will be provided with additional detail on this excursion closer to the event.

The INHIGEO Board has also agreed on our 2013 conference. As this year corresponds to the International Congress of History of Science and Technology (ICHST), it will be held in conjunction with this meeting in Manchester, England. Cherry Lewis one of our British members will have responsibility for the INHIGEO component of the meeting which will be centred on the theme of "Geology of Art and Literature".

Preliminary plans are also in train for INHIGEO conferences in 2014, 2015 and 2017 with the 2016 conference being associated with the 35IGC in Cape town, South Africa.

The INHIGEO Board has agreed that the 2014 meeting will be held in the United States with the 2015 conference being held in China. Further details on location, theme and time have yet to be determined. The 2017 meeting is envisaged as a 50th anniversary meeting in Yerevan, Armenia.

The INHIGEO Brisbane conference in 2012, with its associated Business Meeting, will end the term of the current INHIGEO Board so a formal nomination and election process will take place for all Board positions over the next year. Of interest to members is our current plan to create a separate position of Newsletter Editor in the incoming Board, given the increasing size of our Newsletter with Articles and Book Reviews in addition to News and Country Reports.

INHIGEO continues to provide discussion papers in the series "Classic Papers in Geology" for the IUGS Journal *Episodes*. Members are asked to consider additional contributions to this highly worthwhile series, and are invited to contact, with suggestions and offers, our colleague David Oldroyd who co-ordinates these articles.

INHIGEO's work continues to be made possible by important support from various organisations. Financially we continue to be greatly assisted by the annual grant provided by the International Union of Geological Sciences (IUGS). We also are aided by funding provided by the International Union of the History and Philosophy of Science, Division of History of Science and Technology (IUHST/DHST). Production of our newsletter, maintenance of our website and support of our annual conferences could not proceed without that much-appreciated help. In addition to my compilation efforts, David Oldroyd also arranges printing and distribution of this newsletter. Thank you, David.

Over the past year 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.

My thanks finally to members of the INHIGEO Board who have been quick to respond to my calls for advice and information and especially to our President Silvia Figueirôa.

As a final note, please remember to keep me advised of any address changes especially email as the latter is undoubtedly the most rapid means of communication. Also let me know at any time whether you simply wish to receive this newsletter as a pdf file. Members should be aware that additional copies of this newsletter can always be readily produced from our website www.inhigeo.org.

My very best wishes to all INHIGEO members.

Barry Cooper

INHIGEO ANNUAL MEETING FOR 2011
Visual Images and Geological Concepts
Toyohashi, Japan,
2-10 August, 2011

For the latest news, please visit the conference website at www.inhigeo-jp.org/index.html. The deadline for registration is 15 June 2011.

Japanese historians of geology cordially invite our world-wide colleagues to participate in the 35th INHIGEO conference based in Toyohashi, Japan in August 2011. The conference language will be English. 58 positive responses have been received from 18 countries to the 1st circular.

Throughout the history of civilizations, visual images have always played the most important role in their concepts of the earth of the time in the form of maps and sketches since the ancient times and thus the most appropriate main theme of INHIGEO's annual conference in 2011 is "Visual Images and Geological Concepts".

All participants interested in presenting oral communications or posters are invited to send their proposals to the Organizing Committee as soon as possible.

DETAILED SYMPOSIA TOPICS :
Session 1: "History of Geological Maps and Related Geological Images in the World"

- History of Geological Maps /Geophysical Maps/Geochemical Maps etc.
- History of Geological Maps for Exploration of Oil, Coal and Mineral Resources.
- Geological Image which appear in Literary Works
- Examples of Geological Views/photographs/pictures/prints/cartoons
- History of Education of Geology/of Mitigation against Geological Disasters
- Current Status of Geoparks and their Scenery
- History and results of Geological Survey in Marine area
- History of Digital Geo-scientific Maps including 3D Images
- Related Topics

Session 2: "History of Seismology, Volcanology and Geotectonics"

- History of Volcanology/Volcanic maps/related issues such as volcanogenic ore deposits (Kuroko ore etc).
- History of Seismic Studies(Tsunami)/Seismological Maps/Seismotectonic Maps
- History of Tectonic Maps/Neo-tectonic Maps/Structural Geological Maps
- History of Studies and Maps of Island Arcs and surrounding oceans/marginal seas
- History of Geological Disasters/ Images documented in Historical records
- History of Geophysical/Geochemical Studies of rocks such as Paleomagnetic/super–high pressure rock experiments related to those issues
- Related Topics

Papers will also be accepted "General Contributions on the History of Earth Sciences".

CONFERENCE VENUE:
The venue will be Aichi University(address: 1-1 Machihata-cho, Toyohashi-shi, Aichi-ken 441-8522, Japan. The city of Toyohashi is in Aichi Prefecture and has developed while maintaining the history and traditions of the eastern part of the historically important Mikawa district. Toyohashi has also become the economic center of this district. The cultures of east and west Japan meet here, so the town has developed a unique flavor. This atmosphere, together with the streetcars and streets rich in greenery, fosters a human touch-Toyohashi has long been ranked as one of the most livable cities in Japan and its people remain proud of this.

CONFERENCE SCHEDULE
Scientific Sessions
Tuesday 2 August 2011:
9. 00 – 10.00 Reception at Aichi University
10.00 – 10.30 Welcome and Opening Ceremony
11.00 – 12.00 Keynote Address,
Poster Session
Lunch
14.00 – 18.00 Oral communications

Accompanying program: Toyokawa-Inari(Temple and Shrine Complex)

Wednesday 3 August 2011:
9.00-12.00 Keynote Address and Oral communications
Lunch
14.00-16.00 Oral Communications,
16.00-18.00 Oral Communications and INHIGEO Business Meeting
Poster Sessions (morning/afternoon). Accompanying program: Nagoya Castle

Thursday 4 August 2011
Mid-conference Excursion in the Shitara district
One day field trip by coach to the outcrop of the Median Tectonic Line, the largest fault in Japan, Shitara-ga-hara and the Nagashino Castle(Fort) (ancient battle field of the 16th century), Horai-ji Museum of Natural History and the Horaiji-Temple.
18.00 Symposium dinner at Honjin (Japanese Restaurant) in Nagashino

Friday 5 August 2011
9.00-12.00 Oral Communications
Poster Session (morning).
12.00 Lunch
13.00 Half day trip to Toyohashi City.
19.00 Farewell Party.

Post-Meeting Trip (Saturday 6- Wednesday 10 August, 2011):
A five-day post-symposium excursion is scheduled from 6-10 August 2011, visiting the Kii Peninsula, where you can observe the geology of the Outer Zone of Southwest Japan. It is mainly composed of the accretionary complex of the Shimannto terrain from Jurassic and Cretaceous in the inner side and Paleogene Tertiary in the outer side. They are overlain by the Miocene Sediments and felsic volcano-plutonic complex in both the southeast and southwest sides. The trip will also be a good opportunity to experience Japanese Shinto and Buddhist cultures. In the southern part of the peninsula, there are several famous pilgrimage destinations, such as Ise Shrine, the principal shrine of Shintoism, Hayatama Taisha Shinto Shrine and Kumano pilgrimage routes for Shintoists. The tour includes visits to the Kiwa Mine Museum, which exhibits the history of the Kishu Mine from which the copper is said to be used to erect the large statue of Buddha of the Todaiji-Temple in Nara and Nachi Waterfall (World Heritage site) on the pilgrimage route. Temple lodging in Koya-san Buddhist temple will be a unique experience, offering you a quiet and peaceful night with vegetable diet in a typical Japanese style room. The tour will then take you to Nara, a relatively small but old capital from 710 to 784 A.D., where you can visit temples and shrines with long history and enjoy exquisite sculptures of Buddhism. In Kyoto, another famous ancient capital (794 - 1868 A.D.) of Japan, an unguided sightseeing of the city is available to visit temples, shrines, gardens, and museums at your own pace.

REGISTRATION, FEES & PAYMENT:
Registration has to be made online through the conference web page: www.inhigeo-jp.org/index.html.
Registration will be confirmed as soon as payment has been received by us.
Registration fee for the Scientific Sessions (2 - 5 August 2011）: 30,000 yen including a book of abstracts, mid-meeting trip on 4 August 2011, lunch meals, and coffee breaks. Breakfasts and suppers during the Scientific Sessions are not included.
Accompanying person: 20,000 yen (A special program will be arranged for accompanying persons)
Student: 10,000 yen
Post-meeting trip (Kii peninsula to Kyoto, Saturday 6- Wednesday 10): 60,000 yen. Post-meeting field trips are not included in the meeting fee.
Payment Method:
Payment by credit card: Please go to the registration link within the Conference web page. Registration will be confirmed as soon as payment has been received by us.
On-site registration: Payments only by cash will be accepted.

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INHIGEO BUSINESS NOTICES

Minutes of the INHIGEO Business Meeting 2010
University Polytechnical School of Almadén, Spain,
Thursday 8 July 2010

Members Present: Filomena Amador (Portugal), Luz Azuela (Mexico), Carol Bacon (Australia), Zoya Bessudnova (Russia), Andrea Candela (Italy), Alena Cejchanova (Czech Republic), Barry Cooper (Australia), Algimantis Grigelis (Lithuania); Michyta Inomata (Japan), Tatiana Ivanova (Russia), Mike Johnston (New Zealand), Marianne Klemun (Austria), Martina Koelbl-Ebert (Germany), T. Kutsukake (Japan), Irena Malakova (Russia), Wolfgang Mayer (Australia), Sally Newcombe (USA), David Oldroyd (Australia), Manual Pinto (Portugal), Octavio Puche (Spain), Isabel Rabano (Spain), Philippe Taquet (France), Gennardy Trifonov (Russia), Susan Turner (Australia), Ezio Vaccari (Italy), Jiuchen Zhang (China)

Presiding: Vice President Europe, Martina Koelbl-Ebert (Germany), and Secretary General Barry Cooper (Australia)

1. Welcome and Opening
   Vice President Martina Koelbl-Ebert opened the meeting at 3.00pm and welcomed members to the meeting

2. Regrets and Apologies from those unable to attend
   President Silvia Figueirôa (Brazil), Kennard Bork (USA), David Branagan (Australia), Gregory Good (USA), Rodney Grapes (NZ), Alan Mason (NZ), Simon Nathan (NZ), Tom Reijers (Netherlands), Gerardo Soto (Costa Rica), David Spalding (Canada), Hugh Torrens (UK), Bruce Waterhouse (New Zealand)

3. Arrangement of the agenda
   There was no report from the President Silvia Figueirôa who was unable to be present. A welcoming message from her had been read at the opening of the conference.

4. Minutes of the previous meeting held in Calgary, Canada (August 2009)
   These were accepted unanimously without amendment.

5. Matters arising from the minutes
   Ezio Vaccari reported that the INHIGEO virtual library project was continuing although lack of staff is leading to delays in development.

6. Secretary General's Report
   Membership

   The Secretary General reported that INHIGEO currently has 215 members from 46 countries. Four deaths had been reported over the past months for whom obituaries had been published in the newsletter.

   A membership ballot was held in March/April 2010 with 22 nominations from 9 countries. Unsuccessful efforts had been made to gain new members from Canada, Fiji, Finland, Germany, Iceland, Morocco, Norway and the United States.

   The most notable aspect of the ballot is that so few members (45%) voted. This may have due to the dispatch of the ballot to most members as a pdf file in an email. This file needed to be printed and scanned to return unless a simple Word file was requested. A reminder could also have been sent out.

   Newsletter

   Newsletter #42 has been edited and compiled. As usual David Oldroyd arranged printing and mailing from Sydney. Notably the newsletter contains 13 book reviews. It was noted that book reviews of foreign language books is an important aspect of the newsletter. It was suggested that given the size of the newsletter and the amount of work involved, that the newsletter could in future be compiled by a separate office bearer appointed as an Editor.

Website

The INHIGEO website (www.inhigeo.org) remains very successful. It remains an easy source of information for the INHIGEO membership as well as members of the public. It can be updated easily.

Publications

It remains uncertain whether a publication will result from the 2009 conference in Canada.

The organisers of the 2010 conference have published a special INHIGEO issue of *De Re Metallica* (Volume 13 in 2009) to promote the meeting. Nine articles appeared in English and Spanish on the history of mining.

The proceedings of the Madrid conference will publish by the Geological Survey of Spain.

INHIGEO members continue to contribute to *Episodes* with articles on past Geological Congresses and on "classic papers in geology". These contributions are co-ordinated by David Oldroyd.

7. Matters arising from the Secretary General Report

2010 Ballot

There was general concern about the low participation rate in the ballot.

David Oldroyd suggested that instead of using email all members should receive ballot papers with the newsletter.

INHIGEO website

Ezio Vaccari suggested that additional back issues of the newsletter could be placed on the website.

8. IUGS topics

Inventory of Geological Standards

The Secretary General reported that he had completed an inventory of geological standards on request from IUGS. He had highlighted the potential of the proposed "Global Heritage Stone Resource" designation.

IUGS history project

Susan Turner reported on progress of the IUGS history project. She advised that she had visited Trondheim in Norway to view the IUGS archives before their transfer to Reston, Virginia and had reported on this. Two posters on the project were being presented at the meeting.

She was concerned about progress on the project given the 2011 anniversary and called for additional assistance.

David Oldroyd advised that he was willing to assist and stressed the need to circulate the membership on the topics that needed to be considered.

Philippe Taquet suggested that the project could be deferred until 2012 with the resulting publication being distributed at the International Geological Congress.

9. Future Meetings of the Commission

Toyohashi, Japan 2-10 August 2011

Michiya Inomata reported on progress for the 2011 meeting in Japan. The First Circular had been distributed to all attendees at the conference and the conference website was functioning.

The conference themes are:

- The history of geological maps and related geological images
- The history of seismology, volcanology and tectonics.

A five day post conference excursion will be held to the Kii Peninsula. A mid conference field trip is also planned.

IGC Brisbane, Australia 2012

The Secretary General is managing the INHIGEO symposia that will form part of the International Geological Congress.

Consultation between INHIGEO members from Australia has led to the following symposia topics being accepted

- Biographical Studies of Eminent Geologists: A symposium in honour of David Branagan
- Major Achievements in 20th century geology
- Geology in tropical regions: A history
- Geologists, Resource Exploration and Development: An historical perspective

A pre-conference field trip being planned by David Branagan that will involve a transect from Sydney to Brisbane visiting the Hunter Valley and the New England Fold Belt.

Suggestions for a mid conference field trip near Brisbane and a post conference field trip to western Queensland dinosaur sites have been suggested but these await progress on the overall IGC field trip itinerary.

Manchester 2013

The INHIGEO Board recommends that the 2013 conference be held in conjunction with the IUHPS conference to be held in Manchester. Our proposal has been influenced by the involvement of many INHIGEO members in the last IUHPS conference in Budapest in 2009.

The Secretary General has contacted INHIGEO's UK membership with the proposal and has received a positive response from Cherry Lewis who has proposed a theme of "Geology of Art and Literature". A positive response has also been received from the Manchester conference organisers.

It has been recognised that INHIGEO by itself has to arrange a complementary field trip as IUHPS does not have a field programme.

The meeting generally supported the Manchester proposal with strong support from Ezio Vaccari.

David Oldroyd suggested that a one-day registration was needed for those INHIGEO members who do not wish to attend the full conference.

It was suggested that the IUHPS conference organisers may suggest additional symposia related to the general theme of the conference.

2014 and 2015 Conferences

The Secretary General advised that no decisions had been made for INHIGEO meetings in these years and called for suggestions.

Suggestions for Morocco, Kazakhstan, Mexico and Argentina were raised during the meeting and informally discussed elsewhere during the conference.

The Secretary General agreed to send a letter to members over the next 12 months, inviting formal proposals.

Sally Newcomb strongly supported the suggestion that INHIGEO develop greater links with the Geological Society of America (History of Geology Division), which meets every October.

Cape town, South Africa 2016

This meeting will be held in conjunction with the planned IGC.

David Oldroyd advised that there was a dire need to gain African members that would support INHIGEO symposia at the conference.

Yerevan, Armenia 2017

It has been tentatively agreed that the 2017 meeting be held in Yerevan, thus returning to the place of INHIGEO's formation in 1967.

10. Declaration of the 2010 Ballot

The Secretary General announced that at the recent election the following had been elected members of INHIGEO

RICCARDI, A.	Argentina
SUREDA LESTON, R.J.	Argentina
ACENOLAZA, F. G.	Argentina
ALONSO, R.	Argentina
KARAKHANYAN, A.	Armenia
MALKHASYAN, G.	Armenia
PILIPOSYAN, A.	Armenia
McQUEEN, K.G.	Australia
CAI KEQUIN	China
CAO XIPING	China
BAOGUO CHEN	China
LIU RUIXUN	China
CIANCIO, L	Italy
GERALI, F.	Italy
MORELOS, L	Mexico
DAVIES, H.L.	Papua-New Guinea
KRZYWIEC, P	Poland
WOŁKOWICZ, S.	Poland
MOTA, T.	Portugal
WESTERMANN, A.	Switzerland
BOWDEN, A.J.	UK
O'CONNOR, R.	UK

Francesco Gerali (Italy) and Teresa Mota (Portugal) were present at the meeting and they were welcomed into the Commission with acclamation.

11. New Business, Business without notice

David Oldroyd proposed a vote of thanks for the Secretary-General which was supported with acclamation.

12. Vote of Thanks for our hosts in Spain

    Vice President Europe Martina Koelbl-Ebert proposed a vote of thanks for the Organising Committee for the Madrid-Almadén conference under its President Professor Dr Octavio Puche. It was supported by acclamation.

As there was no other business, Vice President Europe Martina Koelbl-Ebert closed the meeting at 4.10pm.

INHIGEO Business Meeting
Toyohashi (Japan)
Wednesday 3 August 2011 4:00pm

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, Almadén, Spain (2010)
   (* 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. Membership and 2012 Ballot
12. New Business / Business without notice
13. Vote of thanks for our hosts in Japan 2011

CONFERENCE REPORTS

The International Commission on the History of Geological Sciences (INHIGEO) Meeting, Spain, 1 to 14 August 2010 with a pre- and post-meeting fieldtrips

The 35th INHIGEO Meeting was held in Spain from 1 to 14 July 2010. It was what might be called a travelling circus in that it incorporated two field trips between which it switched venues from Madrid to Almadén. Despite the complex itinerary it was extremely well run and the 104 delegates from 26 countries of the 5 continents who registered for the meeting, and lesser numbers on the fieldtrips, were kept fully enlightened, both prior to arriving in Spain and during the meeting itself. For this we are grateful to the organising committee comprising Octavio Puche Riart, Luis Felipe Mazadiego Martínez and José Eugenio Ortiz Menéndez (Madrid School of Mines, Universidad Politécnica de Madrid), Isabel Rábano Gutiérrez del Arroyo (Geological Survey of Spain, IGME), Luis Mansilla Plaza (EUPA, Universidad de Castilla-La Mancha), Enrique Orche García (Vigo School of Mines, Universidad de Vigo), Josep María Mata Perelló (EUPM, Universidad Politécnica de Cataluña) and Mariano Ayarzagüena Sanz (Spanish Society for the Preservation of the Geological and Mining Heritage, SEDPGYM-o.k.).

Pre-meeting Field Trip

Commencing at 8.00 AM on 1 July, 24 participants assembled outside the elegant baroque building that houses the School of Mines in Madrid and weighed down with guide books were soon being sped southeastwards on a comfortable bus to Andalusia. Our main guide for the day was Antonio José Pérez Angel, with introductions by Antonio Arribas Rosado (Newmont Mining Co., USA) who was ably supported by several other members of the Arribas family, namely his father Antonio Arribas Moreno and his sister Isabel Arribas Rosado, all distinguished geologists in their own right.

At first we crossed fertile fields developed on Miocene limestones and other sediments filling broad basins flanked by low ridges of Paleozoic quartzites. On several of the ridges were occasional original windmills of Don Quixote vintage. In places swarms of modern windmills and in the basins themselves arrays of solar

panels highlighted how Spain was addressing her energy needs. The quartzites, as a result of Hercynian folding, are steeply dipping as we were to clearly see on entering the short but spectacular gorge along the cross fault of the Rio Despeñaperos cutting through the Sierra Morena. In the gorge the Late Ordovician quartzite forms columns giving rise to it being named Los Órgans. Utilising the gorge are motorways and railways which provide the main transportation links between Madrid and Andalusia. Despite the existing roads, another motorway was being punched through the mountains flanking the gorge, and involving extensive bridges and tunnels. It was added proof that the gorge is the gateway to Jaen Province of Andalusia. The rocky crags and overhangs of the gorge were also important refuges for man, with evidence of human occupation dating back to 4th millennium BC.

Exiting from the gorge more rolling landscape prevailed on which oak trees gave way to vast plantations of olives, reputedly 60 million of them. Of more interest to participants was that amongst the trees are large stone and brick chimneys and the shells of buildings that once housed boilers, pumps and winding gear. All this signalled that we were now in the celebrated lead mining district of Linares-La Carolina on the north side of the Rio Guadalquivir valley. Except for the olive trees and the temperature being over 40º in the shade, one could briefly imagine that we had exchanged Linares for Cornwall. On reaching the town of Santa Elena, and following a traditional Jaén lunch in the cool confines of the Hotel California, we were guided around some of the mining sites by Angel Pérez Sándoz and José Dueñas Molina of the Association Collective Proyecto Arrayanes. This organisation is actively documenting the various mining relicts as well as progressing plans to turn them into a museum of mining. Although mining of copper began in the Bronze Age through to Roman times, it was not until the 19th century with the introduction of Cornish technology and British capital that large scale lead mining was made possible. Foremost amongst the British was Thomas Sopwith and by the late 19th century Linares was the leading lead producer in the world. Not only was the lead exported as ingots but processing works were established to manufacture pipes, lead shot and other products. The lead was extracted from sulphide veins of Hercynian age in Ordovician slates or granite intruding the slates. The veins were up to 1.5 m thick and had a general orientation of north-south to northeast-southwest depending on the host rock. The last mine closed in 1991.

INHIGEO Field Trip visits the archaeological relicts of the mines of La Tortilla, Linares

The first stop was the mines of La Tortilla. Here the line of the mineralised vein was defined by a string of impressive stone buildings and chimneys stretching north from Linares through olive groves. Amongst the ruins was the imposing shot tower of Fundición La Tortilla. Perhaps more impressive, and certainly more alarming, were the open shafts adjacent to the pump and boiler houses. The numerous shafts in the district are up to 2 km deep and some idea of the scale of the mining is that the cumulative depth of all of the shafts is some 12 km. An appreciation of the hazards of mining was graphically brought home at the Mina San Miguel mine where a plaque next to the San Vincente shaft records the death of 6 miners killed in 1967. Here the shaft is

covered by rather thin looking iron plate. Gaps around the edges allowed boulders to be dropped down the shaft giving rise to the unnerving sound of air being displaced at depth.

The final stop was the large factory complex of La Fundición de La Cruz situated on a hill adjacent to Linares. The factory opened in 1830 and, in 1986, was the most recent to close. Among the products produced was lead shot which, unusually, was not manufactured in a shot tower but instead in a specially constructed shaft. Next to the shaft wooden bunkers still retained remnants of shot of various diameters. After closure of the factory and its foundry, the La Cruz mine remained operational for a further 25 years.

From Linares the trip continued south through a rolling landscape dominated by olive trees before entering the mountains with numerous exposures of dramatically bedded, and in places spectacularly folded, sandstone-mudstone flysch of Late Cretaceous age. After a quick meal in Granada we were, courtesy of the Newmont Mining Corporation, escorted by Antonio Arribas Rosado to a cave cut in a hillside in Albaicin to watch the spectacle of flamenco dancing, accompanied by traditional singing and guitar music. If that was not enough excitement we then walked through the narrow streets of Albaicin, around midnight, whilst a local guide pointed out the highlights. We finally arrived at the crest of the hill where on the other side of a valley stood the magnificent flood lit Alhambra Palace.

Despite the latest of the hour in returning to our hotel, it was an early start the next morning as we headed southeast towards the Mediterranean at Costa de Almeria under the dual guidance of Antonio Arribas, both father and son. Both were highly qualified for this role and the younger Antonio's PhD thesis was on the Tertiary volcanic rocks fronting the coast. After skirting the snow covered Sierra Nevada we crossed eroded Late Tertiary fluvatile bedded conglomerate. These gave way to the Betic fold belt comprising typical basin and range topography. In some of the ranges evidence of past mining was evident, such as the huge mullock heap spread out over a valley floor, mute evidence to the size of the Minas del Marquesado iron mine that closed in 1990. As we progressed eastwards into the rain shadow of the range, the country became drier and drier but deep erosion into horizontally bedded Pliocene sediments testified to severe rainstorms. This landscape was also utilised as a "mini-Hollywood", being the setting for films such as westerns. Of a more permanent value were vast areas of hot houses under plastic sheeting. Further evidence of the high sunshine hours were almost equally vast arrays of solar panels that competed with wind turbines on the adjacent ridge crests to supply part of the electricity demands of this area of Spain.

As we approached the coast, the geology changed as we entered the Neogene Rocas Volcanic Field which stretches along the coast from Cabo de Gata. The first geological stop in the field was to view the Caldera de Los Frailes, which takes its name from two andesitic peaks known as "The Two Friars". The andesite intrudes dacitic rocks that fill most of the caldera. On the caldera's northeast side are ash and other deposits ejected from the more complex Rodalquilar Caldera to the north. Some evidence of mining of epithermal gold deposits, despite having ceased in the 1960s, is still evident in the dry treeless landscape. The 8 km wide Rodalquilar Caldera was convincingly revealed at our next stop on its southern rim. The rim is unusually well preserved and is delineated by several red weathering rhyolite domes. However, not all of the features are the result of the Rodalquilar event as there are also two later, but smaller calderas, one of which has spread ignimbrite onto the floor of the main caldera. As well as being the source of epithermal gold and other minerals, the volcanic field is of great interest to petroleum geologists. For as the volcanoes grew in the warm Neogene Mediterranean sea, algal reefs also accumulated. Algal reefs, as those who attended the INHIGEO Meeting in Calgary in 2009 will attest, are potential reservoirs of hydrocarbons. Taking a barely used, one bus width wide, road from the floor of Rodalquilar Caldera up onto the northwest rim there were superb exposures of breccias that formed as the caldera developed and its rim locally collapsed.

Following lunch in a restaurant at the seaside resort of Cabo de Gata overlooking the Playa del Arco, we returned to Rodalquilar. There a valley breaching the crater rim, and which gained prominence as the setting for the film "Lawrence of Arabia", was followed to the sea at El Playazo. More importantly, it contains the fort of Torre de Los Alambres that was built in 1510 to protect the trading of alunite. This mineral, an important ingredient in the tanning of leather, was relatively extensively mined from the Middle Ages. Some of the alunite was processed in the fort, as soot laden stone roofs in some of the rooms testify. From the fort it was back into the crater and a hot climb through a relatively recently abandoned gold processing plant, with its remains of hoppers, cyanide tanks, settling ponds and tailings dump, brought us to the cooling sea breeze on the northern crater rim. Exposures on the way graphically showed the various stages of alteration in the volcanic rocks due to the intrusion of hot silica-rich fluids. This increasing alteration manifested itself from sericite, through argillaceous to, as the surface of the volcano was reached, vuggey quartz. The latter is due to the complete leaching of the volcanic rocks by silica fluids that carried variable amounts of gold, silver, tellurium, zinc, copper and lead. On the rim thin veins of alunite were sampled and exposures of ignimbrite examined. This rock, named from New Zealand, is the product of large, extremely fast moving, incandescent flows from calderas. Across the valley beyond the crater rim were numerous pits, the result of mining alunite, and also some bentonite, over more than a millennium. Above the pits a tunnel was visible that accessed the 340 Vein. It was this vein that had carried the gold that was recovered in the processing plant that we had just climbed through.

As well as exceptionally high gold values, the 340 Vein was also host to a number of rare or unusual secondary minerals, the most famous being rodalquilarite ($H_3F_2(TeO_3)4Cl$). Then it was back to Granada.

The trip ended on the third day, 3 July, with a three hour visit to La Alhambra on the hills above Granada. An uncharacteristic shower of rain at the start did not mar the visit, and in fact the cooler temperatures accompanying the shower were most welcome. The palace was commenced by the Moors although it was taken over in 1492. Under the reign of the Holy Roman Emperor Charles V it was extensively added to. Fortunately, much of the architecture of the Moors remains in its original form with exquisite mosaics of tiles, carved and inscribed plaster arches and panels and high intricately assembled cedar ceilings. Emerging from the palace there was a pleasant walk back through the gardens to the bus. The long three hours ride back to Madrid was interrupted by a mid afternoon stop for lunch at Linares and another chance to view the 19th century mining relicts. The following day, a Sunday allowed delegates to sightsee around Madrid.

INHIGEO field trip group relax at flamenco dancing in Granada

INHIGEO Meeting (Madrid based activities)

5 July 2010

The 35th Meeting of INHIGEO was commenced in the Universidad Politécnica de Madrid on the morning of 5 July 2010 with welcoming addresses Rector of the Universidad Politécnica de Madrid, Juan Uceda Antolín, the Secretary-General of INHIGEO Barry Cooper, the President of the Sociedad Española para la Defensa del Patrimonio Geológico y Minero, Enrique Orche, and Director of the Madrid School of Mines Sr Benjamin Calvo Pérez. After the meeting was opened by the Rector, business began with a keynote address by Dr Antonio Arribas junior in which he took as his example the role of volcanic activity in the formation of various mineral deposits such as gold and porphyry copper. Pertinent to the role that historians of geology can play, he emphasized that although the key part magmatic hydrothermal fluids play in the deposition of minerals had been espoused by Frederick Leslie Ransome (1866-1935) in 1907 this ground breaking paper had been overlooked for nearly 80 years. Papers presented on the first day of the meeting were:

Keynote Address: Dr Antonio Arribas Rosado (Newmont Mining Company, Denver) – Volcanoes vs. Gold Deposits – a century lost in translation.

History of research and exploitation of metallic ores

Gert Goldenberg, Roland Gauss & Erica Hanning – Prehistoric copper mining in the Alentejo, Portugal – a geoarchaeological approach.

Mark A. Hunt Ortiz, Susana Consuegra Rodriguez, Pedro Díaz del Río Español, Victor M. Hurtado Pérez, Ignacio Montero Ruiz – Prehistoric (Neolithic and Chalcolithic – VI and III millennia BC-) use of cinnabar (HgS) in the Iberian Peninsula: analytical identification and lead isotope data for an early mineral exploitation of the Almadén (Ciudad Real, Spain) mining district.

Gert Goldenberg, Klaus Hanke, Kurt Nicolussi & Peter Tropper – Late Bronze Age/Early Iron Age fahlore mining in the Mauken Valley, North Tyrol, Austria.

Maria Boni – The "calamine" in Sardinia (Italy): discovery and mining history.

Ezio Vaccari – S.B. Spirito Benedetto Nicolis di Robilant (1724-1801) and the "theory of mountains and mines".

Philippe Taquet – Déodat de Dolomieu (1750-1801): unpublished letters on geology and mineralogy addressed to the Duke de La Rochefoucauld.
Marianne Klemun – Understanding of resources and knowledge of raw minerals, as presented at the Big World Exhibitions in the 19th century.
José Antonio Espí – Geological knowledge and ancient mining exploration in the Gádor Range (Almeria, Southeastern Spain).
Wolf Mayer – The discovery and exploitation of iron mines in colonial Australia, with emphasis on deposits in the Tamar Valley district of northern Tasmania.
Leonid R. Kolbantsev, O. V. Petrov & A. R. Sokolov – History of prospecting, research and exploitation of chromium deposits of the Urals after collections of Academician F. N. Chernyshev, Central Research Geological Prospecting Museum.
Tatiana Ivanova – Study and exploitation history of antimony-mercury field Djidjikrut, central Tajikistan.
Mariano Ayarzagüena Sanz & Santiago Valiente Cánovas – Otero de Herreros Roman mine.

In the evening participants were guided around the impressive Geominero Museum with its terraced balconies overlooking a central quad groaning under the weight of fossils and mineral specimens and illuminated by a huge stained glass roof. Also visited were the adjacent School of Mines museum and, below ground, its teaching mine complete with poppet head, shaft and galleries.

6 July
Keynote Address: Professor Manuel Carlos Serrano Pinto (Aveiro University) – Geology and mineral resources in Portugal, a recent marriage.

History of research and exploitation of non metallic minerals
Mike Johnston – Pakohe – the rock that sustained Maori Society in New Zealand.
Luz Fernanda Azuela & Lucero Morelos – Surveying independent Mexico: new actors and old ambitions.
David Oldroyd –The history of the sapphire industry in eastern Australia.

Related Topics
Francesco Luzzini – Matrices, not seeds. Vallisneri's research on mines: between empiricism and philosophy.
Irena Malakhova – The Russians in Madrid, 1926 – the Spaniards in Moscow, 1937: two IGC meetings.
Zoya Bessudnova – Russian geologists Maria Pavlowa and Alexey Pavlow – participants of the 14th International Geological Congress (Madrid, 1926).
Jiuchen Zhang – Mineral Resources Survey on Borderland: The Sino-Swedish Scientific Expedition of 1927-1933.
Sally Newcomb – Irish mining in Richard Kirwan's (1733-1812) time.
Claudia Schweizer & Johannes Seidl – Ami Boué's (1794-1881) approach to Mineralogy in relation to his geological research.
Martina Kölbl-Ebert – Beyond human imagination: the Riess-castrophe and its physical and visual expression.
Manuel Serrano Pinto, Claudia Schweizer & Pedro Callapez – Two 19th century German catalogues of mineral collections in the Museu de Historia Natural of the Univeridade de Coimbra.
Jesús Catalá-Gorgues & Ana Carneiro –The Relationships of Spanish and Portuguese geologists in the Nineteenth Century.
Teresa Mota – From failure to achievement: the relation between the Portuguese Geological Survey and the Portuguese Mining Sector during the 20th century.

History of energy resources (coal, petroleum, uranium)
Octavio Puche Riart, Luis F. Mazadiego Martínez & José E. Ortiz Meréndez – Petroleum in the Iberian Peninsula.
Francesco Gerali – Oil researches in Italy during the second half of the 19th century. Birth of the modern oil industry in Abruzzo, an example of technological development. The geological contribution of Giovanni Capellini.
Luis F. Mazadiego Martínez & Octavio Puche Riart – News from the use of petroleum substances in South America before the 19th century.

Poster Session

History of research and exploitation of metallic ores

Antonio Granara, Valentina Grimaldi, Pietrangelo Loru, Francesco Muntoni, Luciano Otelli & Roberto Rizzo – Sardinia's historical heritage of mining exploitation.

Mohmed Kecir, M'hamed Zibrouche & Jiri Botula – The valorization of gold resources: a promising solution for the economic development of Algeria.

Eric Picard – A history of early copper exploration in Katanga (DR Congo).

Gerardo J. Soto – Mining in Central America (early 1500s – late 1800s).

D. Sevillano-López & Francisco Javier González – Mining and minerals trade in the Silk Road according the ancient literary sources: II BC to X AD centuries.

Fernando Vázquez Guzmin – History of exploration in the Iberian Pyrite Belt.

History of energy resources (coal, petroleum, uranium)

Libera Paola Arena – Finding and using coal in Northern Italy between the 18th and 19th century: instructions for fieldwork in the manuscripts of Carlo Amoretti.

Isabel Arribas, Jim Royall, David Vals Santos & César Martin Pescador – New hydrothermal uranium mineralisation in slates of the Schist-Graywacke Complex of western Iberian Peninsula.

Related Topics

Susan Turner – IUGS-50: The men.

Filomena Amador – History of Geology – a distance learning experience.

Susan Turner & Irene Malakhova – IUGS-50: How the women fared.

Susan Turner, Alberto Riccardi, Ochir Gerel & Irene Malakhova –IUGS-50: 1961-2011 ~ What is the IUGS? The early years.

Esther Boixereu Vila & Alfonso de las Llanderas López – Mining and the early development of geological mapping in Spain Francisco de Luján (1851).

In the cool of the evening we were able to participate in a guided walking tour of downtown Madrid and revel in the history preserved in its old buildings, squares and monuments.

INHIGEO Meeting (Almadén based activities)

The second part of the meeting was to the southeast of Spain, which allowed rocks of the Iberian Pyrite Belt to be examined. Soon after 8.00 AM on Wednesday 7 July two comfortable, and air conditioned, buses transported delegates south from Madrid. After a brief stop at the village of Puerto Lápice in the heart of Don Quixote country, the coal mining and industrial town of Puertollano, in Ciudad Real Province, was reached and we deviated southwest to the volcanic region of Campo de Calatrava. The field consists of a number of isolated volcanic features scattered over 5000 km^2. As explained by Pablo Higueras Higueras of the Universidad de Castilla La Mancha the oldest dated feature is 8 million years whereas the youngest is a mere 700,000 years so that conceivably another eruption is possible. In the shade of a restored windmill and a large statute of Don Quixote on top of a prominent, but undated, basaltic cone on the edge of the Sierra de Calatrava, a ridge of Paleozoic quartzite, we gained an overview of the cone and its neighbours rising above the surrounding almost flat Miocene-Pliocene basin sediments. Although the cone is being actively quarried, mostly for aggregate and railway ballast, most of its original features are still apparent. On its margin the well preserved maar crater of Laguna de Fuentillejo, its shape highlighted more than normal by being filled to the brim with water, the result of runoff from an unusually wet winter. Intruding into the maar is a small basalt flow from the cone.

Continuing southwest the topography became hillier with numerous outcrops of quartzitic sandstone and scattered excavations beaconed that they were approaching the ancient mercury mining town of Almadén sited in a small valley. In the centre of town is a hexagonal building enclosing a bull ring and now partly converted into the appropriately named hotel Plaza de Toros. From the shade of its upper balcony overlooking the bullring a welcome lunch was enjoyed. Then it was on to the University Polytechnical School of Almadén were we were warmly welcomed by Luis Mansilla Plaza, the Director of its School of Mines. He drew to the attention of delegates the fact that while the school was founded in 1777, making it the oldest in Spain. The mining of cinnabar in this ancient town dated back four millennia and gained crucial importance in 16th century when mercury was required to recover gold in the New World. After acknowledgement from Secretary-General Cooper, delegates were further welcomed by the Vice President of SEDPGYM and finally the Rector of Die coordination comunicación y adjunto al Vierrector. On conclusion of the welcoming ceremony the presentation of papers resumed:

History of energy resources (coal, petroleum, uranium)

Andrea Candela – History of uranium in Italy: preliminary notes.

Alena Čejchanova – Roman Jírů. Světec, the earliest history of coal mining in the Krušné Hory Mtns, Czech Republic.

José M. Brandão & Herlander E. Silva – Historical research in the National School of Mines on coal in the Amaga Formation, Antioquia Department, Colombia.

Luis Hernán Sánchez Arredondo – Historical research in the National School of Mines on coal of the Amaga Formation Antioquia Department, Colombia.

Following the papers there was the opportunity to gain a practical insight into the mining of mercury and its importance, not only to Almadén but also to the national economy, when we visited the Francisco Palblo Holgado School of Mines museum. The museum also includes relatively recently excavated remains of the Forzados prison that housed prisoners who had been forced to work in the nearby mines. A welcoming function in the evening was modified so that the football world cup match between Spain and Germany was seen on a large TV screen specially set up in the polytechnic cafeteria. To the delight of our hosts, Spain won, 1-0.

Thursday 8 July, after an extremely hot night, dawned partly cloudy with high humidity and it was pleasure to be indoors, this time to listen to a keynote address by Dr Pablo Higueras Higureras (Castilla La Mancha) on the mining of industrial minerals and rocks. Although there had been a decline in the mining of minerals such as lead and mercury, as we had already seen at Linares and at Almadén respectively, and copper as we were soon to see at Rio Tinto, since 1972 their value had been eclipsed by industrial rocks and minerals. The address was then rounded off by an impromptu summary of mercury mining and its effects at Almadén where the last mine closed in 1997 before the regular presentation of papers resumed:

Keynote Address: Professor Pablo Higueras Higueras (Castilla La Mancha University) – Industrial minerals and rocks. The Spanish perspective.

History of research into groundwater as a mineral resource (mineral waters, groundwater)

João Paulo Meixedo, M. E. Lopes, P. Costa, S. F. Pereira, J. Teixeira, M. j. Afonso, A. Gomes, N Devy-Vareta, L. Freitas, L. C. Gama Pereira, M. J. Dias Costa, J. F. C. Trigo & H. I. Chaminé – Recovery and Reconversion of Ancient Groundwater supply techniques in both rural and urban environment.

History of mineral exploration techniques

Barry Cooper – Geologists and the Burra Copper Boom, South Australia, 1845-1851.

Robert Vernon – Alfred Williams and Leo Daft: Pioneers in geophysical prospection for minerals.

Susan Turner – Thomas Sopwith, the miner's friend: his contribution to the geological model-making tradition.

Toshio Kutsukake – *Sansō-Hiroku* (A secret memory on phase of mountains): an exploration method for the ore deposits in the Edo Period, Japan.

José M. Brandão & Herlander E. Silva – Historical research in the National School of Mines on coal in the Amaga Formation, Antioquia Department, Colombia.

In the late afternoon, following the INHIGEO business meeting (see separate report in this newsletter) we were guided around the Almadén Mining Park. The park on the outskirts of the town incorporates much of the surface mine buildings as well as a small part of the underground workings. The cinnabar mineralisation, still visible in the mine, as well as how it was mined and the mercury recovered, were all clearly explained. Underground we even managed to lose a participant, albeit temporarily.

After another hot night in Almadén, the buses early on the morning of 9 July efficiently conveyed us to Cordoba where we were guided through its famous huge cathedral, a mixture of Moorish and Christian architecture whose huge arches surpassed the Alhambra in Granada. Continuing on to a sweltering 44ºC Seville we recovered in the cool of a restaurant before venturing on to the even higher temperatures at Rio Tinto. Here the vastness of the open cast mines was staggering and exposed the iron stained Paleozoic rocks of the Iberian Pyrite Belt. A short trip in open carriages on a restored section of the Rio Tinto Railway was a fascinating, if sobering, journey through the abandoned pits with their immense mullock and slag heaps, settling ponds, steam locomotives and other rolling stock rusting in pools of red acidic water. The journey terminated beyond the mines where sparse trees partly covered the landscape and the smell of sulphur had vanished. However, the red to orange colour of the Rio Tinto was a reminder of the leaching occurring upstream. In the township we also visited the extensive museum in the former mine hospital and which documents mining at Rio Tinto from the Bronze Age through to the 18 and 19th century. After the heat of Rio Tinto, a pleasant ride in the cool of the mountains to Aracena was experienced where a traditional end-of-meeting INHIGEO dinner, was enjoyed.

INHIGEO group visiting the old Rio Tinto mines

The last day of the meeting, 10 July, was dominated by a visit to the Las Crusces Mine at Gerena, close to Seville. Although in the Iberian Pyrite Belt the mine differed markedly from what we had seen the day before at Rio Tinto. For one thing the Paleozoic host rocks of the belt were buried beneath 140 m thick sequence of Pliocene marls and had been discovered by residual gravity surveying. Subsequent drilling confirmed a resource of 17 million tonnes of ore averaging 6% copper (equal to over 1 million tonnes of copper) in a secondary enrichment zone that had developed prior to the deposition of the marl. Because of environmental concerns, including the potential to contaminate groundwater used for agriculture, the mine operates under a staggering 1000 permits. In digging the huge pit, to expose the ore, the weak marls posed engineering difficulties. The finding and development of the mine and the processing of the ore and the treatment of waste products, including the use of the osmosis plant to intercept arsenic from water that will be reinjected back into the aquifers, were enthusiastically explained by the geologist Bill Williams, an employee of the mining company. Although the company is Spanish, its owners are two North American concerns. In Gerena we were welcomed by Mayor Jacinto Pereira Espada with thanks expressed by Secretary-General Cooper. Dr Octavio Puche Riart then spoke and he was followed by an enlightening well illustrated address on the Las Cruces Mine by Dr Juan Carlos Baquero Úbeda. An informal reception in the shade of a nearby restaurant was held preparatory to catching the superfast AVE train at Seville for the 2 hour journey back to Madrid where we arrived in the early evening. For those staying on for the post meeting field trip, there was a day of rest on Sunday 11 July allowing time to recollect on what we had seen and learnt during the meeting, read up about the geology of northern Spain with time to visit the art galleries and museums for which Madrid is renowned. In the evening we were able to watch on television in local cafes Spain win the football world cup and witness the noisy celebrations that followed.

Post-meeting Excursion

The post meeting excursion commenced on Monday 12 July under the guidance of INHIGEO stalwart Octavio Puche Riart with Carlos Rodríguez García translating for those of us whose knowledge of the Spanish language was woefully inadequate. For this excursion numbers had shrunk to a modest 15 who failed to fully fill the bus provided. Despite this reduced load the bus proved incapable of the challenge and had to be replaced before the morning was over. The first geological stop was on a plateau cut in almost horizontally bedded Jurassic limestone at Medinaceli, in Soria Province some 200 km north of Madrid. Its name is appropriately derived from the Arab word for medina or castle. Its importance is that it has a commanding overview of saline springs that seep from salt lenses in the underlying Triassic (Keuper) into the valley below. The recovery of salt, which still continues, dates back to the pre-Roman period and a well preserved stone arch in Medinaceli is testament to occupation by the Romans. After explaining the geology and the history of recovering the salt our local guide Josep M. Mata Perelló showed us around the village whose buildings are being progressively restored, at least on the outside, to their medieval glory and it is becoming a focus for artists and artisans.

A relatively short distance from Medinaceli is a small iron deposit at Somaén, which like the salt was exploited from pre-Roman times. The deposit is at the base of a Tertiary (Eocene) conglomerate resting

unconformably on the limestone plateau. Although quarrying only ceased in the 1950s some of the old galleries remain displaying beautifully coloured and layered limonite, goethite and minor hematite. Nearby a scramble over a clay slope littered with aragonite crystals provided a great opportunity for those who wanted to collect specimens of this mineral from its type locality. A 120 km drive to Scoria then provided a refreshing stop for lunch.

In the afternoon it was a pleasant drive northwards over the mountains with vistas of deep valleys. On the valley sides gently to moderately dipping bedding in the Mesozoic rocks is well exposed, although somewhat overshadowed by extensive terracing. The terracing was largely implemented in1950s and 1960s when farming declined and a programme of reforestation was implemented. However, because of the relatively low rainfall the trees only constitute a minor component of the landscape. On the other side of the mountains the narrow road follows a winding tributary of the Rio Ebro as it flows around bluffs with barely room for the bus to squeeze past the villages clinging to the hillsides. Part of this landscape will shortly be lost forever, as a high dam is under construction at Enciso. Also under construction is a museum to highlight the fact that this is dinosaur country. At Enciso, Félix Pérez-Lorente of the Universidad de La Rioja and President of the Fundación Patrimonio Paleontológico de La Rioja, proudly showed us several bedding planes of Cretaceous rocks containing the footprints of *Allosaurus* and the famous *Iguanodon*. On one plane ripple bedding had been disrupted by the passing of a giant crocodile and other creatures. After a much appreciated cold beer in the nearby town there was another stop to view further footprints from the age of the dinosaurs. Then it was a long bus journey by way of a rather circuitous route to the refreshing coolness of the magnificent Valvanera Monastery perched on a crag in the forested Sierra de la Demanda mountains southwest of Logroño. For those of us who had been staying in the university hostels or downtown hotels without air conditioning, the cool stillness of the night was bliss.

From left: David Oldroyd, Mike Johnston and Barry Cooper at Valvanera Monastery

Next day it was a bus ride back down to the hot valley floor of the Rio Ebro to a point east of Enciso where we followed a little used road that climbed high into the barren mountains. Here our destination was the Navajún pyrite mine. Much to the surprise of everyone this was not an industrial operation but instead one where beautiful pyrite cubes were being mined as specimens. The mine owner Pedro Ansorena Conde explained how he found three beds rich in crystals in the Cretaceous rocks. Pedro generously allowed us to collect samples and rummage around in the mullock heaps. Although numerous specimens were collected, the largest at 5 cm was no match for some of the cubes the mine was producing. At his processing plant and dispatch centre in the nearby town of Cervera del Rio Alhama we enviously handled cubes a staggering 12 cm across. At the end of the visit we were each given a small piece of mudstone containing one or more bright shiny cubes.

Following lunch in the town, which is tucked beneath towering bluffs of sandstone, we were back into the mountains to Los Cayos Carnago where we again met Dr Félix Pérez-Lorente and were shown more dinosaur footprints including those of a pterodactyl. From there it was back to Valvanera Monastery over what were now becoming familiar roads. However, to dispel any complacency in this regard a stop at a factory at Navarrete offered a bewildering array of local pottery. In the evening participants enjoyed an informal meal with an after dinner speech by Dr Philippe Taquet. With humour and his customary tact our immediate past president dwelt on the language characteristics of the diverse nationalities of those present.

The last day of the fieldtrip, the 14 July, we were whisked southwest through the Sierra de la Demanda mountains where forested hillsides were reflected in the still waters of hydro lakes. On arriving at the small town of Hacinas we were welcomed by its mayor who summarised the efforts of his citizens to preserve, and make known, the silicified logs that abound in the Burgoss region. The scientific importance of the trees and

geology were explained in more detail in the small, but well presented, town museum. This was followed by a short walk to the top of a nearby limestone knoll on which were perched a church and the ruins of a castle. Small caves in the knoll were also archaeologically important. From the town a short journey southwards through a small, but spectacular gorge cut in Upper Cretaceous limestone brought us to the equally impressive Santo Dominigode Silos monastery dating from the 11th century where we were shown around by a local guide. At a nearby restaurant we joined the Dr Taquet and his wife in toasting Bastille Day. After lunch at San Leonardo the trip back to Madrid was interrupted by a short diversion to see the medieval architecture in El Burgo de Osma, including its fine cathedral that was damaged in the 1775 Lisbon Earthquake (the earthquake has been graphically described by INHIGEO members David Oldroyd, Jan Kozack and Victor Moreira). By 6.30 PM we were back in Madrid, bringing to a close a fantastic fortnight in which we saw many of the geological and archaeological showpieces of Spain.

In conclusion, the INHIGEO Meeting along with all of the fieldtrips and social events were extremely well organised. The programme and field trip notes were clear and were supplemented by geological maps, natural history and history booklets and pamphlets at the various places visited. All of this was augmented by knowledgeable trip leaders who clearly explained not only the geology and the history of geological research and exploration, but also provided illuminating background information on Spanish history ranging from the Bronze Age to modern film production. It is no exaggeration to state that this was an outstanding meeting and this was in no small measure due to the care and attention to detail of the organising committee. Our heartfelt thanks go to the organising committee, the many people who help us in our travels around Spain and in particular to José Eugenio Ortiz Menéndez and Octavio Puche Riart who also kindly reviewed this report.

Mike Johnston, Nelson, New Zealand

IUGS 50th Anniversary Event, 21 February 2011, UNESCO Headquarters Paris (France)

Our parent body, the International Union of Geological Sciences (IUGS), had a well attended and busy day on 21 February 2011 in the spectacular premises of UNESCO Headquarters in Paris, to celebrate its 50th anniversary. The day started with a video that can be freely downloaded on the IUGS Website, www.iugs.org, then continued with a series of presentations until late in the day. The full programme is provided at the end of this report. Most presentations emphasized the very strong relations between IUGS and the IGC (International Geological Congress). The IGC, which is held every four years under the sponsorship of IUGS, which in turn advises and assists the organizers in formulating the scientific program The IGC will next be held in Brisbane (Australia) as the 34thIGC in August 2012. Traditionally, the IUGS Secretariat was also located within the IGC organizing country, thus changing every 4 years. But now, it has a permanent address in the USA, hosted by the US Geological Survey (MS-917, US Geological Survey, Reston, VA 20192 USA, email: iugs@usgs.gov).

INHIGEO is one of the eight IUGS Commissions or Taskgroups, located within the Education and Culture Department, which includes also the Commission of Geoscience Education, Training and Technology Transfer (COGE) and the Task Group on Tectonics and Structural Geology. Both had formal presentations on this occasion, however INHIGEO did not, partly because our Past-President, Philippe Taquet, who should have done a communication during the opening ceremony (not only in the name of INHIGEO, but also as Vice-President of the French Academy of Sciences), could unfortunately not attend the ceremony for health reasons. We could, however, convey his apologies to the IUGS President, Professor Alberto Riccardi, and wish Philippe a prompt recovery.

History was however very present during much of the day. The keynote address by Ian Stewart (How the Earth made us), made constant references to James Hutton and the advent of plutonic theories. A very interesting lecture, hopefully soon published in *Episodes*, even if, as continental geologists, we would also have liked to hear, besides the name of Hutton, also names like N. Steno, A.G. Werner, and few others. Then, as can be seen in the Appendix the titles of many presentations include words like « past, present, future », clearly indicating some historical dimension. History could also suddenly appear in places where you would not have expected it. For instance, the presentation by Umberto Cordani, IUGS past-president, was a true IUGS history. Umberto has attended all IGCs since the creation of IUGS at the 21st IGC in Copenhagen (1960) and he described in detail how a small group of dedicated scientists –I think myself (JT) of my mentor and first IUGS President, Professor Tom F.W. Barth(Norway), who succeeded finally to establish « a major non-governmental organization, representing a global membership of one million Earth scientists through its approximately 120 members countries and almost 50 affiliated organizations (See IUGS leaflet, also to be downloaded from IUGS website). In short, a very interesting day, illustrating all activities done in the framework of IUGS. Let us hope for a very successfull IGC next year in Australia.

Programme

Opening remarks

Alberto Riccardi (IUGS President),
Deliang Chen (Executive director ICSU)
Gretchen Kalonji (Assistant Director General for Natural Sciences, UNESCO)

Keynote address

"How Earth made us", Ian Stewart (University of Plymouth, UK)

Opening Ceremony : Presentations

Marie-Lise Chanin, French Academy of Sciences (replacing Philippe Taquet),
Pierre Mauriaud, IUGS National Committee, France,
Aberra Mogessie, Geological Society of Africa,
Patrick Leahy, American Geological Institute,
Ian Lambert, 34th International Geological Congress,
Orhan Altan, International Society of Photogrammetry and Remote Sensing,
Umberto Cordani, IUGS Past-President.

Session "IUGS Looking into the Future"

Keynote address

"The IGCP : past, present and future", Ed Derbyshire (Geological Society London, UK)

Presentations (within the session)

Arne Bjorlykke, (Oslo, Norway): "The International Geological Congress and the IUGS",
Attilio Boriani, (Milano, Italy): "IUGS Strategic Plan in relation to present, past and future activities",
Ed de Mulder, (Haarlem, Netherlands): "The IYPE, its origin, development and aftermath",
Stann Finney, (Long Beach, California-USA): "The International Commission on Stratigraphy: 43 years of international collaboration and cooperation and the establishment of global standards",
Kristine Ash, (BGR, Germany): "Geoinformation develoment and future of the CGI in relations to IUGS past, present and future",
Jesus Martinez (Frias, Spain): IUGS/COGE : "The significance of partnership, capacity building and a multidisciplinary approach in geosciences education",
Cees Passchier (Mainz, Germany) : "TecTask in relation to IUGS past, present and future activities".

J.L.R. Touret (INHIGEO Member, Netherlands)
J. Gaudant (INHIGEO Member, France)

"History of polar exploration, cooperation, research and logistics"
Session during the Oslo IPY Science Conference, 10 -11 June, 2010

This session focussed on the discussion of contextual factors such as the scientific and socio-cultural background that triggered co-operation or non co-operation at different historical stages of polar research as well as aspects of the everyday life of polar explorers and the impact of politics and economy on polar expeditions. Furthermore, it was discussed how, over time, polar field stations have served as units of knowledge production in the field and what role they, along with scientific cooperation, have to play to do.

On Thursday Bernard Stonehouse (University of Cambridge, UK) opened the first session with his talk on cold co-operation: whaling, the Royal Navy, and 18th -19th century exploration in the North Atlantic Arctic. Then Lisbeth Lewander (University of Gothenburg, Sweden) analysed the state support for the Swedish Antarctic Expedition 1901-03. Ursula Rack (Canterbury University, New Zealand) followed with her presentation of a biographical sketch of the Jewish member of Alfred Wegener's last expedition to Greenland (1930-1931), Fritz Loewe, and how he flew from Germany to Australia. Jan Anders Diesen (Lillehammer University College, Norway) showed silent films from expeditions to the North and the South Pole. Terry Vance (San Francisco State University, USA) asked why was the work done there? She explained geographic approaches to understanding the spatial and temporal patterns of Arctic research and research stations. At the end of the session Jörn Thiede (University of Copenhagen, Denmark) introduced the planned European research ice-breaker AURORA BOREALIS in context with the past and future strategies for European marine polar research.

On Friday the second session dealt with historical aspects of Scandinavian polar research. David Anderson (University of Tromso, Norway) focussed on the 1926/27 Polar Census Expeditions and the beginning of Soviet power in the North. Julia Lajus (European University at St. Petersburg, Russian Federation) presented Hans Ahlmann and Scandinavian-Soviet Connections in Understanding the Arctic Environment under the headline "Melting the Glacia", when he analysed the cultural-politics of the northern light as national icon and research specialty. And Anders Houltz (Royal Institute of Technology, Sweden) mediated the modern arctic nation as the International Polar Year's and national ambitions on museum display in Norway and Sweden.

The last session was devoted to the local inhabitants and the history of the exploration of the Arctic environment. Karin Granqvist's (Independent scholar, Sweden) paper on "The Stranger Within" was about the representations of Sámi in Norden in 19th-century Swedish Natural Scientific Works. Urban Wråkberg (Barents Institute, Norway) explained the Sami experience of developing scholarship. Suzanne Zeller (Wilfrid Laurier University, Canada) worked on wild men in and out of science, when the professional-popular borderland in Arctic Canada and Greenland was negotiated during the early 20th century. Then Robert Bird (Florida State University, USA) reframed Arctic history during the Cold War refering to science, empire, and colonialism in comparative Atlantic contexts from the 18th century to the present. Ronald Doel (Florida State University, USA) constituted the Arctic environment and showed how U.S. military patronage after World War II influenced the environmental sciences in the Far North. Finally Sverker Sörlin (Royal Institute of Technology, Sweden) investigated Hans Ahlmann's 'polar warming' theory in the field and in the media, 1920 to 1960 and how it produced Arctic climate change.

Two additional poster sessions described various aspects of Arctic and Antarctic research. In the first poster session on Thursday, N. Pyrtsov (St. Petersburg State University, Russia) pointed his fingers on problems of development of polar tourism in the Yamalo-Nenets Autonomous District. Ron Doel (Florida State University, USA) related comparative international histories of the modern Arctic and gave insights from the European Science Foundation project BOREAS initiative "Colony, Empire, Environment" project. Karen Granqvist (Independent scholar, Sweden) asked "Who produced scientific knowledge" in looking at Axel Hamberg's Sarek research and his Sámi assistant Lars Nilsson Tuorda. Chris Southcott (Lakehead University, Canada) made a social impact assessment of Arctic science. Ronald Doel (Florida State University, USA) looked at field stations in the temperate and Arctic Seas and referring to pedagogy and practice in the physical environmental sciences.

In the second poster session, Terry Wade (Texas A&M University, USA) focussed on the human dimension of scientific research by analyzing the bioavailability of contaminants in Winter Quarters Bay, McMurdo Station, Antarctica. Nina Wormbs (Royal Institute of Technology, Sweden) gave a history of emerging Arctic climate modelling. Svend Funder (University of Copenhagen, Denmark) asked whether migrations in the high Arctic are a question of sea ice. David Anderson (University of Tromso, Norway) introduced histories from the North investigated by a major interdisciplinary research programme of humanities within the European Science Foundation.

Cornelia Lüdecke, Munich

"History of Antarctica and scientific research"
Report on the 6th SCAR History Workshop
SCAR/IASC Open Science Conference, Buenos Aires, Argentina, 5 August, 2010

The SCAR history session on „Polar History and Institutionalization of Polar Research
The International Polar Years"took place on 5 August 2010. It focussed on the time before the Antarctic Treaty came into force, when expeditions sailed south in hopes of earning much money from whaling, sealing or exploiting other resources in Antarctic regions. Science too was the driver behind many expeditions to explore the white continent, sometimes also with the intent of laying claim to a good part of it for one's own nation in the event of a division of the territory. The interrelationship of various types of motives behind and aspects relating to exploration and research were discussed in historical context.

María Ximena Senatore (Universidad de Buenos Aires, Argentine) opened the session with her keynote speech on pre-industrial whaling in the South Shetland Islands, Antarctica. Systematic analyses are based on documents of the New England Historic Archives related to the activity of whaling and sealing ships in the early and mid nineteenth century as well as on archaeological information. The results contribute in setting much earlier dates for whaling incursions in the South Shetland Islands.

The second keynote was given by Adrian Howkins (Colorado State University, USA) on regulating the frozen El Dorado in respect to environment, science and politics in the Antarctic minerals negotiations, 1973-1991. He argued that the unique confluence of environmental, scientific, and political factors that came together by the late 1980s made a complete ban on mineral exploitation an expedient solution to the minerals question that supported the political goals of the Antarctic Treaty System.

Thierry Rousset (University of Cape Town, South Africa) analyzed the Cape involvement in the sea elephant oil trade at the Crozet and Prince Edward Islands (1822-1872). The main protagonist in this trade was John Jearey who had a monopoly in the sea elephant oil trade for a large portion of the thirty years (1838-1869).The paper discussed how he was able to pursue this venture almost uninterrupted over such a long period of time.

Brandon Luedtke (Colorado State University, USA) spoke about Antarctic research and imperial ambition when assessing the 7th International Geographical Congress in Berlin 1899, when participants formulated an Antarctic research program structured around a strict demarcation of national zones of activity involving Great Britain and Germany

Erki Tammisaar (Estonian University of Life Sciences, Estonia) explained the history and future of Estonian Antarctic research, going back to Baltic German expedition leader Fabian Gottlieb von Bellingshausen. The Estonian members of Soviet Antarctic expeditions laid the foundation of Estonian polar research, which now aims to establish a legal and financial basis for the participation of Estonians in Arctic and Antarctic research.

Consuelo León (Center for Hemispheric and Polar Studies, Chile) introduced scientific activities carried out at Base O'Higgins from its creation in 1948 through the tragic fire Base Luis Risopatrón in March 1958 in using the daily logs kept by the base commanders as well as their annual reports.

Lisbeth Lewander (Gothenburg University, Sweden) worked on Swedish deliberations facing the pre-negotiation period of the Antarctic Treaty (1954-1958). Archival material showed that Sweden had a high degree of sensitivity both towards internal political-economic interest groups as well as towards external partners of foreign- and security political cooperation. Foreign political concerns complemented the former understandings of why Sweden chose to abstain from the International Geophysical Year and therefore possibly the later involvement in the negotiations of the Antarctic Treaty.

To conclude Xiaolinang Ling (Polar Research Institute of China, China) discussed a perspective analysis on Antarctic affairs based on paper and recommendation of 32 Antarctic Treaty Consultative Meeting. The paper showed that the original signatory parties such as New Zealand, United Kingdom, Australia, USA and Chile are the most active and influential nations in ATCM, thus strengthen their leadership in Antarctic affairs. Russia, Argentina, Norway and Japan follow them, while the influences of the other consultative parties are not relatively obvious. Besides, the interests of some organizations on Antarctic issues and participation in ATCM are rising rapidly in the recent years.

In an additional poster Alan Cooper and Julianne Stafford (U.S. Geological Survey USA) described music of Antarctic expeditions from Captain Cook to the Antarctic Treaty and its roles in exploration, science and geopolitics. This poster stimulated a music and cultural arts programme for the next SCAR OSC in Portland Oregon in 2012.

Cornelia Lüdecke, Munich

First Symposium on the History of Geology of Chile Santiago, Chile, 17 August 2010

In the Ignacio Domeyko auditorium of the Department of Geology of the University of Chile, before over 60 participants, the President of the Geological Society of Chile, Dr. José Cembrano, opened the First Symposium on the History of Geology, organized by the Group of History of Society. A message from Gerardo Soto, INHIGEO Vice-president for Latin America was read. In his message, it was well stated that INHIGEO was established into IUGS in 1967, and that it is also affiliated to IUHPS.

Then, the guest lecturer, Dr. Rafael Sagredo, from the *Pontificia Universidad Católica*, spoke on the role that science can play in the development of the concept of nation, assessing the diverse impacts on it from the works of Darwin in Chile and Argentina. The following participants lectured about the classic universal pioneers in Geology, as Hutton, Werner and Darwin, their ideas, the historic context, and anecdotes, and additionally, about remarkable personages providing the national geological environment, including the Abbot Molina, Ignacio Domeyko, Amado Pissis and Roland Paskoff.

There were also exhumed the footprints left in Chile by the German geologist and photographer Arnold Heim, pioneer of the Patagonia, and the French engineer Maxime Dorlhiac, with a synthesis of his geological thought and his proposals about the causes of earthquakes, at the beginning of the 20th century. They were followed by presentations on the vision of exploration activities performed by ENAP (National Enterprise of Petroleum), prior to the discovery of oil in Magallanes in 1945, and by the *Instituto de Investigaciones Geológicas* (Institute of Geological Research), before its transformation into the present SERNAGEOMIN (Geology and Mining National Survey) in 1985.

Further talks dealt with the changing geological interpretations of the Porphiritic Formation, as well as Abanico and Farellones Formations, essential constituents of the geological landscape of central Chile. There

was special mention to all the outstanding geologists that contributed historically to the understanding of those characteristic formations. The development of palaeontology and geothermal exploration in the country, and their perspectives for future development were also well documented. Other themes under discussion were the evolution of the knowledge about the Tupungatito and Osorno volcanoes, that emphasized the need for paying close attention to the study of volcanoes in the national territory.

All were enthusiastic expositions performed by young and not-so-young colleagues, who rescuing minutes from their spare time, were able to pay tribute to those whose legacy we enjoy today. We would have enjoyed having longer time for questions and reflections, but we were successful on what our discipline tries to fulfill methodologically, by linking the past to the present. It was clearly demonstrated by the participants, and their wish to consider the humanistic issues of our science, opening the circle to other people from different disciplines in our society. This First Symposium on the History of Geology of Chile opened a door that for sure, will make us access, as a human group, to another level of orienting and stimulating values, something that has been frequently and unfairly forgotten in recent years.

Cristian Ramírez and Francisco Hervé

CONFERENCE ANNOUNCEMENTS

37th meeting International Commission on the History of Geological Sciences (INHIGEO) In association with 34th International Geological Congress Brisbane, Australia 28 July-10 August 2012

For details on the 34th International Geological Congress (34thIGC) registration and submission of papers please consult the conference website: www.34igc.org .

The 37th INHIGEO Conference (except for the pre conference field trip) is being organised within the 34th International Geological Congress programme to be held in Brisbane, Australia under Theme 33: History of Geology.

Details of 34thIGC Theme 33 and the constituent symposia topics and convenors are as follows:

Theme: History of Geology
Coordinator & Communicating Coordinator: B.J. Cooper (Australia) (barry.cooper@unisa.edu.au)
International Coordinator: S.F.de M. Figueirôa (Brazil) (figueiroa@ige.unicamp.br)
Theme Symposia

1. *Biographical studies of eminent geologists: A Symposium in honour of David Branagan*

   Coordinator & Communicating Coordinator:
   D.R. Oldroyd (Australia) (doldroyd@bigpond.com)
   This symposium will focus on the people who have made significant achievements in the earth sciences throughout history. It honours past INHIGEO President, David Branagan, who published a biography on famous Australian geologist, TW Edgeworth David, in 2005.

2. *The early history of continental drift: A centenary tribute to Alfred Wegener (1912)*

   Coordinators: H. E. Le Grand (Australia) (homer.legrand@arts.monash.edu.au)
   A.G. Krill (Norway) (allan.krill@ntnu.no)
   Communicating Coordinator: Allan Krill (allan.krill@ntnu.no)
   This symposium will focus on the history of continental drift within the earth sciences up until the development of modern plate tectonics especially with respect to Alfred Wegener's contribution.

3. *Major achievements in 20th century geology*

   Coordinator& Communicating Coordinator:
   C.A. Bacon (Australia) (cbacon@mrt.tas.gov.au)
   This symposium will focus on any of the vast array of significant contributions that characterised the

rapid development of the earth sciences in the 20th century.

4. *Geology in tropical regions*

Coordinator & Communicating Coordinator:
E.B. Joyce (ebj@unimelb.edu.au)
Given Australia's partial placement in the tropics this symposium will focus on the pioneering research of earth scientists specifically in the tropical regions of the world and with tropical emphasis.

5. *Geologists, resource exploration and development: An historical perspective*

Coordinator& Communicating Coordinator
K.G. McQueen (Australia) (Ken.McQueen@canberra.edu.au)
Given Australia's extensive mining history, this symposium will focus on resource discovery and development worldwide, including all minerals and petroleum, and the major role of earth scientists in any such developments.

6. *General contributions on the history of geology*

Coordinator& Communicating Coordinator:
Barry Cooper (Australia) (barry.cooper@unisa.edu.au)
This symposium will cater for a major contribution in the history of geology that does not ideally fit with any other "History of Geology" symposia.

Associated INHIGEO Field Trip
Separate from the 34thIGC organisation, with separate registration and fees, INHIGEO is arranging a pre Congress field trip travelling from Sydney to Brisbane for 6 days, 28 July – 2 August 2012.
This excursion will examine classical outcrops in the Sydney Basin (location of first European settlement); the Hunter Valley, site of early and continuing coal mining with evidence of late Palaeozoic glaciations and tectonism, as well as early mining localities, major structures and associated serpentinite occurrences, late Palaeozoic granites, Mesozoic and Tertiary volcanism and major geomorphology sites.

Further details will be provided as soon as they are finalised.

The Excursion Leader will be D.F.Branagan (Australia) (dbranaga@mail.usyd.edu.au).
Contact the Excursion Leader or Theme 33 Coordinator for further details.

Important dates for the Congress

August 2011	Early 34th IGC registrations open (available until 30 April 2012).
17 February 2012	Abstract submissions close.
30 March 2012	Formal notification to authors of the success or otherwise of their abstract submissions.
30 April 2012	Presenters of papers (oral and poster) accepted for the 34th IGC must pay for their registration for the congress by this date or be automatically deleted from the Congress Program.
	Close of Early Registration. The more expensive Standard Registration fee will automatically apply for all registrations received 1 May – 1 July 2012.

1 July 2012 Standard Registrations close. The more expensive Late Registration fee will apply to all registrations received after this date. An additional on-site processing fee will apply to all registrations received on or after 1 August 2012.

38th Annual INHIGEO Conference
(in association with '24th International Congress for the History of Science Technology and Medicine', University of Manchester, England 22-28 July 2013)

Please watch the conference website www.ichstm2013.com for further information.

The overall conference theme will be 'Knowledge at Work' and the planned INHIGEO symposia will focus on the "Geology of Art and Literature".

It is also anticipated that INHIGEO will organise an historic field trip either immediately before or after the above conference dates.

The First Circular is due out in October 2011 and the deadline for submission of symposia proposals is 30 April 2012.

The Second Circular will be issued with an invitation to submit papers being issued in May 2012. The deadline for submission of papers will be 30 November 2012.

Cherry Lewis (INHIGEO member UK) is co-ordinating the INHIGEO effort for this meeting.

OTHER FORTHCOMING ACTIVITIES

25th General Assembly International Union of Geodesy & Geophysics, Melbourne Australia
27 June - 8 July 2011.
Historical Session: "History of Geosciences from terrestrial to spaceborne observations".

Co-sponsor: IAGA Inter-Divisional Commission on History, IASPEI
Lead Convenor: József Ádám (Hungary) Co-Convenors: Kristine Harper (USA), Ron Doel (USA), Greg Good (USA), Alice Walker (UK)

The organizers state:-

"With the launch of the International Geophysical Year-related Sputnik in 1957, the possibility of remotely-sensed geophysical data took a step closer to reality. Within a few years, sensors on satellites provided images of clouds, atmospheric temperature data, precise point positions, gravity and magnetic field parameters, earth orientation in space, and data from regions from which little to no geophysical data had been available. These new data, in turn, prompted new research questions and the possibility of answering them. This session will explore this question: how has satellite-based remote sensing changed the research agenda and methodology of geophysics in the past 50 years?"

More information about the IUGG conference can be found at http://www.iugg2011.com/.

11th International Symposium
Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries, Archives, Museums
Mexico City, Pachuca and Real del Monte, Hidalgo, Mexico, 29 August- 2 September 2011

The International Symposium of Mining Cultural Heritage and Earth Sciences: Libraries, Archives and Museums (Erbe Symposium) was held for the first time in Freiberg, Germany in 1993. Researchers from many different archives, libraries and museums related to mining and earth sciences got together. Other disciplines have been added throughout ten symposia held in Europe and America, such as archaeology and anthropology,

in order to understand the cultural impact of mining in places where diverse minerals and metals were exploited. In 2011, the Erbe Symposium will go to México City, where the first mining academy of America was established; then to Pachuca, site of the Historical Archives and Museum of Mining, these archives posses the largest mining archives in México (1616-2002); and then to Real del Monte, where we can find the legacy of the mining work of the region in mining museums and traditions.

Symposium Topics:

- International exchanges of mining culture and technology, and geological theories.
- Mineralogical and geological trips.
- Interdisciplinary research of the Earth sciences history.
- Industrial heritage, conservation of mining heritage.
- Mining archives

For further information contact

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Technic and Engineering in Spain:
Concepts, Methods and Patrimony in the nineteenth century (Second Course)
Royal Academy of Engineering of Spain, Institute «Ferdinand the Catholic» (CSIC)
University of Zaragoza, Zaragoza, Spain, 3-5 October 2011

This course analyzes part of the wide thematic spectrum of technique and sciences, and particularly, but not exclusively, of engineering in Spain in the 1800s. This is the fifth course of a series and the third dedicated to the 19th century. It is centered in the industrial revolution and aspects as mining-metallurgical, iron and steel industry, textile, and infrastructure and mobile material for transportation.

Sessions will take place at the classroom of the Institute Ferdinand the Catholic, in the Palace of Sástago, Zaragoza. It will be in Spanish, starting at 9 a.m., Monday 3 October and ending on Wednesday 5 October at 1:30 p.m. The themes covered in this course will be:

- Mineralogy, Geology and Paleontology
- Mining engineering: laboring techniques and metallurgical treatment
- Iron and steel industry: Technical change and industrial geography
- Metal-mechanic industry: between lag and innovation
- Textile industry: mechanization, production processes and technology transfer
- Mobile material for terrestrial transportation
- The terrestrial system of communications: roads and railroads
- Hydraulic, port and coastal engineering
- Architecture and naval propulsion
- Submarine navigation, a passionate technical challenge
- Forest engineers and forestry
- Defense of property of public forests
- Agriculture: from crop renovation to field mechanization
- Technique in food industry
- Telegraphy and telephony technology

The evaluation of the course will include the physical presence of participants in at least 85% of sessions and a written essay of 10 pages.
Registration will be available until 14:00 of 29 September by presenting the form (available at the website below) in the office of the Institute Ferdinand the Catholic, Pza. de España, 2, 50071 Zaragoza. Further details in Spanish are available at the website http://ifc.dpz.es . For further information: E-mail: activ@ifc.dpz.es., Tel.: 976 288878-976 288859 or Fax: 976 288869. The cost is €40.

Geological Society of London (History of Geology Group)
International Conference on the History of Geology and Medicine,
1-2 November, 2011
Geological Society Rooms, Burlington House, Piccadilly, London W1J 0BG

Medicine was essentially the birthplace for both natural science and geology and the first descriptions of rocks, minerals and fossils are often attributed to early physicians. One of the first pharmacies opened on the Arcadian Way in Ephesus around 400BC whereas the Egyptians prescribed mineral salts ground by mortar and pestle. Nicholas Steno (1638-1686) was an early example of a physician cum palaeontologist whereas James Parkinson (1755-1824) was a founding father of the Geological Society of London.

This conference is dedicated to the memory of such personalities.

Conference Topics:

- The Contributions of Physicians to the Development of Geology
- Lithotherapy-Lithopharmacy: The Pharmaceutical use of Rocks, Minerals and Earths
- Medical Geology and Forensics
- Physicians, Mineral and Thermal Waters
- Miscellanea

For further information contact the conference organisers: Richard Moody (rtj.moody@virgin.net);
Chris Duffin (c.duffin@blueyonder.co.uk) or Christopher Gardner-Thorpe (cgardnerthorpe@docyors.org.uk)

Other meetings on the History and Philosophy of Science

21-24 June 2011	Renewing the Heritage of Chemistry in the 21st Century: Conversations on the Preservation, Presentation and Utilization of Sources, Sites and Artefacts: A Symposium of the Commission on the History of Modern Chemistry (CHMC)1 in Conjunction with the IUPAC-UNESCO International Year of Chemistry, 2011 Paris
1-5 July 2011	11th International History, Philosophy and Science Teaching (IHPST) Conference Thessaloniki, Greece. Details from: Fanny Seroglou (ihpst2011@eled.auth.gr; seroglou@eled.auth.gr)
14-17 July 2011	British Society for the History of Science, Annual Conference, University of Exeter. Details at: www.bshs.org.uk/conferences/annual-conference/2011-exeter .
19-26 July	14th Congress of Logic, Methodology and Philosophy of Science, Nancy, France Details at: http://www.clmps2011.org
8-10 September 2011	XI Congress of the Spanish Society of History of Science and Technology (SEHCYT), Azkoitia, Gipuzkoa, Spain. Contact the Technical Secretary Dr. Elena Alcorta Ortiz de Zárate Email comisiongipuzkoa@bascongada.e.telefonica.net
5-8 October 2011	Third European Philosophy of Science Association Conference, Athens Details at: http://epsa11.phs.uoa.gr

AWARDS

GSA History of Geology Award (2010) to Gabriel Gohau

The important contributions of Professor Gabriel Gohau (French member of INHIGEO) were recognized at the 2010 meeting of the Geological Society of America. Prof. Gohau was honored with presentation of the Mary C. Rabbitt Award of the History and Philosophy of Geology Division of GSA. An overview of Gohau's impact on our discipline was given by Citationist Kennard Bork. Dr. Gohau could not join us in Denver, so his acceptance comments were translated and read by Kenneth Taylor. Both statements appear below, with kind permission from the Geological Society of America.

Citation
Kennard B. Bork

We live in an increasingly "Global World," but barriers of language and culture do still exist. It is therefore possible that many members of the Geological Society of America (GSA) will not be familiar with French historians of geology. My pleasant task today is to introduce Dr. Gabriel Gohau, a French colleague and renowned scholar, as the 2010 recipient of the Geological Society of America's "Mary C. Rabbitt Award." This honor, bestowed by GSA's History and Philosophy of Geology Division, is an excellent example of our recognition of valued work in an international context.

Professor Gohau's insightful writings, and his leadership of COFRHIGEO (Comité français d'histoire de la géologie), are celebrated in France and among Francophone readers around the world. Americans may be familiar with Gabriel's superb book, *Histoire de la géologie* (1987), translated into English (1990) by Albert and Marguerite Carozzi. Also in 1990, Gohau published *Les sciences de la Terre aux XVIIe et XVIIIe siècles*. His important book on *Naissance de la géologie historique* appeared in 2003.

I can tell you that American and British members of COFRIGEO, such as Ken Taylor, Martin Rudwick, Hugh Torrens, and yours truly, have profited immensely from a long line of important articles produced by Dr. Gohau. Hallmarks of his writing are clear explications of major issues and fresh insights into significant historical contexts. Early in his career he illuminated the development of ideas concerned with the origin of mountains. That topic will be revisited in an upcoming book on the prehistory of tectonics. From the late 1970s to the present, Prof. Gohau also has generated valuable biographic analyses of major figures in the history of the geosciences. Subjects of his informative portraits include Buffon, Constant Prévost, Jean-André De Luc, Élie de Beaumont, Lamarck, Dolomieu, Lavoisier, Cuvier, and, in Britain, Rev. Thomas Burnet, and James Hutton. They provide helpful factual frameworks, but also integrate biographic details with larger intellectual and cultural issues. The reader often thinks, "Aha! That is an interesting insight!"

For those not familiar with Prof. Gohau's impressive background, a bit of biography is in order. He was born in Nantes, in the Loire Atlantique region of western France. After schooling in Nantes, he moved to Paris and graduated from the École normale supérieure de Saint-Cloud in 1959, achieving a prized Agrégation de sciences naturelles. A French-professor colleague of mine used to delight in listening to speeches or reading texts by agrégés, because of their clarity, Cartesian rigor of logic, and linguistic poetry. From 1959 through 1995, Gabriel taught at the Lycée Janson de Sailly in Paris. For those not familiar with the French educational system, it is worth noting that the school is one of the most prestigious in France. Its aim is to educate the very best students in areas ranging from science to politics. In 1983, Prof. Gohau completed his doctoral Thèse d'État on ancient ideas on the formation of mountains. The Société géologique de France recognized his many contributions to understanding the history of geology by awarding him the "Prix Wegmann" for 1994. Three years later, Gabriel Gohau took over as President of the Comité français d'histoire de la géologie, succeeding COFRHIGEO's founder and leading light, François Ellenberger, our Division's History of Geology Award winner in 1994. Fittingly, Gohau edited the 1997 book *De la géologie à son histoire* that paid homage to Ellenberger's many contributions to the history of geoscience.

It is not possible in these brief remarks to pay full tribute to the impact of Prof. Gohau's extensive scholarship in our discipline, but both Ken Taylor and I have strong recollections about how Gabriel's clear prose and keen analyses helped us deepen our appreciation for the maturation of geology. Topics such as Actualism versus Catastrophism, Lamarckian evolution, the duration and calibration of geologic time, Theories of the Earth, evolving understanding about metamorphism, and paleontology as a key to unlocking Earth history were all treated in eloquent depth by Gohau. He also helped decode the philosophy behind geological concepts, as he commented on the epistemology of Karl Popper and the philosophical grounding of Lamarck's work. When I was working on a paper about the merit of studying the history of science, it was helpful to have his 2005 discussion of that exact topic, as published in the *Dossiers de l'Union Rationaliste*. Which introduces the point that the significant role of rationalism is built into Gohau's vision of historical and current events. It also indicates that he appreciates the power of history to inform and excite students.

Although retired from classroom teaching, Prof. Gohau remains active as a scholar and leader of the French history of geology community. He retains his love of hiking in the mountains and vacationing along the Atlantic coast of France. Those attuned to French history will be amused to realize that Prof. Gohau's home in the Paris suburbs is on Avenue Bernard-Palissy, named in honor of the great Renaissance potter and proto-geoscientist.

Our Awardee cannot be with us physically today, but he is pleased to be with us in spirit. It is truly a privilege to recognize Professor Gabriel Gohau as the recipient of our Division's "Mary C. Rabbitt Award" for 2010.

Acceptance

I wish first to express my gratitude to the Geological Society of America and its History of Geology Division for this unexpected award. Let me also express my very great regret that I am unable to receive it in person, for reasons of health. François Ellenberger, my French colleague upon whom you bestowed this distinction sixteen years ago, was similarly obliged to remain at home instead of crossing the ocean. And my friend David Oldroyd also had to be absent when the

award was presented to him a decade ago, although in his case for the reason that he was at the time making a journey in a distant desert on the back of a dromedary. I am much less of an outdoor adventurer than David.

The list of the award's previous recipients is impressive, and in reading it I sense the magnitude of the honor you are doing me. I will refrain from arguing that the award is undeserved, even though that is what I think; this could not help seeming to be false modesty, and lacking in respect for your judgment.

I was educated as a naturalist; in France the study of biology and geology are strongly linked. As a lycée professor in Paris, I acquired a taste for the history of science during the 1970s through the works of two distinguished French philosophers of science, Gaston Bachelard and Georges Canguilhem. In 1972 I met Canguilhem, who suggested that I undertake to write a thèse d'Etat under the supervision of one of his most noted students, François Dagognet. Thus I owe my philosophical education to this French school of historical epistemology, a school characterized by study of epistemological obstacles that produce intellectual discontinuities separated by periods of stasis or equilibrium, to borrow from Gould's way of speaking. Robert Dott and Ken Bork both mentioned, on receiving this prize, that there exist two categories of historians of science: scientists themselves, and professional historians. In France, philosophers also play an important role.

My 1983 thesis was entitled "Past ideas on the formation of mountains—the prehistory of tectonics." In 1976, meanwhile, François Ellenberger had founded the French Committee for the History of Geology, our national subgroup within INHIGEO. He appointed our friend Jean Gaudant as secretary, a post he continues to fill with great devotion. I joined COFRHIGEO, as our Committee is known, and in the years that followed this gave me the opportunity to meet American and British friends who have preceded me in winning this award. Ken Bork came to Paris in 1980 for the International Geological Congress. Another participant in the 1980 Congress was Ken Taylor. Right away we got on well together, finding that we had ideas in common about geology during the second half of the 18th century. I also encountered Hugh Torrens, when François Ellenberger organized a repeat performance of his memorable historical field trip from the 1980 Congress. Similarly, I came to know Martin Rudwick, who came to France frequently, and of course Albert Carozzi who often travelled to Geneva. Together with his wife Marguerite, in the late 1980s, Albert translated my *History of Geology*, and this brought my name to the attention of American readers. Perhaps this book helped in turn to raise American consciousness of Continental European characters in geology's history, and French ones in particular. But if so this may be seen as repayment of a debt, for so many of these francophone figures have been studied by researchers from the English-speaking world. Martin Rudwick on Cuvier, for example, or Ken Taylor on Desmarest, or Albert Carozzi who has written so extensively on Saussure, as well as on other Swiss figures, such as Elie Bertrand, who has been analyzed also by Ken Bork. And as is well known, Carozzi has translated de Maillet and Lamarck, among others, into English.

I may say I owe my choice of tectonics as a subject of research to the realization that Buffon could think of a syncline as a hole in the ground. Also, I wanted to fathom his idea of irreversible epochs, and I discovered that the cyclic conception of history in nature, which I had thought arose with Hutton, had a prior history. So I studied tectonic ideas from ancient Greek times forward. Thus I encountered classic authors who wondered if mountains date from the Deluge or even the Creation, a subject on which I learned much from the famous *Earth in Decay* by Gordon Herries Davies, recipient of this award in 1996. Lately I returned to this subject in a brief history of tectonics that was published this past summer.

In contradistinction to mountain formation, another subject that has occupied me a great deal is geohistory. Receiving this award in 2008, Gregory Good noted an advantage held by historians of geology over those concerned with physics: geology is an historical science, and geologists are readily drawn to think about time. The historical sciences have always been a preoccupation of mine. I learned from reading the philosopher Antoine Cournot that all history is contingent. And I concluded that geohistory must be constructed from the Earth's archives, which is in fact a double sort of archiving: stratigraphic archives marking different points in time, and facies archives indicating spatial distinctions. On these grounds I judged that the birth of a real geohistory must be situated around 1780. I share both the subject and the judgment with others, including Ken Taylor (from his thesis on Desmarest and his attention to geology in 1776), and David Oldroyd, with whom I was long acquainted through reading his work and by correspondence before meeting him personally. David's separation of "genetic" from genuinely "historical" systems of temporal thinking remains central to my conception of geohistory and historical science. I wrote a book on this topic in 2003, and organized a conference on it with my friend Stéphane Tirard.

Of course, the birth of geohistory is now a sphere we cannot consider without engaging Martin Rudwick and his two large volumes on the reconstruction of geohistory. He and I agree on the centrality of the contingency of history. Our religious convictions differ, of course, as I am an atheist. But I am prepared to agree that the Genesis story served as an outline sketch or template for some early histories of the world. Provided, that is, that cultural conditions permitted liberties to be taken in interpreting the Bible, something Burnet did, as only an Englishman could do at the time. This was pointed out by the historian of biology and geology Jacques Roger, who was for me a scholarly model and guide.

I see in the statement of thanks by Davis Young, on receiving the award in 2009, that he came to the history of geology through critical responses to young-Earth creationism. In my research I have encountered figures who held to the creationists' short time scale; such is the case for instance of the abbé Maupied, who sought to adapt to this view the work of the geologist Constant Prévost (well known to Ken Bork) and of his friend the biologist Blainville. But others

like the Biblicist Jean-André Deluc, whom I examined with Ellenberger, and Cuvier, who derived much from Deluc, represent the prevalent attitude among serious scientists in having accommodated their religious convictions to their scientific investigations.

One more word on my acquaintance with American and British colleagues. At an early stage of my career I inquired into the geology and chemistry of Lamarck; and I formed a valued acquaintance with the American-trained specialist in evolution, Jon Hodge, who has made his career in England. More recently I studied Darwin's geology. For the latter it was a pleasure to work through the fine book by Sandra Herbert, herself a recent recipient of this award, with whom I first became acquainted years ago, at a meeting held for the centennial of Darwin's death.

I am writing this response at Saint-Brévin, a Breton town where the Loire flows into the Atlantic, near Nantes. I look out on the vast ocean that separates us. It is now some 200 million years since the New World began to distance itself from Europe and Africa. When this message reaches you the distance will have increased by perhaps a half-millimeter. Thank you for staying close in spirit.

(Translation by Kenneth L. Taylor)

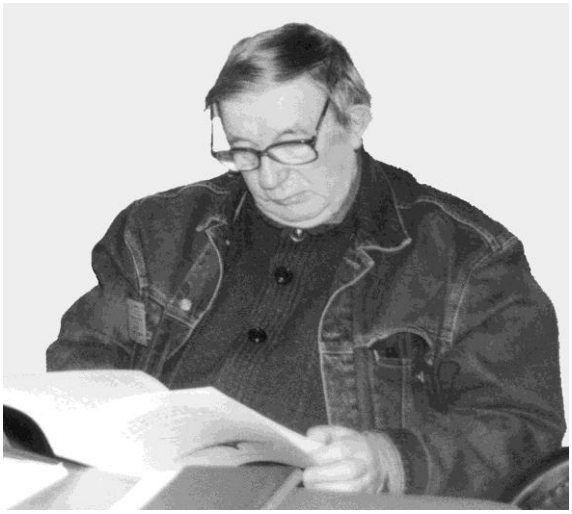
Other Awards to INHIGEO members

Cornelia Lüdecke (Germany), has been awarded the Reinhard Süring Medal of the German Meteorological Society on 20 September 2010 for her "long-time dedicated activities in research and teaching in the field of history of natural sciences (especially meteorology) and the successful organisation of numerous national and international symposia"

Andrea Westermann (Switzerland) has received *Prix Jubilé 2010* Award of the Swiss Academy of Humanities and Social Sciences for the article: "Inherited Territories: The Glarus Alps, Knowledge Validation, and the genealogical organization of nineteenth-century Swiss Alpine geognosy", published in: *Science in Context* 22 (2009) 3, 439–462.

OBITUARIES

Evgeny Alekseyevich Baskov (1925–2010)



Professor Evgeny Alekseyevich Baskov, an outstanding Russian hydrogeologist and historian of geological sciences, passed away on 24 May at the age of 85. He lived a long life and was well recognized in both of his geological professions.

Evgeny Baskov was born on 25 January 1925 in the city of St. Petersburg (then Leningrad). In this city he lived all his life, except for periods during World War II and his numerous field works, and died there. Evgeny descended from an educated Leningrad family: his father graduated from the Technical Academy of Forestry, and mother the Medical Institute.

Evgeny's green years were well endowed with ordeals. In 1931, when he was six years his parents divorced, and in 1937, his father was subjected to repression. During World War II in 1941 when Leningrad was besieged by German troops, Evgeny, who was 16 years old, worked as a medical orderly in a military hospital, and was badly wounded during bombing. He was evacuated to the home front, after recovery was mobilized in the Army in the Field, and badly wounded in leg again. As a result, Baskov was a disabled soldier for the rest of his life.

After graduation from the Leningrad Mining Institute in 1952, Baskov joined the staff of the Russian Geological Research Institute (VSEGEI), which was a successor of the Geological Committee (GEOLCOM), the first state geological institution in Russia established in 1882. He worked there for nearly 60 years, including 24 years serving as a head of the Department of Hydrogeology. From VSEGEI, Baskov received both his degrees: candidate of geosciences (thesis "Ground waters of the southern part of Yakutsk Artesian Basin") in 1958, and doctorate (thesis "Ground mineral waters and paleohydrogeology of the Eastern Siberian Artesian region") in 1967.

Baskov began his regional hydrogeological investigations on the Siberian Platform in 1952. Later, using his personal regional experience, he made a great contribution on the development of the basic features of regional hydrogeology of platforms in general. Since 1968, Baskov had been conducting hydrogeological investigations in various regions of Russia. The findings of these Baskov's investigations were his fundamental contribution to the exposure of regional appropriateness of the underground water distribution in the upper Earth's crust. The central theme of his work on hydrogeology, throughout his life, was paleohydrogeology, that is investigations of bygone hydrogeological conditions in the Earth's crust. Baskov is justly accepted as one of founders of this scientific branch. Starting in 1960-s, he introduced a paleohydrogeological method into metallogenic forecast, i.e. development of ore-forming models used in various structural-metallogenic zones. So, in the middle 1980s, he created a new branch of paleohydrogeology, namely paleohydrogeological analysis with reference to metallogenic investigations. Owing to Baskov's research, paleohydrogeological analysis became an important part of metallogenic investigations. His monograph "The fundamentals of paleohydrogeology of ore deposits", which was published first in Russian in 1983, was re-published in English in 1987 from Springer-Verlag Berlin Heidelberg New York.

Professor Baskov was the author of more than 300 publications, most of which were devoted to various aspects of hydrogeology. Among them, there are 19 monographs, including 12 ones written with co-authors. An addition to the monograph mentioned above, it is pertinent to enumerate several others, such as "Thermal waters of the Pacific segment of the Earth", written with S.N. Surikov (1975), "Paleohydrogeological analysis in metallogenic studies" (1976), "Mineral waters and paleohydrogeology of the Siberian Platform" (1977), "Paleohydrogeochemical studies", written with S.A. Veresov, N.A. Petrova et al. (1985), "Thermal waters of the Earth", written with S.N. Surikov (1989), "Hydrogeochemistry and paleohydrogeology of type structural-metallogenic zones" (1993) and so on. Unfortunately, all Baskov's monographs were published only in Russian, excepting "The fundamentals of paleohydrogeology of ore deposits" (1983, 1987), mentioned above.

In Russia (formerly, in the USSR), Baskov's hydrogeological studies gained wide acceptance. It is the reason why namely Baskov was elected a Chairman of the Hydrogeological Commission of the Russian Geographic Society. Since 1985, he had also been an Honorary Member of the Society.

Beginning in early 1980s, along with hydrogeology, Baskov was professionally working on the history of geological sciences. Apparently, the historical aspects of his research on hydrogeology led him into the early literature. So, he became interested in scientific biography of one of pioneers of paleohydrogeology, a famous Russian geologist of encyclopedian knowledge, S.N. Nikitin (1851–1909), who was an official of GEOLCOM since its establishment. On the basis of scrupulous investigation of archives documents, Baskov published the first scientific biography of Nikitin. Baskov's interest in this field rapidly broadened out, and several years later he issued the first scientific biography of another eminent Russian geologist and also one of the first officials of GEOLCOM I.V. Mushketov (1850–1902). Both these mentioned books by Baskov, namely "Sergey Nikolaevich Nikitin" (1982) and "Ivan Vasilievich Mushketov" (1986), formed two parts of prestige series "Scientific Biographic Literature" published by the Russian Academy of Sciences for fifty years.

Further, Baskov's publication in style of scientific biography was devoted to his predecessor on position of the Head of the Department of Hydrogeology at VSEGEI Ivan Kireyevich Zaytsev (1907-1991). Baskov published a detailed paper about him in 2000.

Baskov's works on the history of geosciences which go beyond the field of scientific biographies are published alone. Mention may be made of two short papers concerning the influence of V.I. Vernadsky's ideas to develop classification of sedimentary rocks (1988) and another one on works by V.D. Lomtadze to investigate conditions under which ground waters were formed (2003).

In the later part of his life, Baskov was in poor health but according to a custom of Russian researchers he never retired. To the last day of his life, he worked at VSEGEI as a major researcher-consultant. Beginning in 2005, Baskov was a deputy chief editor of the three-volume "Geological Glossary". The first volume of the glossary was issued recently several months later his death.

At the same time, Baskov continued to work on the history of geological sciences, namely, on the first scientific biography of a further geologist on encyclopedian knowledge, an official of GEOLCOM Nikolai Alekseyevich Sokolov (1856–1907). According to the author's intention, this book had to be a completion of Baskov's trilogy on three following leader figures of GEOLCOM in the late XIX – early XX centuries, namely Nikitin, Mushketov, and Sokolov. Baskov had been writing the book about Sokolov for many years, but had time to publish only a no significant contribution about him in 2006. Shortly before his death, Baskov made a draft version of the whole book. Practically speaking, this version is ready to be printed. We hope that it will be published in a short time.

Evgeny Alekseyevich Baskov was a distinguished representative of GEOLCOM–VSEGEI scientific school and a deserving keeper of its tradition. He opened a new scientific direction on hydrogeology and, in addition, on history of geosciences, initiated biographic studies of GEOLCOM–VSEGEI officials of the first generation.

Professor Baskov was an eminent purposeful researcher and well-disposed person. He was stamped in a memory of everybody who worked, communicated and was a friend with him. His scientific works are a gold mine of geology.

Andrei Lapo, Vladimir Petrov,
St. Petersburg

Masae Omori (16 October 1919- 3 January 2011)

Professor Omori, the founder and the first President of the Japanese Association for the History of Geological Sciences (JAHIGEO) from 1994 to 1998, died due to the functional imperfection of kidney on 3 January 2011. Though he reached 91 years of age, he remained eager to prepare papers.

He was born in Daigo town, Ibaraki Prefecture, in the Abukuma Mountains. His family moved to Tokyo, where he studied in the elementary school in Tokyo and in Tokyo Ist Middle School. He entered Tokyo Higher Normal School, where he majored in mathematics, yet at the Tokyo University of Literature and Science, he majored in geology and paleontology and graduated from the university in 1944, six months early, due to the last stage of the Pacific War.

His graduation thesis was on the geological history of the Tertiary system in the southwestern part of the Abukuma Mountains. It was burned due to an air raid, so he decided to study the geology of the area again, collecting samples after World War II. He stayed in the field most of time for several years. He wrote his thesis on the area, with special reference to the meaning of the Tanakura shear zone, which run in N-S direction in the west part of the Abukuma Mountains and was awarded a Doctorate of Science in 1957. As the zone is considered to be one of the most significant tectonic lines in northeast Honshu, his research remains highly appreciated.

After graduation Professor Omori was engaged in the study and education of geology and paleontology in the University as Assistant, Assistant Professor and Professor, and taught many prominent geologists and paleontologists.

Tokyo University of Literature and Science was closed in 1978, when the University of Tsukuba opened, so he became a Professor of Azabu University, and was engaged in their Faculty of General Education until 1990. He became Professor Emeritus at Azabu on his retirement.

Even after the retirement he published many papers on geology and paleontology, as well as the stories of Japanese stone masons. He was also actively engaged in the Executive Committee of the Geological Society of Japan, and published "Geological Sciences in Japan: Past, Present and Future", a jubilee publication in commemoration of the seventy-fifth anniversary of the Society in 1968 as Head of Editorial Committee of the publication. He was a President of the Geological Society of Japan from 1982 to 1984.

Professor Omori was one of the most active members of the Association for Geological Collaboration of Japan, founded in 1949, in which the members were engaged in the collaborative geologic research, popularization of earth sciences and acquisition of better conditions for investigation and education.

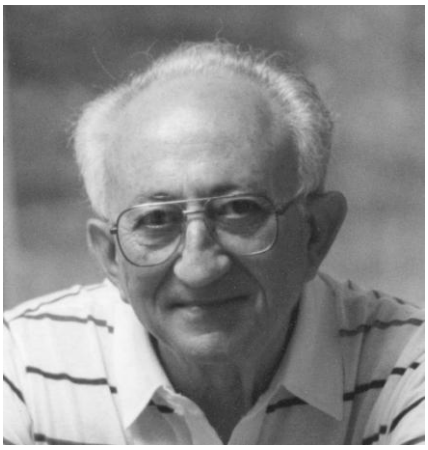
He was one of the founders and leaders of the Fossil Club founded in 1959, in association of which he studied molluscs from the view points of ecology, biochemistry and evolution, in addition to description and classification of fossils. As he was interested in biomineralization, he attended the International Conference of Biomineralization in Germany in 1970 and in USA in 1972, and organized the conference in Kashikojima, Japan in 1977 as the Chairman of Executive Committee. "Restored fossils", published in 1967, was one of his most popular books, describing his image of paleontology. He was asked to revise it, but this never eventuated.

Professor Omori was elected as a member of the Science Council of Japan from 1972 to 1985, and was Chief of the 4th Department (Natural Science) from 1983 to 1985. His activity on the Council was highly appreciated, due to his leadership, wide knowledge, keen eyes and warm heart.

Many papers have been dedicated to Professor Omori by his colleagues and students at his 60th birthday, at his retirement from Azabu University and on his 88th birthday. Until the end of his life Professor Omori devoted his life to geology and paleontology. Now we wish him to take a well earned rest.

Yasumoto Suzuki (Ichikawa, Japan)

Alexander Meier Ospovat (1923–2010)



(Photo portrait from the 1990s,
by courtesy of Naaman Ospovat)

Alexander Meier Ospovat died on 21 December, 2010, at Stillwater, Oklahoma. A professor of history at Oklahoma State University, he was a distinguished researcher on geology's early history, and an Honorary Senior Member of INHIGEO. He was known especially for his investigations of the life and work of Abraham Gottlob Werner.

It is worth sketching Alex's early life in some detail, as it reflects the conditions experienced by one Jewish family in interwar Europe and their escape to safety in the Americas in the early years of the Second World War. Alex was born 13 March, 1923 in Königsberg, East Prussia (now Kaliningrad, Russia), the second of two sons in a middle-class family. His father, born in Warsaw to an artisan family, had moved to Russia and was part way through a course of medical studies at the outbreak of the 1917 revolution; he then served as a medical officer in the Red army until 1922. His mother, born in Polangen, then part of Imperial Russia (now Palanga, Lithuania), came from a merchant family. She was musically talented, and worked as a nurse during the war. The young couple met in Moscow, and married in 1918. With Alex's brother Mordechai (called Mura, later Murray) they fled Russia and settled for a short time in Königsberg. Not long after Alex's birth the family moved to Memel (now Klaipeda) in Lithuania, where Alex's father conducted a business as a supplier to butchers and bakers. They remained there until 1938.

Russian and Yiddish were the main languages common to Alex's parents. Memel was essentially a German city, and he grew up speaking German, and attended a German school. His family encouraged his study of music; he displayed considerable ability at the piano. In a recollection recorded more than six decades later, he said that he sensed relatively little discrimination at school before 1935, but thereafter life became distinctly unpleasant for the Jewish pupils. In 1938 he and the other Jewish youngsters, who numbered about one third of his class, were excluded from the school. At that time Alex's parents sent him to Liepaja in Latvia, where he boarded for a year as an apprentice to a German-speaking florist. The rest of the family fled Memel a year later, on the eve of the Nazi occupation. For about a year they lived together in Libau, Lithuania, before their final departure from Europe in February 1940.

Alex's mother had a brother living in Dallas, Texas. This uncle, Isidore Zesmer, with his wife Jenny, helped facilitate the Ospovat family's effort to secure visas and transit to the New World (from Riga to Stockholm by air, Stockholm to Oslo and then Bergen by train, Bergen to New York by sea). Immediate immigration in the United States was blocked because of national quota limitations, but with an arrangement for their temporary residence in Mexico, permission was secured for a two-month transit through the U.S. After a year in Mexico City Alex's parents and brother gained admission to the U.S. Alex remained in Mexico City, however, at least in part because he did not want to terminate a course of musical study he had begun with a noted piano teacher. During the ensuing two years he attended first a multilingual American School, and then an engineering college. In his three years in Mexico he became fluent in Spanish, but gained only a fair knowledge of English.

Coming finally to the U.S. in 1943, Alex abandoned his musical aspirations, thinking the prospects were poor of earning a living through music. He enrolled at the University of Oklahoma (OU), and received a degree in civil engineering in 1945. For the next several years he worked as a detailer for engineering firms. In 1945 he married Joyce Conoley, whom he had met the previous year when they were both students at OU. They lived for a year in New York City before deciding to return to Oklahoma.

In 1953, Alex decided to go back to school at OU, while continuing part-time contractual engineering work. Initially pursuing a continuation of diverse studies (such as in zoology and history), before long he found his place in the new graduate program in the history of science. That program's establishment in 1954 resulted from the gift to the university of a selection of rare science books by an Oklahoma alumnus and book collector, Everette Lee DeGolyer. From the outset the collection was particularly rich in classic works from early geology, since DeGolyer, who had studied geology at OU, had made a point of trying to acquire as many as possible of the original sources identified in Frank Dawson Adams' *The Birth and Development of the Geological Sciences*.

Alex always liked to tell the story of how the OU history of science program's first professor, Duane H. D. Roller, knowing of Alex's fluency in German, brought out a copy of Werner's *Kurze Klassifikation und Beschreibung der verschiedenen Gebirgsarten*, and said to him: "See what you can do with this." His Master's thesis (1958) on the *Kurze Klassifikation* showed ambitions beyond providing a translation with critical commentary; it included appendices on such topics as Werner's ideas concerning limestone, coal, and volcanoes, as well as a partial list of Werner's students. Alex's doctoral dissertation (1960) was a more comprehensive treatment of Werner's mineralogy and geology, and of the Wernerian influence in nineteenth-century geology. Important to his research for the dissertation, he was able to secure photocopies of a substantial fraction of the Werner manuscript materials held at the Bergakademie in Freiberg. Alex was the first person to complete the doctoral program in history of science at OU.

Alex's first academic appointment was in history at the University of North Dakota, in 1960. Two years later he joined the history faculty at Oklahoma State University in Stillwater, where he taught history of science and medicine, and early modern European history. He worked with his fellow European historians to broaden the agenda of the department, where a focus on American history had tended to predominate. Alex advanced to the rank of professor in 1973, and remained at Oklahoma State until his retirement in 1988.

The Werner research begun as a graduate student continued to be Alex's main focus throughout his academic career. He held Werner to have been the most eminent of all pre-Lyell geologists (*British Journal for the History of Science*, 1976, 9: 197). By this he certainly meant, at the least, that Werner was in his time more influential than any other figure in geology. It is by no means unlikely, however, that he also meant Werner should be viewed in retrospect as having done more to shape geology and establish it as a distinct discipline than anyone else before Lyell's time. Alex was of course keenly aware that such an opinion strongly contradicted an enduring strain of historical disparagement of Werner, found not only in Lyell's own account of geology's history but also in other canonical treatments, notably Geikie's *The Founders of Geology*. Alex made it his mission to refute the oft-repeated contention that Werner was a scientific dogmatist who had actually impeded the progress of geology, and to reinstate him in his proper historical place.

In a series of papers, as well as a critical edition (1971) of Werner's *Kurze Klassifikation* with translation and notes, Alex examined Werner as a geological thinker and teacher, and charted his place in the development of geology in the eighteenth and early-nineteenth centuries. Extending his use of relevant unpublished materials through multiple visits to study the Werner manuscript collections at the *Bergakademie* in Freiberg, Alex was

the most conspicuous voice in the English-speaking world—joining in this respect with the work of a number of German contemporaries—in a rehabilitative reassessment of Werner's place in geology's history.

Key elements of this revisionist program included a defense of the coherence and plausibility, in Werner's time, of 'Neptunist' geological theory; refutation of an alleged link between Wernerian geological doctrines and traditional religious orthodoxy, the Genesis creation myth and the Flood in particular; and an effort to show that Wernerian geognostic theory and practice were fundamental both to the founding of an independent science of petrography, and to the organization of a new stratigraphic science around recognition of a general stratigraphic succession of distinct *Gebirgsarten*, or contemporaneous formations, thus leading the way toward historical geology. Alex argued in support of the substantial originality of Werner's ideas, even while acknowledging roles in their formulation for influences from past and contemporary figures such as Steno, Bergman, Arduino, or Füchsel.

Fundamental to Alex's historical accomplishment was his clear exposition of Werner's theories. His success in helping researchers and students (especially in the Anglophone world) understand Wernerian geological conceptions is exemplified in his imaginative visual summary of Werner's account of the main stages in geological history, a diagram he adapted from his master's thesis for his edition of the *Kurze Klassifikation*.

An aspect of Alex's case for Wernerian geology's preponderant historical role was, of course, the central place of the *Bergakademie* in nurturing an entire generation of geological observers and thinkers who extended Werner's teachings worldwide, while often modifying and sometimes opposing them. Alex also took an interest in students of Werner's who became leading figures in the German Romantic movement. And he studied scientific figures whose views were influenced by Wernerian methods and doctrine, without their having spent any time in Freiberg. (One such character, Humphry Davy, gave geological lectures informed by Wernerian views, and Alex produced an annotated edition of four of these previously unpublished lectures dating from 1805.) Along the way, a sometimes indirect outcome of Alex's analysis of Wernerian geology was its recognition of historical difficulty or ambiguity in distinguishing the descriptive and classificatory functions of mineralogical natural history (and, indeed, of practical mining enterprises), from the business of constructing theories to account for what is observed. He saw that classification and nomenclature, which were important features of Werner's teachings and influence, usually carry with them certain elements of explanatory theorizing, even though such links are not always explicit.

Additional themes addressed in Alex's research, in conjunction with his Werner studies, included his interest in an apparent imbalance, in the closing decades of the eighteenth century, between investigatory production of geological information and success in synthesizing such information in explanatory frameworks. He also took issue with the historical validity of what might be called an environmentalist doctrine concerning an individual's geological thinking—a view asserting a determinative connection between prevalent local and regional geological features and the theories developed by scientists who have lived in their presence. Such an idea had frequently been salient in accounts treating Werner as a geological observer of, it was said, regrettably limited experience and propensity for over-generalizing from what he saw in Saxony.

Alex Ospovat was keenly aware that historical craftsmanship involves hard-earned skills. He admired scholarship that proceeds from close examination of primary sources, and he was wary of interpretations that rely on inadequately scrutinized or hastily-applied historical classifications (such as 'catastrophist' or 'uniformitarian'). Unsurprisingly, in light of his vexation over how Werner's work had been so generally dismissed in Anglo-American histories of geology, he brought to his work considerable skepticism regarding received accounts of the science's past. He was habitually careful to set his subjects in their historical context, and was critical of anachronistic judgments. One specific way this attitude materialized was in his resistance to use of mineral terminology outside its proper historical setting.

Alex travelled to East Germany for his research on several occasions, at times when this was not an easy thing for an American to do, and he developed strong and cordial associations with German scholars and their institutions. Nearly half his publications are in German or were published in Germany. In recognition of his contributions to the history of geology Alex received in 1987 a medal (the Abraham Gottlob Werner Silver Pin) from the Society of the Geological Sciences of the German Democratic Republic (*Gesellschaft für Geologische Wissenschaften*), and in 1990 a doctorate *honoris causa* from the *Bergakademie Freiberg*. He was elected an INHIGEO member as early as 1970 and, in 1971–1972, Alex spent a year as a Fulbright Research Scholar in Great Britain.

In addition to his research and teaching duties at Oklahoma State University, he participated actively in the institution's service and governance functions, and was much involved in campus committee and council work. He also served in various capacities for professional and disciplinary groups, notably by serving terms as a member of the governing councils for the History of Science Society and the American Association of University Professors.

Alex—'Sascha' as he was known within the family—was a man of gentle and self-deprecating good humor, with a talent for sarcasm when the occasion called for it. He always loved music. He enjoyed canoeing and good wine, and was an avid walker. He was especially fond of walks with his dog.

Alex and Joyce (who died in 1993) had two sons, both of whom shared their father's interests and gifts. Dov, the elder son, also became an historian of science and was already an accomplished Darwin scholar when he succumbed to cancer at the tragically young age of thirty-three. Dov's brother Naaman, an OU graduate like his father, is a composer of symphonic and chamber music.

I am indebted to Martin Guntau (Rostock), Ernst Hamm (Toronto), Herbert Kaden (Freiberg), and Susan Oliver (Stillwater) for their kindness in providing valuable information and advice. The Ospovat family generously allowed me to examine the transcription of a lengthy oral-history interview conducted in 2000 by Professor Douglas Hale, Alex's long-time colleague in the Oklahoma State University History Department. Here Alex discussed in some detail the first decades of his life. Because Professor Hale's purpose was mainly to document the manner of Alex's immigration, and more broadly the period before they became colleagues, there is little in the interview about his life beyond the 1950s. I thank Professor Hale for sharing his recollections of Alex with me in a telephone conversation. Above all I am grateful to the Ospovat family, and in particular to Naaman Ospovat.

Kenneth L. Taylor
(The University of Oklahoma)

(Substantially the same obituary will be published in *Earth Sciences History)*

Manuel Carlos Serrano Pinto
(5 March 1936 – 15 January 2011)

During his childhood in Pombal, Portugal, Manuel Carlos Serrano Pinto was much identified with his father's personality – a quiet person, with a great capacity for human relations and, by the force of his profession, always attentive to people.

Later on, when he arrived in Coimbra, he joined a class at the then D. João III Lyceum /High School, where conviviality was a landmark that remained until the present. Having been a student both at the University of Coimbra and the University of Oporto he benefitted from the opportunity for a close relationship with many geologist colleagues, which was a relevant contribution to his identity.

Then, in military service, he left to Mozambique where he received an invitation to integrate the Geology and Mines Services. At the time, Mozambique was developing an ambitious cartographic and prospecting programme that required highly qualified professionals. Consequently he went to Leicester, UK, to focus on a Geochemistry (prospecting) Masters degree. Many works referring to that period were published and mark a turning point towards systematic mineral prospecting based on sediments in Mozambique. It was enriched with a contribution from B.R.G.M.

After a brief stay in Angola (1974) he pursued his activities at the recently created University of Aveiro (1973). At this stage, a meeting on Plate Tectonics that was held at the University in 1976, attended by leading researchers from France, United Kingdom, United States of America, Denmark and Spain was crucial. From then on he undertook the research work that led to PhD degree at Leeds University where the geochemistry and geochronology (Rb/Sr) are fundamental to the knowledge of the Portuguese geology.

The support of George Hornung, J. Rooke and John Vail was decisive and would, together with some Brazilian colleagues, Kobashita, Coulomb, Cordanni and N. Machado lead to the creation of the Isotopic Geology Laboratory at the University of Aveiro.

Since then, Manuel S. Pinto´s activity at the University evolved in complete consonance with all the other colleagues irrespective of function or area, as a result of his personality, where having the University as his main concern, it stands out his availability to hear, to participate in projects and teams, never rejecting what, to others, might seem less appellative.

A multi-faceted person whose research interests also spanned to some different areas like History of Science, Chinese Studies, Environmental Policies, he was one of the founders of the Group of History of Science and Technology at the University of Aveiro, in 1996, later established as Centre for the Studies of History and Philosophy of Science and Technology of the University of Aveiro. This group gathered colleagues from several scientific departments of the University while the Geosciences and Physics Departments kept the leadership. Manuel S. Pinto was in charge of the Centre Secretary Board serving as its Secretary and persistently stayed leading it even when some declining winds arrived. From 1997 until 2000 the Centre published a Newsletter with articles on history of science by many of the active Portuguese historians of science, always with an article signed by the Secretary Board. Also in the context of these activities Manuel S. Pinto co-authored an article on the Development of History and Philosophy of Science and Technology in Portugal – Obstacles and main necessities of the University of Aveiro Centre – Opportunities to the Area Development, that was included in the Manifesto for History and Philosophy of Science presented to the Portuguese Ministry of Science and Technology.

In this research area, Manuel S. Pinto gave particular attention to the history of geology, mineral resources and metallurgy in Portugal and colonial Brazil, and more recently to the history of Jesuits' contribution to natural history in China. He unveiled some lost episodes of Portuguese and Luso-Brazilian history of science as in the case of Gaspar Frutuoso (1522-c1591), and Manoel Ferreira da Camara (1762-1835). More recently he was studying Father Thomé Pereira (1645-1708) and João de Loureiro's Flora cochinchinensis together with Noel Golvers.

During the period that spanned from 2001 until 2004 he served as INHIGEO President.

He co-organized around 12 conferences on the Geochemistry domain and 4 international on the History of Science, namely Luso-Brazilian: in Évora-Aveiro (Portugal) 2001, Rio de Janeiro (Brazil) 2004, and 2009. The forthcoming one will be in Coimbra (Portugal) in October 2011.

He was a frequent invited participant on the History of Science Seminar (Centro Interunidade de História da Ciência) lead by Prof Shozo Motoyama at São Paulo University (USP).

From his published works, one can find around 12 books or book chapters on Portugal, Spain, United Kingdom, Germany, Mozambique and Brazil; 6 geological maps of Mozambique and Portugal; 8 papers in journals from the SCI or as selected papers, more than 80 papers with referees in Portugal, Spain, Brazil, Macao as well as several proceedings in international meetings.

For some years he has been committed to the publishing of a book on the History of Geology in Africa, accepted for publication by the Publishing House of the Geological Society of London.

Renato Araújo and Isabel Malaquias
(Universidade de Aveiro, Portugal)

Wang Hongzhen (17 November 1916-17 July 2010)

Wang Hongzhen, geologist and geology educator, was born in Cangshan, Shandong Province, on 17 November 1916. He was elected an Academician of the Chinese Academy of Sciences in 1980. He graduated from Peking University in 1939 and received his PhD at Cambridge University in 1947. After returning home, he served in many posts, such as Associate Professor, Professor and Secretary General of Peking University; Professor, Departmental Director, Head of Department, and Vice President of the Beijing Institute of Geology; President of the Wuhan Institute of Geology; Secretary, Vice Chairman of the Geological Society of China; President of the Geological History Research Association; Secretary, Secretary General, and Chairman of the Palaeontological Society of China; Secretary General, Vice Chairman of the International Union of Geological Sciences (History Division); Member of the Sixth National People's Political Consultative Conference.

Professor Wang was closely involved in geological education and taught general geology, paleontology, historical geology, stratigraphy, the geology of China, and global geology. In 1956, he edited the *Guide to Geological History*, adopting teaching material from Europe and the Soviet Union but using Chinese data. He emphasized the value of field practice, and helped establish the training centre of Tangshan in 1953. He also organized the revision of the Chinese requirements and teaching programs in geology (1956). In many ways, he put forward his views about the relationship between teaching and research in colleges, and the quality and quantity of training, both basic and professional. In his sixty years of teaching, Wang supervised more than thirty postgraduates, including twenty-three doctorates in stratigraphy, paleontology, structural geology and petroleum geology, and five post-doctorates. He attached great importance to the establishment of academic journals, and founded *Earth Science*, *Modern Geology*, *Earth Science Frontiers*, and other geological publications.

Wang worked energetically on the study of geological sciences. In paleontology, he studied the tiny skeletal structures of rugose corals when doing his PhD in England and later published a paper 'On rugose coral classification from the viewpoint of skeletal microstructure'. He also proposed a new classification system and offered an account of the temporal evolution of corals. In 1989, with the help of his assistant he undertook electron microscope scanning of rugose corals, confirmed the original nature of the skeletal structures, made interpretations in biological crystallography, and published *The Evolution and Classification of Chinese Paleontology: Coral Biogeography*, which established a new classification for the evolution of rugose corals.

Wang also emphasized the importance of the history of geology, and went back to the origins of academic thought, believing that the future must learn from the past. After becoming President of the History of Geological Research Society of the Geological Association of China, he became highly active in international academic exchanges. He edited and published *A Brief History of Chinese Geology* in English, copies of which were distributed at the International Geological Congress. The International Symposium of Geological Sciences (1990) was held in Beijing. He presided over the organization of the commemoration of famous geological predecessors and symposia, publishing a commemorative album and also editing *The Early History of Chinese Geology* (1990). He summarized works in more than ten areas of Chinese and English monographs and collected works, in volumes such as *Fifty Years of Chinese Geology* (1999). More recently he also focused on writing and editing the *Dictionary of Earth Sciences* (2006), contributing articles on Chinese and various foreign geologists.

In the sixty years of his geological career Wang published more than 240 articles and more than twenty monographs. His *Geological Map of Asia* and *Geological Map of China* were together awarded the first prize by National Natural Science (1982). His *Atlas of the Palaeogeography of China* and his monograph on Paleozoic corals were awarded second prize by National Natural Science **(**1987, 1991). His *Guide to Geological History* won the special-class prize of excellence for a national university textbook (1988). He was also awarded the first Science and Technology Progress Award of the Heliang Heli Foundation in 1994 and the Li Siguang Geological Sciences Special Award in 1996.

Professor Wang was for a time the INHIGEO Vice-President representing Asia and in recent years was an Honorary Senior Member. An interview with him was published as: 'Interview with Wang Hongzhen, Beijing, October, 1999', *INHIGEO Newsletter*, No. 32, 2000, pp. 34–37.

Wang Hongzhen died in Beijing on 17 July 2010.

Chen Baoguo (Beijing)

INTERVIEW

An Interview with Yusheng Zhai INHIGEO Member China in Beijing, China, 21 December 2010

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

Introduction: Yusheng Zhai (born 1930), mineralogist and geologist, has made a major contribution in the fields of structural geology of mineral deposits, regional metallogeny, history of geology as well as other fields. He studied first in the Geology Department of Peking University (PKU) from 1948 to 1952 following which he has worked in the Beijing College of Geology (BCG) (renamed to China University of Geosciences in 1987). In 1999, he was elected as Academician of Chinese Academy of Science. Currently he is President of Chinese Commission on the History of Geology (CHHIGEO), and an INHIGEO member.

Surveying in the Axi gold deposit in 2005, Xinjiang, China

Question：*It was an old tradition in China that people have two names, namely ming and zi (with another name taken at the age of twenty). The ming was usually used by people for themselves, with the name indicating a modest attitude; while other people provide one's zi to indicate respect. However, this tradition has been disappearing. From the 1930s, one person usually had only one name, and that is ming. Consequently, recent generations rarely had zi, except a few people who were sinology experts. Are these the circumstances in your family?*

Zhai：On 6 February 1930, I was born in a small village in the northern China. Seven years later, the Japanese army occupied the North China, and my family moved to Tianjin. So I obtained my primary and the junior secondary education there. When I studied in the Tianjin High School, a Chinese teacher suggested the *zi* of my names.

This teacher was Pei Xuehai, and he was a famous palaeographist. Not only did he have extensive knowledge, but he also treated his students very lovingly. He was from Hebei province, just like me. At that time, we were both in residence. Therefore, we spent a lot of time together. He liked me very much, so he suggested *Weicang* as my *zi*—. It has been selected from the famous sentence of China: *yuweicangsheng*, which means to make our country and the common people rich. It reminds me to serve society and the people, and it has affected my value-orientation throughout life.

Mr. Pei played a very important role in my life. He was very broad-minded, and this character makes me to be a person of sublime virtue. I remember that, I wrote "O ever youthful, O ever pure (*yongbaochizizhixin*)" in my classbook when I graduated from the high school.

Question: Geology was not part of the high school curriculum at that time. When did you first learn about geology, and why did you choose it for your career?

Zhai: I learnt about geology in high school. The school was very good. And the school library contained a large number of books. I gained knowledge of nature, including mountains and rivers, in Geography class. I spent much time in the library and enjoyed myself. There was a set of books named *wanyouwenku*, and one of them was *Geology*. When I finished reading it, I became interested in geology. There and then I learnt about geology.

There was a tradition in my high school: the students who studied well could take part in the university entrance examination in the second grade. I was raised in the plains area of the northern China. So rarely did I see mountains when I was little. At that time, my dream was to visit the famous mountains and great rivers all over China. There was a simple motivation that there would be many chances to "travel for pleasure" if I chose geology. The Geology Department of PKU was the best one at that time and also the first to be established in China. It had a great Geological Exhibition Hall, and many eminent geologists were teaching there. For these reasons I chose the Geology Department of PKU.

Question: It was a period of great social change when you were at university. In January 1949, the Communist came to rule Beijing. And on 1 October, the People's Republic of China was founded. There always were some people of active political thoughts in PKU. Did they influence you?

Zhai: I was be influenced by them during my university studies. It was a significant impact on my political thoughts and my geological career. And it also laid a solid foundation during this time. It was a very turbulent period in China during my 4 years at university.

In September 1948, I entered the Geology Department of PKU. When I was a freshman, I gained much assistance from the senior students who were the Communist Party members, and so did my classmates. They told us many things about our university, and helped us to be familiar with living and studying conditions. Moreover, they took us to the hospital when some of us were sick. I was touched by them, deeply. I subsequently knew that, whatever they did was to learn about us and our eligibility to join the Communist Party.

There were many student movements during my university life. And I was active in these movements, such as anti-National Government, welcoming the Communist Party into Beijing, protecting universities and so on. At that time, in most cases, the students from the Geology Department were the most active in taking to the streets. And they often walked ahead. My height helped me to be one of the students who held the flags and slogans in the front of the processions.

Question: Why were the students from the Geology Department more active in political movements?

Zhai: In my opinion, the reason could be that, we were always away on field trips, and it was very easy for us to go to regions where the living conditions were poor. Therefore, we knew more clearly about the national condition and the problems that people were enduring. Consequently, the political thoughts of Communist Party seemed more acceptable to us.

I was favorably disposed towards political thoughts of the Communist Party. I participated in the Young Democratic Union, which was a progressive organization, just after the Communist Party entered Beijing in February 1949. And in January 1950, I joined the Communist party and I was the only party member in my class at that time. Ma Xingyuan, who was the general geology teacher of the Geology Department of PKU, was my sponsor. Mr. Ma was a veteran party member as he had entered the party in the 1930s. He originated from the Northeast area of China where there were many wars of resistance against Japanese aggression. Mr. Ma left his hometown at that time and studied in the Southwest Associated University. And then he left to study in Europe. He always wore a suit in the class. He was tall and grew a moustache, just like a western intellectual. His lessons were rich and colorful.

On 1 October 1949, Chairman Mao proclaimed the founding of the People's Republic of China on the Tiananmen Rostrum. The students of PKU participated in the ceremony as the members of the Tiananmen Square picket. I personally heard Chinaman Mao proclaimed the founding of the People's Republic of China, and saw Commander Zhu De review the troops in an American Jeep that was captured in the war. I was extremely excited at that moment. It was the most profound experience that I had during my university life. And at that moment, I was sure that our country would become strong.

Sixty years later, a number of famous scientists were invited to view the 60th National Day Parade from the Tiananmen reviewing stand. And I was one of them. We stayed in a hotel near the Tiananmen Square the previous day. I was so excited that I could not sleep well. So I got up at 4 o'clock that day. Walking on the street, I saw the armed forces of the People's Liberation Army. It reminded me of the picture 60 years before. At that time, the tanks were made in the US and all of them were captured from the enemy. After 60 years, our army has become strong, and great changes have taken place in the Chinese economy. I felt that we Chinese people had stood up, and moreover, we were strong and powerful. There was a great development during the past 60 years, and I am a witness to these changes.

Question: You succeeded in gaining high academic recognition. Was this relevant to your studies at university?

Zhai: Yes, it was. I studied very hard and learnt a lot at university. Numerous Chinese geologists graduated from the Geology Department of PKU. Many famous geologists were teaching there. The library and the teaching conditions were excellent. Not only were the teachers good and extensive in education, but also stimulating in research, full of original ideas, professional in work, concerned about the students, and teaching by personal example as well as verbal instruction. With the help of our teachers, I participated in the work of drawing a geological map (1:50,000). I still remembered that, on one occasion, I tripped and broke my arm. Then I hung my arm by the belt of the jug and kept working.

I was always away on field trips in mining areas and participated in the geological survey of coalfields and the calculation of reserves during my university studies. Field conditions were atrocious. Meals were typically Wotou (Steamed Corn Bun) and pickles. On one occasion, our teacher asked the head of coal pit to feed us. I cannot remember exactly what we ate, however, it was an impressive meal.

There were 12 students in our class. All of us were very united and studied diligently. It was an outstanding collective. PKU is a comprehensive university. Thanks to the advantageous education condition, I gained a lot of knowledge both of geology and of other subjects, including literature and sociology. In conclusion, I obtained a comprehensive education. And it laid the foundation for my career.

Question: When you graduated from the university, it was a period of recovery from the effects of years of war. And the first Five-Year Plan was brought into effect. Could you relate some experiences from that period?

Zhai: I graduated in the early years of the People's Republic of China. It was a youthful period for our country. It was also a fascinating period, and I was fortunate to have been there.

I graduated from university in 1952 and was assigned to BCG to be a teacher. At that time, the government started large-scale economic construction. And it was necessary to understand the geology and mineral resources of our country. Our country was suffering from an acute shortage of specialized personnel at that time. I was under the strain of heavy teaching work, because of the shortage of geological talent.

I was trained in western education models at the university. The teachers spoke English in the classroom. After I graduated, learning from the Soviet Union became fashionable. Influenced by this, BCG copied the Soviet education models. At that time, many Soviet experts were invited to China. And much scientific and technical literature in Russian was introduced. These experts were full of enthusiasm, and each of them coached about 20 to 30 Chinese students. However, only a few teachers were good with the Russian language. Then BCG decided to send 8 teachers to Harbin in the north-east part of China to learn Russian for half a year. And I was one of them. After six months full-time training, all of us were able to read Russian books, and became Russian translators.

I was so lucky that, I came into contact with two intellectual traditions—Occident geology and Soviet geology—at the start of my career. And both played important roles in establishing the foundation of my career. These were two different intellectual traditions. The Occident was flexible and laid great emphasis on the key problems. But the Soviet paid much attention to the norms, the systematics and the integrity. For example, the Russian usually drilled quadrille drillings and the number of bore holes must be sufficient. The geological map that they compiled was also very systematic, and covering most area of the country.

In my opinion, it was very helpful for Chinese geology to learn from the Soviet tradition, especially at the time that large-scale development of the mineral resources was taken place in China. It was also very convenient for the new graduate students, who were lacking experience, to apply the Soviet model. On the other hand, the Soviet Union was vast in territory, and the geological structure and the mineral resources were manifold so the background of geological work in Soviet Union was solid. I remain interested in research results from Russia today. And I always suggest that my students learn Russian, if they want to learn a second foreign language. For most of them their first foreign language is English.

I spend my life on the mineral deposit geology, especially on the structural geology in mineral fields, studies of metallic ore deposits, regional metallogeny and so on. The number of international students was small in my generation. Most of us accepted the local education. Consequently, I had no acquaintance with the historical background of the western countries. It is the characteristic of our generation that we accepted the great importance of education. So we did well in applying theory to practice. I have surveyed more than 400 mines all over the world in my lifetime. Our theoretical research was favorable to the practical work. And some of my new thoughts were inspired in the practical work, such as combination of study on the ore-control structure and ore-forming processes which was a new direction in the research of structural geology in ore field. I have been engaged in the geological education for about 60 years. I have often shared my experience and knowledge with my students, some of whom have become experts in field of geology and famous geologists.

Question: Many political movements were organized during the first 20 years of your career. Was your career affected by these movements?

Zhai: Research conditions were extremely harsh at the beginning. Many political movements were organized at the time and Chinese geological activity was adversely affected by some of them. During the Cultural Revolution (1966-1976), the research and education of geology had to be suspended. In 1970, we were sent to a village of Jiangxi Province in south China to undergo reformation through labor. The local government gave us a barren mountain slope. And we had to build houses, raise pigs and grow rice there. We thought that we would not be allowed to return when we left Beijing. So I took all of my possessions with me. As a matter of fact, we were forbidden to take anything with us except for the necessities of living. However, I carefully hid some geology books in my suitcase. In the village, we had to work during the day. However after work, I read these books secretly because reading scientific books was forbidden and considered to belong to the capitalist classes at that time.

During the Culture Revolution, Mao instructed that, the colleges should be move to new regional bases. Therefore, BCG was obliged to out-migrate from Beijing. Firstly, it was reconstructed in Jingzhou, Hubei Province. However, the situation there proved too difficult to run a college. It might have been realistic to establish a primary school. I still remember that, there were several regular transport vehicles running between Jingzhou and the other large cities of Hubei. But all of them soon stopped operating. Considering this situation, the teachers of BCG hoped not to out-migrate from Beijing. Unfortunately, it could not be changed because the government had issued the order. As a result of collective effort, BCG later moved to Wuhan—the largest city in Hubei Province.

There were some older professors who did not move to Wuhan with BCG, such as Wang Hongzhen, Yang Zunyi and others. They were internationally recognized geologists. Due to their effort, the graduate faculties were relocated in Beijing, then enrolled and educated graduate students.

After moving to Wuhan, BCG was renamed to Wuhan College of Geology (WCG). I served as Vice-Principal from 1980. For historical reasons, there were three parts in the old BCG campus after Cultural Revolution: the Management Institute of the Ministry of Geology and Mineral Resources, the Graduate School of the WCG and the Graduate School of Chinese Academy of Geological Sciences. It was proposed that the three departments be combined. As a result, the Beijing Education Centre was established to administrate the amalgamated entity.

I was appointed to be the Manager of the Centre and was recalled to Beijing from Wuhan. I had a difficult role. In the first place, I had to sort out interdepartmental relations and re-establish order. The Beijing Municipal Government would not approve the Department. The reason was that the College had out-migrated from Beijing. We worked diligently to satisfy the Government. Finally, the College was re-established in Beijing and began to enroll undergraduates. In 1987, the College was renamed the "China University of Geosciences", and developed into two institutions in Beijing and Wuhan respectively. I was appointed to be the President of China University of Geosciences in Beijing.

It was an extremely difficult period to transition from the Beijing Education Centre to CUG. As the CUGB President, I had to face many difficulties. On the one hand, the College was short of funds. For example, there was no suitable car available for CUG. I still remember that, Mr. Wang Hongzhen's car was asked to park on site when he attended the Chinese People's Political Consultative Conference, because his car was too shabby. So Mr. Wang had to walk a long distance to the Great Hall of the People, though he was old and weak. It was difficult to buy a car at that time. First, we needed to apply for it. However, when we obtained the funds, we hesitated. At last, we gave up buying a car, and decided to use the money to improve the condition of the laboratories. In addition, living conditions were very poor. There were no dormitories for the first batch of freshmen, so they had to live in a bungalow. It was very cold in winter, because the heating was bad. When I went to see them, I saw that they were studying in cotton padded jackets. So I decided to let the students move to the office building, and the offices moved to the bungalow. It attracted wide attention, and the *Beijing Evening News* even reported this news.

Although I was President, I have lived in a tube-shaped apartment for 18 years. I have 4 children so it is a big family. My elder son has married but still lives with us. All of us live in a small room of about 30 m^2. Once a leader of another Department came to my apartment, and he felt very confused. In his opinion, the BCG President was supposed to live in a big house. I explained that, all of the elder professors of BCG lived in small houses. Several years later, there were some apartments available. It was suggested that I move into one of these. In their opinion, I was the President, so I should live better. But I declined it. I thought the old professors should move to new apartments first, and I would like to move with the other professors. It was the most difficult time for our college. However, it was also a time of the greatest unity. Although the college suffered from the damage of the Cultural Revolution and the relocation, the great tradition, including the painstaking efforts of staying together and constantly striving to strengthen ourselves, was not lost. Many elder staffs still cherish the memory of the period when we worked together to surmount difficulties.

Question: You have been President of the Chinese Commission on the History of Geology (CHHIGEO) since 1990. Could you tell us about how you began to pay attention to research into the history of geology and what you have done in this field?

Zhai: Chinese geological research commenced relatively late. And there was no geological research institute until 1910s. After the Cultural Revolution, many geologists were still in good health. They proposed that research into the history of geology be given more attention. Thanks to them, CHHIGEO was established in 1980.

In fact, I needed to read some books about the history of geology when I first gave lessons in the College. At that time, I noticed that the history of geology covered a wide range of subjects. In the middle of 1980s, Mr. Wang Hongzhen, my manager, served as CHHIGEO President. He often invited me to academic activities in this field. And so I gave increased attention to relevant research in this discipline. Maybe Mr. Wang cultivated me deliberately, and that is why he invited me to participate in academic activities that included compiling *The*

History of the Geology of Ore Deposit. Progressively I was became interested in the history of geology, and obtained some good results.

In 1990, I was elected as the Vice President of the CHHIGEO. And in same year, China hosted the annual conference of INHIGEO. At that time, I was also President of the CUGB so I was able to support INHIGEO to hold its conference at CUGB. Since then, my research in the history of geology has flourished.

It has now been 30 years since the foundation of CHHIGEO. Due to the efforts made by the old and new generations, there have been many research results. Research into the history of the Chinese geology falls into two phases, and the divide lies in the 1990s. Before the 1990s, the range of research was wide, including ancient geology, biography of geologists, history of geological education, geological research, geological enterprise and so on. And thanks to the elder geologists, the beginning of the research was very good. After 1990s, the range of research has become more extensive. Research has concentrated on the national economy and the people's livelihood, especially in the exploration/development of mineral and energy resources, geological environment protection and geological hazards. Knowledge of these issues is highly necessary and we can learn much from their history.

Current researchers on history of geology in China have differing education backgrounds, including:

(1) People who major in the history of geology. They work at the core of the discipline, but the sector is very narrow.
(2) Some older geologists, who have paid much attention to history, have begun to concentrate their energy on this subject after retiring from geological research.
(3) Geologists, who are in the front line of geology research, who are also very interested in the history of geology. They spend some time on historical research of their field.
(4) Recent geology graduates also play an important role in the growth of history of geology.

All of the above people contribute to the development of the subject.

There are some challenges in research on the history of geology in China, which as I thought, cannot be resolved in the short term. On one hand, leading researchers are often absent in the field. On the other hand, the average age of the researchers is quite high. And more youth is urgently needed. Luckily, however, more and more people have paid attention to the history of geology in recent years. The importance of this research, in my opinion, encompasses three directions:

(1) Learning from history. The research in this field can provide a direction to research in geology and people can learn a lot from the history of the science.
(2) The realistic meaning. Chinese people have experienced geologic hazards over a long period. A lot of experience and lessons has been gained from each generation. And it is necessary for us to sort out the information.
(3) Educational aim. The research results are educational for the young generation. I hope that research into the history of geology will lead to greater attention being devoted to the environment and hazards.

In the future we may also establish some consulting projects that will also highlight the social function of research into the history of the geology.

ARTICLES

IUGS 50th Anniversary History Project

In early 2009 the IUGS made plans to celebrate its 50th anniversary by undertaking further historical work. INHIGEO member for Australia, Sue Turner, answered the call to be involved in the project. Below is an extract from some of the results of this project.

Capturing the 50-year History of the IUGS (1961–2011)

> Previous efforts to create a unified IUGS history by a geoscience historian and member of INHIGEO (Schneer, 1995; see Mason 2003) focused on certain events and aspects during the Union's first two decades and much of his work remains unpublished (Schneer, pers. comm. July 2009). The time is now ripe for a full analysis of the history and achievements of the Union going back to the post-WWII period when it was first mooted. The memories of the first IUGS president Jim Harrison and others of the executives to be found in *Episodes* (e.g. 1978, 1986) are useful in this context.

The original IUGS Statutes signed in Stockholm on 29 December 1961 made no mention of either a secretarial office or of records and archives. However, the IUGS Secretariat, based in Trondheim, Norway for the past 25 years, housed all historical and archival material. From 10–23 November 2009, the Norwegian IUGS Committee hosted my visit. The Secretariat was then undertaking the massive job of transferring to a new country, which brought home the timeliness of the 50th anniversary history project, as the founder members are now few in number. My time in Norway was spent investigating and assessing the volume and condition of the archives held at the Norwegian Geological Survey in Trondheim before its move to the USA. During the visit, I had hoped to meet with Dr Johannes Dons, former Director of the Mineralogical Museum in Oslo and first IUGS Executive Treasurer, but this was not to be. As one can read in IUGS e-Bulletin #45, Dr Dons died on 14 November 2009. This sad news came just as the Secretariat and I were writing to him. Fortunately, the earlier worker on IUGS history, USA Senior Honorary INHIGEO member, Professor Cecil Schneer, had taped a conversation with Dr Dons when he visited the NGU in 1991 as part of his work for the 25th anniversary. This tape is now one of the most important items in the oral archive. Following conversations by email and skype earlier in 2009, the NGU arranged with Professor Schneer to send his remaining accumulated notes, documents and tapes to Trondheim. While in Trondheim, to add to that legacy, I interviewed, talked to and recorded interviews with several Norwegians who have been involved at high level with IUGS bodies, adding to tapes made when I was preparing the IGCP history (e.g. Turner 2006). The tape archive now includes records of interviews with several former Executive members and associated people.

The IUGS Secretariat moved to Trondheim when Richard Sinding-Larsen became Secretary-General in 1984. Most documents from the earliest Secretariats are missing, but documents from the 1960s onward were found in other archives when I was preparing the IGCP history (see Turner, DFAT report). During late 2009, the IUGS administrator Anne Liinamaa-Dehls (in part in discussion with the author), undertook the scanning of all key documents and photographs amassed over the years to produce the first digital IUGS archive (copies are now at the USGS and in my possession). The former Secretariat member, Hanne Refsdal, also made tapes of meetings during her 15-year period in office and she has provided an invaluable photographic record to add to the materials already acquired from the early IUGS Secretary General, Simon van der Heide, the Canadian Geological Survey and the *Episodes* office, kept during Bill Hutchison's era. These tapes, with personal history and recollections, provide a direct way of understanding the past workings of the Union. Also digitized were items such as IUGS brochures and other products, such as conference memorabilia—another collection in the archive that we hope to build. As this report is being prepared, the IUGS Secretariat has moved to its new home with the USGS in the USA. The new Secretariat is made up of Nancy Zeigler and Richard Calnan (email: IUGS@usgs.gov; address: IUGS Secretariat, MS-917, US Geological Survey, 12201 Sunrise Valley Drive, Reston VA 20192, USA).

Like Professor Schneer discovered during his visit to Trondheim in 1991, I found the IUGS Archives too voluminous for the few days' work that I had available to devote to my visit. Much dedicated further work will therefore be necessary to do a thorough job.

As I worked through documents, a question regarding confidentiality became evident. There is a need for the IUGS Executive to provide guidelines for access to the IUGS Archives, perhaps in consultation with INHIGEO. In general, archives have an exclusion period (10, 20 or 30 years) and perhaps there is already a statute relating to documents. It was suggested that three Executive terms was the usual period. However, which letters marked 'confidential' can be on 'open file', even for historians to see?

A further point relates to the preservation or otherwise of material. I have heard that some documents in Trondheim have been discarded and as a result of previous moves of the Secretariat there are few pre-1984 files available. I suggest therefore that guidelines for the removal or destruction of documents are necessary. As a geoscience historian, I would urge erring on the side of posterity and recommend that all documents should be kept as we cannot judge what future historians may need. I have noted that the archives of the Nominating Committees are not kept with the Secretariat and therefore that aspect of the overall history is inaccessible unless documents are present elsewhere in individual archives. Most important is the need to consider the establishment of a permanent and accessible archive, perhaps in the USA or UK (e.g. the ICSU archive). Both the IUGS Secretariat in Trondheim and I have used Filemaker pro for building our databases, a platform efficient both on pc and Mac. We recommend continuing use of this program.

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Further notes

Since the above report was written, two posters on IUGS history (see below) have been presented at INHIGEO-2010.After July 2010 no further work has been possible. Nevertheless, historic material such as letters and emails from former IUGS personnel continues to be received. If any INHIGEO member knows of any source of funding to continue the project, please let me know.

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Susan Turner

Investigations by the German geologist, H. von Abich, in Armenia

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Otto Wilhelm Hermann von Abich (born 1806 in Berlin, died 1886 in Vienna) developed an early interest in science, particularly geology, from his father, Wilhelm Von Abich, a Mining Councillor, his maternal grandfather Martin Klaport (1747 – 1817), as well as his uncle Julius Klaport (1783 - 1835), a prominent orientalist and an ethnographer of Caucasian peoples. Subsequently, when a Physics and Maths student at Philosophy Department, Berlin University, von Abich was fortunate enough to attend the lectures from several great scientists of the 19th century, namely, George Hegel (philosophy), Leopold Ranke (history), Leopold von Buch (geology, then called geognosy) as well as lectures by Carl Ritter and Alexander von Humboldt on geography (Volkova and Tikhomirov, 1959).

In 1831, having graduated from university, the young scientist wrote a thesis on mineralogy in Latin and went on to study volcanoes – both active and extinct in Italy during 1833-1836. From 1841 to 1844 von Abich worked as an ordinary professor of geology and mineralogy at Derpt (Tartu) University (now Estonia). But the inquisitive scientist's destiny was to be related to the nature and culture of the Armenian Highlands and, first of all, to the most famous mountain of the Old World – the biblical Mount Ararat. Legendary Great Ararat (5165m), or Masis, as it is called in Armenian, appealed to Christian pilgrims, travelers and naturalists from all over the world as a consequence of its beauty, magnificence and mysterious inaccessibility. A disastrous earthquake in 1840 that destroyed a part of the slope stirred agitation among scientists in Europe. In the days when many fields of geognosy, i.e. geology, were beginning to develop, many European scholars and, first of all, Russian researchers endeavored to find the cause of the phenomenon. In order to solve the problem the HQ Corps of Mining Engineers of the Russian Empire turned to von Abich, who was, by then, a recognized authority. On 27 July 1845 von Abich's small expedition commenced a new attempt to climb the south-eastern slope of Great Ararat. And at 11 a.m. the following day von Abich succeeded in realizing the dream of his teacher, Alexander Humboldt. The summit was conquered for the third time. This time the mountain was examined by a professional geologist for the first time. Previous ascents were achieved by F. Parrott, Kh. Abovyan (1825) and K.Spassky-Avtonomov, an orientalist (1834) (Abich, 1846; Agasyan, 1972; Brolidze, 1985).

Having comprehensively and thoroughly explored the peak and its vicinity, the observant scientist still could not distinguish the cause of the 1840 disaster. Only a few years later, following detailed analysis of the data did von Abich come to the conclusion that it was caused by a tremendous tremor provoked by a tectonic earthquake and not by a volcanic eruption. The earthquake in its turn caused a huge mud torrent that resulted in elimination of the Armenian village of Akori and the monastery of St. Hakob. Von Abich explained the so called 'flame', or 'bright red luminescence' on the top of Ararat, observed by immediate witnesses and considered it a necessary attribute of most volcanic eruptions. He supposed it to be the luminous effect of the setting sun on a dust cloud background that was caused by collapse of rocks after seismic shocks (Malkhassian, 1974). It is interesting to mention that so far the arguments, concerning the fact whether it was a tectonic earthquake or a volcanic eruption initiated by an earthquake, are continuing (Harutyunyan, 2005; Trifonov, 2008). Yet, most scientists who studied the phenomenon supported von Abich's viewpoint on the seismic origin of the catastrophe.

The scientist's further activity in the Armenian Highlands was extremely prolific and varied and it concerned nearly all theoretical and applied aspects of geology and physical geography, such as paleontology, stratigraphy, tectonics, mineralogy, lithology, petrography, geobotany, orography, climatology, glaciology, Quaternary geology, hydrogeology, mining studies, and geological mapping (Volkova and Tikhomirov, 1959). Actually von Abich appears to be the first to initiate seismic tectonics as a discipline. His ideas concerning a single cause of orogenetic processes, earthquakes and volcanic activities were later elaborated on and developed by his followers, such as by the prominent Russian geologist Ivan Mushketov (1850-1902) and the Austrian geologist, President of Vienna Academy of Science and one of the founders of modern geology, Edward Suess (1831- 1914) (Volkova and Tikhomirov, 1959).

Also, von Abich is considered to be one of the first elaborator of the chemical direction in petrography. As early as 1841 he introduced a term "acidity of igneous rocks". His contribution in geomorphology and geological mapping is significant as well. In his research the forms of the relief are always connected to the geological structure and elemental components of rocks. Being a skillful illustrator, von Abich graphically depicted different forms of relief and was the first to use the so called 'method of dislocated profiles", having a 20-year advantage over his contemporaries, such as the prominent American geologist and geomorphologist Carl Gilbert (1843- 1918) (Nikolaev, 1958). Also, von Abich's contribution to geological mapping of Armenia, Nagorno Karabach and neighboring territories is noteworthy (Malkhassian, 1982, 1984).

Von Abich was the first to introduce the term 'Armenishen Hochlandes'. According to modern concepts, the Armenian Highland, or Armenian Upland, includes the whole territory of modern Armenia, Nagorno Karabach, a significant part of north-eastern Turkey, a little part of western Iran and the south of Georgia. Due to his works, world science discovered the physical taxonomical unit of high rank, which was called thus by von Abich in honor to the autochthonous Armenian people that have inhabited that region since ancient times. Later the term as a separate orographic unit was put into wide scientific use and adopted by such eminent natural scientists, geographers and explorers of the second half of XIX and XX century as E. Suess, G. Lynch, F. Oswald, A. Voeikov, F. Levinson-Lessing, A. Leister, A. Reinhardt, S. Matveev, F. Machacek, etc. To date, the term appears in all the encyclopedias and geographical references of the world (Gabrielyan, 2000; Zograbyan, 1979; Khalatov, 2008).

The scientist paid the closest attention to the study of minerals. Due to his attempts, one of the richest manganese mines, Chiatur mine, was discovered in Georgia. In his numerous expeditions he traveled to both working and former mines and thoroughly examined all the veins. Some traces of iron ore were found by him practically throughout the north-east of the Armenian Highlands from Georgia to Karabach. Among non-metal minerals von Abich paid utmost attention to rock-salt, marblized and lithographic limes, diatomite, travertine and mineral waters, mentioning their location in the tectonically seismic zones (Mandalyan, 2005; Melik-Adamyan, Khachanov, 2009). Special attention was paid to paleontology and stratigraphy. For over 30 years, von Abich collected and identified numerous fossilized mollusks, corals, etc., including new paleontological species from different regions of the Armenian Highland. It is worth mentioning that a new species of a mollusk found by von Abich from Upper Devonian (374-359 Ma) deposits in the vicinity of the medieval monastery of Noravank in 1868 was called *Cyrtiopsis (Spirifer) orbelianus* von Abich in honor to the Orbelians, a noble family of Armenian princes. The tomb of a representative of this family, Burtel Orbelian, carved by the outstanding Armenian architect and sculptor Momik in 1339 is preserved in the church of St. Virgin at the Noravank monastery today. According to J. Gosselet (1880), A. Vandercamen (1959), M. Rzhonsnitskaya and M. Abrahamyan (1975), this species of brachiopods was later found by other researchers as well and it was identified from Upper Devonian deposits of Pamir, France, Belgium, and Poland. The Polish paleontologist A. Balinki (1995) noted that some specimens of brachiopods from Belgium and Poland, identified as the same species, differ greatly from those of described by von Abich.

We consider it crucial to point out that traditionally Latin names of animals and plants in science are given referring to either some morphological features of the individual, or to the geography of the site, or famous scientists, geographers and zoologists, but hardly ever referring to historical personalities. Von Abich's approach unmistakably witnesses his profound knowledge and deep love for Armenian history and culture. The undeniable evidence of von Abich's estimation of original Armenian culture can be considered to be the fact that a new species of a fossil Cephalopoda was called *Pseudotitanoceras (Nautilus) armeniacum* from Upper Permian (260-251 Ma) deposits in the vicinity of Old Jugha (now Julfa) famous cemetery, Nakhichevan region, Azerbaijan. Unfortunately, at this unique site numerous masterpieces of khachkars (crosses carved on stone blocks) were barbarically eliminated by the government of Azerbaijan only a few years ago. On the territory of Nagorno Karabach which is a part of ancient Armenian Artsakh and where no professional geologist had ever taken a step, von Abich's scientific research is believed to be truly pioneering (Melik-Adamyan, Khachanov, 2006). During the late 1850s – mid 1860s he initiated more detailed stratigraphic and paleontological investigation and gathered a huge fossil collection. It is worth mentioning that among the fossils from the Upper Chalk of Karabakh that von Abich had sent to Vienna the famous German paleontologist D. Antula identified a new species of gastropods *Actaeonella (Volvulinae) armenica* Anhtula 1899 (Rengarten, 1959), a new species of a fossil mollusk called so as a tribute to the Armenian people inhabiting Artsakh (Nagorno Karabakh) since ancient times.

The prominent scientist died in Vienna in July 1886. According to his will, he was cremated and buried in his mother's grave in the town of Koblets. Unfortunately, the scientist's huge heritage, including over 200 articles and monographs, unpublished works, letters and travel notes, archives and paleontological collections in numerous archives and museum of Russia, Germany, and Austria, has not been extensively studied and they demand more thorough analysis. First of all, it refers to historical and cultural layer and epistolary heritage of the scientist, which, in contrast to the geological works, practically was not analyzed and is unknown to the wide audience. For instance, the two-volume edition of von Abich's letters to his parents published posthumously by his widow Adelaide Von Abich, a daughter of an outstanding chemist Hermann Hesse, have not been translated either into Russian or Armenian. Only some fragments of von Abich's versatile legacy have become known to the public in Armenia owing to the effort of Albert Musheghyan (Musheghyan, 1985). Thus, von Abich is considered one of the pioneers in the study of inanimate nature and culture of Armenia and Nagorno-Karabach, whose scientific statements have not lost their relevance even today.

According to published sources and internet resources, so far in honor to academician Hermann von Abich, various researchers have named glaciers on the north-eastern slope of Mount Ararat, an underwater mud volcano shaft in Turkmenistan, a local swell in the Black Sea shelf near Anapa, Russia, potential oil and gas structures in the southern part of the Azov sea, a mud volcano in north-east of the Kerch Peninsula, Crimea, etc. Also, according to G.Ya. Krimholz (2000), in honor to von Abich, various paleontologists - Antula, Ulinga, Romanovsky, Djanelidze and others have named 8 species of fossil invertebrates, mainly from the Mesozoic-Cenozoic deposits of the Caucasus and Central Asia. However, according to preliminary data from one of the authors (Melik Adamian), in honor of Abich so far more than 30 species of fossil invertebrates from the upper Paleozoic and Mesozoic-Cenozoic sediments have been identified, including a new kind of gastropods *Plicopyrazus abich* Hacobjan 1976 from Upper Cenomanian limestones in the basin of the middle course of the river Veda, south of Yerevan, described by the outstanding Armenian paleontologist Vardges Hacopjan (1932 – 1975).

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(Article submitted by the Armenian INHIGEO delegation)

Staszic Fascicules
(„Zeszyty Staszicowskie")

More than 15 years passed since the initiative of prof. Zbigniew Wójcik to organize the „Staszic meetings" in Piła, home town of this eminent man in Poland. During the academic session in 1995 he made a proposal for a group of researchers, who are interested in the figure of Staszic, to meet every two years. The materials, published in the series of "Zeszyty Staszicowskie" („Staszic Fascicules"), are now the result of these periodical meetings. They have been organized by the Stanisław Staszic Museum in Piła, a biographical museum dedicated to this outstanding citizen of this town and directed by Józef Olejniczak. The museum is located in the former Staszic family house in Browarna Street.

Stanisław Staszic (1755-1826) is one of the most important figures in the Polish history. He was, first and foremost, a political writer and a scientist, a teacher as well as an activist in state administration. He translated into Polish George'a-Louisa L. de Bufon's monograph „Les époques de la nature". He carried out the studies of mineral deposits and contributed significantly to the modernization of mining and metallurgical industry. He followed in a way the achievements of his peer, Count Fryderyk von Reden, in Prussia. Furthermore, he has brought to Poland from A.G. Werner's school (Bergakademie in Freiberg) many experts such us Georg Gottlieb Bloede, Johann Graff, Johann Kaden, Wilhelm Gottlob Ernest Becker, Georg Gottlieb Pusch to work in The Mining Academy in Kielce, which was founded by him in 1816, as well as to the Main Mining Board.

Stanisław Staszic was also a prominent geologist. The appearance of the book "On the Geognosy of Carpathians and Other Mountains and Lowlands of Poland" in 1815 was a very important event in the Polish scientific literature. A large volume has been enriched in an atlas which contained a four-sheet geological map of Central Europe, a geological profile extending from the Tatra Mountains to the Baltic Sea, numerous tabular summaries and drawings. Some new methods of geological works concerning not only the theory but also practice that are partially still valid today had been applied by Staszic for the first time. He was integrating the science with practical life in his activity, creating in this way the scientific geological basis of mining and metallurgy. Thanks to his scientific and public (social) activity he became a model to be followed by the contemporary generation of geologists – and for that reason, he wholly deserves to be called THE FATHER OF POLISH GEOLOGY.

As already mentioned, the initiator of the scientific meetings in the Stanisław Staszic Museum in Piła and of the series "Zeszyty Staszicowskie" ("Staszic Fascicules") is prof. Zbigniew Wójcik – a prominent historian of science , geologist and a very thorough researcher of the life and activity of Stanisław Staszic, to whom he devoted many publications. He is also the author of tens of books and hundreds of research works referring to geology, history of natural sciences and history of Poles in Siberia, for example.: "Aleksander Czekanowski – General characteristics of people, science and adventure in Siberia" (1982), "Jan Czerski – Polish explorer of Siberia" (1987), "Ignacy Domeyko. Lithuania, France, Chile" (1995), "Karol Bohdanowicz: a portrait of investigator of Asia" (1997), "Stanisław Staszic – science and economy organizer" (1999), "Aleksander Patkowski – a pioneer of tourist and sightseeing regionalism in Poland" (2003), "Józef Mrozewicz – scientist and organizer of the Academy of Mining in Cracow" (2004), "Stanisław Staszic" (2008), "Walery Goetel: Rector during difficult times at the Academy of Mining and Metallurgy" (2010).

The published 7 volumes of "Zeszyty Staszicowskie" ("Staszic Fascicules") – contain altogether 1959 pages of text – presenting many-sided activity of Stanisław Staszic. These volumes are impressive from an editorial viewpoint. The cover pages are decorated with the images of Staszic's monuments located in many Polish towns.

Selected papers published in 7 volumes of the "Zeszyty Staszicowskie" ("Staszic Fascicules") - in Polish are as follows:

Volume 1 – 1998 (9 papers, 179 pages)
- Andrzej Abramowicz - Stanisław Staszic between Bufon and Cuvier,
- Stanisław Czarniecki - Stanisław Staszic and Hugo Kołłątaj in Polish geology,
- Zbigniew Wójcik - Stanisław Staszic and the rock soil (salt?) problem in Poland.

Volume 2 – 2000 (16 papers, 266 pages)
- Antoni S. Kleczkowski – Staszic's creation and exploration of mining government in the Staropolska Ore-region and its management,
- Antoni S. Kleczkowski - Abraham Gottlob Werner (1749-1817) – Connections with Poland. Symposium in Freiberg (Saxony) 19-24th of September 1999,
- Ryszard Palacz - Stanisław Staszic – Philosophy of Polish enlightenment in action.

Volume 3 – 2002 (15 papers, 274 pages)
- Andrzej Abramowicz – Staszic's map at the Congress in Bologna in 1871 r.
- Józef Olejniczak – Handwritten "sztasziciana" in the collections of The Stanisław Staszic Museum,
- Jerzy Starnawski - About Staszic on the column of "Annals of Literature and Art" („Annalen der Literatur und Kunst"),
- Zbigniew Wójcik – New renditions of Staszic's translations of French philosophic literature.

Volume 4 – 2004 (18 papers, 327 pages)
- Jan Jadczyszyn and Adam Wołk, Travel observations by Stanisław Staszic concerning erosion process and soil protection methods,
- Zbigniew Wójcik –Staszic's relationships with the Zamoyski and Sapieha Family,
- Zbigniew Wójcik – On a critical edition of Stanisław Staszic's translation of Voltaire's poem "About the issue of Lisbon".

Volume 5 – 2006 (10 papers, 228 pages)
- Maciej Ursuski – Stanisław Staszic's participation in the works of the State Council of the Polish Kingdom,
- Adam Wołk – Gardens in Stanisław Staszic's opinion,
- Zbigniew Wójcik – The evolution of thoughts (ideas) of Stanisław Staszic.

Volume 6 – 2008 (18 papers, 309 pages)

Jerzy Mikuszewski, Zbigniew Wójcik – About geological and cartographical workshop of Stanisław Staszic,

Stanisław Czarniecki, Algimantas Grigelis, Jan Kozák, Wojciech Narębski, Zbigniew Wójcik – „Carta geologica totius Poloniae, Moldaviae, Transilvaniae et partis Hungariae et Valachiae" by S. Staszic and its importance for European geology and geological cartography,

Marian Skrzypek – Stanisław Staszic as a translator and commentator of Bufon's works,

Adam Wołk – Agriculture in the notebooks of Stanisław Staszic's trips to Italy.

Volume 7 – 2010 (12 papers, 364 pages)

Marian Skrzypek – Stanisław Staszic – neptunist, plutonist, volcanist or buffonist?,

Adam Winiarz – Academic thought of Stanisław Staszic,

Zbigniew Wójcik – The geological collection of the Warsaw Friends of Science Association (1809-1831).

Andrzej J. Wójcik and Wojciech Narębski

Early Geological Maps from Central Europe (Some preliminary results from the VISEGRAD Project)

The VISEGRAD project commencing in 2010 has the objective of filling the gap in the knowledge of the early history of geognostic/geological cartography in Central Europe including the Eastern Alps, the Carpathians and the region of the Bohemian Massif, together with the Holy Cross Mountains in Poland. It involves the preparation of a 'database' for early maps of the study region, the history of 'geo-cartography' of the area in question, and discussion of its significance for the history of science. Participating Visegrad countries, namely Poland, Hungary, Slovakia and Czech Republic are supported by partners in Germany and Austria The participants seek out maps in their own countries and make enquiries from suitable contacts for other areas.

The first list that follows provides a record of geo-science maps of Central Europe until 1820. There are 31 citations. A copy of the 1768 map by Christian Lommer is shown on the next page.

List of all older geological maps of Central Europe, issued until 1820

1726 Mappam mineralographicam in qua neglecta accurata locorum distantia. Hungarie Superioris Fondinae (Luigi F. Marsigli)

1741-4 Mappa mineralographica; Schemnitz large section; Schemnitz small section (Luigi F. Marsigli)

1764 Carte mineralogique de Pologne (Jean-Etienne Guettard)

1768 Mineralogische Bemerkungen bey einer Reise von Freiberg bis an das Riesengebirge (Christian H. Lommer)

1774 Geographischer Plan der Gefürsteten Graffschaft Henneberg (Friedrich Gottlob Glaeser)

1778 Petrographische Karte des Churfürstenthums Sachsen und der Incorporirten Lande (Johann F. W. von Charpentier)

1780 Geographische Mappe des Gross-Fürstenthums Siebenbürgen (Johann Ehrenreich Fichtel)

1782 Petrographische Landkarte des Hochstifts Fuld (Johann C. Wilhelm Voigt)

1786 Petrographische Karte derer Kameral-Herrschaften Zbirow, Tocznik, Königshof, Miröschau und Wossek (Johann Jirasek)

1788 Petrographische Karte der Oranien Nassauischen Lande (Johann Philipp Becher)

1791 Petrographische Karte eines Theils der Landgräflich Hessen Casselischen Lande (Johann Philipp Riess)

1791 Petrographische Charte eines Theils des Bőhmischen Riesengebirges an der Schlesischen Gränze (Johann Jirasek)

1791 Plan des vulkanischen Gebirges von Eperies von Tokay (Johann Ehrenreich Fichtel)

1792 Gebürgs -Karte von Baiern und der Oberen Pfalz (Mathias von Flurl)

1793 Petrographische Karte vom Leitmeritzer Kreisse in Böhmen (Franz Ambrosius Reuss)

1794 Petrographische Karte des Egrischen Bezirks (Franz Ambrosius Reuss)

1796 Tatra versus Septemtrionem (Belsazar Hacquet)

1797 Petrographische Karte vom Bunzlauer Kreis in Böhmen (Franz Ambrosius Reuss)

1797 A new map of Hungary particularly of its rivers and natural productions (Robert Townsend with co author M. Korabinsky)

1802 Mineralogische Karte von Schlesien, entworfen im Jahre 1797 (Leopold von Buch)

1803 Über die merkwürdige Gegend von Fassa in Tirol: Geologische Karte (Alois Pfaundler von Sternfeld)

1808 Totius regni Bohemiae Mappa Chorographico-Mineralogico-Hydraulico-Commercialis cum Commitatu Glacensi et Districtu Egrano (Joseph F. Bock – Polach)

1808 Mapa geognostica del Tirol ca. 1:550 000 (Carlos de Gimbernat)
1811 Illuminierte petrographische Karte (Abraham Gottlieb Werner)
1813 Geognostische Skizze von einem Theile des Schlesischen, Böhmischen und Lausitzer Gebirgs (Karl von Raumer)
1813 Petrographische Charte der Cservenitz und Telky-Bányer Gebirgskette … (Mathias Sennovitz)
1815 Karte zum Beschurfungs Plan von Ost Galizien gezeichnet nach der Liesganigschen Karte (Carl Ritter von Schindler)
1815 Carta geologica Poloniae, Moldaviae, Transylvaniae, et partis Hungariae, et Valachiae (Stanisław Staszic)
1816-7 Orographische Charte von dem Fichtel-Gebirge (Agust Goldfuss, Gustav Bischof)
1818 Mineralogische Karte von Schlesien (August Kaluža)
1819 Geognostische Karte von Böhmen (Franz Xaver Riepl)

Mineralogical Map by Christian Lommer (1768)

The second list that follows contains selected younger "milestone" maps created in the period 1822-1840 (a total of 14 citations). Among these additional 14 citations there are included documents, which are understood by authors of VISEGRAD project as significant documents in a development of the history geo-science of Central Europe. There are fourteen references; some of them include two or more short descriptions of maps. For instance the citation of L. von Buch (1826) includes three separate descriptions of geological maps of Breslau (now Wróclaw), Eperies (now Prešov) and Brunn (now Brno). The citation of J.G. Pusch (1836) contains five and their descriptions and maps by F. Hoffmann (1836) presents two separate maps (of Hirsberg/now Jelenia Góra and of Glatz/now Kłodsko).

Selected list of geological maps of Central Europe 1822-1840

1822 Carte Géologique de la Hongrie et de la Transylvanie avec une partie des pays limitropes (Francois Sulpice Beudant)
1822 Carte Géologique des bords du lac Balaton (Francois Sulpice Beudant)
1822 Carte Géologique de la contrée de Schemnitz (Francois Sulpice Beudant)
1822 Geognostische Carte von Ober-Schlesien und angranzenden Landern. Entworfen im Jahr 1819 durch, von Oyenhausen (Carl Oyenhausen). Mapping undertaken in 1819.
1826 Geognostische Karte von Deutschland und den umliegenden Staaten in 42 Blattern. Section/Blatt Breslau; Section/Blatt Eperies; Section/Blatt Brunn are described (Leopold von Buch)
1830 Geognostical Map of Southern Bavaria (Ami Boué)
1831 A sketch of the structure of the Eastern Alps (Roderick Impey Murchison and Adam Sedgwick)
1833 Carte géologique du bassin de la Gallicie et de la Podolie Autrichienne (Karl Lill von Lilienbach)
1834 Carte géologique de la Transylvanie du Marmarosh et d'une partie de la Bukowine (Ami Boué)
1836 Geognostyscher Atlas von Polen (5 maps are described) (Georg Gottlieb Pusch)
1836 Geognostsche Charte von Sachsen, Schleisen einem Theile Bohmens und der Rheinlande in 50 Blattern…. Sheets Hirschberg and Glatz are described (F. Hoffmann)
1837 Geological map of Czech kingdom and neighbouring districts (Andreas Preininger)
1838 Petrographische Karte von Teplitz und seinem Umgebung (August Emanuel Reuss)
1830-40 Geognostische Charte des Königreichs Sachsen und der angrenzenden Länderabtheilungen (Carl Friedrich Naumann)

It follows that the number of citations in the above listings do not agree with the total number, which we anticipated at the beginning of the project. This results from the brief duration of the project and an absence of some study materials.

Selected references:

Bock - Polach, J. F. (1818): Totius regni Bohemiae Mappa chorographico-mineralogico-hydraulico-commercialis cum comitatu glacensis et districtu ergano. – Artaria et Socii, Wien

Buch, L. von (1802): Mineralogische Karte von Schlesien, entworfen im Jahre 1792. Haude und Spener, Berlin.

Buch, L. von (1826): Geognostische Karte von Deutschland und den umliegenden Staaten in 42 Blättern. - Simon Schropp und Comp. Berlin

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Flurl, M. von (1792): Gebürge-Karte von Baiern und der Oberen Pfalz. – Joseph Lentner, München.

Goldfuss, A., Bischof, G. (1816 – 1817): Orographische Charte von dem Fichtel-Gebirge. Steinische Buchhandlung, Nürnberg.

Hoffmann, F. (1836): Geognostische Charte von Sachsen, Schlesien und einem Theile Böhmens und der Rheinlande in 50 Blattern zur östlichen und westlichen Erweiterung der geognostischen Charte vom nordwestlichen Deutschland. Simon Schropp und Comp. Berlin

Jirasek, J. (1786): Petrographische Karte derer Kameral-Herrschaften Zbirow, Tocznik, Königshof, Miröschau und Wosek. Waltherische Hofbuchhandlung, Prag – Dresden.

Jirasek, J. (1791): Petrographische Charte einer Theils des Bőhmischen Riesengebirge an der Schlesischen Gränze. Waltherische Hofbuchhandlung, Dresden.

Kaluža, A. (1818): Mineralogische Karte von Schlesien. Kreuzer und Scholz, Breslau.

Marsigli, L.F. (1726): Mappam mineralogicam in qua neglecta accurata locorum ditantia. Hungarie Superioris fodinae magis distinete exhibentur. The Hague.

Naumann, C.F. (1830 – 1849): Geognostische Karte des Kőnigreichs Sachsen und der angränzenden Länderabtheilungen. Bergakademie Freiberg.

Preininger, A, (1837): Kőnigreich Bőhmen nach den neuesten Beobachtungen verfasst. Wien.

Reuss, A. E. (1838): Petrographische Karte von Teplitz und seinen Umgebung. C.W. Medau, Prag, Leitmeritz und Teplitz

Reuss, F.A. (1793): Petrographische Karte vom Leitmeritzer Kreise in Bőhmen. Waltherische Hofbuchhandlung, Dresden

Reuss, F.A. (1794): Petrographische Karte des Egrischen Bezirks. Waltherische Hofbuchhandlung, Dresden.

Reuss, F.A. (1797): Petrographische Karte vom Bunzlauer Kreiss in Bőhmen.Waltherische Hofbuchhandlung, Dresden;

Riepl, F.X. (1819): Geognostische Karte von Bőhmen bearbeitet von Franz Riepl. Wien.

Riess, J. P. (1789): Petrographische Karte eines Theils der Landgräflich Hessen Casselischen Lande. Kőnigliche Buchdruckerei, Heinrich August Rottmann, Berlin.

Staszic, S. (1806): Carta geological totius Poloniae, Moldaviae, Transilvaniae, et partis Hungariae, et Walachiae. Drukarnia Rzaodowa, Warszawa.

A report of activities in the VISEGRAD project is also found in the Country Report for the Czech Republic.

Alena Čejchanová,
Prague

Mexican geologic cartography: an exhibition marking the centennial of the UNAM, (Universidad Nacional Autónoma de México). 4 December 2010 to 26 February 2011

Organized by the Geological Institute in the Museum of Geology, UNAM

To mark the centennial of the National University of Mexico, the Institute of Geology prepared an exhibition to show through maps the history of the Mexican geology. The exhibition was inaugurated on 4 December 2010 in the main floor of the Museum of Geology, located in Santa María la Ribera of the city of Mexico and it concluded 26 February 2011.[1] A representative part of cartographic material that has been produced by the Geological Institute of Mexico from its creation in 1886 was presented to the public. Through this presentation the visitor was shown the evolution that the knowledge of the Mexican geology has had, the growing advance and refinement in the cartography and the representation of geologic features on Mexican territory. The sequence of the exhibited maps also expressed the different visions and geologic paradigms of the scientific world from the late XIX century until modern times.

The exhibition in seventeen screens and seven cabinets, covering ninety five square meters, showed some geologic maps, scientific instruments, types of rocks, fossils and minerals, as well as some publications. Also, other maps were presented, published by other institutions and which constituted a reference for Mexican geology. In addition, a chronology on the most outstanding events in the discipline was included. The maps showed an evolutionary sequence of the knowledge of the Mexican geology, while other detailed maps were good examples of the refined cartography of complex regions.

The objective of the exhibition was to show to the public, the knowledge of the Mexican geology over a century, according to Elena Centeno, Director of the Geological Institute of the UNAM, who indicated that:

> "Geology is one of the natural sciences that has been developed in Mexico from very early times […] we see that in the last hundred years that it has advanced considerably. Also, these last hundred years, Petroleos Mexicanos, El Sistema Nacional de Geografía, Informática y Estadística and the Consejo de Recursos Minerales (Nursery of the current Mexican Geologic Survey) were created. On the whole, all these institutions have had an important role in the geologic cartography of the country".

Without a doubt, maps are an important element of the geologic discipline, since in them there is summarized a series of complex formations of rocks, structures and space and temporary relationships. They are also the product of the laboratory work, mainly hours of interpretation and abstraction of the processes that have determined the geologic evolution of a region. Besides the scientific value of the geologic maps, they impact on the development of the society, because they constitute the base from which develop mines, oil fields, water and energy exploration and exploitation, with economic ends. That´s how we know that:

[1] The original idea of the exhibition, texts, digitalization and management of geological maps was developed by Dante Moran, Luis Espinosa, Enrique Gonzalez, Laura Luna, Esteban Monroy, Omar Moncada, Fabian Duran and the undersigned. UNAM institutions that collaborated in the exhibition were: the Director General for the Popularization of Science, Science Museum, Universum, the Library of Joint Earth Sciences, the Historical Archives of the Palace of Mines, the Institute of Geography, the Library of the Institute of Historical Research and the staff of the Geology Museum.

> “the geologic map, with its scheme of contrasting colors, evidently unequivocal structural symbols and precise contacts among the formations, creates the impression that, just as many other types of maps, is a true and objective registration of the derived data of the observations made on different types of rocks clearly differentiated among them by defined physical characteristics” (Harrison, 1970).

The vision of the geology of Mexico through its maps shows us a great diversity in the types of rock units and tectonic features. This is the result of a complex evolution in a very active interaction spaces, of dramatic geographical and environmental changes. A chronological sequence that begins with the roots of modern geology in Mexico, orders some of the events of the modern geology of Mexico. Based on that, this exhibition of the Institute of Geology is evidence of the wealth of the country and at the same time cultivates the culture of the Mexican geologic patrimony.

The start of this development can be set in 1888, when the Congress of the Union authorized the ordinance for the creation of the Geological Institute of Mexico, which inherited and concluded some of the tasks of its predecessor institution, the Geological Commission. Such tasks were the elaboration of the first *Bosquejo de una carta geológica de la República Mexicana*, together with the *Carta minera de la República Mexicana* of the country, both completed in 1889 at a scale of 1:3,000,000 that ended with the publication of the *Bosquejo Geológico de México* (Aguilera, 1896). The first of these maps, presented in the exhibition, was designed to give a general idea of the dominant geologic formations in Mexico and, at the same time, to serve as base for further detailed work. This map allowed appreciation in a single document, the general covering of the different rocky formations of the country and the areas where its geologic constitution was unknown, including nearly fifty percent of the country. Later on, new editions of the Geologic Map were completed, from 1891 to 1896, in a more complete and smaller scale, at 1: 10,000,000. From the Mexican experience it was revealed that "the geologic map is the graphic expression of the knowledge of the age and the nature of the rocks. The diversity of colors shows the extension of the formations" (Furon, 1973).

An outstanding event in the geology of Mexico was the celebration of two International Geological Congresses in Mexico. The X International Geologic Congress in Mexico City in 1906, allowed the preparation of 31 guide books for geologic trips to different regions of our country, as well as the enriching presence of investigators of diverse countries. Half a century later the XX International Geologic Congress took place in 1956; another exceptional fact was the beginning of the *Boletín de la Sociedad Geológica Mexicana* in 1905, that together with the publication of the first number in 1895 of *the Boletín del Instituto Geológico de México*, constitute one of the fundamental foundations of the evolution of the geology in Mexico. These publications revealed the diverse areas of the geologic knowledge, through maps, general descriptions on the stratigraphy, mining districts and fossil towns. This fact has a strong meaning because of the preservation and diffusion of the geologic knowledge of Mexico to the world.

In summary, this period of great intellectual dynamism about the geologic wealth of the country allowed the birth of the first modern geologic descriptions of several regions, as well as maps related to several geologic aspects, and the period that provided the deepest roots in the Mexican geology.

Another important map of the exhibition takes as title *Carta de los meteorites de México o regions de la República en que han caído fierros y piedras meteóricas* was completed under the auspices of the Secretary of Fomento and under the direction of the Engineer of Mines Antonio del Castillo, Director of the National Geologic Institute and drawn by Luis G. Becerril to scale 1:1,000,000. Exhibited and recognized at the International Exhibition of Chicago in 1893, it was the first map of its type produced in Mexico, and at the same time, it upgraded the *Plano de los meteóritos* of 1889, which was part of the works exhibited in the Universal Exhibition of Paris in the same year. The map attracted the attention of the scientific world as it showed the fallen masses of meteoric iron on the earth and of those of greater size and number that Mexico had, since:

> “the meteorites are the only tangible messages that we receive from the interplanetary spaces, and the knowledge of its constitution suggests to us clear notions on the nature of the masses distributed in those spaces as well as the history of our Globe" (Orcel, 1973).

In this same context, the exhibition presented the *Carta Estadística Minera de la República Mexicana* at scale 1: 3,000,000, also under the direction of Antonio del Castillo in the Mexican Geologic Commission. It is important to point out that the Fourth Centennial of the Discovery of the New World was celebrated at the Universal Exhibition of Chicago in 1893, to which Mexico sent 3,021 packages with diverse products and obtained 1,777 prizes. The variety and mining wealth of Mexico was highlighted at this exhibition that included a sample of minerals. Also, the Geologic Institute of Mexico presented a rich collection of fossils and maps, giving prominence and recognition to the referred letter, highlighting the richness and distribution of minerals that is preserved in the interior of the Earth whilst, at the same time, aiming to attract the capital investment, with relative data on operating mines, the situation of the mining centers and the opportunities available used in each district.

Another fundamental map at the exhibition was produced out by José G. Aguilera in 1906, under the title of *Les volcans du Mexique dans leurs relation avec le relief et la tectonique generale du pays* at a scale 1:5,000,000, which was published for the occasion of the X International Geologic Congress then taking place

in Mexico. The map was accompanied by a study on the volcanoes of Mexico in connection with the general tectonic setting of the country. In it, the distribution of several volcanoes of Mexico are located, mainly in the *Faja Volcánica Mexicana*, as well as in the *Sierra Madre Occidental* sectors (SMO) mainly of the state of Durango and in the region of Chiapas. In it, areas of fractures and tectonic boundaries are located and linked with volcanic and seismic activity. It is necessary to point out that the SMO is one of the most impressive volcanic regions on earth, because there are few places in the world where ignimbrite rocks in fabulous volumes are developed as a result of the activity of calderas from the Cretaceous to the Neogene.

The succession of exhibited maps that proceed from the end of the XIX century until the present, allowed viewers to appreciate the evolution of the geology as it developed in Mexico, supplemented by associated exhibits of technology and publications on the topic. The last map at the exhibition is the magnificent *Mapa geológico del Mundo*, at a scale of 1: 50,000,000 that provides worldwide information, where each color represents a specific type of rock and a geologic age.

With the evolutionary succession presented through the maps, the important role that technology has had was demonstrated, which has facilitated the simplification of the elaboration of the letters and the construction of models and animation. These supports provide evidence of the evolution of the work and of the integration of elements like colors, patterns, cartographic units, the toponymy and the plan of work development.

Through the present maps from the Museum of Geology of the UNAM, the evolution of the language of the geology and the accumulation of the knowledge has been shown, which also reflects the development of the institution.

In conclusion, Mexico is a country with a considerable geologic history that embraces almost half of the history of the planet, due to the fact that the oldest rocks in Mexico are between 1800 and 2000 thousand million years. Within this endowment there are the immense variety of the resources that are associated with these rocks.

We should consider that "the geologic maps are neither static nor eternal" (Harrison 1970), as long as they reflect the evolution of the geologic knowledge. This exhibition has been a rich example of the change registered in the geologic maps of Mexico and has looked to geology as an hermeneutic science whose transmitter is the understanding of the evolution of the earth.

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NOTES

A special historical gem from Hungary

Mathias Bél of Pannonia (1684-1749), a remarkable polymath, was the second Hungarian Fellow of the Royal Society of London. In the Philosophical Transactions of the Royal Society he published in the Latin language a paper on mineralized waters. (Ph.T. Number 450, pp 351-361, Oct.-Nov. 1738). It was discovered by **George Gömöri** (London), translated into Hungarian by **Endre Dudich**, and presented to the History of Geology Section jointly with hydrogeochemist István Fórizs (Geochemical Research Institute of the Hungarian Academy of Sciences). Below is the abstract of this paper, translated into English.

Extract from: Philosophical Transactions of the Royal Society of London, 1738, London

A Nature-historical Study of the Fe/Cu Interchanging Mineralized Waters (Cement-Wasser) at Neusohl

by
Mathias BÉL of Pannonia
FRSL, FRSSB

ABSTRACT

These waters occur in the large copper ore mine in the Valley of Lords (Herren Grund), one mile north of Neusohl town (1). They have the peculiarity of converting iron to copper. This has been used to produce high quality native copper much appreciated by goldsmiths. Pieces of iron are put into wooden barrels and tubas filled with mineralized water for 3-4 weeks. To this effect, twenty "chambers" are in operation. Top production was 3,200 kg/year (in 1707), diminishing afterwards.

In situ underground observations made in two chambers are described, as well as several laboratory experiments performed on the water samples taken. The author concludes that the ongoing natural process is the exchange of minute particles of iron with those of copper contained, in dissolved form, by the mineralized water. The author firmly rejects and refutes the false assumption of Alchemists and all kinds of "Gold Makers" of an "essential transmutation" of iron to copper. Comparing the situation with that of the similar waters known and utilized in the ore mining district of Szomnolnok / Schmolnitz, the author deduces that the vitriolic (sulphate) mineralization derives from rock-water interaction (prolonged contact of the water with the pyritic ore). An attempt is made, on the basis of quantitative laboratory tests executed *in vitro* on Neusohl water samples, to determine the concentration of the copper sulphate bearing solution. It was determined to be around one weight percent. The following sequence of precipitation is established: mercury, silver, lead, copper, iron.

(1) In Hungarian: Besztercebánya, now Banská Bystrica in Slovakia.

(Submitted by the Hungarian delegation)

International Year of Crystallography – 2013:
Information received from the International Union of Crystallography

The birth of modern crystallography took place almost 100 years ago when Max von Laue directed the experiment that showed that X-rays were diffracted by crystals and the Braggs (father and son) shortly after showed that the diffraction of X-rays can be used to determine accurately the positions of atoms within a crystal. The significance of these experimental results was realized immediately, and Max von Laue received the Nobel Prize in 1914 and the Braggs the year after.

The International Union of Crystallography wishes to mark the centennials of these results by making 2013 the International Year of Crystallography (IYCr). The crystallographic scientific community has welcomed the idea of having 2013 as an International Year of Crystallography with great enthusiasm and several National Organizations have already started their preparations in eager anticipation of the IYCr.

Since its birth 100 years ago modern crystallography has developed in close collaboration with other scientific disciplines. Since crystals also diffract neutrons and electrons the scientific focus of the International Union of Crystallography has enlarged, so that crystallography now covers all aspects of structural science involving X-rays, neutrons and electrons. The IUCr envisions the IYCr 2013 as a unique opportunity to promote scientific cross-fertilization between crystallography and its related disciplines. Indeed, crystallography permeates all structural science at the molecular level, including physics, biology, chemistry, mineralogy and the geosciences. The IUCr is therefore seeking support to make 2013 a unique year for all crystallographers worldwide, stimulating interactions between crystallography and its closely related research areas.

For additional information please contact the IUCr Executive Secretary: Mr M.H. Dacombe, IUCr Secretariat, 2 Abbey Square, Chester CH1 2HU, UK Telephone: +44 1244 345431 – Fax: +44 1244 344843 – E-mail: execsec@iucr.org. The IUCr website is www.iucr.org .

BOOK REVIEWS

Leading Geologists and Jamaica

Stephen K. Donovan (Editor), with contributions from Lawrence J. Chubb and John B. Williams *Jamaican Rock Stars, 1823-197: The Geologists Who Explored Jamaica.* Memoir 205, Geological Society of America (2010).

This slim, large format and fascinating book lives up to its title, being both informative and entertaining, full of anecdote and more than a little drama and controversy. It comprises important contributions from Lawrence Chubb, former Geological Survey geologist and pioneer historian of Jamaican geology, while the editor, Stephen Donovan, a former member of the Geology Department at the University of the West Indies at Kingston, has provided his own perceptive studies of key figures and an excellent introduction to the book with a brief modern outline of the geology of Jamaica.

Jamaica is the third largest of the islands in the Greater Antilles, after Cuba and Hispaniola. In size it is a little smaller than Connecticut and half the size of Wales. It was a British colony until 1962, and the history of geological investigation followed that found in many of the far-flung outposts of Empire in the nineteenth and early twentieth century. The pioneers were frequently few and often amateurs; to be followed later by the establishment of a professional Department of Mines or Geological Survey, and a University Geology Department. The interesting feature of the history of geological investigation in Jamaica, particularly in the early days is that the early workers in Jamaica had links with some of the leading figures in geology at a time when the science was still in its infancy. The first geologist to visit Jamaica was Henry de la Beche (1796-1855), whose family had long owned sugar plantations on the island and which he visited for a year in 1823-24 to manage his Halse Hall estate. While there, he spent some time travelling around and geologising, producing the first map and description of the island – *Remarks on the Geology of Jamaica with map and sections* in 1827. He carried out a lengthy correspondence with British geologist the Revd W.B. Conybeare (1787-1857) from Jamaica, and later was to achieve distinction as the first Director of the Geological Survey of England and Wales.

The first Geological Survey of Jamaica was set up in 1859 with Lucas Barratt (1837-62) as Director. Barratt had been the youngest fellow admitted to the Geological Society of London at age 17 and had worked under the aging Adam Sedgwick in Cambridge, seeming likely to succeed him as Professor until the Jamaican position snared him. Barratt was a brilliant geologist, but had trouble with his deputy in Jamaica, J.G. Sawkins (1806-78) who was thirty years his senior and had no formal training in geology. The two differed in temperament and character and while Barratt was on a trip back to England with an exhibit for the International Exhibition, Sawkins had undermined his authority and reputation with the colonial powers. Barratt had a keen interest in dredging and offshore investigations and it was his intrepid forays into diving that were to lead to his untimely death. He had only been in Jamaica two and a half years when he died of the bends (pulmonary air embolism), while diving at Port Royal. Sawkins took over as Director and in 1865 the first geological map of the entire island was published, followed in 1869 by a Memoir, with Sawkins as the chief author. Chubb makes the comment that after Barratt's death the quality of the Survey's work deteriorated and he is critical of the subsequent map and Memoir.

The next geologist to feature in this story is an American, R.T. Hill (1858-1941), who did important work in Texas and during his time with the U.S. Geological Survey had connections with John Wesley Powell and Charles Walcott, holding a variety of jobs during his career. On a seasonal basis he worked on the islands of the West Indian arc, including Cuba , visiting Jamaica in 1896-97 where he did stratigraphic work, showing up the inadequacies of Sawkins' work. He published *The Geology and Physical Geology of Jamaica* in 1899; and his overview of the geology and structure of the island chain provided the best (most modern) interpretation before plate tectonics.

In the 1920s and 30s, three geologists, one American and two British were to figure prominently in Jamaican geology. The American, Wendell Woodring (1891-1983), was a palaeontologist who spent most of his career with the U.S. Geological Survey. He was dubbed 'a geologist's geologist' by Hans Cloos, and was an active field geologist and meticulous systematist. His connection with Jamaica was through his long and detailed study of the highly fossiliferous Bowden Shell Bed, which he studied at 'second hand' for many years, using collections from American institutions, first for his PhD (1916), before he finally visited Jamaica in 1952. The age of the Bowden Shell Bed had been in some doubt since Sawkins' day and even Woodring's work was not conclusive; today the unit is classed as Upper Pliocene.

In 1921 the second Geological Survey of Jamaica was established with C.A.Matley (1866-1947) as Director. Matley was born in Birmingham, England, and learnt his geology as an evening class student under the tuition of Charles Lapworth (creator of the Ordovician System in 1879), gaining his degree as an external student of the University of London in 1894. He joined the Civil Service and from then on was essentially a

part-time geologist but productive enough to gain a DSc from the University of London for his work in North Wales and the island of Anglesey. He later did geological work in India but had not held a full-time geological post until, perhaps surprisingly, he was appointed Director of the short-lived Geological Survey of Jamaica at the age of 55. In contrast to Matley, C.T.Trechmann (1884-1964) came from a wealthy family in northeast England, gaining a D.Sc. from Durham University for his work on the Permian of his home region. With no financial restrictions he was in the tradition of 'gentleman geologist', able to spend the winter months in the Caribbean, notably Jamaica, where he carried out significant work on Cretaceous and Tertiary molluscs between 1922 and 1930. He was widely respected, an eccentric, individualistic figure, who published prolifically. On matters geological, he and Matley held very different views, largely stemming from their personal experiences and interests. Notable here were their widely differing views on the structural development of the Antilles arc of which Jamaica is a part. Matley believed in a Basal Complex, subsequently inundated, but this has never been supported, chiefly because there are no rocks older than Cretaceous in Jamaica. Trechmann developed a Mountain Uplift theory, which proved equally untenable, though for years both men fiercely promoted their ideas publically and in numerous papers. Today the theories can be viewed as just two of many hypotheses concerned with the major structural features of the earth before the advent of plate tectonics.

After the Second World War, a third Geological Survey was established with the brief to map the island in twelve 1:50,000 sheets and for two geologists to be appointed. As the earlier survey had been disbanded in 1925 this meant a fresh start The new government geologist was V.A.Zans (1904-61), a Latvian with a distinguished academic career in the 1930s and who had survived a particularly stressful time during the Second World War when his country was caught in the middle of the German-Russian conflict. The shortage of geologists immediately after the war led to his appointment by the British Colonial Office, and in 1949 Zans and his family arrived in Jamaica. Life was hard at first as Zans had little English and he found writing difficult, but he was an indefatigable field worker and worked long hours, even after dark, reading his maps in the glow of the car headlights. Water supply problems in a karst landscape was an early concern of his, and later he focussed on economic mineral deposits, including bauxite (in which he developed a particular interest), and also iron ore, copper, zinc and lead. He attracted mining and prospecting companies to the island and this led to the setting–up of an independent Department of Mines. He became interested in underwater studies and took up skin-diving (shades of Lucas Barratt), and had to cope with a hurricane that devastated Kingston in 1951 and an earthquake in 1957, which was to lead to the setting up of seismic stations across the island. The Survey staff grew during his time in office from two to forty, as did the general interest in geological matters in Jamaica – leading to the formation of the Geological Society of Jamaica in 1960 with its own Quarterly Journal. The energy and zeal which Zans brought to his job continued to the end, although his perfectionist nature meant that he found it difficult to sign off on a project and the 1:50,000 maps were slow to appear. Finally his staff took it on themselves to compile a provisional 1:250,000 map which, when it was shown to Zans, immediately won his approval for publication (1959). The accompanying Bulletin published by the Geological Society of Jamaica appeared in 1963, two years after his death of a heart attack in 1961.

Lawrence C. Chubb (1887-1971) was a Survey geologist from 1950 and succeeded Zans after the latter's death. He was sixty two when he arrived on the island after a career on the teaching staff of University College, London. While he made a significant contribution to Cretaceous stratigraphy on Jamaica, he is best remembered for his promotion of public interest in geology and the setting up of the equivalent of the Geologist' Association in Britain (largely an amateur group) in 1955, which became the Geological Society of Jamaica five years later. He was also keenly interested in documenting the history of geological investigation in Jamaica, and it is his contributions to this publication, with their wealth of anecdote and biographical detail of lives lived before Jamaica, and connections with the geological world beyond the island that make this compilation such a treasure trove for the historian of geology.

David Corbett, Adelaide.

The Revolution in Geology

Rosenberg, Gary D. (Editor), *The Revolution in Geology from the Renaissance to the Enlightenment*: Geological Society of America, Memoir 203, 2009, 283 pp.

Origins and transitions are of intrinsic significance to anyone interested in the ebb and flow of human history. Memoir 203 of the Geological Society of America (GSA) is therefore of real value to readers wishing to learn more about the origins of geology as a discipline and the undercurrents operating as Medieval visions transitioned into Renaissance thinking and then into an age termed the Enlightenment. The title (*The Revolution in Geology from the Renaissance to the Enlightenment*) is valid and descriptive, but the primary focus is on Nicholas Steno (Niels Stensen), the featured geo-innovator of a Topical Session chaired by Rosenberg at the GSA-2006 meeting in Philadelphia. The twenty chapters cover a rich panoply of relevant topics in the evolution of geoscience, with ten of them devoted primarily to Steno.

Whether any one person needs to be credited as "the founder of geology," as partisans of Steno, Hutton, and other paternity-suit candidates would have us believe, is open to serious debate. But this volume provides an illuminating view of Steno, his era, his contemporaries, and many then-current issues in natural science. The informative and well-illustrated papers shed light on a fascinating transition period in science that encompasses medieval religion-based interpretations of the world, followed by Renaissance observation and description, Enlightenment secular insights, and nineteenth-century British empiricism. Philosophy, religion, and art are interwoven into many articles and are specific topics of a few chapters. The volume is a treasure trove for liberal arts majors, historians, and scientists with an interest in observing the maturation of our way of understanding the planet's history and operation.

Listings book chapters can be boring, yet helpful as a clue to included content. Here, for the record, are abbreviated titles of what the reader can find in Memoir 203. Alternate spellings of Nicholas occur throughout the book and apparently reflect each author's preferred version.

Introduction: Gary D. Rosenberg

1) Man and landscape in the Renaissance and Scientific Revolution: Gary D. Rosenberg
2) Geochemical concepts in Isaac Newton's alchemy: William R. Newman
3) Alchemy to science: Spanish American mining and metallurgy: Joaquin Pérez Melero
4) Signs and symbols in Kircher's *Mundus Subterraneus*: William C. Parcell
5) Niels Stensen in the world of collections and museums: Elsebeth Thomsen
6) Steno's synthesis on the animal origin of glossopetrae: Kuang-Tai Hsu
7) Hooke-Steno relations: the roles of Ole Borch and Robert Boyle: Toshihiro Yamada
8) Prompters of Steno's geological principles: glossopetrae and molding: Troels Kardel
9) The age of Earth in Niels Stensen's geology: August Ziggelaar
10) Nicolaus Steno and the problem of deep time: Alan H. Cutler
11) Nicholas Steno and René Descartes: Sebastian Olden-Jorgensen
12) Steno's modern, but forgotten philosophy of science: Jens Morten Hansen
13) Nicholas Steno: Geological evolution and original sin: Frank Sobiech
14) Nicholas Steno's twofold conversion: Gian Battista Vai
15) Benjamin Franklin and geology: Dennis R. Dean
16) Thomas Jefferson, extinction, and Earth history: Stephen M. Rowland
17) Resistance to geological theory in nineteenth-century England: Noah Heringman
18) Charles S. Peirce and the "Light of Nature": Victor R. Baker
19) Theory choice: Geology as a philosophical case study: William L. Vanderburgh
20) Natural theology, design and law: Michael T. Ghiselin

This is not the place to comment on each and every chapter, but a few words about the editor's 'Introduction' and kick-off chapter are in order. Rosenberg sets the stage by presenting a valuable overview of the entire book, introducing each author and the key ideas of each chapter. In discussing man and landscape during the critical period leading to the Scientific Revolution, he contends that geometry, as comprehended through human anatomy, was a key to the birth of geology. He suggests that it was Steno who, along with Copernicus and Galileo, made the requisite connections within the "geometrization of Nature" that led to the new discipline of geology. The impact of geometric thinking is pushed quite far, as Rosenberg suggests that evolutionary theory, democracy, and Western materialism were all products having roots in the new vision of nature. He also states that China's lack of geometric insight contributed to undercutting that country's own scientific revolution. Art history is used to illustrate the thesis that geometry led to artistic visions of landscape and, in due course, to the Scientific Revolution. Geology, in fact, is defined as "the science of landscape and of Earth's interior"—which might startle many a geochemist.

One striking aspect of the book is the frequent consideration of little-known but substantive contributors to our present knowledge about the Earth. For example, Alvaro Alonso Barba (1569–c. 1661) and Francisco de Gamboa (1717–1794) moved mining and metallurgy from the Middle Ages into the era of scientific revolution. Ole Borch (1629–1690) mentored Steno and interacted with Robert Boyle (1627–1691) as scientific data and methodology evolved in the seventeenth century. Charlotte Smith (1749–1806) wrote poems involving geological features and expressing resistance to over-theorizing in natural science. The celebrated Benjamin Franklin (1706–1790) considered questions of a geological nature, when not making pithy statements, dazzling the French, and saving the young United States. The reader will likely meet many interesting new people and learn relevant new things about familiar figures.

Another noteworthy feature is the relevance of philosophy to geology's origin and evolution. This is in keeping with the recent renaming of the GSA "History of Geology" Division to "History and Philosophy of Geology." Philosophy is woven into Rosenberg's introduction, with its frequent allusions to the work of Michel Foucault. Philosophical issues are also pivotal to Parcell's discussion of semiotics in the writings of Kircher; Olden-Jorgensen's commentary on Steno's Cartesianism and his statements having echoes in the work of

Popper and Kuhn; Hansen's comments about Steno's philosophy of science and its relation to the work of modern philosophers; Sobiech's chapter on geology and original sin; Heringman's analysis of British Baconians' resistance to over-arching theory; Baker's overview of Charles S. Peirce, with references to Galileo and Kant; and Vanderburgh's chapter on theory choice in historical science, using geology as a philosophical case study. The book concludes with Ghiselin's discussion of German *Naturphilosophie* and its impact on Richard Owen (1804–1892) and William Whewell (1794–1866) as Darwinian concepts of mechanistic evolution took center stage.

A degree of repetition occurs as one moves through the chapters, particularly as events in Steno's life are recounted by each author. That is understandable in such a compendium, and may actually be of value if the reader chooses to dip into non-sequential chapters of personal interest.

Production values are high. The typography is clear, dark, and legible; the numerous illustrations, many in striking color, are well produced and are nicely tied to the text; extensive references are cited for each chapter; and typos are almost non-existent. Alas, there is no index, perhaps an understandable shortcut in a book with twenty separate chapters, but unfortunate in these days of powerful computers that could churn through 283 pages of accumulated text, indexing major points and key persons. Paper and binding are excellent. There is no 'bleed-through' when a neurotic reviewer uses multiple highlighter colors, nor does the book fall apart when it gets a rigorous physical workout.

Likely audiences for Memoir 203 should be abundant and broad-based. Anyone interested in the origins of geoscience and the discipline's maturation from medieval times to the Enlightenment should own or read the book. Geologists, historians, philosophers, persons having an interest in the melding of liberal arts and science, and librarians wishing to serve a wide range of readers, are potential readers or buyers.

Beyond the mechanical elements and the 'book-report' aspect of this review are some deeper messages that emerge from a close reading of *The Revolution in Geology*. The allure of understanding more about origins, transitions, and evolution of major modes of thought becomes evident. The complexity of history, of individual humans, and of the path to building the modern world is a repeated theme. We see a progression of ideas through time, but we realize that the old orthogenetic, straight-line, "Just-So" stories are lacking in reality and in richness. "Giants" and paradigm shifters can be perceived and applauded, but we also begin to appreciate the lesser-known "toilers in the field." And we recognize the limits of hagiography that celebrates one person at the expense of others, or does not factor in the complex existing foundation upon which the scaffolding to the present was constructed. We also develop an increased recognition of the importance of philosophy and theological visions in shaping contemporary science. Lastly, the illuminating merit of history, when well researched and well told, is a high-impact message to be taken from books such as Memoir 203.

Kennard B. Bork, Granville, Ohio USA

A young geologist in the American west during the 1850s

Fritiof M. Fryxell, *Ferdinand Hayden: A Young Scientist in the Great West, 1853–1855*, edited by Richard C. Anderson, Phil Salstrom and Paul Salstrom: Rock Island, Illinois: Augustana Historical Society, 2010, 281 p. US$19.95.

Fritiof M. Fryxell (1900–1986) undertook a comprehensive biographical study of Ferdinand Vandeveer Hayden (1828–1887) during the mid-20th Century, supported by Guggenheim and National Science Foundation grants, but died before completing the project. Fryxell's dissertation area [geology] in western Wyoming had initially been described by Hayden some hundred years earlier. Fryxell became interested in the explorer, and collaborated with Jesse V. Howell (1891–1971), a collector of the Western exploration memorabilia, to study Hayden. He consulted unpublished letters written by Hayden, his paleontologist colleague Fielding Bradford Meek (1817–1876) and others to describe the earliest years of Hayden's surveys of the American West. Unfortunately, health issues thwarted both Fryxell and Howell and their manuscript remained unfinished. Their book, envisioned by Fryxell as part of a first volume addressing Hayden's pre-Civil War geologic ambitions, was later assembled and edited by former Augustana College colleagues and students. In describing Hayden's exploration of the Upper Missouri Country, Fryxell contributes a perspective largely overlooked by Hayden's biographers. These biographers (Foster 1994: *Strange Genius: The Life of Ferdinand Vendeveer Hayden*; Cassidy 2000: *Ferdinand V. Hayden, Entrepreneur of Science*) focus more on the achievements of Hayden's post-war: *United States Geological and Geographical Survey of the Territories* whereas Fryxell explores the early efforts of Hayden in his quest to become America's premier geological explorer.

A review of Hayden's origins focuses upon his Oberlin College education and apprenticeship with John Strong Newberry (1822–1892), who introduced him to New York State paleontologist James Hall (1811–1898). Exciting vertebrate fossil finds in the Badlands [*Mauvaises Terres*] of present-day western Nebraska and

South Dakota raised interest in an expedition among Hall and vertebrate paleontologist Joseph Leidy (1823–1891). Following notice that commercial German fossil collector and showman Albert C. Koch (1804–1867) was organizing a Badlands collecting expedition, Hall sponsored Hayden (under the supervision of Meek) to depart for that region. Additional controversy arose when it transpired that Isaac Stevens (1817–1862), then Governor of Washington Territory, and Dr. John Evans (1812–1861), a previous Badlands explorer, had launched a similar collecting expedition. Meek declined an offer that he and Hayden leave Hall's employment and join the Evans party. "Thus Meek refused to be bought out by Gov. Stevens and Dr. Evans unless Hayden would be taken on board as well. Since Gov. Stevens rejected taking Hayden, Meek and Hayden kept their independence" (Fryxell p. 49). The German collectors instead travelled to collect fish in Arkansas and Texas.

Letters relating to their steamboat trip up the Missouri River in 1853 abound with details provided most often by Meek on costs of food, equipment and transit. Attempts at collecting of representative fossils and rock formations, animals and plants were made, often in the evening, that being their only extensive time on land. Measured sections [not included in this book] were recorded. Upon leaving the river and heading overland with Indian guides, muleteers and hunters, Meek recorded his first impressions of the Badlands: "These depressions with their isolated peaks & ridges as well as numerous valleys & ravines are clearly attributable to the wearing away of the Tertiary clays by atmospheric agencies." Plagued by bad water, heat, mosquitoes, wolves, disgruntled packers, and surrounded by unfriendly natives they, however, discovered a rich vertebrate fauna and collected hundreds of pounds of specimens. Meek's diary and letters sent to Hall provide the majority of descriptive narrative. These notes describe the natural setting, scenery, agriculture, travel logistics and wide assortment of people travelling the river. These include missionaries, emigrants, natives, trappers, fur traders, foreign adventurers and river workmen. Meek recorded his daily observations from sunrise until midnight, sketched fossils and prepared specimens. Post-journey, he apparently spent every waking hour tediously preparing fossils and reports. A shy bachelor but dedicated naturalist, he didn't celebrate holidays. Meek shipped a representative suite of specimens to Leidy. Hall sold the remainder. Hall and Meek completed a memoir on the invertebrates collected, their only co-authored publication. Following the 1853 expedition Meek and Hall drifted apart. When Meek did break away from Hall's employ, Hall (Fryxell p. 246) "dipped his pen in vitriol and denounced . . . his assistant in most unmeasured terms."

Hayden returned to Albany and followed Hall's advice to complete his medical degree at the Albany Medical College. This he accomplished during the fall term of 1853, after which he resumed work on cataloging plants collected on the expedition and became fully devoted to natural history. Hayden became increasingly disillusioned with Hall and sought advice, support and employment from other scientists. However, "although he was excitable and quick-tempered", Hayden retained professional contact and correspondence with Hall throughout his life (Fryxell p. 105). Having completed his medical schooling early in 1854, Hayden explored all avenues in his search for a naturalist position on future western expeditions. His next opportunity was with Major Alfred A. Vaughan, Indian Agent to the Upper Missouri tribes [a veteran Indian agent with 12 years' experience]. Hayden sought advice on collecting techniques from Leidy and Smithsonian scientist Spencer Fullerton Baird (1823–1887), a leader among American naturalists. In a letter to Baird upon on his termination of work with Hall and with the prospect of joining the Vaughan expedition, Hayden wrote (Fryxell p. 118): "I am so sanguine that I can see nothing but success. It is the darling wish of my heart to go into that wild country. . . . Science will reap a good reward from it." Meek wrote recommendations for Hayden, but the Vaughan survey fell through.

Meek is viewed as "dedicated to his profession, [as] he lived a severely simple, even austere, life, spent for the most part working long and hard at his desk. In his collaboration with Hayden . . . he generally assumed the major responsibility for describing the figuring specimens, interpreting their significance stratigraphically and otherwise, and seeing papers through to publication" (Fryxell p. 136). Thus Meek's younger colleague [Hayden] became . . . "his alter ego, who undertook the on-the-spot studies which he himself would have liked to pursue but could not" (Fryxell p. 136). Hayden excelled as an explorer-scientist, a man of action and lover of the outdoors who put aside any fear of hostile natives. He collected plants, animals and fossils, and recorded information on Indian culture and languages. He witnessed a bloody attack by the Blackfeet tribe upon the Crow at the time of massacre of military troop near Fort Laramie.

In the fall of 1854, at age 25, he became a persuasive advocate of science in the service of government and perfected his lobbying skills among politicians. In his bid for support of the mapping the Nebraska Territory, he founded a museum or natural history at Bellevue, a first in the Territory, emphasizing its fossil treasures. He collected everything at a stopgap pace, fearless of Indian hostility. Aware of the possibility of political patronage (Fryxell p. 174), "[a]t the suggestion of Col. Ar. R. Gilmore [an early settler in Nebraska], I [Hayden] have prepared a small box of nice specimens well labeled for Senator Douglass [*sic*] which he will carry to him and press the matter of a Survey." With Douglas' skills as an influential orator in Congress and Hayden's zealousness, the Nebraska Survey was realized with Hayden as geologist-in-charge. This marked the beginning of an era of territorial surveys that continued until the founding of the United States Geological Survey.

Early in 1855 Hayden journeyed back to the Badlands region, indefatigable despite harsh winter conditions and Indian hostility, realizing that this threat was perhaps diminished in winter months. His correspondence records his constant battles to obtain financial support, using his collections as bargaining chips to some degree. Hundreds of pages of geologic notes and sections are cited, although not reproduced herein. In 1855, despite news of murders of Fur Company employees by the Sioux, Hayden started for the Badlands in February, a party of three men, four horses and a cart: "There is no snow on the ground now and may be none this month, and no danger is apprehended from Indians, whereas in the months of May and June it would be almost certain death for a small party, and much trouble for a large one." The account of his 1855 expeditions was published, in narrative style, as a Senate Executive Document in 1856. In a letter dated 23 October, 1855, Meek advised Hayden to avoid antagonizing "a certain scientific gentleman of the East [Hall] . . . I know of no one man who can do a young man wishing to follow scientific pursuits more harm or more good than he." In 1856 Hayden was appointed as naturalist on the Upper Missouri expedition of Lieutenant Gouverneur Kemble Warren (1830–1882), and in 1856 Hayden published the *Geology and Natural History of the Upper Missouri.*

These several years of Hayden's early history are covered in exhaustive detail, with extensive quotations from primary sources. The Meek-Hayden relationship is of particular interest given Hayden's predilection for antagonizing both colleagues and assistants. For Hayden scholars this detail is rewarding; for the casual reader it is perhaps overkill. Cassidy (2000) provides a thorough review of Hayden's adroitness in obtaining financial support for his explorations; Foster (1994) provides an excellent general overview of the man. How much more is needed?

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Geochemical Prospecting and John Stuart Webb (1920-1987)

John Stuart Webb, F R Eng and the history of Applied Geochemistry at Imperial College, London. *Geochemistry: Exploration Environment Analysis*, v. 10, part 3, August 2010

With the advent of improvements in spectrographic elemental analysis, the art of geochemical prospecting became established on a more rigorous basis. In the early 1930s, pioneering systematic soil and vegetation surveys were conducted to discover geochemical anomalies of element abundances, especially those of metals that might indicate the presence of previously undiscovered mineral deposits. Throughout that decade, Soviet geochemists carried out studies of trace metal distributions in soil samples and stream sediments, and the Swedish Prospecting Company undertook corresponding biogeochemical surveys of trace metal contents in plants. During the 1940s, the U. S. Geological Survey introduced a program of geochemical prospecting under the direction of Herbert E. Hawkes (1912–1996), and in Canada Harry V. Warren (1904–1998) employed plant chemistry as a guide to potential mineral deposits.

Soon thereafter, John Stuart Webb (1920–2007) was instrumental in putting applied geochemistry on the map in Great Britain. During his tenure on the faculty of the Royal School of Mines at the Imperial College of Science and Technology in London, Webb established the Geochemical Prospecting Research Center (GPRC) in 1954 and its successor, the Applied Geochemistry Research Group (AGRG), around 1963, within that institution. Thanks to Webb's vision, energy, and leadership, these two research groups were, for several decades, in the vanguard of studies on the distribution of heavy metals in land-based surface deposits that might serve as guides to the location of ore deposits. As a result of an ambitious, comprehensive program of investigations in Africa, Australia, and elsewhere under Webb's oversight, modern applied geochemical approaches took root in many parts of the world. Thanks to his initiative, studies by AGRG broadened to include geochemical mapping, studies of element distribution in marine environments, and application of geochemistry to agriculture, ecology, and human health. Webb became known to the wider geological audience as co-author with Hawkes of the 1962 text *Geochemistry in Mineral Exploration.*

In the aftermath of Webb's death in 2007 at the age of 86, Richard J. Howarth, mathematical geochemist, historian of geology, INHIGEO member, and a colleague of Webb's, spearheaded an effort to memorialize the work of Webb and the institutions he had established. The result of Howarth's labor is a special issue devoted entirely to the career of Webb and the institutions that he founded: Volume 10 Number 3 of *Geochemistry: Exploration, Environment, Analysis*, a journal jointly published by the Association of Applied Geochemists and the Geological Society. The value of this special issue is enhanced by the fact that all ten contributors, as either students or colleagues of J. S. Webb, experienced the GPRC and/or AGRG personally for several years. The participants know firsthand the ethos, emphases, contributions to science, and personalities of the applied geochemistry program at the Royal Society of Mines.

The issue begins with a brief introduction by Howarth, followed by nine review papers focusing on specific aspects of the work of GPRC and AGRG under the direction of Webb and his successor, Ian Thornton. In his initial paper, Howarth provides a close look at the professional career of John Stuart Webb. Here we learn that Webb chose to pursue undergraduate geology at the Royal School of Mines in preference to medicine as a result of a coin toss! During World War II Webb joined the Royal Engineers and was eventually sent to Nigeria to search for sources of tantalite in pegmatite bodies. After the war he received his Ph.D. from Imperial College for a dissertation on the tin lodes of Cornwall. After this promising start, Webb played a determinative role in the advance of geochemical prospecting methods as well as additional applications of geochemistry, and Howarth provides a very detailed account of his stunning array of contributions. Howarth's chapter also includes reference to a website at which the reader may locate detailed bibliographic and personnel material pertaining to GPRC and AGRG.

Gerald J. S. (Gerry) Govett was one of the earliest PhD students in the GPRC, entering the Royal School of Mines in 1955 when the Centre personnel consisted of little more than Webb, J. S. Tooms (who was the first Ph D recipient), and Margaret Gilbert, a laboratory research assistant. He received his doctoral degree in 1958 with a dissertation entitled *Geochemical Prospecting in Northern Rhodesia*. In his article, Govett tells of his personal field experiences in the late 1950s collecting and analyzing soil and stream samples from the weathered material overlying the Precambrian Katanga System in the copper belt of Northern Rhodesia (what is now Zambia) in the late 1950s. His paper includes arguably the most interesting passage in the entire issue, an account of both the personnel problems with local field assistants and the extreme difficulties involved in collecting data. Stream sampling was hazardous thanks to the presence of crocodiles, and lions were always a concern. For his soil sampling procedure, Govett established a large grid pattern establishing the location of a series of pits as much as fifteen meters deep that were dug by members of his field party. The pits were temporarily covered with logs to prevent animals and humans from inadvertently falling into the pits. When he was ready to examine a specific pit, Govett was lowered into the pit to describe the stratigraphy of the profile and to collect samples. The method of covering the pits with logs, although successful in keeping the large beasts out, was ineffective when it came to smaller animals. The difficulty, Govett wrote, was that "there were [*sic*] invariably a collection of large, and highly poisonous, snakes (such as cobras and mambas) at the bottom of the pits that had to be dispatched by the digging crew before I would venture down." His is a particularly dramatic example of the fact that science is often far from the neat, orderly, cooperative process that printed data tables and graphs in published papers seem to imply to a reader who does not know better. In Govett's case, many data points were won in the face of potentially life-threatening conditions!

In the next article, Michael Thompson, the chief analytical chemist at AGRG from 1969 to 1987, informs us that he recalled overhearing a conversation in 1960, when he was a chemistry undergraduate at Imperial College, in which Webb inquired of an instrumental analyst about the feasibility of some day developing rapid, inexpensive, instrumental methods of quantitative multi-element analysis, a dream that he would begin to realize toward the close of his career and that has come to fruition in recent years. Webb also early came to the realization that applied geochemistry required "reliable chemical analysis on a huge scale." For example, preparation of Webb's geochemical atlas of England and Wales entailed on the order of 50,000 analyses of stream sediments. But, as highly accurate and precise chemical analyses on a huge scale would be economically unrealistic, Webb arrived at the controversial opinion that much more information could be extracted from suitable geologic settings and materials by analyzing a very large number of samples with a lesser degree of accuracy than would be acceptable to the 'pure geochemists'. In his essay, Thompson reviews the various analytical methods that were employed at Imperial College in the context of Webb's philosophy, beginning with spectroscopy and leading up to inductively coupled plasma atomic emission spectrometry (ICP–AES).

Martin Hale, a staff member in AGRG from 1976 to 1983 and later Assistant Director of the Geology Department in the School of Mines, received his PhD in 1978 at AGRG. Hale reviews the contributions of AGRG that utilized gas geochemistry in the search for deeply buried mineral deposits. He discusses studies of mercury anomalies in soil air as a guide to potential base metal sulfide deposits in Chile, as well as studies involving samples of soil air that is depleted in oxygen and enriched in carbon dioxide resulting from oxidation of sulfide deposits and subsequent reaction with carbonates.

C. R. M. Butt and R. H. Mazzucchelli discuss the influence of John Webb and the AGRG on geochemical exploration in Australia. Charles Butts received a PhD in 1971 from AGRG for work based on the regional geochemical survey of Northern Ireland and subsequently was involved in geochemical exploration in Australia, and Richard Mazzucchelli received his PhD from AGRG in 1965 on geochemical dispersion in relation to gold mineralization in western Australia. Noting that the AGRG played a small direct role in applied geochemistry in Australia, the authors summarize the four doctoral projects that were undertaken in Australia by AGRG graduate students between 1960 and 1965. In contrast, AGRG exerted considerable *indirect*, long-term influence because several of its graduates returned to Australia where they worked in geological surveys, mining companies, universities, and analytical laboratories. The authors note the dramatic rise in Australian

geochemical exploration during and after the so-called 'Nickel Boom' triggered by the discovery of world-class nickel deposits in Western Australia in the late 1960s. AGRG graduates played a major role in the concomitant re-invigorated application of geochemistry to the search for mineral deposits.

In the 1960s, thanks to the many successes of geochemical prospecting in terrestrial environments, John Webb became intrigued by the possibility of extending existing geochemical methods and concepts and of developing new approaches to marine settings. David Cronan, a staff member of AGRG since 1973 and currently Emeritus Professor in the Department of Earth Science and Engineering at Imperial College discusses the successes and difficulties of applying geochemical exploration techniques to marine minerals. He examines examples of AGRG work on placer deposits off the coast of Cornwall; phosphorite deposits off the coast of northwestern Africa; hydrothermal deposits in the Red Sea, near Santorini, and along the Mid-Atlantic Ridge; and manganese nodules on the Pacific Ocean floor.

The next chapter addresses the statistical aspects of applied geochemistry. Here Richard Howarth and Robert G. Garrett review the methods of statistical analysis and data display used by the GPRC and AGRG. Howarth had been a staff member in AGRG with responsibility for the mapping and statistical aspects of Webb's projects, and Garrett initiated statistical applications within GPRC/AGRG and completed its first PhD project (1966), a geochemical reconnaissance of eastern Sierra Leone, to employ computer printouts. Their extensive paper reviews discusses chemical mapping in Africa, the introduction of computing into production of regional maps, and the development of regional multi-element geochemical atlases for Wales, England, and Ireland under Webb's leadership. The authors also summarize methods of data analysis employed by the Imperial College, such as factor, discriminant, and cluster analysis, data transformation, data displays, and ridge regression. The paper includes 23 figures presenting a very wide range of geochemical maps and other data displays.

As noted above, Webb understood that his geochemical maps had potential applications not only to mineral exploration, but also to a variety of aspects of agriculture, ecology, and human health. Hence, this special issue contains a paper on research in applied environmental geochemistry, primarily in reference to human health. The author, Ian Thornton, was a staff member at AGRG from 1964 to 1974 after which he became Assistant until 1979 and the head of AGRG upon Webb's retirement. Thornton retired in 1988. Thornton's article deals with the application of geochemistry to agriculture as exemplified, for example, by studies of molybdenum, an element with potential deleterious effects on livestock, in stream sediments in England and Wales; wildlife nutrition at Lake Nakuru National Park in Kenya; environmental contamination from mining and smelting of lead, cadmium, and arsenic, primarily in England and Wales; and the urban environment, again mainly in England. Thornton also briefly summarizes links between geochemistry and human disease in the United Kingdom, China, Brazil, and Slovakia.

As we saw before, John Webb's doctoral dissertation addressed the famed tin lodes of Cornwall in southwestern England. He retained active interest in that district throughout his career. In the final chapter of the Webb issue, Charles Moon, who undertook a 1983 PhD project on the distribution of As, Sb, and Bi in British mineral deposits and who has also done studies in Cornwall, summarizes geochemical exploration in Cornwall as well as neighboring Devon. He describes the various geochemical methods to be applied in that area before turning to specific studies of the Wheal Jane tin deposit, the largest mine in southwest England to be opened since 1945; the north Saint Austell granite soil survey; stratiform lead-zinc mineralization in Egloskerry; and the Modbury South Devon gold deposits.

All contributors to the Webb issue are either active or retired geochemists. Only Howarth has published papers in the field of history of geology. Consequently, there is a decidedly internalist flavor to the various papers, not unexpected in a technical geochemistry journal. The articles are to some degree literature reviews that focus on the specific contributions to applied geochemistry by the Royal Society of Mines. Moreover, as noted, all the contributors have personal connections with Webb and/or AGRG. As such, the authors have provided a wealth of fundamental factual information that can serve as a suitable launching point for anyone wishing to pursue biographical studies of individual applied geochemists, such as Webb; an institutional history of the applied geochemical research program within the Royal School of Mines; or, more broadly, a historical analysis of the discipline of applied geochemistry.

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Geoconservation: Where, When and How did it start

C. V. Burek and C. D. Prosser (eds), *The History of Geoconservation*, Geological Society, London, Special Publications 300, 2008.

This book claims to be the first to describe the history of geoconservation, and draws mainly on work in the UK and Europe. It covers a specific aspect of geology the new field of geoconservation, also known as *geological conservation* (as also used in this book), *geological heritage* (especially in Australia), *geoheritage* (the title of a new international journal), *geodiversity* (a recent textbook in Europe by Murray Gray and also the title of his chapter in this book), and *earth heritage* (a long-running UK journal). The papers, some from a Geological Society conference held in November 2006, and others solicited later, concentrate on work in the British Isles and Europe under three original conference themes—the origin of Geoconservation (4 papers), Geoconservation in the British Isles (3 papers), and Geoconservation on an international scale (3 papers) - with 10 further papers added to complete the book. The conference was initiated by HOGG (History of Geology Group of the Geological Society, London), as explained in the book's Preface by the two editors, who then go on to introduce the book, explaining how geoconservation arose in the two decades following the Second World War, as leisure and tourism increased, with a greater international awareness of the natural environment, and so leading after some fifty years to this book.

Topics include: what is geoconservation; where, when and how did it start; who was responsible; and how has it differed across the world? Geological and geomorphological features, processes, sites and specimens are "the foundation of the world's varied and spectacular landforms and landscapes". Geoconservation is now an established and growing activity across the world, and this volume "highlights a history of challenges, set-backs, successes and visionary individuals and provides a sound basis for taking geoconservation into the future" (quoting here from the book's back cover).

The book is also notable for a chapter on the 'History of Geoparks', a history that began a little more than ten years ago, but is of some relevance to Australia, which had its first Geopark declared in 2008 on the volcanic and karst plains of Western Victoria and SE South Australia, an extensive area now known as the Kanawinka Geopark. Another useful chapter for local geological heritage workers is a history of geotourism by Tom Hose, who is credited with publishing the first definition of the term in 1995.

A paper by Ian Houshold and Chris Sharples describes geomorphological heritage studies in Tasmania. Since the early 1980s Australian state government workers, including also Dixon, Eberhard and Kiernan, have been developing an approach to geoconservation that places emphasis on geomorphology, soils and landforms. Household and Sharples discuss the geological heritage work of the Geological Society of Australia (GSA), but unfortunately this is the only reference in this volume to over fifty years of geological heritage studies in Australia, and the work of the Australian GSA Divisional Subcommittees and the Standing Committee for Geological Heritage, dating back to at least 1960, still awaits comparison with that of British and European geological heritage work over the same period.

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History of Geomorphology

T. P. Burt, R. J. Chorley, D. Brunsden, N. J. Cox and A. S. Goudie (eds), *The History of the Study of Landforms or the Development of Geomorphology, Volume 4: Quaternary and Recent Processes and Forms (1890–1965) and the Mid-Century Revolutions*, The Geological Society, London, 2008.

This is the latest volume in a series on the development of geomorphology, which began as almost an individual effort by Richard Chorley in 1964, and this fourth volume brings the story up to that year.

In the first volume, the now deceased Richard Chorley and his original co-authors Antony Dunn and Robert Beckinsale began the story by briefly considering classical writings, but pointed out that "the traditional accounts of the Creation, and particularly the Mosaic account as later incorporated into the Bible of the Christian church, had a great control over scientific ideas especially in the early nineteenth century, when the study of landforms occupied the bulk of geological thought". So after briefly considering Leonardo da Vinci, Nicolas Steno and others, they began their main account with geologists Abraham Werner and James Hutton in the 18th and 19th centuries, and so through to 1890. Volume 2 was devoted to *The Life and Work of William Morris Davis, 1850 to 1934*, who from 1880 published many papers and was the towering figure of international physiography during the late-19th and early 20th centuries. Volume 3 covered *Historical and Regional Geomorphology 1890–1950*, and this latest Volume 4 covers much the same period for *Quaternary and Recent Processes and Forms (1890–1965).*

There are five parts to Volume 4, beginning with 'Geological Controls' (including geology, tectonics, volcanics and rock types), then 'Fluvial Processes and Landforms' (weathering, mass movement, river channels, slopes), 'Glacial Processes and Landforms' (The Quaternary, glacial and periglacial processes), 'Other Regional Processes and Landforms' (humid tropics, drylands, aeolian processes and forms, coastal, landforms, coral reefs), and 'The Mid-century Revolutions' (fluvial geomorphology, palaeoclimatology).

This substantial volume (1,056 pages) has five editors and twenty-two individual listed contributors, and their well-illustrated discussions cover each subject thoroughly. The history of geomorphology over the period of some fifty or so years since the mid-20th century will no doubt follow when it can be looked at more dispassionately.

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On the "Photo Biography of Ding Wenjiang (V.K. Ting)"

Guangbo SONG, *Photo Biography of Ding Wenjiang (V.K. Ting)*, Hubei Yangtze River Publishing Group Corporation, Wuhan, China, 2007, 226 pp.

Ding Wenjiang, courtesy name Zaijun (20 March 1887- 5 January 1936), well known as V.K. Ting in English speaking countries, was one of the earliest geologists, top socialists, and educators of China. He was born into a local gentry's family in Taixing County, Jiangsu Province, China. His exceptional intelligence was first shown in one of his examination papers when was eleven years old. In his paper he wrote about the accomplishment of the Emperor Han Wu Ti (140-87 B.C.) in developing the southwestern area of China, where he studied geology later after he became a geologist.

Ding was first educated in China to an age of 15 years, followed by Japan (1902–1904) and then in the United Kingdom (1904–1911). He stayed in Tokyo learning Japanese for one and a half years and then went to England where he studied at Cambridge University (1904–1906) and the University of Glasgow (1907) respectively, majoring in zoology and then geology. He received two bachelor's degrees from Glasgow in 1911 at the age of twenty-four and promptly graduated. After returning to China, he taught at Nanyang Public School (now Shanghai Jiao Tong University) in Shanghai.

In 1913, Ding was appointed Chief of the Section of Geology under the Ministry of Industry and Commerce of the Peking government of China. Recognizing the urgent need to train young Chinese geologists, Ding and his colleagues, Weng Wenhao and Zhang Hongzhao, the three top founders of modern Chinese geology, established in 1913 China's Institute of Geology, later well known as the Geological Survey of China, which was more like a training college in geology at that time. Some thirty students were enrolled and received three years of serious training in geology. In this temporary educational institute, Ding taught geology and paleontology and was especially rigorous in field training and mapping. In 1916, eighteen students graduated. They became the first generation of Chinese-trained modern geologists and became the backbone of the newly established Geological Survey of China.

Ding was the first President of the Geological Survey of China from 1916 to 1921. In that post he initiated systematic prospecting of mineral resources and regional geological mapping. He established the China National Geological Library and the China National Geological Museum, both in Beijing, and authored various geological publications, including the *Bulletin of the Geological Society of China*, which was initially published annually and then quarterly in 1948. The journal was renamed as *Acta Geologica Sinica*, affiliated with The Geological Society of China in 1952. Of special note was Ding's role in the development and publication of the multivolume *Palaeontologia Sinica*, one of the most important palaeontological publications. Ding organized it with the help of Johan Gunnar Anderson of Sweden. Ding was the Chief Editor from 1921 (its first year of publication) until his death in 1936. Another contribution of note was the first Special Issue of Geological Survey of China, titled *A General Statement on the Mining Industry of China*, by Ding and Weng Wenhao, published in 1921. In it, the authors point out that unsuccessful prospecting for oil in the northern Shaanxi Province of China was probably the result of insufficient drilling, not a lack of oil. This supposition proved correct, and the area later became one of the biggest oil and gas basins in Northern China.

In 1922, Ding helped establish the Geological Society of China in Beijing, one of the earliest natural science organizations in China. He was President of the Society in 1923 and was re-elected in 1929.

Ding was also a renowned geological educator as well. The Department of Geology, Peking University, founded in 1909, but closed in 1912, was restored in 1917. In 1920, Ding invited Amadeus William Grabau from the United States and Li Siguang (J. S. Lee) from England to assume professorships in Peking University, and they greatly improved the department. From 1931 to 1934, Ding was himself a research Professor at the

university. The joint efforts of Ding, Li, and Grabau brought about the first era of success for the Department in the 1920s and 1930s.

In 1921, Ding took the position of General Manager of Beipiao Coal Mining Company, and founded the Geological Society of China. He served as Vice President of the Society, and was the Editor-in-Chief of "Chinese Palaeobiology". He published a paper, "Mythology and Science". In 1925, Ding was appointed as the Director of Shanghai's Commercial Bureau. He represented Jiangsu's provincial government in negotiating with foreign delegates in Shanghai. They signed "The Temporary Regulation on Reclamation of Juridical Rights in Shanghai by China" on 1 August 1926. In 1931, Ding became a Professor of Geology at Peking University. Together with Weng Wenhao and Zeng Shiying, he edited and published the "New Geographic Map of the Republic of China", and "Provincial Maps of China". In June, 1934, Ding served as the Chief of Staff for Academia Sinica. Ding also authored The Textbook of Zoology. His geological researches were compiled into Mr. Ding Wenjiang's Geological Investigation Reports, and published in 1947. Ding was also the first Chinese scholar to systematically study the written words of Yi ethnicity. Hu Shih wrote Biography of Ding Wenjiang (1956), and commented that Ding is "a most europeanized Chinese, and a most scientifically styled Chinese." (1956).

In 1933, Ding attended the Sixteenth International Geological Congress in Washington, DC, with Grabau and presented papers on the subdivision of Carboniferous and Permian, then a much-discussed problem in stratigraphy. Afterward he visited the United Kingdom and returned to the University of Glasgow. Then he traveled around Europe and spent more than a month visiting geological institutes in the former Soviet Union. He was deeply interested in that country and wrote an article for the *Independence Review* in Beijing, praising the great efforts made by the Soviets in geology.

In the summer of 1934, Ding was appointed Secretary-in-General of the China Academy of Sciences in Shanghai. During his tenure of eighteen months, he contributed significantly to reforming the administration of the academy. He helped change the Senate and the funding and budget systems, establishing the Academician Committee, which enabled the Senate to qualify academicians. These changes greatly enhanced the efficiency of the Academy and improved the working efficiency of its research institutes. He also did his best to support independent scientific research free of prejudices.

Ding emphasized the importance of first hand geological field observations and originality in geological studies. On his way back to China from abroad in 1912, he visited Haiphong, Vietnam, and then traveled to Kunming, China, to begin a geological reconnaissance through the Yunnan, Guizhou, and western Hunan provinces. This geological survey was Ding's first fieldwork in southwestern China and this and his subsequent work there was of monumental importance to both Ding and Chinese geology. He revisited southwestern China twice, in 1914 and then in 1930. In 1914, he studied the Carboniferous, Permian, and Triassic sequences in the northwestern Guizhou Province and established the Late Palaeozoic stratigraphic successions. In 1929–1930, he organized several group of geologists to conduct systematic and comprehensive geological surveys in the southwest region. The investigations cover paleontology, geology, mineral resources and mining, geography, and anthropology. On the basis of the rich material obtained, Ding established the Fengninian System of the Lower Carboniferous Age, which had been used for many years in China. Ding remained interested in paleontology and in 1932 published a paper on the brachiopod species, *Spirifer tingi* and *Spirifer hsiehi*, using statistical research methods.

Ding possessed wide interests in geology and mining. As a geologist and natural scientist, he contributed eminently to academic and social enterprises, as well as to mining exploration and industrial administration. He wrote social and political commentaries and criticisms for many journals and led the well-known countrywide debate regarding his article "Metaphysics and Science" (1923) and "Science and Outlook of Life," the latter a compilation of articles including three papers by Ding. This was an intense debate about the outlook of life and points of view on social problems. Ding attempted to make "Mr. Science" an integral part of China's daily life.

In the winter of 1935, the Ministry of Railways invited Ding to survey the Xiangtan coal mine in Hunan Province to find more coal for the Canton-Hankow Railway. Simultaneously, the Ministry of Education asked him to propose a new site for Tsinghua University. He began his work from Hengshan in Hunan. Ding lived in the Tanjiashan coal mine and was poisoned by the old-fashioned coal stove in his bedroom. He was sent to the Xiangya Hospital in Changsha for first aid, and some of the best Beijing doctors were sent to treat him. Unfortunately, Ding died on January 5, 1936, and was buried at the foot of Yuelushan Hill, west of Changsha. His grave was restored in 1986. Long after his death, Prof. Huang Jiqing (T. K. Huang) edited his manuscripts and created a volume with many attached maps, titled *Geological Reports of Dr. V. K. Ting* (1947), published by the Geological Survey in Nanjing. Ding was first and foremost a patriot and then ultimately a most renowned geologist, natural scientist, scholar, and the most eminent and competent organizer and administrator in China of his time. He was awarded the fourth A. W. Grabau Medal by the Geological Society of China in 1932.

Ding was the key person in organizing scientific activities and research in China. He played the most important role to set up the Geological Survey of China. During 1920s and 1930s, a group of top Chinese scholars, scientists, politicians, entrepreneurs, and young geologists followed *Ding*. To some extent, *Ding* could

be directly compared to a godfather of Modern Chinese sciences, politics, education, cultures, mining and so on. *Ding* was not only good at science organization and research, but also very skillful at dealing with and fixing any issues which he encountered.

Cai Yuanpei, the most well-know modern educator of China, spoke extremely highly of *Ding*, and thought "*Ding* is one of a kind in modern China".

Hu Shih (17 December 1891-24 February 1962), a well-known Chinese philosopher, essayist and diplomat, who is widely recognized today as a key contributor to Chinese liberalism and language reform in his advocacy for the use of written vernacular Chinese, believed his best friend Ding is "the most brilliant, most capable and most kind-hearted person in the world." "Ding can naturally complete any mission impossible, supervise and train people, and can naturally achieve outstanding academic achievements". In a word, Hu believed that Ding was a shining star among brilliant academic minds.

Some other foreign scientists believe that "Ding's knowledge is king to that of an encyclopedia."

Like most, if not all other top scholars and scientists who worked with e national party before 1949, Ding was not as popular in China as before 1949. For a long period of time, the communist party did not allow people to mention Ding any more. With the passing of time, many young Chinese did not know who Ding was. In addition, Ding's tomb was destroyed during the Cultural Revolution of China.

After China's open door policy to the world in the 1980s, over 30 years after Ding's death, his great contributions to modern Chinese sciences, education, culture and mining industry were remembered. Ding once again became more and more popular. His colleagues, students and family members started to write papers to document and highlight this big picture in modern China's scientific world.

Of all these works of Ding, Guanbo Song's works on Ding are the most outstanding. As a non-geologist, Song has been spending extended periods of time digging, collecting data of Ding and his time and researching Ding's colorful history. After publishing "A Chronicle of Ding Wenjiang's Life", Song completed "Photo Biography of Ding Wenjiang" in 2007.

Within a full year, Song put himself into mountains of history records and data, and tried to figure out and re-build Ding Wenjing and the social background of his time. "Photo Biography of Ding Wenjiang" includes 133 history photos, of which the oldest one was taken in the end of 1890s and the newest one in 2004. Of all the 133 photos, those of Ding and his families number 40. All other are the records of Ding and his colleagues and friends, including those well-known Chinese who strongly influenced and even changed modern history, culture, and education of China, Hu Shih, Fu Sinian, Johann Gunnar Anderson of Sweden, Weng Wenhao, Liang Qichao, and so on.

In addition to research and writing Ding Wenjiang, Song also tried his best to appeal for a rebuilding Ding's tomb that was damaged during the Cultural Revolution of China, and for putting Ding's former residence in the list of historic sites to be protected. All of these wishes have since been realized.

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Weng Wenhao's Journals (1 January 1936 – 31 December 1942)

Xuetong LI, Ping LIU and Xinjun WENG (Editors), *Weng Wenhao: Journals between January 1, 1936 and December 31, 1942*, China Books Corporation, Beijing, China, 2010, 846 pp.

Two Chinese geologists have taken the position of Prime Minister of various governments thus far in China's history. One is Mr. Wen Jiabao, the current Prime Minister of communist China; that is, the People's Republic of China. The other is Dr. Weng Wenhao, the former Prime Minister of the Kuomintang government, the national party during China's civil war in 1948. Geologically, Weng played a much more important role during his tenure than Wen currently does in China. Weng was one of the top two contributors to the startup of modern geology in China (the other is Mr. Ding Wenjiang, also well-known as V.K. Ting in English-speaking countries). Weng was the first Chinese to have gained a Ph.D. degree in geology abroad. As one of the top leaders of the Chinese government during World War II, Weng also played a very important role in directing, supervising and managing exploration and mining essential minerals to support China against Japan's intrusion.

1. Brief introduction

Weng Wenhao (Chinese pinyin: Wēng Wénhào, courtesy name Weng Yongni) (1889 - 1971) was born to a merchant family in Cixi, Jinxian County (now Ningbo municipal City), Zhejiang Province, southeast China during the late Qing Dynasty. Weng's father was a locally well-known businessman. Weng is one of the two major founders of modern geology and geography in China, and is also known as the father of the modern Chinese oil industry. In addition, Weng is also a modern science educator, paramount politician and economist.

From May to November 1948, Weng served as the Secretary of the Republic of China. The position is most commonly referred to as Prime Minister, Premier, or Secretary of State.

In 1902, as a 13-year old boy, Weng passed the Imperial Examination and won the title of "skillful writer". Later, he went to Shanghai and then entered a French-speaking Catholic school there. In 1912, Weng obtained his Doctor's degree in Geology from the Catholic University of Leuven in Belgium. He was the first Chinese to have held a western Doctor's degree in geology.

After obtaining his Ph.D. degree in geology and coming back to China in 1912, Weng focused on educating and training modern scientists, especially geologists, for China. For a long period, Weng had been the President of Geological Survey of China, "the first real science research center in China (Cai Yuanpei, the leading modern Chinese educator and chancellor of Peking/Beijing University during 1916-1926)". Weng founded the Department of Geology as a part of Tsinghua University, China and also served as the principal of said university.

In addition, Weng respectively served as Minister of the Ministry of Mine Industry and Minister of Ministry of Agriculture and Commerce for the Chinese Beiyang Government. At the same time, he was also a Lecturer and the Chief Professor (Director, from 1914) of Geological Survey of China. He was also an acclaimed Professor in geology of both Beijing/Peking University and Tsinghua University. He was once the head of the Department of Geology in Tsinghua University and in July 1931, he started to serve as the acting President of Tsinghua University.In 1928, Weng supported *Davidson Black*, a Canadian, in establishing the Cenozoic Research Institute for the research and appraisal of Peking Man fossils unearthed at Zhoukoudian near Beijing City, China at that time.

During the period of the Central (Provisional) Military Government of the Republic of China, Weng served in the central government respectively as Minister of the Ministry of Education (28 October 1932 – 21 April 1933), General Secretary of the Republic of China (13 December 1935 – 9 September 1937), Minister of the Ministry of Industry (till 1 January 1938), and Minister of the Ministry of Economy (1 January 1938 - 1947).

Invited by Chiang Kai-shek, the President of the former Republic of China, Weng served as the first Prime Minister of the Republic of China between 25 May and 26 November 1948 when the civil war between the communist party and the national party was in progress. In March 1948, Weng was elected to be a member of the Academia Sinica of China. After the establishment of the PRC, he also became a member of the Chinese Academy of Sciences. The Academia Sinica of China is based in Taipei, with most members living in Taiwan and the United States.

After the Chinese Civil War, he relocated to Beijing and served in the People's Political Consultative Conference with his longtime associate Qian Changzhao. During the Cultural Revolution of China, Weng was specially protected by *Zhou Enlai*, the first Prime Minister of modern communist China. In 1971, Weng died in Beijing, China.

2. Key academic achievements

Weng is acknowledged as one of the top two founders of modern Chinese geology and geography and father of China’s modern oil industry. He was the second president of Geological Survey of China in the 1930s.

For a long period of time, Weng had acted respectively as President of China’s Association of Geology, President of China’s Association of Geography, Director of the Board of China’s Funds for Education and Culture, President of the Special Committee of China, Secretary of the Evaluation Committee of China’s Academia Sinica, as well as President of China’s Association of Engineers. He had been the leader of Chinese scholars during the mid 20th century in China.

Wang recognized the Yanshan Movement or Yanshan Orogeny, the most important geological event in east China that control all of the tectonic movement, igneous activities, sedimentation, and mineralization of various minerals including gold, silver, lead, zinc, iron, copper and industry minerals. Before the 1990s, over 80% of minerals in China were refined from areas along the Yanshan tectonic belt. Wang was also the first Chinese scientist to have done systematic studies on earthquakes in China. As a proven scientific leader, Weng also supervised and directed the studies of the Peking Man fossil which was lost during World War II.

Over 30% of the income of China’s government was from mining during World War II, and as Minister of the Ministry of Economy and the highest supervisor of mining, Weng played the most important role in making money to support China against the invasion of the Japanese.

Unfortunately, after coming back to the Communist China from France in the beginning of 1951, Weng was not allowed to do geology research, though he really wanted to focus on geological studies and keep away from politics, due to political issues. It was truly a shame that such a brilliant mind was devoid of its greatest field of knowledge.

3. Weng’s family

Weng had four sons, the eldest of which was named *Weng Xinyuan*, a famous petroleum geoscientist who was killed during the Cultural Revolution of China. The second son was named *Weng Xinhan*, and was a pilot who was killed in the Second Sino-Japanese War.

Weng Wenbo, the founder of Chinese modern geophysics and also an academician of the Chinese Academy of Sciences, is *Weng's* cousin.

Weng Xinzhi, academician of the Chinese Academy of Engineering, is Weng's nephew.

4. Weng's major works

Weng’s major works can be summarized as follows:

- Studies of Earthquakes in Gansu Province, China
- Brief Records of Minerals in China
- Literary Collection of Zhuizhi
- In Memory of Mr. DING Wenjiang
- On Earthquakes
- Quadrumana Fossils in China
- The First Record on Chinese Mine Industry
- Paleozoic Plant Fossils in the central Shanxi Province, China
- An Elementary Introduction to Earthquakes
- Lectures on Geology

5. Published books of Weng

- Chronicle of Weng Wenhao
- Weng Wenhao's outstanding contributions to Chinese oil industry
- Selected works of Weng Wenhao)

6. Weng’s journals

Weng used to write journals almost every day and continued this habit for a long period. Unfortunately, due to political reason and China’s civil wars in the 1940s, the only existing journals that have been found thus far were written between January 1 of 1936 and December 31 of 1942. These journals are currently kept by Taiwan’s National Archive Museum.

In his journals, Weng described in detail his daily work including interviews of various visitors from both home and abroad and involving politics, economy, science, education, culture and military in China and around the world. Well-known people involved in his journals include *Chiang Kai-shek*, the President of the former Republic of China, Kong Xiangxi (H.H. Kung), Minister of the Ministry of Finance of China, Zhang Qun, President of the National Party, Dai Li, Minster of the Internal Ministry, and other top politicians at that time.

Also top scholars and scientists Hu Shih (December 17, 1891-February 24, 1962, was a Chinese philosopher, essayist and diplomat. Hu is widely recognized today as a key contributor to Chinese liberalism and language reform in his advocacy for the use of written vernacular Chinese. He was also an influential Redology scholar and held the famous Jiaxu manuscript for many years until his death), Zhu Kezheng, Li Siguang, Huang Jiqing, and so on; top businessmen Lu Zuofu, Wu Yunchu, Sun Yueqi, etc.

Weng also described his secret visit in Germany, his trip to the former Soviet Union, and so forth.

Much of information in his journals is being published to the public for the first time.

7. Postscript

The great improvement in relationships between Mainland China and Taiwan in recent years makes it possible for the editors of Mainland China to visit Taiwan and access the original journals, and further makes it possible for these journals to be edited and published in Mainland China. Weng Xinjun, one of the three Editors of the journals, is one of Mr. Weng's sons.

It was not easy for the editors to complete the final edition of the journals. Since the journals have existed for such a long period of time and many of the words has become blurry due to water damage, the editors spent many hours to try to recognize the words in the original versions. In addition, the journals were written in mixtures of Mandarin, English and French, which made an already difficult task even more daunting.

Jianzhao [Jim] YIN,
Richmond, British Columbia, Canada (Chinese Member)

Pioneering geology in remote Western Australia

John Glover with Jenny Bevan, *The Forgotten Explorers: pioneer geologists of Western Australia 1826-1926*, Hesperian Press, Carlisle, Western Australia, 2010

The western third of Australia has often been ignored by historians of geology and this book seeks to redress this situation with a detailed overview of geologists and their activities during the first 100 years of European settlement. The effort is especially welcome given that Western Australia is currently home to about 1500 geologists, more than in any other Australian State, and contains some of world's most significant current mining developments, spanning iron ore, gold, alumina, nickel and diamonds.

This 231 page paperback volume, embracing 18 chapters, aims to satisfy most categories of readers, be they professional geologists, members of the public or historians of geology, and it succeeds remarkably well. It is copiously illustrated with about 150 historical images of people, field scenes and maps as well as several newly prepared illustrations. It is also written in a light, engaging style. For the historian, there are also 20 pages of listed source materials, plus both a "General Index" and a "People Index".

To encourage the general readership Chapters 1-7 provide a review of West Australian geology and its importance as well as an overview of the critical historical events in 19th century geology. These chapters are also supported by a "Glossary of terms" near the end of the volume. For the historian these chapters are somewhat uneven in content, yet still very useful. For example here there is good general introduction to the West Australian gold rushes (commencing 1892/3) and a suitable focus on iron ore, yet only minimal discussion on the early occurrence of copper mining during the 1840s, the discovery of artesian water and the development of coal and building stone resources. A suite of diagrams showing the time ranges of geological activities by individuals and their association with the gold rushes is particularly useful in this introduction.

The central core of the book extending from Chapters 8 -18 focuses on the pioneering geologists themselves and it succeeds admirably in its wide coverage of the people who worked on West Australian geology over a century. Whilst centred on the people, the book also does not neglect several critical and important themes that recur throughout the volume and are reinforced in a concluding review in Chapter 18.

First and foremost of these is the importance of the Geological Survey of Western Australia that flourished under the direction of Andrew Gibb Maitland during the period 1895-1926.

Another theme is the changing public support of geology within Western Australia that preferred prospectors in the early years but turned to favour extensive scientific assessment via a Geological Survey during the gold rushes in the 1890s.

There are also important sub themes that have been critical to West Australian geology. This includes the determination and interpretation of iron ore including jaspilite, the recognition of gold telluride mineralisation and the appreciation of the rare diamond-bearing lamproite volcanic rocks.

With the establishment of European settlement in Western Australia in 1826 it is serendipity that the first "geologist" to provide comment was none other than Charles Darwin. On visiting the south coast in the *Beagle* in 1836 he wrote "I do not think we have visited any place so very dull and uninteresting". Fortunately for geologists, fellow *Beagle* voyager, John Lort Stokes, returned in the same ship in 1837-38 and published more significant geological observations. J.B. Jukes followed in 1843.

The Government appointment of a German visitor, Ferdinand Von Sommer, during 1847/8 to search for coal and other minerals has been afforded a separate chapter by Glover and Bevan. In hindsight, Von Sommer's short period in Western Australia can be considered unusual. Research by German scholar, K-R. Biermann, over the past 50 years has revealed that he was a confidence-man having little known geological experience before arriving in Australia. However in the 1840s Von Sommer travelled hundreds of kilometres in unknown parts of Western Australia and produced a report, with geological map, that reflects some geological expertise. It

confirms that in the early 19th century, institutional education and recognition were not the only attributes necessary to make a geological contribution.

The four Gregory brothers were primarily home grown geological talent in the fledgling colony as they arrived as children in Western Australia as early as 1829. Their geological understanding proved astounding as they discovered new pastoral land and recognised coal. As early as 1848, J.W. and F.T. Gregory submitted a geological map of Western Australia to the Geological Society of London. And in 1861, F.T. Gregory, during a visit to London, liaised with Roderick Murchison, who transmitted a paper on the Gascoyne River region for publication by the Geological Society. The superb diagrammatic sections produced in this paper are reproduced in the book under review.

The Government appointments of H.Y.L Brown (1870-1872) and E.T. Hardman (1883-1885) were the first sign that the geological profession was being permanently established in Western Australia, however only with the appointment of H.P. Woodward in 1887 was there continuity. In one prophetic statement Woodward made the observation that Western Australia had the enough iron ore to supply the world, thus predating reality by 80 years.

Yet it was under guidance of Andrew Gibb Maitland (1864-1951) that geology first flourished in western third of Australia. During his direction of the Geological Survey (1896-1926), a suite of notable geologists were appointed to the agency which published no less than 91 scientific bulletins and geologically mapped almost half of the State, no mean feat given that it encompasses more than 2.5 million square kilometres of largely hostile desert.

By way of a personal contribution Gibb Maitland successfully explored for artesian water and assessed the Pilbara goldfields. Then there were significant review publications notably his "Mining Handbook of Western Australia".

Within Gibb Maitland's Geological Survey there were also several appointments that Glover and Bevan judge as making significant contributions to world geology. There was J.T.Jutson, a pioneering geomorphologist who produced a landmark monograph on physiography in 1914 and who worked with Johannes Walther. Jutson's monograph, which was notably republished in 1935, nevertheless did not prevent his retrenchment from the Geological Survey as a consequence of wartime financial stress in 1918. Another appointment to Gibb Maitland's Survey was E.S. Simpson, a mineralogist, who, amongst many achievements attempted dating of uranium minerals using radioactive decay as early as 1910 and went on to publish a comprehensive manual of West Australian minerals in 1932. W.D. Campbell, an early environmental geologist; C.S. Honman who recognised the sedimentary origin of jaspilite in 1917; and H.W.B. Talbot, an untrained field assistant who rose to become a highly regarded geologist and explorer are others who worked under Gibb Maitland. I could not read this book without appreciating that much more could be researched about this dynamic organisation.

In the period under consideration, geologists were also appointed to the Kalgoorlie School of Mines from 1904, notably C.O.G. Larcombe, and to the University of Western Australia from 1913, notably W.G. Woolnough, M. Aurousseau and E. de Courcy Clarke. This volume suggests that their institutional influence was generally less than that of the Geological Survey under Gibb Maitland despite significant fertile interaction.

Chapter 16 provides details on eight specific individuals who made unique and varied contributions to West Australian geology. It shows that there were numerous disparate strands to the development of geology in this remote region that nevertheless liaised with the wider world. Here we learn of Robert Austin, an explorer, who after a disastrous expedition in 1854 prophetically predicted the occurrence of gold using the models of Roderick Murchison. Then there is clergyman, Charles Grenfell Nicolay, who, during the 1880s, acted as a geological advisor to the Government, published "Some Notes on the Geology of Western Australia" and established in 1881 a Registry of Minerals that evolved into a Geological Museum in 1891 and eventually into today's "Western Australian Museum". And there is Arthur Holroyd who prepared exhibits for international exhibitions and arguably had the major role in recognising the gold-telluride minerals that held perhaps 20% of Kalgoorlie's gold.

Chapter 17 is virtually a dictionary of other geologists who worked on West Australian geology in the pioneering period with summary details on more than 50 individuals and their contributions. Here we learn about Herbert Clark Hoover, later US President, and his low grade mining operations as well as numerous additional geologists who have contributed to the West Australian gold rushes. Here also are references to the summary contributions of other explorers and geologists who are perhaps better known for their work in other Australian States.

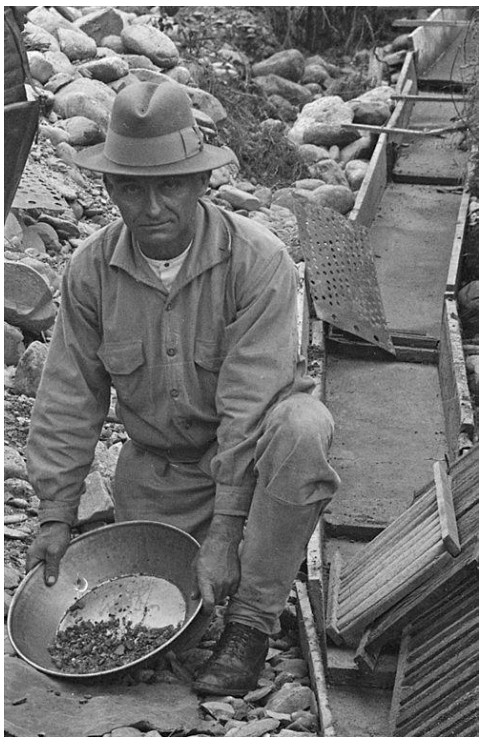
Overall, this volume is a valuable source and reference book on the first 100 years of West Australian geology. It is also recommended to any historian of geology interested in the pioneering application of geology in a remote region where the geology has numerous unique characteristics.

Barry Cooper, Adelaide

Unique photo history of mining in New Zealand

Simon Nathan (with assistance from Les Wright and Brendon Wilshire) *Through the Eyes of a Miner - The photography of Joseph Divis,* Steele Roberts Publishers 112p.

This remarkable book by INHIGEO member Simon Nathan consists of a sample of a fascinating, if not unique, collection of photographs from the camera of Joseph Divis that record in detail mining in New Zealand in the first half of the 20th century. This was a time when New Zealand underground mining was at its peak and the mines, whether they were exploiting gold or coal, required a large labour force. This in turn necessitated towns nearby to house the miners and their families along with storekeepers and others. The towns were commonly isolated being tucked away in rugged bushed mountain valleys or perched on top of barren, frequently mist shrouded, plateaus. Although several of Divis photographs had been published in contemporary New Zealand periodicals, the man himself and his photographs were all but unknown until the publication of this fascinating book.



Self portrait of Joseph Divis taking whilst living in Waiuta on the West Coast of the South Island, New Zealand. He is visiting the 'Sons of Freedom' alluvial gold mine near the township. The photograph is typical of his skill with a camera, being well composed with great clarity and depth of focus.

Divis was born in 1885 in Orlik, near Prague in what was then the Kingdom of Bohemia in the Austro-Hungarian Empire and is now in the Czech Republic. He received a good basic education and apparently worked as a miner before he and his family moved to Lower Silesia in Germany (now Poland) where he again was employed as a miner. Although Simon has been unable to unearth many details of Divis' early life, the inference is that he had been brought up in a coal mining family. Nevertheless, both in Bohemia and Silesia, Divis was taking photographs and was an accomplished photographer by the time he arrived in New Zealand in 1909. Like much of the details of his early life, the reasons for Divis coming to this country remain a mystery. In New Zealand he was soon employed underground in the Blackball Coal Mine, situated in a damp rather forbidding valley on the eastern flank of the Paparoa Range on the rugged and wet West Coast of New Zealand's South Island. As Blackball was, at least outside of New Zealand, a little known mining town, this suggests that Divis had organised employment there before he left Silesia. On the West Coast he moved around the mines before returning to see his family in Europe for a year but was back on the West Coast a few months before the outbreak of the First World War. Despite this visit, coupled with his obvious connections with the belligerent powers and a photographer to boot, he avoided interment. Instead, apart from a brief stint mining

coal at Denniston, he spent the war at the relatively new Waiuta goldmine and also the nearby Big River mine between the Grey valley and Reefton. Soon after the end of the war he worked for five years in the celebrated Martha Goldmine at Waihi in the northeast of the North Island before again heading south to Waiuta in 1924. Two years later he returned to what was then Czechoslovakia.

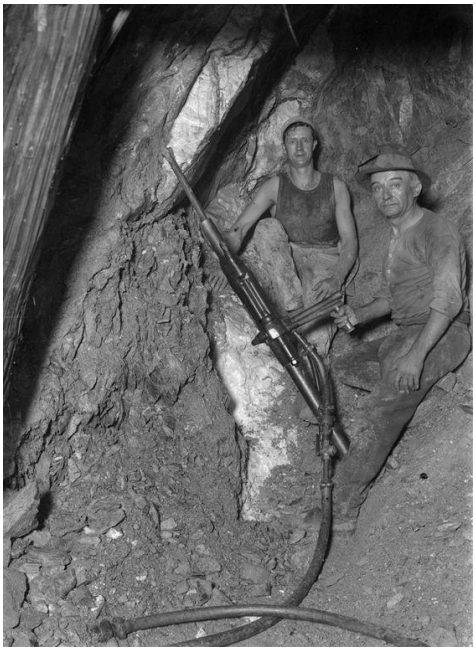
When Divis left New Zealand in 1926 for Europe it is not known whether this was intended to be a temporary sojourn to see his family or a permanent homecoming. However, by now he had developed a strong affinity with New Zealand and after a certain amount of travelling, documented in the book by photographs of scenes and relatives in Europe, United States and Japan, Divis in 1930 returned to New Zealand. He also had with him a new camera, an unequivocal statement that he was intent on making a living as a photographer. Although his first destination was Waihi he was soon returned to Waiuta which was now clearly home.

In 1939 while underground he was injured by a rock fall, which gave him concussion and a fractured skull. The book reproduces the telegram that the mines inspectorate in Greymouth received from the mining company advising of the accident. In reporting on the accident, the mines inspector commented that if Divis had been wearing a hard hat he would likely have received only minimal injuries. Although Divis was back underground a few weeks later, his injuries were more serious that was at first apparent and he never worked again. His troubles were not over for in 1941, for no good reason, he was interned on an island in Wellington Harbour as an enemy alien but after nearly two years he was given his freedom. Going back to Waiuta he witnessed the closure of the mine in 1951 and the relatively rapid demise of the town. Divis remained in Waiuta and was appointed as telephonist for the town's few remaining inhabitants. In 1965 he was in hospital care and died two years later, being buried at Reefton. However, this is not so much a book about Davis but of a representative selection of the huge number of photographs that he took (at least 600), many of them as a professional photographer rather than as a hobbyist. Stereoscopic images were also a speciality of his.

The main photographic part of the book starts with a series of photographs showing the early development of the Blackwater Mine and the town of Waiuta developed in bush high on the hills towards the head of the Grey valley on the West Coast. As well as images of the head works and township, the latter with its rows of modest miners' huts contrasting with the slightly more luxurious manager's house, there are revealing underground photographs. For the miners amongst the massive beech props supporting the roof there are no hard hats, only candles for illumination but at least water spray was incorporated into the rock drills to reduce the ravages of silicosis. In comparison to the West Coast towns, Waihi township as Divis records in his photographs had a considerably more mature and civilised appearance, although underground conditions for the miners were the same. With Waihi being relatively close to Rotorua in the Taupo Volcanic Zone, Davis with his camera made at least one visit to its thermal wonders. However, his aspirations of making a living as a photographer were not realised and he remained primarily a miner.

Much of the rest of the book comprises a wide variety of photographs taken on the West Coast and showing underground mining, processing gold-rich quartz in the Snowy River battery, sluicing and dredging of alluvial gold, search and rescues, union meetings, personalities, schools and numerous social events such as reunions, plays and weddings. Although a bachelor, Divis had at times boarded with families and photographed his hosts as well as many other family groups. There are even photographs of the pioneer aviators Charles Ulm and Kingsford Smith when they landed their planes *Faith in Australia* and *Southern Cross* respectively in the nearby Grey valley. These were about the last photographs known to have been taken by Divis although the reasons for this are not known. Simon postulates that the cost of photography may have been too great during the lean years of the Great Depression and in any case Divis had been unable to make a full time living from his photography and was reliant on working in the mines. It also suggests that Divis felt more at home in the isolated rough and ready mining towns rather than in the larger towns or cities where there would have been far more commercial opportunities for a photographer of his undoubted calibre.

The book is nicely presented and clearly and logically laid out although its unquestionable value would have for overseas readers been enhanced by the inclusion of a simple map of New Zealand showing the main towns and mines that Divis was associated with. The photographs have full and enlightening captions and interspersed throughout the book are pages of concise explanatory text. This reflects Simon's considerable experience as a geologist, particularly on the West Coast, and as an acknowledged historian. The photographs themselves are of large size and have reproduced well, although their printing in sepia rather than black and white is something that could be debated. The combination of sepia and the printing process has given the book a somewhat sombre appearance. However, without seeing the negatives it is not possible to determine whether a lighter tone would have conveyed all the detail that these photographs contain. Nevertheless, one suspects that the publisher had decided on a more 'artistic' format.



Self portrait of Joseph Divis taken deep underground in the Blackwater Goldmine on the West Coast of the South Island, New Zealand.

However, this is more a matter of taste and there is no doubting that *Through the Eyes of a Miner* is a unique photographic record of mining over almost half a century through the lens of a highly competent photographer. The photographs and the excellent captions and explanations provided by the author, along with the brief, but for this book more than adequate, account of Divis, makes this a valuable reference. The book is even more indispensable for anyone wishing to appreciate the social history associated with mining and the large communities that mining supported in New Zealand in the first half of the 20th century. These West Coast towns have now all but vanished as the gold and coal resources were depleted or mining became highly mechanised. Furthermore as roads improved the now, much reduced, number of miners and their families are able to live in more congenial locations. At its modest retail price, this book is excellent value and is strongly recommended for anyone interested in history of mining. Also it has a much wider appeal as it provides a vivid impression of an important segment of New Zealand's economic and social history.

Mike Johnston, Nelson, New Zealand

Additions to "Book Review" published in INHIGEO Newsletter 42 (2010)

INHIGEO Newsletter 42 Pages 41-42: Book Review: Zbigniew Wójcik *Walery Goetel. Rector of the University of Mining and Metallurgy during hard times*. AGH University of Science and Technology Publishing House, Kraków, 2009

Addition: Add "Andrzej J. Wójcik" as author of this review

Additional text after the words in Paragraph 3 *"from 1939 till 1951"* (third line page 42) add following phrase: *"with a recess during World War II (1939 - 1945) when Nazi Germany closed down universities so that geologists' and miners' education could have been continued only in conspiracy".*

BOOK & JOURNAL NOTICES

"Earth Sciences History"

Members of INHIGEO, or their institutions, are invited to join the History of Earth Sciences Society (HESS). The Society is most active in the United States, where it holds meetings, etc. However the Society's chief activity is the publication of the ISI/Web of Science-listed journal "Earth Sciences History". This is the main international journal for history of geology and related sciences and contains papers about topics for all parts of the world. There are two issues a year and in 2010 there were fifteen articles and book reviews (372 pages) on topics in Australia (3), the US (3), Germany (2), Britain, The Netherlands, Madagascar, the Andes, Sweden, and Canada, and a long essay review. 2011 (No. 1) has articles relating to the US (3), Japan (1), Britain (1), Mexico (1), Portugal (1), and 'general' (1).

Membership of HESS is open to all at US$50 p.a., which includes subscription to the journal, either as hard copy or online. For further information visit www.historyearthscience.org/store.html and for a membership form go to: www.historyearthscience.org/subscription.html. Or contact the Treasurer Dr Emma Rainforth (treasurer@historyearthscience.org) at Ramapo College of New Jersey, 505 Ramapo Valley Road, Mahwah, NJ 07430-1680, USA.

Also, INHIGEO Members are cordially invited to submit articles for publication in "Earth Sciences History". Those interested in publishing in the journal should contact the Editor, Professor David Oldroyd (esh@historyearthscience.or), 805/36-42 Stanley Street, St Ives, NSW 2075, Australia.

International Polar Years

Barr, Susan and Lüdecke, Cornelia (Eds.), 2010, The History of the International Polar Years (IPYs). Series: From Pole to Pole, Vol. 1, Springer-Verlag, Berlin, Heidelberg, XI, 319 p. ISBN: 978-3-642-12401-3, eBook: http://dx.doi.org/10.1007/978-3-642-12402-0

Although international scientific cooperation - particularly in meteorology - was established prior to the first International Polar Year, the IPY-1 (1882-83) is considered to be the first revolutionary step towards an extensive international cooperation in the polar areas for the benefit of science rather than national prestige and territorial gain. This was followed by IPY-2 (1932-33) and IPY-3 - actually the International Geophysical Year (1957-58) - before the crowning effort of IPY-4 (2007-08). The history of these years is recounted here and explains the political, economic, technical and scientific conditions and expectations that laid the basis for each IPY and which gradually expanded both the scope and extent of our understanding of the complexities in polar regions.

More information is provided at *http://springer.com/978-3-642-12401-3*

History of foraminiferal microfossils

Alan J. Bowden (National Museums Liverpool) is currently co-editing a history of foraminiferal micropalaeontology with John Gregory and Andy Henderson (both ex Natural History Museum). This is an international multi-authored work which is seeking to examine the development of a particular aspect of micropalaeontology from a number of viewpoints.

The book is due to be published in 2012 by the Micropalaeontological Society and the Geological Society of London Publishing House.

New journal "History of Geo- and Space Sciences"

INHIGEO members are advised of the new journal "History of Geo- and Space Sciences"

The first two issues are now in print and you may look at the articles which have been put online so far at www.history-of-geo-and-space-sciences.net/

Publishing in the new journal is free for the next few years and each article which has successfully passed the review process will be put online immediately.

Recent Papers include:

- “Anthropic Rock: a brief history” by R. B. Cathcart. Hist. Geo Space. Sci., 2, 57-74 (2011)
- "A not completely satisfactory attempt" – peak discharges and rainfall-runoff relations for Javanese rivers between 1880 and 1940 by M. W. Ertsen. Hist. Geo Space. Sci., 2, 39-55 (2011).
- “On the precision of Ptolemy's geographic coordinates in his Geographike Hyphegesis” by C. Marx. Hist. Geo Space. Sci., 2, 29-37 (2011)
- “Georg von Neumayer and geomagnetic research” by W. Schröder, K.-H. Wiederkehr, and K. Schlegel. Hist. Geo Space. Sci., 1, 77-87 (2010)
- “Alexander von Humboldt's charts of the Earth's magnetic field: an assessment based on modern models” by M. Mandea, M. Korte, A. Soloviev, and A. Gvishiani. Hist. Geo Space. Sci., 1, 63-76 (2010)
- Book Review "A Natural History of Time" K. L. Taylor. Hist. Geo Space. Sci., 1, 43-44 (2010)
- “Kristian Birkeland's pioneering investigations of geomagnetic disturbances” by A. Egeland and W. J. Burke. Hist. Geo Space. Sci., 1, 13-24 (2010).

New Journal: “Almagest”, An International Journal for the History of Scientific Ideas

Members are advised that the first two issues of “Almagest”, the new international journal for the history of scientific ideas have been issued by Brepols publishers. Please find a description of the journal at www.hpdst.gr/publications/almagest .

“Almagest” views history of science both as a history of ideas and as a history of activities that have taken place in institutional and social contexts. In its pages, the journal aims to address not only the philosophical assumptions underpinning scientific ideas and developments, but also the reciprocal influence between historical context and these phenomena.

“Almagest” holds that an accurate understanding of scientific activity requires a deep appreciation of its situation in time and place, and, consequently, that emphasis should be laid not only on the universal validity of such activity but also on its local particularity. And yet, despite pioneering efforts from the 1930s through the 1950s, as well as important developments in the historiography of science since then, a genuinely interdisciplinary, comparative historical perspective is still in its infancy. Acknowledging this lacuna, and recognizing the potential applications of this approach, this journal aspires to publish essays on the history of science that take advantage of such a perspective, and contribute to a better understanding of major issues of the present day, such as those concerning cultural conflicts, multiculturalism, cultural fusions and globalization. Given the defining features of Almagest’s approach, the history of science, of scientific ideas, of research priorities and agendas, and of conceptualizations of nature is perceived as being related in reciprocal ways not only to History, broadly construed, but also to various cultural factors, including geo-political, social, economic, religious, and technological.

Thus, the journal invites papers that examine and analyze the relations between scientific activity on the one hand and, on the other, the specific geographic locations, political context, social conditions, religious undercurrents, and the technology of a given era.

The Managing Editor of Almagest, Antigone Nounou, can be contacted at the National Hellenic Research Foundation, Vassileos Constantinou 48, GR-11635, Athens, Greece.

New Journal “Metatheoria: A Journal of Philosophy and History of Science

This new journal is produced and edited in Argentina. Email: redaccion@metatheoria.com.ar

Please see http://metatheoria.com.ar/Index.php/m/index for further details

Metatheoria is an academic, print and online peer-reviewed journal that publishes articles, discussions, and reviews in the field of philosophy of science–including not only systematic, synchronic, and formal philosophy of science, but also historical, diachronic approaches to the field as well as historical epistemology, and history of science from a philosophical point of view.

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COUNTRY REPORTS

Argentina

The Second Argentine Congress on the History of Geological Sciences (*Segundo Congreso Argentino de Historia de la Geología*) – IICAHGEO was held in the Departamento de Ciencias Geológicas, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires Argentina, 12 -13 August 2010. Following a welcome from the Dean of the *FCEN-UBA*, Professor Dr. Jorge Aliaga, the President of the Executive Committiee of the International Union of Geological Sciences, Professor Dr. Alberto C. Riccardi, and Eduardo G. Ottone for the Organizer Comitee, opened the meeting.

The following papers were presented in oral sessions:

12 August 2010

Aceñolaza, F.G. - Juan Valentin (1867-1897): el geólogo que supo resumir la geología Argentina
Alonso, R.N. - Las investigaciones geológicas en la puna de Juan Barnabé en 1915
Alonso, R.N. - Amadeo Sirolli (1900-1981) y sus estudios paleontológicos
Aguirre-Urreta, M.B. & Camacho H.H. - Martín Doello Jurado y la enseñanaza de la paleontología en la Universidad de Buenos Aires
Cioccale, M.A., Carignano, C.A. & Rabassa, J, - Walther Penck (1888–1923) en la Argentina
Concheyro, A. & Montenegro, T. - Guido Bonarelli, explorador y geólogo incansable: pionero en la prospección de hidrocarburos en la republica Argentina
Ermili R.A. & Martínez, A. - Polémica Trunca: los yacimientos minerales Según Erwin Kittl
Gay, H.D. & Sureda, R.J. - Juan Augusto Olsacher (1903 – 1964): un gozne histórico en la mineralogía Argentina
González Díaz, E.F. - Jorge Polanski (1892-1975)
Lazo, D.G. - Charles E. Weaver (1880-1958) y su paso por la cuenca neuquina en la década de 1920
Leanza, H.A. - Guillermo Bodenbender, el primer estratígrafo de la cuenca neuquina

13 August 2010

Albanesi, G.L. & Ortega G. - Evolución del conocimiento de graptolitos y conodontes en la Argentina: una perspectiva bioestratigráfica
Charrier, R. & Hervé, F. - El abate Juan Ignacio Molina: una vida dedicada a la historia natural y civil del reino de Chile.
Ottone, E.G. - Científicos, exploradores y plantas fósiles en exposición para la Argentina del siglo xix
Ottone, E.G. - Paleontología y literatura en la Argentina de fines del siglo xix y principios del siglo xx
Pasquali, R.C., Bond, M. & Tonni, E.P. - La cambiante clasificación de *toxodon* Owen 1837
Riccardi, A.C. - El desarrollo de la paleontología de invertebrados en el Museo de La Plata
Ramos, V.A. - Doscientos años de ciencias de la tierra en Argentina
Tonni, E. & Zampatti, L.H. - El hombre fósil de Miramar, comentarios sobre la correspondencia de Carlos Ameghino a Lorenzo Parodi

Most participants came from Argentina, with the exception of R. Charrier and F. Hervé from Santiago de Chile. A booklet was published during the meeting including the Abstracts. However, the Organising Committee intends to publish the extended articles at the *Asociación Geológica Argentina* in 2011. After the realization of the First Argentine Congress on the History of Geological Sciences at San Miguel de Tucumán in 2007 under the leadership of Professor Dr. F.G. Aceñolaza and this meeting in Buenos Aires, we plan to meet together for the Third Argentine Congress on the History of Geological Sciences in 2013 at the City of Salta. In this way, the recognition of the History of Geological Sciences will become an important part of academic geological schedule in Argentina is ensured.

Eduardo G. Ottone,
Buenos Aires

Armenia

At the recent INHIGEO ballot in 2010, a group of three Armenian geoscientists were elected to INHIGEO membership thus creating a new INHIGEO national group. The new INHIGEO members are Arkadi Karakhanyan, Gourgen Malkhasyan and Ashot Piliposyan. Malkhasyan has been appointed Country Coordinator for Armenia and in this capacity has submitted a short historical article by Hayk H. Melik-Adamyan, Christophor V. Khachanov of the Institute of Geological Sciences, in Yerevan, Armenia entitled "Investigations by German Geologist, H. Von Abich in Armenia" for publication in this newsletter. This article is devoted to a person, who is thought to be the founder of Transcaucasian geology, particularly the geology of Armenia. Von Abich's scientific activity has been examined by many scientists including the late Eduard Malkhasyan. The article provides a further step in investigating Von Abich's activity. The new Armenian delegation is well aware that INHIGEO was created at a meeting held in Yerevan, Armenia in 1967 and is working towards organizing a 50th anniversary INHIGEO conference in 2017 in Armenia.

Arkadi Karakhanyan is an active geologist who has headed the Institute of Geological Sciences of the National Academy of Sciences of Armenia since 2006. Dr. Karakhanyan has worked in three distinct fields: geodynamics of Eurasia, seismic hazard assessment, and archeo-seismology. In geodynamics, Dr. Karakhanyan has literally helped develop the first modern geodynamic model of Armenia. This work has involved the analysis of specific major fault zones, the development of extremely valuable documentation of Holocene and Historical volcanism in Armenia and adjacent regions, and analysis of modern tectonic stress in the region, applying, *inter alia*, the evidence collected from the historical records and ancient Armenian manuscripts. These diverse projects lay a foundation for all future research in geodynamics in Armenia and adjacent areas. Publication of results in prestigious international journals highlights the importance of this work to the global community.

In seismic hazard assessment, Dr. Karakhanyan clearly leads one of the most active groups in Eurasia and the Middle East. His work on seismic hazards and land slide mitigation is not only important to the entire region, but is used widely by the international geoscience community. Perhaps Dr. Karakhanyan's most innovative work is in archeo-seismology, a field he has pioneered in Armenia during the last 30 years. Armenia is unique in the superposition of a record of many cultures over the Holocene and active tectonism. Dr. Karakhanyan has used this setting to develop new methods in the application of archeological data for fault analysis.

Gourgen Malkhasyan is an active field geophysicist whose interest in the history of geology follows that of his father, Eduard Malkhassyan (1926-2003), a longstanding INHIGEO member, who published a comprehensive "Bibliography of Armenian Geology" in 2000.

Malkhasyan continues to expand this bibliography as an ongoing project and has, in recent years, issued an updated bibliography in compact disc format. This includes over 9000 references with notes. References date back to 1718 with 100 from the 19th century. He is specifically interested in the geology of Armenian archaeological monuments and has published on the archaeology of the Erebuni archaeological site.
In addition, Malkhasyan is currently collecting material on the biography and scientific activities of prominent geologists that were examining Armenian geology in different periods for presentation as a website. It would be a new form of presenting geologists and it should interest many specialists. The proposal has gained the support of geologists at Armenian Institute of Geological Sciences.

He is also working to organize local meetings that will deal with the history of geology and is specifically liaising with the Government of Armenia on the proposed 50th anniversary meeting in 2017 with Government meetings scheduled over the next few months.

Ashot Piliposyan has a major interest in:

- geodynamics and the history of human civilization,
- historical volcanism in the ancient Near East and the Armenian Highlands,
- geodynamics and mythology,
- historical volcanism and palaeodemographic processes,
- geomagnetic researches in the archaeological sites.

In April 2010 in Rouen, France, he participated in an international conference devoted to the archaeological programs done by Direction Régionale des Affairs Culturelles Bretagne during 2007-2009 in Armenia. The results of the Armenian-French joint archaeological expeditions at Erebuni (8-7th cc. BC), Benyamin (6-4th cc. BC), Sepasar (1st half of the 3rd millennium BC) were featured.

In July-August 2010 he led the excavations at the city quarters southeast of Erebuni citadel in Armenia . This sector was selected deliberately as in 2009 an electromagnetic research with the help of ground-penetrating radar was carried out by German specialists to prove the existence of an archaeological layer there. This research yielded good results due to which excavations were started at Erebuni in 2010.

In November 2010 he participated in an annual international conference "XIII Edizione Internazionale Borsa Mediterranea del Turismo Archeologico" organized in Paestum, Italy.

Articles were published 2010 are:

Piliposyan A. *Erebouni, l'ancêtre d'Erevan* ("Les douze capitales d'Arménie" sous la direction de P. Donabédian et C. Mutafian), (Somogy editions d'art), Paris 2010, pp. 207-214,

Piliposyan A. *Teïchebaïni, ville ourartéenne proche d'Erevan* ("Les douze capitales d'Arménie" sous la direction de P. Donabédian et C. Mutafian), (Somogy editions d'art), Paris 2010, pp. 215-217.

Australia

Carol Bacon attended the 2010 INHIGEO meeting in Spain and continues her interest in the history of geology of Tasmania.

David Branagan: Highlights of the year included attending the Australian Earth Sciences Convention in Canberra in July, where a paper entitled 'The Past is Key to the Present', outlining the history of Australian geology, was presented at a well-attended History of Geology Symposium organised by the Earth Sciences History Group of the Geological Society of Australia. The papers presented at this symposium are now available on a CD-Rom Disk, prepared by Don Perkin.

I worked with the Perth-based Executive of the ESH Group in locating appropriate photos for the Group's burgeoning Website, and prepared a paper on Edgeworth David's association with the Sunny Corner Silver Field of New South Wales, for the Group's newsletter.

In March my wife and I were happy to entertain former INHIGEO President Philippe Taquet and Geneviève during their extensive visit to Australia and show them some historical geology sites in the Sydney region.

In July I attended the 16th Australasian Mining History Association's meeting in Greymouth, New Zealand, presenting a paper on Australian–New Zealand geological/mining associations, and attending field excursions. A CD-Rom of the proceedings is in preparation.

In November I attended the very successful New England Orogen (NEO) convention in Armidale (in the 'New England' district of northern New South Wales), celebrating seventy-five years since the beginning of geology teaching and research at the University of New England, and presented a paper on the 'Heroic Years of New England Geology'. Several field trips were also attended.

Using an earlier visit to geological sites in the Hunter Valley, and the field trips of the NEO Convention and a follow-up visit to Brisbane I began preparations for the proposed field excursion from Sydney to Brisbane to be offered by INHIGEO preceding the 33rd International Geological Congress in Brisbane, August, 2012.

During the year, four presentations on the history of geology were given to various historical, scientific and community groups in Sydney and country locations in New South Wales, and I gave several radio interviews on Edgeworth David's work in coal discoveries and his wartime exploits.

The research paper on the life of E. F. Pigot, seismologist and astronomer, was published in two parts in *Earth Sciences History*, 2010, *29*, pp. 69–99 and 232–263.

A paper on the visit of Russian scientists to the Blue Mountains of New South Wales in 1820 was published in the *Journal and Proceedings of the Royal Society of New South Wales*, Vol. 142. Reviews of several books also appeared.

Barry Cooper has continued as an adjunct at the University of South Australia in Adelaide with research interests that focus on the history of South Australian geology and the geological heritage of building stones.

In collaboration with UniSA colleague Jim Jago, Barry has completed a paper entitled 'The Emu Bay Shale *Lagerstätte*: a history of investigations'. This paper, originally presented at the INHIGEO conference in Calgary in 2009, has been accepted for publication in the *Australian Journal of Earth Sciences.*

For the 2010 INHIGEO conference in Spain, Barry presented a paper entitled 'Geologists and the Burra Copper Boom, South Australia, 1845–1851'. This has since been accepted for publication in the conference volume to be published by the Geological Survey of Spain.

Also completed and published was a brief review in Journal of Australasian Mining History 8: 188–190 of the newly published book by R. Keith Johns entitled "A Mirage in the Desert? The Discovery, Evaluation and Development of the Olympic Dam Ore Body at Roxby Downs, South Australia, 1975–1988".

With respect to his work on building stones, Barry has published:

Toward establishing a 'Global Heritage stone resource' designation. *Episodes* 33: 38–41."Global Heritage Stone Resource: How can it be utilised to promote stone quarrying and stone projects?" *Proceedings of the Global Stone Congress, Alicante (Spain) 2–5 March 2010 (compact disc reference only)*.

"Recognising a Global Heritage stone resource". *Extended Abstracts to the Proceedings of the 11th Congress of the IAEG Auckland, New Zealand 5–10 September 2010*, p. 499.

A paper is also in preparation in collaboration with the English Stone Forum entitled 'Portland Stone; A Global Heritage stone resource from the United Kingdom'. In addition two papers have been submitted for the EGU General Assembly Vienna April 2011 in collaboration with Spanish geologist (D. Periera) entitled 'Building stone as part of a World Heritage site: Piedra Pajarilla Granite and the city of Salamanca, Spain'.

Following from work completed in previous years the following paper was published in *Earth Sciences History*, 2010, *29*, pp. 121–145. 'Snowball Earth: the early history from South Australia'.

As most members will be aware, Barry has also continued as INHIGEO Secretary General.

Tom Darragh is still revising the English translation of the five Australian notebooks of Ludwig Leichhardt. Negotiations with possible publishers are now underway. It is hoped something can be finalised in time for publication in 2013, the bicentenary of Leichhardt's birth.

A paper on Herman Deutsch, a Ballarat engraver and lithographer, who published a unique series of mining views and sections of the deep lead mines in the Ballarat district, has been published in the *Australian Jewish Historical Society Journal*, 2010, *20*, pp. 131–146.

Bernie Joyce & Doug McCann are both involved in a project to compile a history of the Geology Department at the University of Melbourne with Bernie involved with archive assembly, indexing and storage and Doug undertaking research on F. McCoy and J. W. Gregory.

The overall aims of the Project are to:

- establish an archive of historical documents, photographs and artefacts
- conduct interviews with current staff members, surviving former staff, and past students of the former geology department
- prepare displays at the University of Melbourne , and ultimately publish a departmental history.

See the 'History of the Geology department Project' web site at: www.earthsci.unimelb.edu.au/history .

The University of Melbourne Geology Map Collection were housed in the School Map Room until late in 2009. This room was closed early in 2010 and over the summer of 2009–2010 the archives were moved to another more secure room. During the move the Archive Collection was quickly reviewed, and maps that are now in the separate Map Collection have been checked for historic material and some items moved into the Archives.

The historically important 1860s geology Quarter Sheets of Victoria, Geological Parish Plans, and Goldfields maps, as well as the manuscript maps of Professor E. S. Hills and other former staff and bound volumes of historic maps, some of particular interest for further study, were moved to the new secure location, which now houses both the School Map Collection and the School Archives.

During this process a number of significant items have been identified, including a major set of nineteenth-century geology and topographic maps, which will be kept in the Archives. Examples include Greenough's 1854 large rolled geological wall-map of India, Selwyn's 1865 geological map of Victoria, original manuscript maps related to Professor E. S. Hills, the wartime giant relief model of Australia, framed photographs of old geological features from the corridors of the 1927 building, as well as recent donations to the School by the families of Professor Summers and Professor Hills.

Some duplicate maps were transferred to the main University map collection, including many rolled maps; and students gratefully received others. In March a carload went to Canberra for the National Library of Australia's map collection.

McCann and Joyce are also editing, and writing chapters for, a book to be titled: *The Scientific Legacy of the Explorers Burke and Wills*, which will commemorate the 150th anniversary of the famous Burke and Wills Expedition (1860–1861) from Melbourne to the Gulf of Carpentaria in the north of Australia. (Only one man returned alive to Melbourne) See**:**

www.burkeandwills150.info/index.php/event-calendar/happenings/109-book-project .

The work will have fourteen authors and the organisation has involved numerous meetings. In November 2010, the book was accepted for publication by CSIRO Publishing.

McCann and Joyce were also involved in related activities of the Royal Society of Victoria for the Burke and Wills Expedition commemorations **(** www.burkeandwills150.info **)**. These involved:

- Re-enactments of the departure from Royal Park: 18 and 20 August 2010
- 'Signing-On' at Royal Society of Victoria: 18 August
- Burke and Wills film at National Gallery of Victoria: 20 August
- Moonee Ponds commemoration: 22 August (Camp 1)
- Baynton volcano identification: 27 August (Camp 5)
- Mia Mia commemoration: 28 August (Camp 6)
- Swan Hill commemorations, with talks to students at Joyce's old High School; and the town's Burke and Wills procession, with camels: 9–11 September
- Royal Park 'Probus' walk: 23 September

Publications by Joyce and McCann during 2010:

Joyce, Bernie and McCann, Doug. 2010. 'The tragedy and the triumph of the Burke and Wills expedition to be celebrated in 2010', *The Australian Geologist*, Newsletter No. 154, March 2010, 15 pp.

Joyce, Edmund Bernard. 2010. 'Australia's geoheritage: history of study. A new inventory of geosites and applications to geotourism and geoparks', *Geoheritage*, 2010, *2*, pp. 39–56.

Joyce, E. B. 2010. Geology, environment and people on the Western Plains of Victoria, in: Lisa Byrne, Harriet Edquist, Laurene Vaughan (eds), *Designing Place, An Archaeology of the Western District*, Melbourne Books, Melbourne, pp. 100–111.

Joyce, Bernie and McCann, Doug. 2010. Commemoration of the Burke and Wills expedition. *The Australian Geologist*, Newsletter No. 155, June 2010, pp. 17 and 18.

McCann, Doug and Joyce, Bernie. 2010. The science and mapping of the Victorian Exploring Expedition of Burke and Wills, and of the related relief expeditions of 1860–1862, Australian Earth Sciences Convention July 2010, Concurrent Abstracts, Session 04ta (*Earth Science History*), p. 238.

Joyce, Bernie and McCann, Doug. 2010. The scientific legacy of the Burke and Wills expedition. *The Australian Geologist*, Newsletter No. 156, September 2010, pp. 25–27.

Joyce, Bernie. 2010. History of geology—two books reviewed: *History of Geomorphology* . . . ; and *The history of Geoconservation*. . . Book Reviews. *The Australian Geologist*, Newsletter No. 156, September 2010.

Joyce, Bernie. 2010. History of geology—two books reviewed: *The History of the Study of Landforms, Vol. 4* and *Whatever is Under the Earth* . . . Book Reviews. *The Australian Geologist*, Newsletter No. 157, December 2010, pp. 39–40.

McCann, D. A. and Joyce, E. B. 2010. The science and mapping of the Victorian Exploring Expedition of Burke and Wills, and of the related relief expeditions of 1860–1862, *Earth Sciences History Group Newsletter*, No. 41, December 2010, p. 11.

Wolf Mayer attended the INHIGEO conference in Madrid last July and presented a paper on 'The discovery and exploitation of iron ores in colonial Australia with emphasis on the deposits of the Tamar Valley district in northern Tasmania'.

As part of his continuing interest in the scientific work of the French expedition to Australia (1801–1803) led by Nicolas Baudin, Wolf attended a symposium at Kingscote on Kangaroo Island, South Australia last November, which was held to mark the 200th anniversary of the death of François Péron, one of the expedition's naturalists and its official historian. There he presented a paper titled: 'Experiments carried out by François Péron and Louis Depuch to determine the temperature and salinity of seawater at various depths in the ocean.'

An article based on a paper he presented at a conference in Brussels was recently published under the title: 'L'accueil en Europe des résultats géologiques de l'expédition Baudin aux Terres australe'. In: Jangoux, M. (ed), *Études sur le 18° siècle*, 2010, *38*, pp. 233–239. Wolf carried out further research, in the Austrian State Archives and in the *Muséum national d'histoire naturelle* in Paris, into the life and work of Nicolas Baudin and the naturalists who accompanied him on his expeditions.

David Oldroyd spent much of his time in 2010 on editorial work, notably editing and producing *Earth Sciences History* for the History of the Earth Sciences Society. He attended, and enjoyed (except for the heat!), the INHIGEO meeting in Spain and presented a paper on the history of the sapphire industry in Queensland, which will appear in the conference proceedings in 2011. He has collaborated with Professor K. Murty in a paper for *Episodes* on the IGC in New Delhi in 1964. Also in 2010 he wrote a survey article on the history of geomorphology in the first half of the 20th Century for Elsevier's encyclopedic *Treatise on Geomorphology* and a contribution to a *Festschrift* for Charles Gillispie that deals with his famous book *Genesis and Geology* and some historiographical conundrums (forthcoming Princeton UP).

Publications during 2010:

‘Geohistory repeated and expanded’ (essay review of Martin Rudwick, *Worlds Before Adam: The Reconstruction of Geohistory in the Age of Reform*, Chicago University Press, Chicago and London, 2008), in *Annals of Science*, 2010, *67*, 249–259.

‘Lyell, Charles’. In: *Encyclopedia of Life Sciences* (December 2010), John Wiley & Sons Ltd, Chichester. DOI:10.1002/9780470015902.a0002524.pub2.

Review of: G. D. Rosenberg (ed.), *The Revolution in Geology: From the Renaissance to the Enlightenment*, Geological Society of America, Boulder, 2009, in *Metascience*, 2010, *19*, 323–327.

‘The Geological Society’s birthday’ (combined essay review of Gordon L. Herries Davies, *Whatever is Under the Earth: The Geological Society of London 1807 to 2007*. The Geological Society, London, 2007; and Cherry L. E. Lewis and Simon J. Knell (eds), *The Making of the Geological Society of London*, The Geological Society, London, 2009), in *Metascience*, 2010, *20*, 177–184.

C.R. (Rowl) Twidale reports that 2010 was, in many ways, disappointing insofar as the heavy rains of the winter and spring months, though welcome in a general sense, impeded planned fieldwork. On the other hand the enforced office time facilitated the writing up of past work, though increased teaching commitments in the University of Adelaide and in the University of South Australia, had to be accommodated.

Several historical papers were published during the year, including an issue of the *Cadernos Laboratorio Xeoloxico de Laxe*, prepared in honour and memory of Dr Elizabeth Campbell, a long-time student, colleague and friend, who died in 2008.

Papers in press, review, or preparation include an account, in collaboration with colleagues in Cologne, of the palaeodunefield that extends west–east across northern South Australia, and of several associated features in the Murray Basin, as well as analyses of geomorphological features located on Eyre Peninsula and in the Gawler Ranges.

Historical publications for 2010:

J. T. Jutson and the work of the wind in shaping the landscape. *Geographical Research.* (with E. J. Brock). *doi: 10:1111/j.1745-5871.2010.00662.x*

Charles Fenner and the development of landform studies in South Australia. *Historical Records of Australian Science* 21, 149–163.

Dedication and Determination. Essays in Honour of Elizabeth M. Campbell. *Cadernos Laboratorio Xeoloxico de Laxe* 35, 255 pp. (edited J. A. Bourne, C. R. Twidale and J. R. Vidal Romani).

Elizabeth Mary Campbell 1940–2008. In: J. A. Bourne, C. R. Twidale and J. R. Vidal Romani (eds), *Cadernos Laboratorio Xeoloxico de Laxe* 35, 243–254.

The Earth Sciences History Group (ESHG) of the Geological Society of Australia, currently organised from Western Australia, has 88 financial members, about one-third (27) of whom are listed as Retired Members. Articles are regularly published in the ESHG Newsletters, and several books have been sponsored, as well as conference publications (See www.gsa.org.au/specialgroups/eshg.html).

David Oldroyd,
Sydney

Austria

1.) Historical Science Workshop

On 19 November 2010 the Meeting of the Working Group for the History of Earth Sciences in Austria was held in the Geological Survey of Austria in Vienna, themed “On the History of Geology in Austria: Research projects - Institutions – Sources”. The focus of the meeting were the presentation of university and non university sources mainly for the 19th and early 20th Century, textbooks of natural history at the University of Vienna from the mid-18th until the early 20th Century and geological maps as sources for the history of earth sciences. Similarly, electronic research opportunities at the Geological Survey and the research opportunities at the Institute of the Austrian Biographical Dictionary of the Austrian Academy of Science and the co-founded Biographical Portal, as an international biographical search media, were presented. The abstracts and some additional articles were published in the Reports of the Geological Survey, volume 83, Vienna 2010.

2.) Scripta geo-historica

In 2010 the fourth volume of the series “Scripta geo-historica - Grazer writings on the history of earth sciences” under the title “The beginnings of geological research in Austria - contributions to the conference “Ten Years of Working Group History of Earth Sciences” was published. This series of the University publishing house in Graz, which was founded in 2009, is managed by the Centre for History of Science of the Karl-Franzens University Graz. The volume has wide-content. In addition to a historical summary of the Austrian Association for the History of Earth Sciences, representations of the network of Austrian mineralogists during the 18th Century (Helmut FLÜGEL), an article on Johann Jakob Scheuchzer (Jean GAUDANT) or the work of the French geologist and paleontologist Constant Prévost in Lower Austria (Norbert VÁVRA) were also published.

Belarus

The Institute of Geology of the Academy of Sciences of the Republic of Belarus was withdrawn from the Academy and united with the Institute of Geological Survey of the Office of Geology under the Council of Ministers of the Republic of Belarus in 2010.

Scientific conferences commemorating academicians G.V.Bogomolov and G.I.Goretski were held also with the participation of scientists from Russia, the Ukraine, Poland and the Baltic Countries.

2010 was 125 years since the birth of an outstanding Belarusian geologist and writer Michail Gromyko (1885-1969). He graduated from the Moscow University in 1911. Since 1921 he lived in Minsk, taught Geology and Mineralogy at the Belarusian State University, took part in the expeditions in search of oil in Belarusian marshy woodlands Polesie region. Since 1936 he was the scientist working in Kirovsk Mining Technical School in Murmansk Region. M.Gromyko spent the last years of his life in Moscow Region. Gromyko is widely known as a poet and playwright; his “Selected Works” were posthumously published in Minsk in 1967.

The journal “Lithosphere” (№2) published a large essay, devoted to the 70th anniversary of Valeri Ermolenko – representative in Belarus for INHIGEO. V.Ermolenko graduated from St. Petersburg Mining Institute and since 1969 has been working in Minsk. He is the author of the unique geoeconomical estimation of all the types of mineral resourses in Belarus. During the last 15 years he has been occupied with the history of geology and has had his materials published in scientific journals and newspapers.

Valeri Ermolenko, Minsk

Bolivia

I was invited by the National Institute of Metallurgical-Mining-Geological Research of Ecuador to take part in the First International Seminar on Geological, Mining and Metallurgical Heritage, which took place in the city of Loja on 10-12 June. I presented the lecture 'Geological-Mining Heritage of Bolivia', which, in a workshop, it was discussed the Form of a Project for Mining, Geological and Metallurgical Heritage, as a model for Ecuador or any other country. At the end of the seminar, we went to the gold field in the city of Zaruma, in order to know closely the ways of exploitation and of the treatment of the gold ores, work that is small-labored style performed by hundreds of miners. At Portovelo, we visited the Magner Turner Museum, a very interesting mineralogical display, containing minerals of that zone, exploited since the colony era. We also visited the Petrified Forest of Puyango, to return from Machala to Quito (at Rumicucho we visited the Pululahua crater, Mid of the World and the historical center). Those who attended this event came from Argentina, Bolivia, Brazil, Colombia, Ecuador, Peru, Spain and Venezuela.

Between June and July a course on “Training for Operators and Tourism Guides for Mining Tourism” took place in Potosí, sponsored by the Spanish Agency for International Development Cooperation. During one week, a module on Geology was delivered, co-ordinated by geologist D. Howard. In the two remaining weeks, I delivered two modules on Mining, and Metallurgy. The topics were closely related to the silver bed of the Rich Mountain of Potosí and its history (both in colonial and in republican times). This course had an excellent participation of people concerned. Besides the theoretical classes, we visited the Diego Huallpa Museum, which is located inside the mountain; DVDs were projected, as well as slides dealing with the effect of mining activity in the morphology of the mountain and on the metallurgical substructure.

In September, in the mining city of Oruro (north of Potosí), 'The First National Congress of Geological Mining Heritage of Bolivia' and 'The First Andean Congress of Geological Mining Heritage' were held, organized by the Post Graduate Office of the Technical University of Oruro, the Polytechnic University of Catalonia (Spain), the National University of Colombia, Medellín campus, the Superior Polytechnic School of the Littoral in Ecuador and the Vice-presidency of the Multinational State of Bolivia. In this event I was in charge of the topic 'An Industrial Place: the Bank [La Ribera] (16th-19th centuries)'. The lecturers were delivered

by experts from Bolivia, Colombia, Ecuador and Spain. Among the Bolivians, the participation of the large companies was outstanding, such as San Cristóbal, Manquiri and Inti Raymi, as well as the participants in the Master in Science on Natural Resources and the Environment, Professors J. Mata (Spain), J. Molina (Colombia) and C. Serrano (Bolivia). During a week, we delivered the last module of the post-graduate program, sponsored by those who were in charge of the congress already mentioned and Bolhispania (España-Bolivia Cooperation).

The Ricardo Palma University in Lima, Perú, sponsored the 'First International Seminar on History and Climate' from 11-13 November. In this event, the Swiss Professor Dr. Christian Pfister of the University of Berne was nominated Honorary Doctor of the aforementioned university. Experts from Argentina, Bolivia, France, Mexico, Peru and Switzerland took part in the Seminar. As a member of INHIGEO, I presented the paper 'Interrelation: mining-health-climate' (in the case of Potosí, Bolivia in the colonial period). This gathering had many Peruvian participants of various academic and scientific institutions, students and persons who were interested in those matters.

At the end of the year, I was awarded with the "Acknowledgement Medal" (as a national historian) by the *Cooperativa Porco Limitada* in its Golden anniversary, and with the Silver Medal, commemorative of the Bicentenary of Potosí, awarded by the *Empresa Minera Manquiri S.A.*

Carlos Serrano

Brazil

During 2010, the history of geological sciences in Brazil continued to reflect the consolidation of this field of knowledge in the country, with the increasing number of institutions where these researches are possible. In the post-graduate program on "Education and History of Earth Sciences" of the Institute of Geosciences of the State University of Campinas (UNICAMP), one PhD dissertation on geohistory was accomplished and approved (by Mrs. Giovana Galvão Tavares). A Masters degree dissertation was also approved at the State University of Ponta Grossa (by Miss Drielli Peyerl). In addition, as part of the International Congress of AGU (Geophysics) a historical session was held, in August, counting about 12 papers. INHIGEO Vice President for North America, Gregory Good, was the scholar who proposed the session. Immediately afterwards he went to Campinas (São Paulo State) and Salvador (Bahia State) to deliver highly successful short courses at the Institute of Geosciences/ UNICAMP, doing the same at the Institute of Physics of the Federal University of Bahia. Sessions including papers on geohistorical issues also took place at the 45th Brazilian Geological Congress (Belém, Pará State), as well as at the 12th Brazilian Symposium on the History of Science and Technology.

Other articles and books were published, which are cited below:

Alvim, Márcia and Figueirôa, Silvia, 'A Descrição do Entorno Natural do Vale do México em Relatos Missionários do Século XVI: Novo Mundo, Antigas Tradições,' *Revista Brasileira de História da Ciência*, 2010, *3*, 85-98.

Alvim, Márcia, *Dos Céus e da Terra: Conhecimentos sobre o Mundo Natural nas Histórias Missionárias do Século XVI Novo-hispano*, Annablume and FAPESP, São Paulo, 2010.

Figueirôa, Silvia, ' "Os irmãos [Paes] Leme": Luiz (1881-1943) e Alberto (1883-1938) Betim Paes Leme, Engenheiros nas Primeiras Décadas do Século XX,' in: Alda Heizer and Antonio Videira (eds.), *Ciência, Civilização e República nos Trópicos*, Mauad X & FAPERJ, Rio de Janeiro, 2010, 357-373.

Figueirôa, Silvia, 'Apresentação do Dossiê Engenheiros & Engenharia no Brasil,' *Revista Brasileira de História da Ciência*, 2010, *3*, 122-125.

Figueirôa, Silvia, 'Aziz Ab'Saber, a História das Geociências e o Papel da Universidade: Preocupações de Longa Data,' in: May Christine Modenesi; Celso Dal Ré Carneiro; Virgínio Mantesso Neto; Andrea Bartorelli (eds.) *A Obra de Aziz Nacib Ab'Saber*, Editora Beca, São Paulo, 2010, 146-151.

Lima, Flavia and Figueirôa, Silvia, 'Etnoastronomia no Brasil: a Contribuição de Charles Frederick Hartt e José Vieira Couto de Magalhães,' *Boletim do Museu Paraense Emílio Goeldi - Ciências Humanas*, 2010, *5*, 81-99.

Lopes, Maria Margaret, 'Compartir Espacios, Colgar Ballenas y Apoyar a las Universidades,' in: Américo Castilla (ed.) *El Museo en Escena. Política y Cultura en América Latina*, Paidós, Buenos Aires, 2010, 39-52.

Lopes, Maria Margaret, 'Museus e Coleções de Geociências: Novas Conjunções de Objetos, de Públicos, de Políticas e de Profissionais,' in: Brandão J .M. et al. (eds.) *Colecções e Museus de Geologia: Missão e*

Gestão, Museu de Mineralogia e Geologia da Universidade de Coimbra, Centro de História e Filosofia da Ciência, Coimbra, 2010, 9-12.

Lopes, Maria Margaret, 'Os Catálogos de Hermann von Ihering: "o Archivo dos Resultados Obtidos na Exploração Científica do Brasil",' in: Alda Heizer and Antonio Videira (eds.), *Ciência, Civilização e República nos Trópicos*, Mauad X & FAPERJ, Rio de Janeiro, 2010, 291-304.

Lopes, Maria Margaret and Varela, Alex Gonçalves, 'Viagens, tremores e conchas: aspectos da natureza da América em escritos de José Bonifácio de Andrada e Silva, José Hipólito Unanúe e Dámaso Antonio Larrañaga,' *Boletim do Museu Paraense Emílio Goeldi - Ciências Humanas*, 2010, *5*, 227-242.

Silvia Figueirôa, Campinas-SP

Canada

Keynyn Brysse

In 2010 I continued working as a Postdoctoral Research Associate at Princeton University, in the Woodrow Wilson School's Program in Science, Technology, and Environmental Policy. My project at Princeton examines the history of science and scientific assessments of ozone depletion, with the aim of distilling lessons that can be applied to ongoing and future environmental assessments, such as those being done by the Intergovernmental Panel on Climate Change (IPCC).

I presented on this work at several meetings, including the Princeton Environmental Institute's Energy Group Lunch Seminar Series, and the Annual Meeting of the American Anthropological Association in New Orleans, USA (paper read in absentia by Jessica O'Reilly). I also served as discussant for a panel on "The Science, Politics, and Publics of Climate Change" at the Annual Meeting of the History of Science Society in Montreal, Canada. Panelists included Jessica O'Reilly, Naomi Oreskes, and Evelyn Fox Keller.

I am also working on two papers about the history of environmental science assessments, and have a third under review with a climate science journal.

Finally, I reviewed six books (in three reviews) this year:

Untitled. Review of Jim Endersby, *A Guinea Pig's History of Biology: The Plants and Animals Who Taught Us the Facts of Life* (Cambridge: Harvard University Press, 2007). *Isis*, vol. 101, no. 4 (December 2010): 849-850.

"Cryptozoology, archaeology, and paleontology: histories near the high table." Essay Review of Bernard Heuvelmans, *The Natural History of Hidden Animals* (London: Kegan Paul Limited, 2007), Anne O'Connor, *Finding Time for the Old Stone Age: A History of Palaeolithic Archaeology and Quaternary Geology in Britain, 1860-1960* (Oxford: Oxford University Press, 2007), and Derek Turner, *Making Prehistory: Historical Science and the Scientific Realism Debate* (Cambridge: Cambridge University Press, 2007). *Annals of Science* vol. 67, no. 4 (September 2010): 569-575.

Untitled. Review of David Sepkoski and Michael Ruse, eds., *The Paleobiological Revolution: Essays on the Growth of Modern Paleobiology* (Chicago: University of Chicago Press, 2009). *Isis* vol. 101, no. 3 (September 2010): 684-685.

Ernst Hamm(Science and Technology Studies Program, York University)

My most important INHIGEO related activity of 2010 was co-organizing with Katharine Anderson an international workshop entitled 'Earth Science, Global Science,' which was held at York University, Toronto, from 30 September to 2 October 2010. Prompted by questions about globalism, modernity, and disciplines, this workshop focused on the global scale of earth sciences. Among the general questions addressed by the workshop were: How and why did explicitly global accounts of the earth emerge and how did they serve the needs of their authors? What conceptions of scale and place, movement or fixity underpin the disciplinary boundaries of modern earth sciences, and what is their significance? What are or have been the points of tension between the local and the global in the earth sciences? How do practitioners move from national survey to global inventory? How has our understanding of the global changed over time?

We were very fortunate in being able to pull together an outstanding group of scholars who delivered a very fine set of papers, as follows:

Zuoyue Wang, California State Polytechnic University, and Jiuchen Zhang, Chinese Academy of Sciences, Beijing, 'Beyond the Middle Kingdom: China and the Evolution of Global Earth Science' .

Gregory Good, American Institute of Physics, 'Many Things to Many People: Encounters with our Home Planet'.

Andre Wakefield, Pitzer College, 'Leibniz and the Universal Local'.
Andrea Westermann, Max Planck Institute for the History of Science,
'Overcoming the Division of Labour in Global Tectonics: Eduard Suess's *The Face of the Earth*'.
Deborah Coen, Columbia University, 'The Planet in the Village: Seismology Between Natural History and Geophysics'.
Michael S. Reidy, Montana State University, 'Physics in the Field: From the Local to the Global in Glacial Science'.
Grace Shen, York University, 'Cold Shoulder: Pleistocene Glaciation Debates in China and Global Science'.
Alistair Sponsel, Harvard University, 'Local Studies and General Theories of the South Sea Islands in the Decades around 1800'.
Helen Rozwadowski, University of Connecticut, '"Undersea" and Other Categories of Space: A Possible Bridge between the Global and the Local in Earth Sciences'.

The workshop also benefited from the active participation and commentary of Richard Jarrell and Naomi Oreskes.

Gerard Middleton

I have little to report for 2010. But I have run across three items of Canadian history that might be of interest. The first is the book "The Fluid Envelope of Our Planet" by Eric L. Mills (Dalhousie). It is a history of physical oceanography, so perhaps does not fall within the scope of INHIGEO? The second is the autobiography of T. Nelson Dale (1846-1937) "The Outcomes of the Life of a Geologist". There is only a slight Canadian connection (he spent a year in Toronto, and his collection of rocks, minerals and fossils was sold to McMaster). I have written a review for Earth Sciences History. The third is a web page: **http://www.turnstone.ca/** produced by Graham C. Willson, which includes a complete bibliography of Frank W. Beales (1919-2004) a pioneer Canadian sedimentologist, who taught for many years at the University of Toronto.

And incidentally, there is an American blog on the history of geology. Perhaps INHIGEO should get into the blog business? Historians are not proving to be leaders in social networking!

Randall Miller

In October 2010 a region in southern New Brunswick officially became the Stonehammer Geopark, the first North American member of the Global Geoparks Network (GGN). The name is derived from the 'Steinhammer Club', formed in 1857. It consisted of a group of amateur geologists who explored the area of the proposed park. In 1862 the club founded the Natural History Society of New Brunswick, precursor to the New Brunswick Museum (**www.nbm-mnb.ca**). The announcement was made at the 9th Annual European Geoparks Conference in Lesvos, Greece by the GGN Bureau. With the acceptance of the Stonehammer Geopark application, the GGN has 77 members in 24 countries throughout Europe, Asia, South America, Australia, the Middle East and now North America. Dr. Godfrey Nowlan, Chair of the newly formed Canadian National Committee for Geoparks (**http://geoscience.ca/index.php?page=geoparks**) said "The designation of the Stonehammer Geopark as North America's first Global Geopark is wonderful recognition of the significant geological heritage of the region, as well as its great potential for sustainable economic development". The success of this project is due in part to the incredible community support. The Stonehammer Geopark encompasses 2500 km2 in southern New Brunswick, stretching from Lepreau Falls to Norton, Saint John and Grand Bay-Westfield to St. Martin's. The geology of the Geopark includes a billion years of stories, and has been studied by geologists for almost two hundred years. The region has a vibrant human and cultural heritage, as well as active educational, tourism and community development sectors, all vital elements for a Global Geopark.

Stonehammer Geopark tours are starting to be offered by tour companies like Daytripping Adventures that offers geology walking and snowshoeing tours of Rockwood Park, rock climbing and other special events for school and corporate groups. Two free walking tour guides are available 'Reversing Rapids Geology Walk' and the 'Fort Howe - Somerset Street Geology Walk'. In addition there is map highlighting 15 things to do in Stonehammer. The geopark is now preparing new educational and tourism activities for 2011.

Protection for more of the region's geological heritage became law in 2010 so that most of the Maritime Provinces of Canada now have legal protection for fossil resources. The Province of Nova Scotia already had protection for many of its natural and cultural heritage resources, provided by the Special Places Protection Act passed in 1980. This Act covers palaeontological, archaeological, and historical sites and remains, including those under water and is administered through the Heritage Division of Tourism, Culture and Heritage. The Act can be seen at (**http://nslegislature.ca/legc/statutes/specplac.htm**). In August 2010 New Brunswick's Heritage Conservation Act was completed with the passing of the supporting Regulations. The new

Act includes protection for palaeontological specimens and sites in the province and clarifies government ownership of palaeontological resources. In New Brunswick permits are now required to collect fossils and permits to alter important fossils sites are also necessary. The Act and regulations can be found on the Government of New Brunswick web site (**http://www.gnb.ca/0131/HeritageConservationAct**). Information about conducting Palaeontological Field Research can be found at; (**http://www.gnb.ca/0131/HeritageConservationAct/Palaeontological_field_research.asp**)

The Department of Geology at the University of New Brunswick continued development of the Quartermain Centre, due to open in 2011. It will be the showcase for earth sciences teaching, research, and outreach at UNB and will be accessible for viewing by the general public. This new facility was made possible by a generous donation from UNB Geology alumnist Bob Quartermain, former President and Chief Executive Officer of Silver Standard Resources Inc. Information about the Quartermain Centre can be found on the department's web site (**http://www.unb.ca/fredericton/science/geology/quartermain.php**).

The Fundy Geological Museum in Parrsboro underwent a makeover in 2010, redoing its already great exhibits to make things even better. The interactive exhibit showcases the region's unique geological features. The museum highlights Carboniferous to Jurassic stories from the Bay of Fundy (**http://museum.gov.ns.ca/fgm/en/home/visitus/default.aspx**).

Activities at the Joggins Fossil Cliffs UNESCO World Heritage Site continue to demonstrate that promoting our geological heritage also has many benefits (**http://jogginsfossilcliffs.net/**). In April the Joggins Fossil Centre at the Joggins Fossil Cliffs UNESCO World Heritage Site announced they had won an International Green Apple Built Environment Award. The Centre was selected to receive this award as a result of efforts to minimize the impacts of the new centre on the environment. The awards are presented by the Green Organisation, a UK-based non-profit organization, in partnership with the British Chartered Institute of Environmental Health, The Environment Agency, The Chartered Institute of Wastes Management and the Municipal Journal.

The Joggins Fossil Institute was also a finalist for the Parks Canada Sustainable Tourism Award. The award is given to an organization that best demonstrates that they protect and enhance Canada's natural and cultural heritage, consistent with the surrounding community and environment. The award, presented by The Toronto Star, is part of the National Awards for Tourism Excellence.

Publications concerning Geological Heritage:

Buhay, D.N. and Miller, R.F. 2010. The Natural History Society of New Brunswick library: supporting geological science. Earth Sciences History 29: 146-170.

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Dewar, K. and Miller, R.F. 2010. Geotourism, Mining and Tourism Development in the Bay of Fundy, Canada, Chapter 18, pp. 214-226. In Mining for Tourism: Developing Mines as Heritage Attractions, Conlin, M. and Joliffe, L. (eds.) Routledge, Advances in Tourism, 254 pp.

Quann, S.L., Young, A.B., Colin P. Laroque, C.P., Falcon-Lang, H.J. and Gibling, M.R. 2010. Dendrochronological dating of coal mine workings at the Joggins Fossil Cliffs, Nova Scotia, Canada. Atlantic Geology 46: 185-194.

David Spalding

Following the activity around the Calgary INHIGEO conference the previous year, 2010 has been a quiet year for History of Earth Sciences activities.

I have continued as a board member of the History of Earth Sciences Society and an editorial board member for Earth Sciences History, in which my review of Burek & Prosser's History of Geoconservation was published.

I have also continued my role as literary executor for the late William Sarjeant, which has involved unsuccessful attempts to get his Geologists and the History of Geology bibliography available again. I had earlier updated one of Bill's papers which first appeared in The Complete Dinosaur (Indiana University Press, 1997), covering "The First Discoveries." Publication of Complete Dinosaur II is now going ahead for 2011. I have also contributed a short memoir of Bill to a centennial edition of Conan Doyle's The Lost World edited by John Lavas of New Zealand, and continue work on "Before The Lost World: Prehistoric Life in Science and Fiction to 1912," which will form part of the introduction, and for which a surprisingly rich vein of early fiction touching on scientific matters has become available through the web.

My own book "Into the Dinosaurs Graveyard" (Doubleday Canada, 1999) covering the discovery and history of research on dinosaurs in Canada has been effectively out of print for some time, but I am engaged in discussions with the original publisher about an electronic edition (eBook).

During 2010 I have travelled in connection with paleontology history research, visiting museums and sites in Colorado, Idaho, and Utah. In September, I went to the 25th anniversary celebrations of the Royal Tyrrell Museum of Paleontology in Drumheller, Alberta (which had grown out of a program I had previously administered at the Alberta Provincial Museum — now the Royal Alberta Museum). This is the largest paleontology museum in Canada, which had its 10 millionth visitor in 2010. It carries out extensive research programs particularly in North America and Asia. I took the opportunity to interview a number of the research and other staff about the progress of their work for future publications.

Meanwhile I am commencing updates for articles on Canadian dinosaurs and dinosaur discovery for the (online) Canadian Encyclopedia.

Darren H. Tanke

This was another busy year for me and colleagues.

In April, 2010 the book by Lowell Dingus and Mark A. Norell "*Barnum Brown – The man who discovered Tyrannosaurus rex*" (University of California Press) came out; I was the reviewer for the Canadian chapter of that book.

In June, 2010 we embarked on the scow trip- a 100th anniversary re-enactment of the first American Museum of Natural History (ANMH) expedition which floated down the Red Deer River in the quest for the abundant dinosaur bones and skeletons in the badlands along this watercourse. This turned out to be somewhat of a disaster for me personally. We discovered the scow, with its wooden bottom, became stuck easily on submerged rocks and it was quite difficult to extricate the heavy scow in these situations. We also had two medical emergencies: my girlfriend (and expedition cook) Patty Ralrick badly gashed her hand open on the first day (ironically on a box of safety equipment!) and a few days later (July 4th) I collapsed in the field, fortunately near a group of lepidopterists about to go on a hike. Both these incidents involved ambulance transport to hospitals. In my case it was a combination of nervous exhaustion, low iron and potassium levels, and anaemia. Blood work results in hand, the doctor took one look at me and said my trip was over. An emergency crew took the scow all the way down the river to Drumheller. The trip started in Red Deer, Alberta on June 29th and we only travelled 12 km before we became hopelessly stuck on a large rock. Fortunately we were able to get a crane right above the scow and lift it out, but it was a rather delicate operation. We put the scow back in the river further downstream at Content Bridge (July 1st) and the scow made its way down to Drumheller over a 7 day period, travelling some 105 km which is close to the distance the AMNH scow travelled over 3 field seasons. No actual fieldwork was achieved in 2010. One major triumph however, was that we were able to anchor our scow on the exact spot the AMNH had their scow anchored in 1910. This trip was a very steep learning curve for all of us and we will re-attempt the trip this summer, this time probably with a thin steel bottom on the scow, some other much needed infrastructure modifications, and less equipment (and therefore a lighter scow).

On August 7th, the author and Patty Ralrick had a table display of the 1:10 model of the AMNH scow "*Mary Jane*" at Dinosaur Provincial Park. There, we and others from the Brooks (Alberta) Historical Society dressed up in period costume. The author then gave a talk on his mystery quarry project involving historical archaeology and investigative techniques to analyze and date the garbage left behind by fieldworkers long ago. This in turn helped date and identify what was collected from the old site, when and by whom.

I've had several paleontology history papers published since my last report:

1. A short biography on Dr. Oscar Erdman (1915-2010), a Calgary geologist who, during WWII, relocated an important dinosaur site which yielded good skulls and other bones of the unusual Late Cretaceous horned dinosaur *Pachyrhinosaurus* (Tanke, 2010). This site was one of the first dinosaur localities in southern Alberta that was examined by the Geological Survey of Canada in 1882 but had largely been forgotten.

2. A detailed review of the often troubled history of discoveries and collection of the Late Cretaceous tyrannosaurid dinosaur *Albertosaurus* in Alberta, Canada was published (Tanke and Currie, 2010).

3. Tanke and Walker (2011), highlights the first (1967) airlift of a dinosaur skeleton in its heavy plaster of Paris field jacket from a field locality and related histories. The lift was done by the Canadian Army and used one of their new CH-113A Voyageur twin-rotor helicopters. This lift was the first of its kind- hundreds have been done worldwide since.

A paper on the history of Royal Tyrrell Museum helicopter use to collect large dinosaur specimens in the field is well underway.

4. At the memorial service of amateur fossil collector and artist Hope Johnson (1916-2010), I read a short eulogy, highlighting her numerous paleontological contributions in southern Alberta. A 30 minute talk on her

life was given by me at the 2011 Alberta Palaeontological Society meetings (about 100 attending) in Calgary (Tanke, 2011) on March 19, 2011. A much larger biography on her life is well underway. Research and writing on this should be finished and submitted later in 2011.

5. Henderson and Tanke (2010) used much historical data on dinosaur specimens collected in Dinosaur Provincial Park in Alberta, Canada since 1911. We then estimated how many dinosaur skeletons were lost to 14,000 years of erosion and how many potentially remain in the rock there.

Writing projects on other little or poorly known characters involved in Albertan vertebrate paleontology continue. Interviews with still living people who were active in the field many years ago ensures their stories and memories are not lost. Interviews have been conducted with Jane Danis (1941-) and Maurice Stephanuk (1924-) and manuscripts on them are well along. Writing projects on William E. Cutler (1878-1925) and the American Museum's Peter C. Kaisen (d. 1936) are also ongoing, but more slowly. A colleague of mine found Cutler's family in England and the author made contact with two branches of the Kaisen family in the United States in the late spring of 2010 and January, 2011. All are proving to be valuable contacts, the Cutler family providing a detailed interview which was recorded.

A co-authored manuscript, on the history of Cretaceous marine reptile discoveries and collection in the province is also well underway, but will not be finished for at least a year, pending the publication of some important anatomical papers on Alberta mosasaurs and plesiosaurs.

Another paper nearly done by me is on *Albertosaurus* in Canadian popular culture; this involves much old and current history as well. This paper will be submitted mid-year. Another large project, started on March 10th is an historical review and census of all major Late Cretaceous vertebrate specimens recovered up and downstream along the Red Deer River and its tributaries. This is being worked on one day per week at the Royal Tyrrell Museum and will be the most thorough data-rich compilation of all major fossil vertebrate specimens found since 1884 along the Red Deer River up and downstream of Drumheller, Alberta.

Relocation of lost quarries and identification of found but unidentified quarries in Late Cretaceous rocks continues. A Drumheller man found two old dinosaur quarries near Drumheller- both were linked to the Royal Ontario Museum (ROM) and one yielded a 1931 newspaper. An avid badlands hiker, he has offered to look for other old quarries and report them to us. Efforts to relocate a horned dinosaur bonebed worked by Charles H. Sternberg and youngest son Levi during 1916 were attempted twice in today's Dinosaur Provincial Park (DPP), but without success. Slim historical data provides a rough locality but searches for the site have so far been fruitless, which is frustrating as the dinosaur therein is a new genus (manuscript accepted, to be published this year in *Acta Palaeontologica Polonica*). Those search efforts did result in the discovery of old newspapers with color comics containing Mickey Mouse cartoons. These demonstrated the small site was no older than 1930 (when Mickey Mouse first appeared in comics) - it was later determined to be a ROM turtle quarry from 1934.

Another search effort was for a ROM turtle site in DPP, collected in 1930. It was just another average fossil turtle for many years but it fractured recently revealing eggs inside, so relocating the site is now important. Armed with two 1930 site photographs, one trip failed but since then, better locality data has surfaced allowing another better try this spring- it turns out we were less than 500 metres from the rough area where the site is supposedly located.

I gave a public talk at TMP on 15 April on the mystery quarry project. Talk at TMP and linked to TMP webpage (**www.tyrrellmuseum.com**). It may also be podcasted to the Youtube site: **http://www.youtube.com/**

The Royal Tyrrell Museum will feature a small temporary exhibit on "Women in Paleontology" starting this summer. A series of about 18 framed pictures (portrait style) with short biographies will highlight women past and present who have been involved in paleontology both in Alberta and worldwide. At time of writing the list of those chosen to be featured had not been fully finalized, but Alberta amateur fossil collectors Hope Johnson (1916-2010) and Irene Vanderloh (1917-2009) have been confirmed. I have been involved a bit in this exhibits historical research, mostly involving local women.

My Facebook group "Vertebrate Paleontology History" group had 421 members as of March 20, 2011. Finally, a reminder that most of my paleontology historical papers can be found at **www.academia.edu** - just search "Darren H. Tanke", follow the "Papers" link and go from there.

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Darren Tanke (Canadian Editor; INHIGEO)
Compiler and Editor

China

1. Research on the history of Chinese geoscience, the geological enterprise and the famous geologists

1.1 In 2010, the Chinese Committee for the History of Geology (CCHG) and Xiake Xu Academy, under the Geological Society of China (GSC), continued the research project—"special research of subject's history", and submitted the report *Subject of History of Geology in China* in March. This project was one of the first selected projects of "special research of subject's history" by China Association for Science and Technology (CAST), and the report was favorably accepted by the evaluation experts of CAST. And the monograph was published by Science and Technology of China Press in April.

1.2 The study on "history of China regional geological survey and its effect on society, economy and culture", a commission given by China Geological Survey (CGS), has yielded good results. It researched the history over more than 100 years until late 1900s. A book entitled *Events in History of Chinese Regional Geological Survey* will be published in 2011 as a result of this research.

1.3 In 2010, CCHG and History of Geology Institute of CUGB took on the responsibility to collect the materials of old scientists' academic courses, which was formerly a responsibility of CAST. The project researched into the academic courses offered by Hongzhen Wang and Qi Yang, both of whom were geologists, and dealt with various materials systematically. The two scientists were regarded as important figures in geology, and their work involved many years of accumulated experience.

2. CCHG Annual Session and Special Seminars

2.1 The 22nd annual session of CCHG was held from 15-16 October 2010 in CUGB Academic Exchanges Center. Academicians of CAS, Mengxiong Chen, Pengda Zhao and Yusheng Zhai, and 76 experts and scholars from Departments of geology, mining industry, metallurgy and petroleum, CAS, Chinese Academy of Geological Sciences (CAGS), Beijing University, and China University of Geosciences (CUG) attended the session. 147 graduate students of CUGB listened to the presentations. The session received 47 articles, 31 of which were presentations in the meeting. The academician, Y. Zhai, Director of CCHG, reviewed the committee's development and achievements in the past 30 years since its foundation. He pointed out that the committee did a lot of research in ancient geology history, geological career history, geological education history, geology figures, subjects of geology history and geological exchanges between China and the rest of the world. It opened up and established an important base for the research of both geology and geological history, which was a credit to geological career and sciences. He summarized and evaluated the 18 years' contribution of H. Wang to CCHG. The topic of how to carry out the research of geological history in new situation—"learn from history, open new chapter" was vigorously discussed for an hour. The Associate Director, Guang Yu, made a summary of the annual session.

During the session, an exhibition commemorating 30 years' achievements of CGHC and the photographic exhibition of H. Wang was held.

2.2 Research into the history of Qinghai-Tibet Plateau climbing and investigation was carried out. Two seminars about Qinghai-Tibet Plateau climbing and investigating were held and 41 articles were received. Two seminars basically described the progress and achievements of CUG in Qinghai-Tibet Plateau climbing and investigations over the past six decades, and provided very good examples for the recent research of special subject history. The first drafts of a research report and monograph *CUG history of Qinghai-Tibet Plateau climbing and investigating* will be completed in 2011 and published in 2012.

3. Activities organized to popularize scientific knowledge

3.1 Geologists gathered in CUGB
(Science and technology day, Beijing Association for Science and Technology)
20 May 2010
CUGB
About 38 exhibition boards and 800 in audience

3.2 Famous Geology Teachers Gave Lectures
(An entrance education for the freshmen of CUGB)
20-22 September 2010
CUGB
About 42 exhibition boards and 1000 in audience
3.3 30th Anniversary of Research on the History of Chinese Geology
15-16 October 2010
CUGB
About 38 exhibition boards and 200 in audience

4. Monograph and symposium
4.1 *Chinese History of Geology Subject* was published in April, 2010.
4.2 The editing of the *Proceeding of 30 Years' Research on History of Chinese Geology* was still progressing.

Baoguo Chen（Beijing）

Costa Rica

There are two national members for INHIGEO in Costa Rica. One of them, Gerardo J. Soto, has served as Vice-President for Latin America since 2004. His duties have included a frequent communication with regional members of INHIGEO. Cooperation with the Board in its business has been active throughout 2010.

Early in 2010, the *Colegio de Geólogos de Costa Rica* [CGCR, Guild of Geologists of Costa Rica] accepted "History of Geology" as one professional area of Geology in Costa Rica, where members can request to be recognized as "specialists". Gerardo J. Soto was elected as the first specialist of this area into CGCR and Costa Rican geological community.

In March, the Costa Rican Institute of Electricity (ICE, acronym in Spanish) published a book entitled "*Miravalles. Historia del Primer Complejo de Energía Geotérmica en Costa Rica*" [Miravalles. History of the First Complex of Geothermal Energy in Costa Rica] that dedicates several pages to the history of geothermics in Costa Rica, covering since the first approach by ICE in 1959, the development of geological studies during the 1970s and 1980s, the inauguration of the first geothermal plant in 1994 on the edge of Miravalles volcano (northwestern Costa Rica), its growth, and up to the future with developments in the neighbourhood of volcano Rincón de la Vieja. This book on geothermal development is remarkable, since 15% of the total electrical energy in Costa Rica is produced by this renewable source (and in fact, 95% of total electricity is produced by renewable sources, mainly hydroelectric).

On 4 May, two activities were held in commemoration of the hundredth anniversary of the Cartago Earthquake. That event has been by far, the most destructive seismic disaster in the history of Costa Rica. In despite that the affected area was relatively small (a local fault and a shallow hypocenter), the city of Cartago was practically destroyed, and the death toll reached the hundreds (figures are between 200 and 1000, although it will never be clear). One symposium took place at the *Escuela Centroamericana de Geología* [Central American School of Geology] of the University of Costa Rica, and the other at the *Colegio Federado de Ingenieros y Arquitectos de Costa Rica* [Federative Guild of Engineers and Architects of Costa Rica], both covering diverse aspects of the catastrophe. Lectures from the activity at the University of Costa Rica were later edited by Giovanni Peraldo and Benjamín Acevedo in a book from which four papers are related to the history of geosciences (see references below). On the other hand, most of the lectures presented in the *Colegio*, can be seen and downloaded from the site http://www.civiles.org/publicaciones.html.

Soto could not attend the INHIGEO meeting in Madrid-Almadén (Spain) in July ("History of Research in Mineral Resources") because last minute funding problems, but presented a poster on "Metal mining in Central America (early 1500s – late 1800s)", and sent a paper to be published in the proceedings, that will appear in 2011.

Soto attended the "*Simposio Geonaturalia Geografía e Historia Natural hacia una Historia Comparada, Cuarto Encuentro Internacional*" [Symposium on Geonaturalia Geography and Natural History with comparative history, Fourth International Meeting], held in Buenos Aires, Argentina, into the *III Congreso Internacional Europa-América "Museos, Archivos y Bibliotecas para la Historia de la Ciencia"* [3rd International Congress Europe-America "Museums, Archives and Libraries for History of Science"], on 19-23 July, where he delivered a lecture on the history of mining in Central America (1500-1900). During this meeting, the third book in the Geonaturalia series was presented, including two papers related to the history of geosciences in Central America, authored by Costa Rican geologists Soto and Giovanni Peraldo.

Soto was invited to the *Primer Simposio de Historia de la Geología* [First Symposium on the History of Geology], organized by the Geological Society of Chile on 17 August in Santiago, but could not attend neither. A short contribution of his, entitled "*INHIGEO y América Latina*" [INHIGEO and Latina America], was read by Prof. Francisco Hervé at the beginning of the meeting.

Publications

Fallas, Carlos E. and Rodríguez, Jeannette, *Miravalles. Historia del Primer Complejo de Energía Geotérmica en Costa Rica*, Instituto Costarricense de Electricidad, San José, Costa Rica, 2010.

Peraldo, Giovanni, 'Las normativas de 1841, 1887 y 1910 para modificar los estilos constructivos en el país. ¿Inicio del Código Sísmico de Costa Rica?', in Peraldo, Giovanni and Acevedo, Benjamín (eds.), *Efemérides de la destrucción de la Ciudad de Cartago (1910 – 2010)*, Editorial Perro Azul, San Pedro, Costa Rica, 2010, 117-129.

Peraldo, Giovanni, 'Una sistematización de las observaciones geológicas y geográficas para escoger el nuevo emplazamiento de la ciudad de Santiago de Guatemala, a raíz de su destrucción en 1773', in Lértora, Celina (ed.), *Geonaturalia. Geografía e Historia Natural: hacia una historia comparada. Estudio a través de Argentina, México, Costa Rica y Paraguay, 2009*, Ediciones FEPAI, Buenos Aires, 2010, 122-138.

Peraldo, Giovanni., 'Comentario: Amenaza Sísmica y Ordenamiento Territorial en Costa Rica', *Revista Geológica de América Central*, 2010, 42, 143-147.

Peraldo, Giovanni and Acevedo, Benjamín, *Efemérides de la destrucción de la Ciudad de Cartago (1910 – 2010)*, Editorial Perro Azul, San Pedro, Costa Rica, 2010.

Peraldo, Giovanni and Acevedo, Benjamín, 'El conocimiento sismológico y las explicaciones relacionadas a la actividad sísmica durante 1910', in Peraldo, Giovanni and Acevedo, Benjamín (eds.), *Efemérides de la destrucción de la Ciudad de Cartago (1910 – 2010)*, Editorial Perro Azul, San Pedro, Costa Rica, 2010, 83-94.

Solano, Flora J. and Díaz, Ronald, 'Pedro Nolasco Gutiérrez y su explicación astrometeorológica de la sismicidad de 1910', in Peraldo, Giovanni and Acevedo, Benjamín (eds.), *Efemérides de la destrucción de la Ciudad de Cartago (1910 – 2010)*, Editorial Perro Azul, San Pedro, Costa Rica, 2010, 95-106.

Soto, Gerardo J., 'Costa Rican 2009 annual report to INHIGEO', *Revista Geológica de América Central*, 2010, 42, 149-151.

Soto, Gerardo J., 'Metal mining in Central America (early 1500s – late 1800s)', *International Commission on the History of Geological Sciences (INHIGEO) Annual Conference "History of Research in Mineral Resources", Madrid-Almadén, Spain 1 – 14 July, Book of Abstracts*, 2010, 53.

Soto, Gerardo J., 'La minería en América Central (1500-1900)', *Simposio Geonaturalia Geografía e Historia Natural hacia una Historia Comparada, Cuarto Encuentro Internacional, 21-22 July, Buenos Aires, Argentina, Programa y Resúmenes*, 2010, 10.

Soto, Gerardo J., 'El mapeo geológico y vulcanológico en América Central hasta el inicio de la Segunda Guerra Mundial', in Lértora, Celina (ed.), *Geonaturalia. Geografía e Historia Natural: hacia una historia comparada. Estudio a través de Argentina, México, Costa Rica y Paraguay, 2009*, Ediciones FEPAI, Buenos Aires, 2010, 263-287.

Soto, Gerardo J., 'INHIGEO y América Latina', *Primer Simposio de Historia de la Geología, Sociedad Geológica de Chile, 17 August, Santiago, Chile, Compact Disc with Resúmenes*, 2010, 1 page.

Velázquez, Carmela, 'Santos patrones y oraciones contra los temblores', in Peraldo, Giovanni and Acevedo, Benjamín (eds.), *Efemérides de la destrucción de la Ciudad de Cartago (1910 – 2010)*, Editorial Perro Azul, San Pedro, Costa Rica, 2010, 107-114.

Gerardo J. Soto, San José

Czech Republic
(incorporating the results of the VISEGRAD project)

In INHIGEO Newsletter 42, (2010) the six-month Visegrad project on early European geological maps entitled "Geological mapping in Central Europe in the 18th and Early 19th Centuries" was already reported. This short-time project represented a major activity of the Czech INHIGEO members during 2010 and that is why their report mainly will be focusing on the result and conclusions of this project. Firstly the results demonstrated that the cooperation of all participating national teams of the Visegrad countries, namely of Poland, Hungary, Slovakia and Czech Republic together with the partners from the German Federal Republic and Austria, was beneficial. Simultaneously, the project yielded desirable cooperation with some non-Visegrad INHIGEO members - T. Cernajsek, B. Fritcher whilst a good relationship was also established with new members of INHIGEO - S. Wołkowicz and P. Krzywiec from Poland.

T. Cernajsek contributed with a description and classification of a set of maps (Bavaria, Vienna Basin, Tyrol, Savonian Alps) dating from 1808 to 1831. These maps undoubtedly contribute to the understanding of geological perception in this region. B. Fritcher contributed by analysing selected Bavarian maps by M. Flurl and by L. von Buch (1802). Beside that, he also studied the little known map "Orographische Charte von dem Fichtel-Gebirge" of 1816 by August Goldfuß and Gustav Bischof. New Polish INHIGEO members organized a meeting in Warsaw; they elaborated on mainly maps, which covered historical part of Poland (J.É. Guettard (1764), C. von Raumer (1813), C.Ritter von Schindler (1815), C. Oyenhausen (1822), K. Lill von Lilienbach (1825, 1833), A. Boué (1834), F. Hoffmann (1836), J.G. Pusch (1836) and others).

The map by S. Staszic, Polish geologist and naturalist, was proved to stand out above any other synoptic geological maps of the period between the years 1806-15. The set of four folio-sheet maps, which compile this map and which shows the geology and stratigraphy of the vast region of central and Eastern Europe (ca 1 mil km^2), from the Baltic Sea to the Black Sea and from Vienna to Kiev. By the other words the map, in particular, covers the historical territory of Poland, Russia, Lithuania and parts of Belarus, Ukraine, and Slovakia (especially the High Tatra Mts. region), Hungary, Moldova and parts of Moravia. Z. Wojcik and W. Narebski reported on S. Staszic and his map in the INHIGEO Newsletters several times (e.g., Newsletter 42, in the article "Father of Polish Geology" and Newsletter 41, "Biographic Proceedings of Eminent Geologist of the Polish Enlightenment Period".

As the oldest map-document elaborated in the project was the map from 1726 "Mappam mineralographicam in qua neglecta accurata locorum distantia Hungarie Superioris Fondinae" by the Italian naturalist L. Marsigli; I. Tunyi and Z. Kukal analysed this map. E. Kašiarová from the Mining Archives in Banská Štiavnica cooperated on the map by H. Belsazar "TATRAS versus Septemtrionem" from 1796 with Z. Kukal.

F. Sikhedyi (Hungary) has described the mineralogical map of occurrence (mines) in Hungary by the same author, and its small and large sections from 1741. He is also author of the description of documents by J.E. Fichtel 1780 and 1791, R. Towson 1897, M. Sennovitz 1813, F.S. Beudant 1822 and others.

The Czech team was focused mainly on the geo-science map of Bohemia and Moravia. The most interesting and one of the oldest maps of Bohemia is the geological map of the Beroun county in mid-Bohemia by Johann Jirasek from 1786, together with his map of the Giant Mountains (German *Riesengebirge*) dated 1791. The project also mentioned the historical maps by F.A. Reuss 1793, 1794 and 1797 and well-known geological map by F.X. Riepl from 1819. The collection of Czech maps also contains the monumental mineralogical-trading map by J. F. Bock et Polach covering the entire Kingdom of Bohemia in 1808. Several sheets of maps by L. von Buch (1826) and by F. Hoffmann (1836) also included a part of Bohemia territory and also newly re-discovered map of Silesia by A. Kaluža dated 1818, which is deposited at the Polish National Archives in Warsaw.

As milestones can be counted, later a printed map of Bohemia from 1837 can be attributed to A. Preininger whilst the geological map by A. E. Reuses - younger, which mapped the Czech territory, was completed in 1838.

G. A. Naumann composed a set of fundamental geological map sheets of the Ore Mountains in the years 1830-1840; they are deposited in the Library of the Bergakademie in Freiberg. Some of these maps were included among younger milestone maps. Also in Saxony, A. Kiessling from *the Bergakademie Freiberg Universitätsbibliothek* and P. Hoheisl from *the Sächsisches Staatsarchiv* kindly assisted in the identification of unique maps by Ch. Lommer, J. P. Riess, J. P. Becher, A.G. Werner, C. Schindler, and J. E. Fichtel.

The VISEGRAD project was also focused on other areas of Central Europe; the main result of the project VISEGRAD consists of collection of old geological maps, created prior to 1820 (See Table in accompanying Article in this Newsletter). These early maps manifest well the origin and evolution of the geological cartography in Central Europe and the emerging synthesis of the geological knowledge of the Bohemian Massif, Eastern Alps, West Carpathians, Pannonian Basin, Holy Cross Mountains and some adjacent areas.

The rich cartographic material collected during the VISEGRAD Project clearly illustrates, that the period, during which mentioned early maps were created, was a prosperous time for natural and social sciences and a time of rapid economic advancement for Central Europe. Enough surprisingly, such progress was achieved in Europe in the time period, when were appeared serious political upheavals, such as the Napoleonic Wars. It seems that as a whole the 18th century achieved enormous progress in understanding the geological history of earth. Geology, at that time also known as geognosy, was embodied as a new, separate branch of natural science. There was also the time of growing interest in mineral resources use, which evoked an intensified geological prospecting and surveying. Mining academies were set up in Central Europe shortly after half of the 18th century and they were often established as universities; and the study of geological sciences gradually became attractive for private researchers, especially among the nobility.

The number of published geoscience's books and geological maps expanded. Locations of raw materials were particularly described on maps; but they also contained first observations based on newly emerging geological disciplines such as petrology, structural geology and stratigraphy. Seen from this perspective, the work on the project covers the period not only until 1820 as originally planned; additionally, there also were included selected younger "milestone" maps created in the period 1822-1840 (see accompanying article in this Newsletter). The final report of the Visegrad project was, in English version, submitted to the Centre of VISEGRAD administration in Bratislava together with an interactive DVD. These documents are also available in the archives of the Czech Geological Survey (http://www.geology.cz) and in the cooperating institutions.

The results of the Visegrad Project could be understood as the first step towards preparation a monograph "Atlas" of the early geological maps of Central Europe. The planned atlas should be extended about the general chapter on the types of geological maps, about a comparison of overview of the geology of Central and Western Europe and especially about an evaluation of the development of geological disciplines, as reflected in a synthesis of geological maps. At present timework has progressed on preparing a sample copy of the Atlas run and it could be offered for publishing. D. Oldroyd and A.Grigelis have kindly promised to cooperate on this new Atlas-project.

The authors of the project, named above, will be grateful for any suggestion and advice on the processed subject; comments added to individual members of the project will be most cordially welcome.

Alena Čejchanová,
Prague

Estonia

Dimitri Kaljo (age 82 years) believes that he has reached the right time to retire from INHIGEO. He advises that he is still compiling a book about history of the Institute of Geology in Tallinn, although no other historical activities are being planned.

France

2010 was a successful year for the French Committee on the History of Geology as its President, Gabriel Gohau, received, in November 2010, the Mary C. Rabbitt Award of History of Geology awarded by the Geological Society of America. He was, after François Ellenberger, the second French historian of geology to be distinguished with this award. As Gabriel was not able to attend personally the Annual Meeting of the Geological Society of America, our friend Ken Taylor read his acceptance statement.

As usual, the Committee held three meetings in 2010, during which nine contributions were delivered as follows:

- Moreau, C., 'Louis-Benjamin Fleuriau de Bellevue (1761-1852 : un novateur méconnu de la géologie'.
- Lepvrier C., 'Jacques Deprat (1880-1935) et les nappes du Tonkin'.
- Damotte, B., 'L'étude de la croûte par les méthodes sismiques : le programme ECORS (1983-1994)'.
- Sigrist, R., 'Deluc et Saussure, frères ennemis de la géologie naissante (1760-1800)'.
- Touret, J., 'Auguste Michel-Lévy (1844-1911): le microscope à l'assaut des montagnes'.
- Gaudant, J., 'Wilhelm Ernst Tentzel (1659-1707) et le Collège des médecins de Gotha face à l'éléphant fossile de Tonna (1696-1697)'.
- Plaziat, J.-C., 'Bernard Palissy (1510 - 1590) : près de trois siècles de malentendus de la part des géologues, qu'il convient de dissiper à l'occasion de son 500^{e} anniversaire'.
- Beaumont, C., 'La contribution du Corps des mines aux progrès de la géologie (1810-2010)'.
- Gaudant, J. : 'Il y a trois siècles, l'irruption d'un « crocodile » dans le bestiaire fossile'.

We are glad to inform colleagues throughout the world that the 'Travaux' published by our Committee are now available on line from 1976 to 2005 at the following website address:
www.annales.org/archives/cofrhigeo/travaux.html .

In September 2010 Jean Gaudant and Jean Mergoil organized a four days excursion: 'On Faujas de Saint-Fond and abbé de Mortesagne footsteps', in order to visit the best volcanic sites of the Ardèche valley originally described by Faujas in his *Recherches sur les volcans éteints du Vivarais et du Velay* (1778), and also in the Haute-Loire where an almost unknown naturalist, Gui de Mortesagne, made a significant attempt of interpretation of some volcanoes in six letters sent to Faujas who printed them in his book.

It should be also noted that the history of tectonics was also honoured during this year by two books: '*Histoire de la tectonique*' by our President, Gabriel Gohau, and '*Marcel Bertrand (1847-1907), génie de la tectonique*' by Michel Durand-Delga.

Finally, Jean Gaudant has announced that at the beginning of 2011 the publication of a new series of books will commence, which will feature the history of geological study in every major geological region of France. The first volume, prepared by Jacques Debelmas (Grenoble), is entitled '*Exploration géologique des Alpes franco-italiennes*'.

Jean Gaudant, Paris

Germany

Meetings, lectures and events

Following a very busy year in 2009 with international events, such as the "International Congress of History of Science and Technology" at Budapest (where several German INHIGEO members were particularly engaged), and the International Symposium "Cultural Heritage in Libraries of Geoscience, Mining and Metallurgy" at the Technical University/Bergakademie Freiberg, the German working group on the "History of Earth sciences" decided to have no proper annual meeting in 2010. Nevertheless, several German INHIGEO members contributed to various national and international meetings and events. Martina Koelbl-Ebert gave an invited talk on "Geology and religion -- historical perspective and current problems" at the *European Geosciences Union General Assembly* 2010 at Vienna, and participated in the INHIGEO meeting in Madrid with a paper on the history of research on German impact craters (a topic on which a book by Martina might be expected). In 2010 Cornelia Lüdecke organized a bipolar session on "History of polar exploration, cooperation, research and logistics" during the International Polar Year Oslo Science Conference (Oslo, 8-12 June 2010) and a session on "History of Antarctica and scientific research" during the SCAR Open Science Conference in Buenos Aires (3-6 August 2010). Furthermore, Cornelia gave various talks at conferences and meetings, amongst others on "The German part of the ArchaeObs project on Kerguelen Island 2006/07" at the *International Polar Heritage Committee, Punta Arenas, Chile*, on " 'Final battle for the South pole': the international geophysical year (1957-1958) in German media" at the *24th International Polar Conference* (Obergurgl, Austeria), and on "Water colours versus black and white photographs -Souvenirs from World War II" for a Symposium on Symposium *Colours in culture and science* at the University of Hamburg. Finally, Bernhard Fritscher and Austrian INHIGEO member Marianne Klemun (Vienna) participated in the *GeoDarmstadt 2010* at Darmstadt, the annual meeting of the German geological societies, contributing two papers on the history of the *Geological Union* ("Geologische Vereinigung") which has had its 100th anniversary in 2010.

Publications

In 2010, again, the German INHIGEO members also presented several publications. Martina Koelbl-Ebert, amongst others, contributed a paper to *Earth Sciences History* on "Father Damian Kreichgauer SVD (1859-1940) and Father Erich Wasmann SJ (1859-1931): Geology, Earth History and Evolution in Two German Lives between Science and Faith", and on "Darwin's theory of evolution in contemporary context" in *Archaeopteryx* (vol. 28, pp. 41-56). Also by Martina is a more popular description of "Lyme Regis, Dorsetshire" as a famous site of fossil collecting, published in "Meccas of modernity – Pilgrimage sites of knowledgeable societies" (Mekkas der Moderne - Pilgerstätten der Wissensgesellschaft, ed. by H. Schmundt et al., Köln). Cornelia Luedecke, together with Susan Barr, edited a voluminous book on "The History of the International Polar Years (IPYs)" (vol. 1 of the series "From Pole to Pole", Springer-Verlag, Berlin) with several contributions by herself (on "International Cooperation in Antarctica (1901-1904)", "14 Months in the Arctic - The Austrian Polar Expedition to Jan Mayen 1932/33", "International Meteorological and magnetic Co-operation in Polar regions", "Island of fogs and gales - The first Polish Expedition to Bear Island during the 2nd International Polar Year 1932/33", and others. Furthermore, Cornelia published papers on "Approaching the Southern Hemisphere: The German Pathway in the 19th Century" (in: R. D. Launius et al, eds., Globalizing Polar Science: Reconsidering

the Social and Intellectual Implications of the International Polar and Geophysical Years; Palgrave Studies in the History of Science and Technology, New York, pp. 159-175), on "Gorgeous Landscapes and Wildlife: The Importance and danger of Antarctic Tourisms" (in: Estudios Hermifericos y polares 1, No. 4, pp. 213-231), and some more. Finally, Bernhard Fritscher, besides some more popular papers in German, contributed descriptions of early geological maps (Matthias Flurl, Geological map of Bavaria, 1797; August Goldfuss and Gustav Bischof, Orographic map of the Fichtelgebirge, 1816/1817; Leopold von Buch, Geognostic outline map of Silesia, 1797) to Alena Cejchanová's and Jan Kozák's project on "Geological Mapping in Central Europe in the 18th and early 19th centuries"; the 2010-result of this project was a digital *Atlas* of early geological maps (a printed version of the *Atlas* is currently under work).

Further Activities

On 20 September 2010, the German Meteorological Society awarded INHIGEO member Cornelia Lüdecke the Reinhard Süring Medal for her "long-time dedicated activities in research and teaching in the field of history of natural sciences (especially of meteorology) and the successful organisation of numerous national and international symposia". Bernhard Fritscher started a research project, supported by the *Fritz Thyssen Foundation*, on the private library of Christian Keferstein (1784-1866, usually known for his Geological map of Germany, 1821) at the Library of the *Francke Foundation* in Halle/Saale. Also in 2010, University courses were given by German INHIGEO Members: by Cornelia Lüdecke at the University of Hamburg on "Milestones from the history of polar research", and on " Selected chapters from the history of meteorology", and by Bernhard Fritscher at the University of Munich courses on "Geognosy: the invention of a science", and "Earth history and national identity". Finally, a new issue (no 20) of the "Nachrichtenblatt zur Geschichte der Geowissenschaften", now entitled "Geohistorische Blaetter", has been edited by Ulrich Wutzke (Berlin), containing a very fine paper by Christian Schubert on the emergence and early reception of A. G. Werner's concept of geognosy.

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

Bernhard Fritscher, Munich
Martina Koelbl-Ebert, Eichstaett

Hungary

The History of Geology Section of the Hungarian Geological Society celebrated its 40th Anniversary on 22 November 2010.
The President of the Section, Á. Tóth, presented a historical overview whilst T.Póka and J.Hála showed a series of archive photos. E.Dudich summed up the Section's very productive relations with INHIGEO since 1976. T.Kecskeméti spoke about theoretical and methodological problems of studying the history of geology. J.Tóth (Director, Museum of the Oil Industry) presented a collection of postcards and stamps concerning Hungarian geology and mining. H.Boér (Sepsiszentgyörgy/Sfintu Gheorghe, RO) gave an introduction to the relevant objects kept in the Museum of Székelyland. J. Pozsonyi spoke about the sponsors of Hungarian geology, above all the rich landowner A. Semsey.

The VIth Saint George Day Bauxite Meeting organized by Á.Tóth discussed the history of MASZOBAL (Hungarian-Soviet Bauxite Company).

Personal jubilees

- P.Papp, Secretary of the Section, presented a lecture with archive photos about the life of **Gyula (Julius) Szádeczky (1860-1935),** Professor of Geology at the University of Kolozsvár / Cluj Napoca, RO) to a commemorative meeting held at Cluj Napoca on 11 December 2010.
- The 85th birthday of **György Bárdossy**, world bauxite expert, geochemist and geomathematician was celebrated at a scientific conference held at the Hungarian Academy of Sciences on 17 December 2010.
- The 80th birthday of **Tibor Kecskeméti**, former Deputy Director General of the Hungarian Mseum of Natural History, was duly celebrated on 2 September 2010.

Hungarian contribution to IMA-2010, the 20th General Meeting of the International Mineralogical Associaton, Budapest, 21-27 August, 2010.
Two sessions of IMA were devoted to History of Science: MH110G Mineral museums and Historical mineralogy, and MH111: History of Mineralogy, the role of the Carpathian region in the 18th century (co-sponsored by INHIGEO). Presentations by Hungarians at the meeting were: **P.Rózsa**: Sir James Hall's (1761-1832) visit in Schemnitz (1784), **I. Viczián**: Letters of German naturalists to Domokos Teleki, the first President

of the Jena Mineralogical Society. The Abstracts are available in the IMA-2010 Abstract Volume, Acta Mineralogica-Petrographica, Abstract Series 6, published on CD and downloadable from http://www.ima2010_abstracts.pdf.

Lectures at the sessions of the History of Geology Section of HGS

These dealt with the history of natural science museology in Hungary **(T.Kecskeméti**), Mining and Geoscience in Hungarian folklore **(J.Hála**), History of Hungarian hydrogeology and water management **(I.Dobos)** (see selected publications), the history of the Hungarian bauxite exploration (Tóth Á.) etc.

P.Papp presented a lecture to the 12th Conference of Mining, Metallurgy and Geology of the Transylvanian Society of Technology and Science (EMT) held at Nagyenyed /Aiud RO, on "Nomenclature and history of advancing knowledge in the Carpathian basin realm". It was shown using the example of the Italian military engineer L.F.Marsigli's late 17th century map that it was a fundamental requirement to conserve and use the earlier nomenclatures while studying the history of cartography.

Selected publications

Dobos I. :Than Károly (1834-1908) ásványvíz-elemző módszere. (Károly Than's method of mineral water analysis.)– *Hidrológiai Közlöny*, 90/1, 60-65.

Dobos I.: *Zsigmondy Béla (1848-1916) vízépítő mérnök szoboravatása Szegeden. –(Inauguration of water engineer Béla Zsigmondy's statue at Szeged)* - Hidrológiai Közlöny, *2010. 90/2. 3-4.*

Dobos I.: A Kárpát-medencéről 1859-ben megjelent ásványvíz-monográfiák. (Mineral water monographs of the Carpathian Basin published in 1859) – *Földtani Közlöny*, 140/3. 321-326.

Dobos I., Szlabóczky Pál: Miskolc fürdő vizeinek emlékalbuma. (Memorial album of the waters of Miskolc spa.)– *Hidrológiai Tájékoztató*, 2010. 83-84.

Dobos I.: Berekfürdő kialakulását és fejlődését meghatározó karcagi kutatás. (The Karcag exploration controlling the origins and development of Berekfürdő) – *Balneológia-Gyógyfürdőügy-Gyógy-idegenforgalom*, I. 84-94.

Dobos I: A Salvus gyógyvíz kutatástörténete.(Exploration history of the Salvus medicinal water) – Internet, „Bükkszék, Salvus víz."

Hála J.– Landgraf I.:(2010).: *Magyarországi bányászmondák (Miners' legends in Hungary).* 2nd unchanged edition) Második, változatlan kiadás, Érc- és Ásványtani Múzeum Alapítvány, Rudabánya, 2010. p.124

Hála J.– Papp, P. : Ťažba ílovitej bridlice a jej využitie v Uhorsku (Exploration and utilization of clay shales. - In Slovakian -) In: KRÁĽ Jozef (szerk.): *Bridlica – čierny marmor v Strednej Európe (3-4. jún. 2009, Marianka) Zborník príspekov z odborného seminára s medzinárodnou učasťou. Spolok PERMON, Marianka - Máriavölgy, 2009*. pp. 54-57

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Ireland

It's been a quiet year in my home country, on the edge of western Europe. Recently Patrick Wyse Jackson has been commissioned to research the activities of the Irish Geological Association which was founded in 1959, with the view of publishing an account of its history in 2011.

Recent Publications

G.L Herries Davies, 'Jacques-Louis, Comte de Bournon'. *In* C.L.E. Lewis and S.J. Knell (eds), The Making of the Geological Society of London. *Geological Society, London, Special Publications* **317**, 2009, 105–113.

G.L Herries Davies, 'A History of Irish Geology'. *In* C.H. Holland and I.S. Sanders (eds), *The Geology of Ireland*. 2nd edition. Dunedin Academic Press, Edinburgh, 2009, 471–485.

P.N. Wyse Jackson, 'Servants of the Raj at play: an example of the social interactions between a geologist and an engineer in nineteenth century India', *The Compass*, 81 (1-4), 2010 (date of imprint 2008), 96–103.

P.N. Wyse Jackson, 'Irish 'Rock Stars': Valentine Ball (1843-1895)', *Earth Science Ireland*, 7, 2010, 14–15.

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Patrick Wyse Jackson, Dublin

Italy

The activities of the Italian members during 2010 mainly included participations in several international symposia and national meetings, involvement in research projects and organization of conferences or exhibitions, as well as teaching in the field of the history of the Earth sciences.

One of the main events of the year was the conclusion of a two-year national project entitled *Geological travels in the mountain areas of Northern Italy. The fieldwork in the stratigraphic localities of historic importance during the 18th century*, as part of a major research on "Galilean scientific tradition and the naturalistic experimentalism during the Early Modern Age", undertaken by the universities of Piemonte Orientale (Vercelli), Pavia, Ferrara, Milan and Insubria (Varese), with the financial support by the Italian Ministry of Education, Research and Universities. This project, coordinated by Ezio Vaccari at the University of Insubria, included also other Italian INHIGEO members, including Andrea Candela and Francesco Gerali, as well as Francesco Luzzini (University of Piemonte Orientale, Vercelli) and Libera Arena (PhD student at the University of Bari). The results of the project were presented in a workshop organized at the University of Milan on 15 October: more material about this research (including the edition of primary sources on the travels of A. Vallisneri, L. Spallanzani, C. Amoretti, P. Sangiorgio, G. Arduino, P. Spadoni) is scheduled for publication in 2011.

Andrea Candela (University of Insubria, Varese) also collaborated with local communities to promote the geo-historical heritage of Lombard Pre-Alps. He attended the INHIGEO Meeting in Spain (July 2010), with a lecture on the history of uranium in Italy during the 20th century. He also published some interesting papers about philosophy, public communication and ethics of geological sciences, especially in relation to climate change.

Luca Ciancio (University of Verona) edited the correspondence between the Paduan geologist Alberto Fortis (1741-1803) and the Florentine naturalist Giovanni Fabbroni (1752-1822). He also collaborated with local communities to promote the geo-historical heritage of the Veronese countryside. As a result of this cooperation, he published a book (*Vulcan's Secret Forge*) on the discovery of columnar basalts in the Veneto region during the 18th century. This work focuses on a research programme in geology promoted by British aristocrats such as John Stuart, Frederic Augustus Hervey and John Strange. During the 1770s, Venetian naturalists, artists and engravers were involved in a systematic survey - and depiction - of basaltine structures. Available in bilingual edition, *Vulcan's Secret Forge* can be requested form the Consorzio di Tutela Vini Soave (V. Mattielli, 11 - 37038 Soave, Verona, Italy). Ciancio was also invited by the Universities of Bologna, Trento, Padua and Rome to discuss his recent book on the cultural history of the Serapis' Temple at Pozzuoli (*Le colonne del Tempo*, Florence 2009).

Pietro Corsi (University of Oxford) continued his research on 19th century Italian geology, with particular attention on the history of geological institutions and national projects, such as the Italian Geological Survey and the geological map of Italy. Together with Ezio Vaccari, he has been involved in an ongoing research project on the unpublished papers of geologist and traveller Alberto Ferrero della Marmora (1789-1863) as well

as those of mineralogist and politician Quintino Sella (1827-1884): these papers are kept in some libraries and institutions in Biella (northern Italy). Corsi was also nominated Associate Editor of *Centaurus*, the Official Journal of the European Society for the History of Science.

Francesco Gerali (Accademia Lunigianese di Scienze "Giovanni Capellini", La Spezia) completed the reorganization and the catalogue of the scientific archive of Giovanni Capellini (1833-1922), geologist and paleontologist at the University of Bologna. Two thousands and forty-four papers are preserved in the archive: letters, manuscripts, drawings, lithographic prints and other printed materials. This documentation covers about fifty years of the scientific activity of Giovanni Capellini. Gerali also worked at the project *Geological travels in the mountains of Northern Italy,* focusing his research on Lazzaro Spallanzani (1729-1799) in the Emilian Apennines, and Paolo Spadoni (1764-1826) in the eastern side of Liguria region. At the INHIGEO Meeting in Spain (5-10 July), Gerali presented a paper on the oil researches undertaken by Giovanni Capellini in central Italy (Abruzzo region). In August he took part to the ICOHTEC meeting in Tampere, Finland, where he discussed a paper on the early Italian oil industry, focusing on the role of geology in the oil search. In October Gerali was awarded an Andrew Mellow Travel Grant to work for two months on his post doctoral research project at the History of Science Collections of the University of Oklahoma (USA).

Claudia Principe (Istituto di Geoscienze e Georisorse – CNR, Pisa) continued her researches in the history of volcanology and geo-archaeology. She also organized a series of scientific-popular conferences on the geological history of Versilia (Tuscany) between March and June at Villa Borbone in Viareggio (Pisa).

Ezio Vaccari (University of Insubria, Varese) continued his research on the history of stratigraphy in 18th-19th century Italy. In April he was invited to give a lecture on the geological studies of Giovanni Serfino Volta (1754-1842) on Mount Baldo and Lake Garda at the Academy of Agricolture, Sciences and Letters of Verona (Italy). During the summer Vaccari attended the INHIGEO Meeting in Spain, presenting the paper "Spirito Benedetto Nicolis di Robilant (1724-1801) and the «theory of mountains and mines»". In October he was invited to the National University of Ireland, Galway, where he gave a talk with the title "Making geology in the field: the role of scientific instructions in the 19th century" at the international Symposium "Scientific instructions for travellers". In November he took part to the 4th International Conference of the European Society for the History of Science in Barcelona (Spain), where he presented a paper on "Collecting and sending geological specimens between the 18th and the 19th century: a traveller's experience" (at the symposium "Moved Natural Objects – Spaces in between") and finally in December, at the international symposium on the scientist Paolo Mantegazza (1831-1910), held in Guspini (Sardinia, Italy), he gave a talk on the geological observations carried out during the travels in Sardinia by Alberto La Marmora and Paolo Mantegazza. Vaccari also continued to teach history of geological sciences within some of his courses, in particular "History of Mountains" and "History of Natural Sciences", at the University of Insubria.

Gian Battista Vai (University of Bologna) maintained his research activity in history of geology and paleontology also as Director of the Museo Geologico Giovanni Capellini in Bologna, where he organized a series of lectures ("Il Sabato del Capellini") mainly of historical interest: within this context in October he gave a talk on the heritage of Luigi Ferdinando Marsili and the contribution of the geologists to the unification of Italy. More ongoing information is available in the web site: www.museocapellini.org

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Candela A., *Environment and History: mining, natural resources and technical knowledge in the Alps between 18th and 19th century*, «Physis», (in press),

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Corsi, P.,'*Scienze e tecniche. Dalla preistoria alle piramidi', 'La Civiltà Greca: Una Scienza senza Tecnica?', 'La Civilta di Roma. Una tecnica senza scienze?'*, in E. Eco, ed., *Il Mondo Antico*, Milano, Encyclomedia Publishers, 25 pp. (forthcoming)
Corsi, P., *The politics of theory in the history of science*. In F. Ardigo, ed. *Histories of a Regional Science. Scientists and their Institutions in Parana (1940-1960)*, Editora Contexto, Sao Paulo (Brazil), 12 pp (forthcoming).
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Vaccari, E., *Eighteenth-century 'classification' of mountains in the Alpine region*, "International Geology Review", 52, n.10-12, 2010, 1009-1020.
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Ezio Vaccari, Varese

Japan

The Japanese Association for History of Geological Sciences (JAHIGEO) held three meetings in 2010. The first was held at the Civic Center of Bunkyo Ward, Tokyo, on 20 June; the second at Toyama University on 20 September; and the third, serving as the annual meeting, at the Hokutopia, Tokyo on 23 December.

The main presentations at the first meeting were "Airborne LiDAR and red relief image map" by Tatsuro CHIBA and "Doubtful interpretations and mistakes in the comments about Miyazawa Kenji's works, considered from the viewpoint of geology" by Hirokazu KATO. As Miyazawa Kenji (1896–1933) was a famous poet who studied pedology and geology in his schooldays, his works were full of geological and mineralogical terms. Kato drew attention to the terms misinterpreted by literary researchers. The second meeting formed part of the annual meeting of the Geological Society of Japan and two lectures were given: "History of the study of the Hida Zone", by Tsuneo SOHMA; and "The excavation of dinosaurs by the Fukui Prefectural Museum", by Yoichi AZUMA. Sohma stated that the Hida Zone, composed of metamorphic, granitic and migmatitic rocks, had been supposed to be the oldest rocks in Japan but recent radiometric age dating showed they were of younger Mesozoic age rather than of Paleozoic. The Fukui Museum is famous for its exhibition of dinosaur fossils found in the inner region of the central part of Honshu. Azuma was engaged in the excavation of those fossils and the foundation of the museum. At the third meeting, Itsuki SUTO gave a paper titled "To make unknown things known: microfossils as useful educational material" and Shin'ichi KIKUCHI spoke on "The progress of modern maritime maps in Japan". Suto majored in the study of diatoms, and has published a book on his study for young students. He discussed their reaction to his book.

Four meetings on the history of geosciences (*Chigakushi Kenkyu-kai*) were conducted by relatively younger members of the association at the Waseda Service Garden, Tokyo, on 27 March, 19 July, 9 October, and 19 December. In March, Naoki TAKAHASHI spoke on "Contributions of Kiyoshi KOIKE to the geology of the Boso Peninsula, Chiba Prefecture" and Toshiaki OSADA on "Miyabe Naomi, a pioneer of Japanese geodesy". In July, Takao NAKAJIN lectured on the "Early history of oceanographic work in Japan". In

October, Daisuke OKUMURA talked about "An introduction to the poetics of stones: toward a cultural study of minerals". And in December, two lectures were given: "Jimbo Kotora, who travelled through Eurasia" by Kenji HAMAZAKI and "Miyazawa Kenji's geoscientific background: Sven Hedin's expeditions to Central Asia or the Western Marches of China" by Hirokazu KATO.

Meanwhile at the annual meeting of the History of Science Society of Japan (HSSJ), held at Tokyo University of Marine Science and Technology, 29-30 May, seven lectures related to geoscience history were presented: "The geographical books, K. Kume referred to for editing '*Bei-O Kairan Jikki*,' Part 3, the volume on France and Germany" by Tomoko FUKUKAWA; "Ladies in modern geology in Japan" by Michiko YAJIMA; "Zhang Dingzhao at the Shanghai Science Institute, and spectrochemistry" by Toshifumi YATSUMIMI; "A Buddhist controversy about Western astronomical geography" by Seiji UMEBAYASHI; "Motivation toward mean-field magnetohydrodynamics: finding another approach to the geodynamo" by Hiroo MIZUNO; "A mathematician faces geology: physical geology and William Hopkins" by Toshihiro YAMADA; and "The quadrant and meridian transit instrument used by Ino Tadataka in land surveying in the Chugoku District" by Tsuko NAKAMURA.

On 23 May, at the Makuhari Messe, Chiba, historians and philosophers of science organized a session at the annual meeting of the Japan Geoscience Union (JpGU), presenting ten oral lectures and five posters. Seven lectures of the ten were historical ones: "Rethinking of the Theories of the Earth in the Seventeenth Century: Cartesian 'Invention' and the Reformation of Geography" by Toshihiro YAMADA, "On the denominations of early seismographs in Japan" by Masahiro OSAKO, "Imperial Land Survey and Geographical Survey Institute as a seat of Geodesy" by Hiroo MIZUNO, "Aspects of the role of microscopes in the history of petrology in Japan" by Michiko YAJIMA, "History and presence of the granites quarries of Inada area, Ibaraki" by Mutsuko INUI and Yuuki NAKASHI, "The Continental Drift Theory was living in the Japanese Earth Science Community before the 1950s" by Jiro TOMARI, and "Association for the Geological Collaboration in Japan in 1950-60s: Three Characteristics of the Activities" by Fumihiko TOCHINAI, The remaining three papers were philosophical ones: "Evaluating Miyashiro Akiho's philosophy of Science" by Kazuhisa TODAYAMA and Shigeo YOSHIDA, "Miyashiro's Philosophy of Science and Laudan's Reticulated Model" by Shigeyuki AOKI and Katsuya ISHII, and "Models and Scenarios in earth and planetary science" by Sei-ichiro WATANABE and Kazuhisa TODAYAMA. The posters included "Mines and thinkers of Germany" by Fuki UENO and Hitoshi HIYAGON, "Philosophy of experiment: Analyzing neutrino oscillation experiment (OPERA)" by Hidenori SUZUKI, Naotaka NAGANAWA and Taku IWATSUKI, "A scientific realism debate and geosciences" by Rei NOUCHI and Mineo KUMAZAWA, "What role can history of science play in philosophy of science?: in the case of philosophical theories of theory change in geoscience" by Ken INOUE and Shigeyuki AOKI, and "Half-Academic: Mode 2 Science and Career Path of Researchers" by Miwa KURI and Yuko MURAKAMI. This was a stimulating session to create a new perspective for the development of Japanese geosciences by the collaboration of historians, philosophers and scientists and attracted many audiences.

At the international symposium of INHIGEO in Spain (1–14 July, 2010), Toshio KUTSUKAKE, President of JAHIGEO, gave a lecture on "Sanso-Hiroku, a Japanese miner's or surveyor's manual from the Edo Period" and introduced the INHIGEO Meeting to be held in Japan in 2011.

In 2010, the JAHIGEO issued its *Bulletin*, Numbers 34 and 35 (in Japanese), and the *JAHIGEO Newsletter*, Number 12 (in English). The latter consisted of Hirokazu KATO's "Fusion on Kenji Miyazawa's literature and geology" and Michiko YAJIMA's "The role of microscope in the history of petrology in Japan". The Editorial Committee of History of Geosciences in Japan, of the Tokyo Geographical Society, published "Trends in geosciences after the Pacific War in Japan, 1945–1965, Parts 1–3", *Journal of Geography*, Vol. 117, 2008, pp. 270–291; Vol. 118, 2009, pp. 280–296; and Vol. 119, 2010, pp. 709–740 (in Japanese), giving an overview of the sciences including their international relationships, academic research agencies and societies, educational system, and land survey work.

The Administrative Committee for the INHIGEO 2011 continued to prepare for the conference and excursion in Japan. The central theme for symposium is "Visual images and geological concepts including the history of volcanology, seismology and geotectonics." The meeting, with two excursions, will be held at Aichi University in Toyohashi City, Aichi Prefecture, central Honshu, on 2–10, August, 2011. In spite of the 3/11 disaster of the mega-tsunami caused by a huge earthquake, we, the Japanese INHIGEO members, are doing our utmost to make the meeting a success and we are confident that it will be. We extend our warm welcome to all INHIGEO members to attend the INHIGEO meeting in Japan in 2011.

Yasumoto SUZUKI, Ichikawa
Michiko YAJIMA, Tokyo
Toshihiro YAMADA, Chiba

Latvia

1. Past and future meetings

Some talks relating to the main aim of INHIGEO were provided during the annual scientific conference of University of Latvia held at the beginning in February 2010 in Riga. Short reports on the history of studies of Devonian vertebrates from the Baltic area was included in the contribution to the 12th Baltic Conference on Intellectual Co-operation "Science and Society", which took place in Vilnius, 4-5 November 2010.

The Organising Committee and Scientific Committee of the 8th Baltic Stratigraphical Conference were organized at the end of 2010, and decided that the next conference will be held in Riga, Latvia, at the end of August 2011. The scientific sessions will be organized on 29-30 August and a field excursion to the most attractive sites of the Devonian and Quaternary rocks in Vidzeme including the first Geopark of Latvia is proposed for 31 August – 1 September 2011. We expect some contributions will deal with the history of stratigraphy and regional geological studies in the Baltic area.

2. Presentations in meetings in 2010

Lukševičs E. 2010. Modern vertebrate palaeontology in the Baltic States. *In*: 12th Baltic Conference on Intellectual Co-operation "Science and Society", Vilnius, 4-5 November 2010. Lithuanian Academy of Science, Vilnius.

Kukela A., Segliņš V. 2010. Būvakmens senās valsts sakrālās būvēs Ēģiptē [Building stones in the sacral constructions of the Ancient Egypt]. Latvijas Universitātes 68. zinātniskā konference. Ģeogrāfija. Ģeoloģija. Vides zinātne. Referātu tēzes. LU Akadēmiskais apgāds, Rīga. Pp. 318-319.

E. Lukševičs, Riga

Lithuania

The Lithuanian INHIGEO group consists of two members, Prof. Dr. Habil. Algimantas Grigelis and Dr. Gailė Žalūdienė. The group is intending to propose new members for elections at INHIGEO Annual meeting in Brisbane, Australia, 2012.

During 2007–2010 the international Czech–Lithuanian–Polish group developed the "Staszic 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". This project resulted from the extended paper "Stanisław Staszic' – an early surveyor of the geology of Central and Eastern Europe", that was published in *Annals of Science*, Toronto, Canada, 2011.

Prof. Grigelis took part in the annual conference SCIENTIA ET HISTORIA held in Vilnius, 26 April 2010, where he gave a lecture „Sketch on the Green Alaska: outline of nature and history".

Academician Grigelis, Chairman of the Section on Geosciences of the Lithuanian Academy of Sciences, represents the Academy of Sciences in the BONUS Program *'Science for a better future of the Baltic Sea region'*, declared by the European Union. Annual BONUS Forum held in Tallinn, Estonia, 12 October 2010 [www.bonusportal.org].

Prof. Grigelis is Editor and Publisher of *BALTICA: International Journal on Earth Sciences of the circum-Baltic States* [indexed in Thomson Reuters ISI Web of Science, Impact Factor 0.529]. Two issues of BALTICA are published in 2010.

Prof. Grigelis in 2010 completed an academic monograph *'Academician Vytautas Gudelis'* devoted to science and life of famous Lithuanian geographer and geologist; book that was published in April 2011 (368 pp., il.; in Lithuanian).

Annual meeting of the Lithuanian Ignotas Domeika Society, led by Prof. Grigelis, was cancelled in 2010 due to limited member interest.

Prof. Grigelis and Dr. L. Ž. Gelumbauskaitė participated in the annual INHIGEO Conference "History of Research in Mineral Resources", Spain, Madrid-Almadén, 4–11 July 2010. The event in Madrid and geological excursions to Iberian Pyritic Belt left great impressions.

Prof. Grigelis and Dr. Gelumbauskaitė took part in the 10th International Marine Geology Conference "The Baltic Sea Geology–10", St. Petersburg, 24 –27 August 2010, where Prof. Grigelis gave presentation on the history of bedrock geology of the Central Baltic Sea.

Dr. Gailė Žalūdienė, Secretary of the Lithuanian Ignotas Domeika Society, advised she was inactive in 2010 due to other work commitments.

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Algimantas Grigelis, Vilnius

Mexico

Last year was Mexico's Bicentennial Independence Anniversary, the Centennial Anniversary of its Revolution, and our National University celebrated also its Centennial Birthday. All academic institutions engaged in symposia, conferences and meetings, where historical matters were discussed, including science. Historical, artistic and scientific exhibitions were set, in order to show national accomplishments along its independent history. Among these activities, an exhibition of geological cartography was organized by Lucero Morelos, Dante Moran, Luis Espinosa, Enrique Gonzalez, among others.

Continuing their efforts to locate Mexican scholars or graduate students working on the history of Geology, Azuela and Morelos have congregated a small but interesting group of scholars that will be proposed as INHIGEO members next year. These are their names:

Zoltan de Cserna. Ph. D. (Geology), Columbia University, USA, 1955. Emeritus Professor, and founding headmaster of the Institute of Geology, UNAM.

Dante Morán**.** Ph. D. (Geophysics), UNAM, 1991. Teacher of Historical Geology and researcher at the Geochemistry Department, Institute of Geology, UNAM.

Luis Espinosa**.** Paleontologist. Principal of the Geological Museum, UNAM.

Enrique Gonzalez**.** M. Sc. (Geology), UNAM. Researcher at the Department of Regional Geology, Institute of Geology , UNAM.

Omar Escamilla**.** Physicist. Head of the Historical Archives in the Ancient School of Mines, UNAM.

José Lugo. Ph. D. (Geomorphology), State University of Moscow, 1976. Researcher at the Physical Geography Department, Institute of Geography, UNAM.

Luis Sánchez-Graillet. M. Sc. (Philosophy of Science), Institute of Philosophy, UNAM, 2007.

All of them have been informed about INHIGEO's purposes and are enthusiastic about their nomination.

During 2010 the following papers relating to the history of geology were presented at scientific conferences:

Azuela, Luz Fernanda, "Las ciencias de la Tierra en el siglo XIX: profesionalización e institucionalización" [Earth Sciences in the Nineteenth Century: Professionalization and Institutionalization], Jornadas Académicas *Desarrollo y estructuración de disciplinas científicas en México (siglos XIX y XX)*, Instituto de Investigaciones Sociales, UNAM, May 2010.

Azuela, Luz Fernanda, "El Museo Público de Historia Natural, Arqueología e Historia (1864-1867)" [The Mexican Public Museum of Natural History, Archeology and History (1864-1867)], en la Mesa Redonda "Coleccionismo natural: Bicentenario-centenario. Reflexiones", Seminario de Investigación Museológica, Universum, Museo de las Ciencias, September 2010.

Azuela, Luz Fernanda, "El papel de las ciencias en el proyecto de la Universidad de 1910" [Science Role in the National University Project (1910)], Foro "Cien años del *alma mater* de México, la Universidad Nacional", Instituto Nacional de Estudios Históricos de las Revoluciones de México, September 2010.

During the *VI International Meeting on Topics from Jalisco* (March 20-22), Lucero Morelos presented the paper "The geology of Jalisco in the works of Mariano Bárcena".

The 53th International Congress of Americanists was held in Mexico City, 23-25 July. Azuela read a paper on "Henri Galeotti's naturalist travel to Mexico in the Nineteenth Century"

During the First Meeting of Students of History and Philosophy of Science in México (August 12-13), Lucero Morelos and Luis Sánchez-Graillet presented their joint work "An Approach to Scientific and Technical Press on Mining, in Mexico and the United States (1870-1904)". Sánchez-Graillet also presented "*Chapopotli*: Methodology for the study of a Mexican prehispanic material in documental and archeological sources".

On 28-30 October, the National Society of Geography and Statistics carried out the *Sixth Symposium on Geographical Teaching in Mexico*, in Chihuahua. During two sessions on the History of Geography, Azuela and Sabás read a paper about the diffusion of Geography, Geology and Natural History, for public instruction in nineteenth century magazines. Morelos read a paper concerning popularization of geography in the works of Mexican naturalist José Joaquín Arriaga.

On 23 November, the Institute of Geography held a Symposium on Charles Darwin, organized by José Lugo and Luz Azuela. Participants centered their attention on *The Origin of Species*, standing out Lugo's study regarding Darwin's contributions to geology.

Azuela was invited by the Cuban Society for the History of Science and Technology (2 December), where she read a lecture on the subject of "Science in Mexican Culture in the Nineteenth Century". She was also the guest speaker on the Seminar on the History of Science in the Institute for the Study of the History of the National University and General Education, UNAM, where she spoke about Scientific Societies in Nineteenth Century Mexico, (29 August).

Morelos delivered the manuscript of her first book, that will appear in 2010 in Spanish, under a title that could be translated as *Life and works of Antonio del Castillo in the Process of Institutionalization of Earth Sciences in Mexico.*

Azuela's research program on *Geography and Natural History in Mexico*, will publish its first book in 2011, including some aspects of geographical and geological research in the nineteenth century.

Recent Publications

Azuela, Luz Fernanda, 2010. "La geología en México en el siglo XIX: Entre las aplicaciones prácticas y la investigación básica", *Revista Geológica de América Central*, Escuela Centroamericana de Geología, número 41, Costa Rica, p. 99-110. [v. t. http://www.geologia.ucr.ac.cr/revista-geol.htm]

Azuela, Luz Fernanda, 2010. "The Emergence of Geology in Nineteenth Century Mexico", *INHIGEO Newsletter*, no. 42, May 2010, p. 28-32, Adelaide, Sydney, 2010. [v. t. http://www.inhigeo.org/newsletters]

Azuela, Luz Fernanda, 2010. "El régimen de cientificidad en las publicaciones del último tercio del siglo XIX" [Scientific Cannon in Mexican Peridicals of the Late Nineteenth Century], en Celina Lértora (coord.), *Geografía e Historia Natural: Hacia una historia comparada. Estudio desde Argentina, México, Costa Rica y Paraguay*, volume 3, Ediciones FEPAI, Buenos Aires, p. 103-118.

Azuela, Luz Fernanda, 2010. "La ciencia positivista en el siglo XIX mexicano" [Positivist Science in Nineteenth Century Mexico], en Rosaura Ruiz, Arturo Argueta y Graciela Zamudio (coordinadores), *Otras armas para la Independencia y la Revolución. Ciencias y Humanidades en México*, Fondo de Cultura Económica-UNAM, México, p. 172-188. (ISBN 978-607-16-0479-8.

Morelos, Lucero, 2010. "México: Tierra de volcanes. Los estudios vulcanológicos y sismológicos en la obra de Mariano Bárcena" [Mexico: land of volcanoes. Mariano Bárcena's Seismological and Volcanological Studies], pp. 249-263, en Jorge Alberto Trujillo Bretón, Federico de la Torre y Rosa Noemí Moreno Ramos (coord.), *Entre regiones: historia, sociedad y cultura*, Guadalajara, Universidad de Guadalajara. (ISBN 978 607 450 292 3)

Dr. Luz F. Azuela
México, D. F.

New Zealand

Last year saw the amalgamation of the Geological Society of New Zealand and the New Zealand Geophysical Society into the Geoscience Society of New Zealand. With a combined membership of nearly 1000 the new society will strengthen the already strong links between many of the earth science disciplines in this country. The Historical Studies Group comes within the ambient of this new organisation and two issues, under the editorship of Heather Nicholson (docroc3@gmail.com) were published during the year. **Simon Nathan** (s.nathan@xtra.co.nz) remains convenor of the group. Members of the group and others interested in the history of geology met in Auckland during the inaugural annual conference of the Geoscience Society in late November.

At the conference two papers dealing with aspects of interest to historians of geology were presented. One, by Kim Baker-Wilson, dealt with the New Zealand Tunnelling Company in France during the First World War and the other by **Simon Nathan** concerned the early 20th century mining photographer Joseph Divis (1885-1906). The latter was based on Simon's book *Through the Eyes of a Miner* (see review in this Newsletter). Simon has now picked up the reins again with respect to his biography of Sir James Hector (1834-1907). **Rodney Grapes**, now retired from teaching in Seoul, is back in New Zealand and continues his research into New Zealand's large historic earthquakes. During the year he had two papers published: "Charles Lyell and the great 1855 earthquake in New Zealand: first recognition of active fault tectonics" *Geological Society of London* 167, 1-13 (co-authored with Gaye Downes) and "Alexander McKay and the Awatere Fault, New Zealand: ground rupturing and large-scale horizontal displacement" *New Zealand Journal of Geology and Geophysics* 52, 349-365.

Mike Johnston and Sascha Nolden have finished their book on the travels of Ferdinand von Hochstetter in New Zealand in 1858-1859 and publication is planned for early in 2011. They have also, with Leonore Hoke, completed a translation, transcription and annotation of Hochstetter's fifth diary that relates to the geologist's stay in Nelson in September 1859. This will be published by the Geoscience Society.

Alan Mason who did more than anyone in New Zealand to foster research into the history of geology in this country has now retired. Alan, an emeritus member of INHIGEO, was instrumental in founding the Historical Studies Group and was its convenor as well as editor of its newsletter for many years. We wish him well.

Mike Johnston, Nelson

Papua New Guinea

A small window was opened upon the rich history of geological investigations in Papua New Guinea and the Indonesian province of Papua at the Australian Earth Sciences Convention in Canberra in July 2010, in a paper presented by Hugh Davies and Chris Pigram. The paper was a late submission that was accepted only by the grace of the Convention Coordinator, Brad Pillans. Because it was late the abstract did not appear in the Convention Abstracts volume; however, it did appear in the Australian *Earth Sciences History Group Newsletter* No. 41 of December 2010. The newsletter also included a video recording of the presentation on a CD, together with other talks. The session was initiated by Larry Harrington and coordinated by Alistair Stewart, and focussed on the systematic mapping of the Australian continent. The island of New Guinea, as Chris Pigram was only too pleased to point out, is a part of the continent of Australia. A valuable source for the PNG part of the talk was an account of the geological mapping of PNG by John Bain (1976).

As part of the flurry of email correspondence involved in the preparation of the paper by Pigram and Davies, David Trail was persuaded to record his recollections of the geological mapping of Indonesian Papua (then Irian Jaya) in 1978-82 (Trail, 2011). This was a joint initiative of the Indonesian Geological Research and Development Centre and the Australian Bureau of Mineral Resources and was funded as part of the Australian aid program. David was deputy Project Leader on the BMR side. Parts of the draft read like an adventure story.

A more complete historical account of the geological mapping of Papua New Guinea and Indonesian Papua is a project that one can hope will materialise in the next few years before those who particpted "start to fall off their rocking chairs".

Another small window on to the early geological investigations of Indonesian Papua was opened in 2010 when the search for the possible source of a jadeite chisel led to an account of similar material in an unpublished paper by C.E.A. Wichmann of the University of Utrecht. The chisel was uncovered in 2009 in an archaeological dig on Emirau Island (00 40' S, 149 E) and predominantly comprised an unusual Fe-rich Na-Al jadeite. Wichmann described a rock of similar composition collected from near Lake Sentani, inland from Jayapura, and sent to him in 1891 by missionary, G.L. Bink. Wichmann's unpublished manuscript was discovered recently by Diederik Visser and published with an introducion in 2004 (Visser, 2004). The investigation of the two objects continues using modern analytical methods (Harlow et al., 2011).

In October 2010 Hugh Davies spoke to a gathering of PNG geologists on the history of geological education in the University of Papua New Guinea. The occasion was the first Corporate Dinner of the Earth Sciences Division of the University. The University was established in 1966 and Cliff Ollier appointed as the first member of the geological staff in mid-1967. Warren Manser also was recruited in 1967 and continued until 1988. In 1973 geology was established as a separate department and in 1976 Peter Nixon was appointed as the foundation Professor on a 3-year secondment from the U.K. In 1983 Kent Brooks was appointed on a similar arrangement. Hugh Davies was appointed in 1989.

Bain, J.H.C., 1976, BMR's regional mapping and metal search program in Papua New Guinea 1962-1974. *Australian Mining*, March 1976, p.13-26.

Davies, H.L., 2010, A short history of the Geology Department and Earth Sciences Division of UPNG (unpublished manuscript) 6p.

Davies, Hugh, and Pigram, Chris, 2010, Papua New Guinea and Indonesian Papua 1:250,000-scale geological mapping – tales from the past. *Earth Sciences History Group Newsletter* 41 of December 2010, p. 24-25, and video on accompanying CD.

Harlow, G.E, Summerhayes, G.R., and Davies, H.L., 2011, A jade gouge from Emirau island, Papua New Guinea (Early Lapita context: 3300 BP): A unique jadeitite. *European Journal of Mineralogy* (in press)

Trail, D.S., 2011, A personal account of the geological mapping of Irian Jaya by Indonesian and Australian government geologists of the joint GRDC-BMR team in 1978-82 (unpublished manuscript) 37p.

Visser, D., 2004. An unpublished manuscript by C.E.A. Wichmann. In Visser, R.P.W., and Touret, J.L.R. (eds), *Dutch Pioneers of the Earth Sciences*, Chapter XI, 177-195.

Hugh Davies, Port Moresby

Poland

There are rather few Polish geologists professionally active in the history of geological sciences. They are employed in the Museum of the Earth and in the Institute of the History of Sciences of the Polish Academy of Sciences in Warsaw. Besides, one of them is working in the historical section of the State Geological Institute and another in the Pedagogic University in Cracow. It is a pity that because of financial and personal problems the Section of History of Geological Sciences and the Archive in the Museum of the Earth were recently closed. However, the studies on the history of geosciences were not slowed down because of increasing activity of collectors; particularly in the field of history of geological cartography (Piotr Krzywiec, Stanislaw Wolkowicz) who, as INHIGEO members are cooperating in a international grant on the history of geological cartography in Central Europe lead by Czech historians of geosciences. The same refers to the ongoing study of old collections of amber, first of all in Poland, Lithuania, Russia and Germany.

Altogether about 50 papers on the history of geosciences were published, first of all in such periodicals as Quarterly of the History of Science and Technics, Analecta: Studies on the History of Science and Geological Review, but also in those edited by some institutions including the State Geological Institute, Stanislaw Staszic Museum in Pila, Museum of Agriculture in Ciechanowiec and Polish Academy of Arts and Sciences in Cracow.

The second volume of the monograph "Amber – ideas and opinions" (published in Gdansk in Polish) contains several historical papers:

- Joanna Popiolek – On the history of studies and practical use of amber.
- Antoni R. Chodynski – Amber products in the Törnhielm Kunstkamer collection of 1739
- Ewa Swidnicka & Jacek Szwedo – Amber collection of Robert Goeppert in the Department of Palaeozology of the Zoological Institute of the Wroclaw University.

This volume was edited under scientific coordination of the Department of Amber of the Museum of the Earth in Warsaw lead by Prof. Barbara Kosmowska-Ceranowicz (www.amber.com.pl).

The historical problems of geology and mining in the Upper Silesian coal basin in 19th century are being studied by Andrzej J. Wojcik. His researches are devoted mainly to archival geological – mining maps of this region and the preparation of an atlas. Moreover, he is also active in the protection of ancient monuments of techniques and of geological museums.

Another INHIGEO member Radoslaw Tarkowski, in cooperation with Piotr Daszkiewqicz (Museum of Natural History in Paris) has gained a ministerial grant for the studies on Polish-Lithuanian-French research works on the history of geology at the Cracow University during the Enlightenment period. Their papers, published in France and Poland, are dealing with the scientific activity of Prof. Jan P. Jaskiewicz and the investigations of French physician Jean Etienne Guettard in 18th century in France and Poland.

For many years the Stanislaw Staszic Museum in Pila has been the center of studies on many sided scientific and social activity of this author of the geological monograph and map of Poland, published in 1815.

In the 7th volume of the periodical "Staszic Fascicules" Zbigniew Wojcik has described the geological collection of the Warsaw Society of Friends of Science (1809–1831) and Marian Skrzypek published a paper entitled:"Stanislaw Staszic – Neptunist, Plutonist, Volcanist or Buffonist?"

Thanks to the efforts of Honorary Senior INHIGEO member, Stanislaw Czarniecki, the school museums in Jaroslawiec and Turobin near Lublin were established to pay homage to Stanislaw Staszic and his achievements in this region.

The Museum of Agriculture in Ciechanowiec is popularizing the achievements of its patron priest Krzysztof Kluk (1739 – 1796), author of the important pioneer geologic-economic monograph *"Rzeczy kopalnych osobliwie zdatniejszych szukanie, poznanie i zazycie"* (Exploration, investigation and application of particularly useful minerals), edited in the years 1781 – 1782. In the recent 5th volume of "Ciechanowiec Museum Yearbook" there are several historical papers including:

- Jan Parafiniuk – Priest Krzysztof Kluk–Precursor of economic geology in Poland;
- Ewa Lewandowska & Zbigniew Wojcik–The problem of water resources in the Priest Krzysztof Kluk monograph;
- Henryk Jankowski & Ignacy Suchacki–Comments on Priest Krzysztof Kluk monograph.

The main place of scientfic discussions in Poland is the Commission on the History of Science of the Polish Academy of Arts and Sciences in Cracow. In the last 10th volume of its "*Prace Historii Nauki PAU*" (Transactions of the Commission of History of Science PAU) the following papers are worthy of mention:

- Jan Staszel & Zbigniew Wojcik – Relations of Julian Talko – Hryncewicz with the Polish Academy of Arts and Sciences and the Jagellonian University in Cracow (J. Talko Hryncewicz was an eminent anthropologist but was also carrying out geological investigations in Siberia at the turn of 19th and 20th century)
- Andrzej J. Wojcik - Forgotten maps of mining and metallurgical centers of the Polish Kingdom and their author Maksymilian Strasz.

This volume also contains the papers written by other Polish INHIGEO members:

- Wojciech Narębski – Civil and military education in the Polish Armed Forces in Middle East and Italy;
- Stefan W. Alexandrowicz – Jan Sarnicki – geographer, Pope's teacher and author of block-diagrams and plastic maps;
- Radoslaw Tarkowski, Piotr Daszkiewicz & Massary de Jean-Christophe – Konstanty Jelski (1837 – 1896) and its activity in natural sciences, particularly in French Guyana.

In 2010 the 7th volume of the series "Archival materials on the history of geosciences in the Archive of the Museum of the Earth" (in Polish) was published devoted to the heritage and output of eminent petrographer and historian of geosciences Stanislaw Malkowski (1889 - 1962).

Zbigniew Wojcik (Warsaw) &
Wojciech Narebski (Cracow)

Portugal

Publications

Chapters in Books

Carneiro, Ana and Mota, Teresa Salomé, 'Breve Resenha Histórica da Geologia em Portugal,' *in* J.M. Cotelo Neiva, A. Ribeiro, L. Mendes Victor, F. Noronha e M. Magalhães Ramalho (eds.), *Ciências Geológicas: Ensino, Investigação e sua História*. Braga, Associação Portuguesa de Geólogos/Sociedade Geológica de Portugal, 2010, vol. I, pp. 517-528.

Praia, J.F., Marques, L. and Soares de Andrade, A., 'Teoria-Observação: Contributos para o ensino da Geologia em Portugal,' *in* J.M. Cotelo Neiva, A. Ribeiro, L. Mendes Victor, F. Noronha e M. Magalhães Ramalho (eds.), *Ciências Geológicas: Ensino, Investigação e sua História*. Braga, Associação Portuguesa de Geólogos/Sociedade Geológica de Portugal, 2010, vol. I, pp. 641-650.

Soares de Andrade, A. and Pinto, Manuel S., 'Geotectónica e granitos portugueses: o pioneirismo dos anos 40,' in *Livro de Homenagem ao Prof. Manuel Maria Godinho*, Coimbra, 2010, p.87-102.

_____ 'A geologia de Cabo Verde antes e depois da "Missão Geológica,"' *in* J.M. Cotelo Neiva, A. Ribeiro, L. Mendes Victor, F. Noronha e M. Magalhães Ramalho (eds.), *Ciências Geológicas: Ensino, Investigação e sua História*. Braga, Associação Portuguesa de Geólogos/Sociedade Geológica de Portugal, 2010, Vol. III, p. 97-104.

Periodicals

Amador, Filomena, 'Contributos da História da Geologia para a compreensão da evolução das concepções sobre a natureza, num curso de licenciatura em Ciências do Ambiente,' *Revista Electrónica de Ciências da Terra – Geosciences On-line Journal*, 15 (2) (2010), 4 pp.
http://metododirecto.pt/CNG2010/index.php/vol/article/view/

Mota, Teresa Salomé, 'Os Serviços Geológicos de Portugal: uma escola prática para geólogos,' *Revista Electrónica de Ciências da Terra – Geosciences On-line Journal*, 15 (1) (2010), 4pp.
http://metododirecto.pt/CNG2010/index.php/vol/article/view/

Pinto, Manuel S. and Soares de Andrade, A., 'Um compêndio de geologia pouco conhecido: "A Terra Apontamentos de Geologia Agricola"' *Revista Electrónica de Ciências da Terra – Geosciences On-line Journal*, 15 (3) (2010), 4 pp.

Simões, Ana, Carneiro, Ana, and Diogo, Maria Paula, 'Riding the wave to reach the masses: natural events in early twentieth-century Portuguese daily press,' *Science & Education*, (2010) (forthcoming, but already published online since 12 September 2010, http://www.springerlink.com/content/c28g256033501304/)

Proceedings

Amador, Filomena, 'As representações do tempo nas Ciências da Terra: uma abordagem histórico-cognitiva com vista à transposição didáctica,' Caballero, C., Moreira, M.A., Meneses, J. (coord.), *Actas do III Encuentro Iberoamericano sobre Investigación en Enseñanza de las Ciencias*, Burgos/Spain, Universidad de Burgos, 2010, pp. 63-87.
ISBN 978-84-92681-17-4

_____ 'History of Geology – a Distance Learning Experience'. Accepted for publication in the Proceedings of the *International Commission on the History of Geological Sciences (INHIGEO) Annual Conference, History of Research in Mineral Resources, Book of Abstracts*, Madrid-Almadén, 2010.

Catalá-Gorgues, Jesus and Carneiro, Ana, 'El Projecte de la Carta Geològica d'Europa i la Participació dels Serveis Geològics d'Espanya i Portugal,' *Actes d'Història de la Ciència i de la Tècnica*, 3, (2010), pp. 11-22.

Presentations at meetings/Talks

Carneiro, Ana, 'Marriages of Convenience: Seisms and Utopias,' *Applied History, Climates and Seisms*, Seminar promoted by the Centro de História e Filosofia da Ciência, Universidade de Évora/Portugal, 8 July 2010.

_____ and Catalá-Gorgues, Jesús, 'The Relationship of Spanish and Portuguese Geologists in the Nineteenth Century,' *International Commission on the History of Geological Sciences (INHIGEO) Annual Conference, History of Research in Mineral Resources*, Madrid-Almadén, 1-14 July, 2010, *Book of Abstracts*, p. 33.

Mota, Teresa Salomé, 'From failure to achievement: the relation between the Portuguese Geological Survey (PGS) and the Portuguese mining sector during the 20th century' *International Commission on the History of Geological Sciences (INHIGEO) Annual Conference, History of Research in Mineral Resources*, Madrid-Almadén, 1-14 July, 2010, *Book of Abstracts*, p. 34.

_____ 'Os Serviços Geológicos de Portugal: uma escola prática para geólogos', *VIII Congresso Nacional de Geologia*, Braga/Portugal, 6-9 July, 2010.

Pinto, Manuel S., 'Geology and Mineral Resources in Portugal, a Recent Marriage'. Invited Talk, *International Commission on the History of Geological Sciences (INHIGEO) Annual Conference, History of Research in Mineral Resources*, Madrid-Almadén, 2010.

_____ 'José Álvares Maciel (1761-1804) e a Fábrica de Ferro de Angola', *Scientiarum Historia III*, Rio de Janeiro/Brazil, 13-15 October 2010.

_____ 'Três Brasileiros e Três Fábricas de Ferro em Angola, Brasil e Portugal (séculos XVIII e XIX),' Invited Talk, Centro Interunidade de História da Ciência da Universidade de São Paulo, São Paulo/Brazil, 19 October, 2010.

_____'The Jesuit Le Chéron d'Incarville and his Catalogue of «Objects d'Histoire Naturelle» in Use in China', *4th International Conference of the European Society for the History of Science*, Barcelona, 18-10 November, 2010, *Book of Abstracts*, p. 42.

_____ and Wang, B., Golvers, N., Loureiro, R. M, Pinho, R., Plenary Lecture, 'The Jesuit João de Loureiro (1717-1791) and the Medicinal Plants of China,' *12th International Conference on History of Science in China*, Beijing, 26 -30 June, 2010, *Book of Abstracts*, p. 10.

_____ and Schweizer, Claudia, Callapez, Pedro, 'Two 19th century German catalogues of mineral collections in the Museu de História Natural of the Universidade de Coimbra,' *International Commission on the History of Geological Sciences (INHIGEO) Annual Conference*, *History of Research in Mineral Resources*, Madrid-Almadén, 1-14 July, 2010, *Book of Abstracts*, p. 32.

Soares de Andrade, A., 'Cabo Verde revisitado,' *X Congresso de Geoquímica dos Países de Língua Portuguesa e XVI Semana de Geoquímica*, Memória nº 14, FCUP, 2010, p. 251.

_____ 'Graciosa: geologia e turismo. Uma perspectiva histórica,'.
Santa Cruz da Graciosa (Azores), July 2010.

Miscellanea: Archives
In the context of the Project funded by Foundation for Science and Technology (FCT-MCTES), *The Portuguese Geological Survey (1848-1970): History and Scientific Heritage* PTDC/HCT/65345/2006, 2008-2011, up to the end of February 2011, 5,938 manuscripts belonging to the Historical Archive of LNEG (National Laboratory of Energy and Geology) were catalogued, digitized and properly accommodated; 1,942 maps were catalogued and accommodated, and 180 specimens of iconographic material were accommodated and began to be catalogued. These documents can be accessed in http://geobiblio.ineti.pt/psqsimp.asp AHGM- manuscripts; CARTANT- Maps.

Russia

1. Meetings

1.1. International meetings

The A.P. Karpinsky Russian Geological Research Institute (*VSEGEI*) in Saint-Petersburg held an international session to commemorate the first elected president of the Russian Academy of Sciences, Alexander P. Karpinsky (1847-1936). I.G. Malakhova has participated in this meeting and the ceremony of the monument opening.

Opening Ceremony for the A.P. Karpinsky monument

Z. Bessudnova, T. Ivanova, I. Malakhova, G. Trifonov have participated in the technical and excursion program of the INHIGEO International Symposium 'History of Research in Mineral Resources' (Madrid-Almadén-Iberian Pyritic Belt, Spain, 1 – 14 July 2010). Z. Bessudnova, T. Ivanova, I. Malakhova were among the speakers at the meeting.

1.2. Country meetings

N. Yushkin has revised some aspects of the history of mineralogy and presented these results at the panel session of the XI Congress of the Russian Mineralogical Society (Saint-Petersburg). In Syktyvkar, N. Yushkin has organized and took part in two conferences: 'Vasily Mikhailovich Severgin – first Mineralogist on the staff of the Russian Academy of Sciences' to commemorate his 245th birthday, and 'Vera Alexandrovna Varsanofieva' (the 120th commemoration).

Papers by Z. Bessudnova & I. Malakhova were included in the program of the 2010 Conference of the Institute of the History of Science & Technology RAS (Moscow). Z. Bessudnova devoted her presentation to Johann Freiesleben (1774-1846) and his collection in the Vernadsky State Geological Museum, RAS. I. Malakhova reported results of the INHIGEO meeting in Spain.

2. Publications

The year 2010 included the 65th Victory Day in Russia. Three volumes of the journal 'History of the Earth Sciences' were devoted to veterans of the Great Patriotic War (1941-1945). There are memoirs and articles on members of the Russian Academy of Sciences. Historians of geosciences are among them – Vladimir V. Tikhomirov, Eugene E. Milanovsky, Victor. E. Khain.

Some articles were written by Z. Bessudnova, G. Khomizuri, I. Malakhova, A. Ryabukhin in the Journal "History of Earth Sciences"
(See: http://www.ifz.ru/journals/hes/english_version/index.htm).

The book 'The Princes Gagarin mineral collection (19-20th centuries)' (Moscow: Mineralogical Almanac publishing, 2010 – Russian and English versions) was published by E. Minina.

N. Yushkin has prepared articles about Princess E. Dashkova, Academicians V. Severgin and D. Rundquist, V. Vityazeva, K. Yanulova, etc.

The volume of the annual conference of the Institute of the History of Science & Technology RAS 2009 was issued in 2010 with articles by:

Bessudnova Z. 'Head of the Mineral Cabinet of the Moscow University Michael A. Tolstopyatov (1835-1890) and his works'
Malakhova I. Hundred years of the geological discovery' (Charles D. Walcott)

3. Other activities

Under a project of the Russian Academy of Sciences entitled 'Virtual Library: Scientific Heritage of Russia' the Department for the History of Geology of the Vernadsky State Geological Museum has prepared articles about 23 geoscientists, 34 publications, and 6 collections of the Museum (paleontological & mineralogical).

About 300 original books and papers are available now at http://nasledie.enip.ras.ru/index.html. Some original papers are in French or German, as follows:

Pavlow, A.P. Le Crétacé inférieur de la Russie et sa faune. Première partie. Aperçu historique des recherches, suivi d'indications sur la distribution des mers et des terres aux différentes époques. Seconde partie. Cephalopodes du Néocomien supérieur du type de Simbirsk // Nouv. Mém. Soc. Imp. des Natur. de Moscou. 1901. Liv. 3. T. XVI. 87 p.: 8 tab.

Pander, Christian H. Monographie der Fossilen Fische des Silurischen Systems der russisch-baltischen Gouvernements. - St. Petersburg: Buchdruckerei der Kaiser. Akad. der Wissenschaften, 1856. X, 91 S.: 7 tab. (Geognostische Beschreibung der russisch-baltischen Gouvernements).

Toll, E. Die fossilien Eislager und ihre Beziehungen zu den Mammuthleichen Mém.l'acad.Imp.des scien. de St.-Peter. 1895. VII sér. T. XLII. N 13. 88 S.

Trautschold, H. Die Kalkbrüche von Mjatschkowa. Eine Monographie des Oberen Bergkalks // Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou. 1876. T. XIII. - P. 327-474: 7 tab.

Irena G. Malakhova, Moscow

Spain

Many diversified activities can be reported from the Spanish group on the History of Geology.

The new President of the Commission on History of Geology in Spain (Spanish Society of Geology) was recently elected. She is the Dr. Miss Isabel Rábano, Director of the "Geominero", the Geological Museum of the Geological Institute of Spain. Dr. Luis Felipe Mazariego is Vice President of SEDPGYM (Sociedad Española para la Defensa del Patrimonio Geológico y Minero), and Director of the news bulletin *De Re Metallica*. He was also co-organizer of INHIGEO Meeting in Spain during 2010, where he presented two papers: "Information about petroleum in America prior to nineteenth century". Authors: L. Mazadiego; O. Puche; J. Ortiz. "Petroleum in the Spanish Iberian Peninsula". Authors: O. Puche; L. Mazadiego; J. Ortiz.

Professor Dr. Antonio Gómez Ortiz and his group (Faculty of Geography, Barcelona University), during the year 2010 continue the research about the history of glacial knowledge in "Sierra Nevada" mountains, Southern Spain. They focused the work on the documentation preserved of the time of the travellers and scientists visiting the "Sierra" in the centuries XVII-XVIII. The information collected is very interesting and valuable, showing the evolution of geomorphological ideas and concepts in this time.

Dr. Miss Carmina Virgili, during 2010 continued the research about the history of geology in Catalunya during the centuries XIX and XX. As a result, she has published a paper about "Norbert Font i Sagué, geòleg", published in the journal "Montagna" of the Centre Excursionista de Catalunya (number 890, august 2010). She has also assisted at the meetings of the Catalan Society of History of Geology.

Professor Cándido M. García Cruz (Canary Islands) prepared a monographic number of the "Enseñanza de las Ciencias de la Tierra" (Herat Sciences Teaching) about The First Centenarian of the Continental Drift, with a Spanish traslation of the three first papers published by Wegener in Pettermans Geographische Mitteilumgen.

Research Projects

1.-"El patrimonio histórico minero de Andalucía" (The mining heritage in Andalousie), supported by the Consejería de Innovación, Ciencia y Empresa de la Junta de Andalucía (Programa proyectos de excelencia en equipos de investigación). (Proyecto P06-HUM-02159).Director of the group*:* HURTADO PÉREZ, V.M.

2.- "Estrategias de monitorización de CO_2 y otros gases en los estudios de análogos naturales". Director of the group: MAZADIEGO MARTÍNEZ, L.F.

Publications

GÓMEZ ORTIZ, A.; OLIVA FRANGANILLO, M. (2010). Evidencias morfológicas y ambientales de la Pequeña Edad del Hielo en las cumbres de Sierra Nevada: la aportación de los libros de época (siglos XVII-XIX). *Avances de la Geomorfología en España 2008-2010.* Sociedad Española de Geomorfología-Centre Tecnològic Forestal de Catalunya. Barcelona, pp. 435-438.

GÓMEZ ORTIZ, A.; PALACIOS ESTREMERA, D.; SCHULTE, L.; SALVADOR FRANCH, F. & PLANA CASTELLVÍ, JA. (2009). Evidences from historical documents of landscape evolution alter Little Ice Age of Mediterranean high mountain area Sierra Nevada, Spain (Eighteenth to Twenttieth Centuries). *Geografiska Annaler*, 91 (A): 279-289.

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MENÉNDEZ, S. Y RÁBANO, I. 2010. Fósiles de Extremadura en la colección paleontológica histórica del Museo Geominero (Instituto Geológico y Minero de España, Madrid): catálogo y puesta en valor. *Boletín Geológico y Minero*, 121 (2), 169-178.

ORCHE, E.; AMARÉ, M.P.; PUCHE RIART, O. (2010) Dos peticiones del gremio de mineros de Huancavelica (Perú) al gobernador Madariaga, en el año 1692. *De Re Metallica*, 14, 71-80 (enero-junio 2010).

MORO ABADÍA, O. & PELAYO, F. (2010). "Reflections on the concept of "precursor": Juan de Vilanova and the discovery of Altamira". *History of the Human Sciences*, vol. 23 (4): 1-20.

PUCHE RIART, O.; MAZADIEGO MARTÍNEZ, L.F.; MATA PERELLÓ.; OBIOLS PERARNAU, L. (2010) Los minairons (los mineritos). Enanos de mina en la cultura española. En: *Libro de Actas del VIII Congreso*

sobre Patrimonio Geológico y Minero, 13-16 de septiembre de 2007, Mieres (Principado de Asturias). Ed. Consejería de Cultura y Turismo del Principado de Asturias. Págs. 197-204. ISBN:978-84-693-36625

PUCHE RIART, O. (2009) Ejemplares mineralógicos escandinavos recibidos en la Escuela de Ingenieros de Minas de Madrid hacia 1850. En: Colecçoes e museus de Geologia: missão e gestão-Collections and museums og Geology: misión and management. BRANDAO, J.M.; CALLAPEZ, P.M.; MATEUS, O.; CASTRO, P. (Eds.). (2009). Ed. Museo Mineralógico e Geológico de la Universidade de Coimbra, Portugal. Págs. 155-166. ISBN: 978-989-96564-0-6

RÁBANO, I. 2010. Museos históricos en España: de los gabinetes de curiosidades a los modernos centros de investigación, conservación y comunicación. In: Gámez Vintaned, J.A. (Ed.), XI Jornadas Aragonesas de Paleontología, "La Paleontología en los museos". Colección Actas, Paleontología. Institución Fernando el Católico, Zaragoza, 29-39.

RAMOS MARTÍN, F.J; SUÁREZ SUÁREZ, J. (2010) *Fotografías (I),* Col. Imágenes Históricas. Ed. Asociación Herrerías. Introduction: PUCHE RIART, O. ISBN: 978-84-693-5176-5

SEQUEIROS, L. (2009) Cuando hablamos de "evolución biológica", ¿de qué evolución estamos hablando? Implicaciones teológicas. *E-volución* (www.sesbe.org) 4(1) 43-54.

SEQUEIROS, L. (editor) (2009) *Boletin de la Comisión de Historia de la Geologia Española (Sociedad Geológica de España),* 33, 24 pág. (www.aepect.org)

SEQUEIROS, L. (2009) Juan Carandell Pericay (1893-1937): geólogo y geógrafo andaluz. *Enseñanza de las Ciencias de la Tierra,* AEPECT, 16 (2), 190-192.

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SEQUEIROS, L. (2010) Juan Carandell Pericay (1893-1937): un geólogo y geógrafo catalana-andaluz. *Naturaleza Aragonesa,* 22 (julio-diciembre) 71-73.

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SEQUEIROS, L. (2010) *Athanasius Kircher (1601-1680): ciencia y religión en el siglo XVII*. Bubok publish. 192 páginas.
http://www.bubok.com/libros/172868/ATHANASIUS-KIRCHER-16011680-ciencia-y-religion-en-el-siglo-XVII

SEQUEIROS, L. (2011) Leer las rocas con Nicolás Steno. Bubok publ.,
http://www.bubok.com/libros/199152/LEER-LAS-ROCAS-con-Nicolas-Steno 153 pág.

SEQUEIROS, L. (2010) *Elefantes, tortugas y volcanes. Alcolea de Calatrava y sus fósiles.* Bubok publish, 330 pág. http://www.bubok.com/libros/187290/Elefantes-tortugas-y-volcanes-ALCOLEA-DE-CALATRAVA-Y-SUS-FOSILES

SEQUEIROS, L. (2010) *Darwin y Granada. Rafael García Álvarez y el Arzobispo Monzón.* Bubok publish. 234 pág. http://www.bubok.com/libros/190232/DARWIN-EN-GRANADA-Rafael-Garcia-Alvarez-y-el-Arzobispo-Monzon

SEQUEIROS, L. (2010) *El Aparato para la Historia Natural Española (1754) de José Torrubia.* Bubok publish. 252 pág. http://www.bubok.com/libros/190177/El--Aparato-para-la-Historia-Natural-Espanola-1754-de-Jose-Torrubia-Aportaciones-cientificas-y-filosoficas-a-la-Teologia-de-la-Naturaleza

SEQUEIROS, L. (2010) Darwin, Darwinismo y Evolucionismo. Seis tópicos sobre Charles Darwin. *Revista de Andorra*, 9, 82-92.

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Scientific meetings and Congresses

PUCHE RIART, O.; MAZADIEGO MARTÍNEZ; ORTÍZ MENÉNDEZ, J.E (2010) Petroleum in the Iberian Peninsula. 35 INHIGEO Meeting (IUGS).BMadrid-Almadén-Faja Pirítica Ibérica. 2010 (1-14 de julio).

MAZADIEGO MARTÍNEZ, L.F.; PUCHE RIART, O.; ORTÍZ MENÉNDEZ, J.E. (2010) News from the use of petroleum substances in South America before the 19th century. 35 INHIGEO Meeting (IUGS). Madrid-Almadén-Faja Pirítica Ibérica. 2010 (1-14 de julio).

Responsibilities for conferences

PUCHE RIART, O. Member of Scientific Commitee. VI Simposio sobre Mineraçao e Metalurgia Históricas no Sudoeste europeo. Tejo-Vila Velha de Ródão, Portugal, 18-20 de junio de 2010.

PUCHE RIART, O. Organizer. 35 INHIGEO (IUGS) Meeting. Madrid-Almadén-Faja Pirítica Ibérica, 5-11 de julio de 2010.

PUCHE RIART, O. Member of Scientific Commitee. XI Congreso Internacional sobre Patrimonio Geológico y Minero. Huelva, 22-26 de septiembre de 2010. 24.

PUCHE RIART, O. Member of Scientific Committee. I Congreso Iberoamericano sobre Geología, Minería, Patrimonio y Termalismo. Ariño, Teruel, 22-24 de octubre de 2010.

Switzerland

Andrea Westermann reports that she has not been as active in 2010 as she would have wished.

She has received *Prix Jubilé 2010* Award of the Swiss Academy of Humanities and Social Sciences for the article:

> Inherited Territories: The Glarus Alps, Knowledge Validation, and the Genealogical Organization of Nineteenth-Century Swiss Alpine Geognosy. *Science in Context* 22 (2009) 3, 439–462.

Andrea has also given the following talks and invited papers:

> "Der Simplontunnel: ökonomisch-technische und geologische Welterschließung", talk at the session *Schnitt. Zur Technikgeschichte von Grenzen*, organized by Daniel Speich und Andrea Westermann, Schweizerische Geschichtstage 4–6 February 2010, Basel.
>
> "Geologische Familien-Semantik", Interview with the online journal *ETH Life*, 8 June 2010.
>
> "Coping with the division of labor. Practices of global research in German-speaking geology of the 20th century", invited talk, workshop *Zukunftskolleg* 16 September 2010, University of Konstanz.
>
> "Overcoming the division of labor in global tectonics: Eduard Suess' The Face of the Earth and the aestheticization of narrative", invited paper, Workshop *Earth Science – Global Science*, 30 September–2 October 2010, York University, Toronto.
>
> "Overcoming the division of labor in global tectonics: Eduard Suess' The Face of the Earth", invited paper, Colloquium Department II, 26 October 2010, Max Planck Institute for the History of Science, Berlin.

United Kingdom

Publications

Bowden, A.J., Tresise, G. & Simkiss, W. 2010. *Chirotherium*, the Liverpool footprint hunters and their interpretation of the Middle Trias environment . *In*: Moody, R.T.J., Buffetaut, E. Naish, D. & Martill, D.M. (eds) *Dinosaurs and Other Extinct Saurians: A Historical Perspective*, Geological Society, London, Special Publications, **343**, 209-228.

Boynton, H.E. & Ford, Trevor D. William W. Watts, pioneer Midland geologist. *Mercian Geologist*, 2010, *17* (3), 195-202.

Burkhardt, Frederick, Secord, James A. & Evans, Samantha (eds.). *The Correspondence of Charles Darwin. Volume 18. Volume 1870*. Cambridge University Press, Cambridge, 2010.

Ford, Trevor D. The geological setting of the lead mines in the northern part of the Peak District. *Mining History*, 2010, *17* (5), 1-48 [also issued as supplement to *Mercian Geologist*, 2010, 17 (3)].

Ford, Trevor D. Derbyshire pipe veins – deep-seated speleogenesis. *Kave and Karst Science*, 2010, *37* (1), 9-22.

Ford, Trevor D. Leicester's extractive industries. *Charnia*, October 2010, 17-20.

Fuller, John G.C.M. & Torrens, Hugh S. Murchison in the Welsh Marches: a History of Geology Group field excursion led by John Fuller, May 8th - 10th, 1998. *Proceedings of the Shropshire Geological Society*, 2010, *15*, 1-16. [available at: www.shropshiregeology.org.uk/SGSpublications].

Howarth, R.J. 'Introduction,' in: Howarth, R.J. (ed.) John Stuart Webb and applied geochemistry at Imperial College, London. [Commemorative issue] *Geochemistry: Exploration, Environment, Analysis.* 2010, *10* (3), 211-212.

Howarth, R.J. 'John Stuart Webb, FREng, and Applied Geochemistry at the Imperial College of Science and Technology, London,' in: *ibid*., 213-235.

Howarth, R.J. & Garrett, R.G. 'Statistical analysis and data display at the Geochemical Prospecting Research Centre and Applied Geochemistry Research Group, Imperial College, London,'in: *ibid*., 289-315.

Howarth, R.J. 2010. Exploring Indonesia 1902-1911. Adventures of Geologist Johannes Wanner. Translated [from German] and edited by Antonia and George Boyden, 2009. [Book review]. *Geology Today*, 26 (3), 116-118.

Howarth, R.J. 2010. Stephen Jay Gould. Reflections on His View of Life. Edited by Warren D.Allmon, Patricia H.Kelley and Robert M.Ross, 2009. [Book review]. *Geology Today*, 26 (1), 38-39.

Lewis, Cherry, L.E. Mineral collecting and the Elgin scandal: just who was Robert Ferguson? HOGG Newsletter , October 2010, no. 40, 23-27.

Mills, Ian & Torrens, Hugh S. Professor John Callomon obituary, *The Independent*, 15 June 2010, Viewspaper, p. 9.

Torrens, Hugh S. 'Scientists and swindlers: consulting on coal and oil in America, 1820-1890'by Paul Lucier, Johns Hopkins University Press, Baltimore, MD, 2008 [Book review], *Economic History Review*, 2010, *63*, 271-272.

Torrens, Hugh S. Another Quaker "Lunatick": The Worcester origins of Jonathan Stokes, junior (1754-1831), physician, botanist, geologist and youngest member of the Lunar Society (from 1783), *Journal of the Friends Historical Society*, 2010, *61*,196-220.

Torrens, Hugh S. Hand of history [the need for a Society archivist]. *Geoscientist*, February 2010, *20* (3), 3 [Online at http://www.geolsoc.org.uk/gsl/site/GSL/lang/en/page7059.html]

Torrens, Hugh S. New light on John Williams' last days in Verona, Italy, *Montgomeryshire Collections*, 2010, *98*,151-152.

Torrens, Hugh S. Jean Jones (1935-2009): Obituary and bibliography. *INHIGEO Newsletter*, 2010, *42*, 26-27; reprinted in HOGG Newsletter, October 2010, no. 40, 28-30.

Torrens, Hugh S. John Hannes Callomon obituary. *The Times*, 29 May 2010, 123; *Geoscientist*, September 2010, *20* (9), 6-7. [Online at http://www.geolsoc.org.uk/gsl/site/GSL/lang/en/page7830.html]

Torrens, Hugh S. 'William Perceval Hunter (1812-1878), forgotten English student of dinosaurs-to-be and of Wealden rocks', in: Moody, R.T.J., Buffetaut, E., Naish, D. & Martill, D.M. (eds), *Dinosaurs and Other Extinct Saurians: A Historical Perspective*, Special Publication 343, Geological Society of London, 2010, 31-47.

Torrens, Hugh S. The Two George Perrys, Naturalists of Somerset, Shropshire, Liverpool and London from 1736 to 1811. Online at http://mikespages.weebly.com/uploads/3/6/2/0/3620244/the_perry_family.pdf

Torrens, Hugh S. 'Uncurated curators no. 2: Vivian Erwood Robson (1890-1942)' [reprinted from: *Geological Curator*, 1989, *5*, 65-71]: (1) 'Vivian Erwood Robson (1890-1942) Curator Turned Astrologer' in: *A Students Text-Book of Astrology Vivian Robson Memorial edition* [1922], second edition, 2010, Astrology Classics, Bel Air, CA, 253-270; and (2) Newsletters of the Astrology Center of America, Bel Air, CA, 10, 17 & 24 August 2010 [available at: http://www.astroamerica.com/astroamericanewsletter.pdf]

Torrens, Hugh S. John Randall (1810-1910) as writer and geologist, *Proceedings of the Shropshire Geological Society*, 2010, *15*, 28-43 [online at: http://www.shropshiregeology.org.uk/SGSpublications/Proceedings/2010%20No_15%20028-043%20Torrens%20Randall.pdf].

Other activities

The History of Geology Group of the Geological Society of London (HOGG) held several very successful meetings in 2010. Their 2010 Committee consisted of: Chairman: Alan Bowden; Vice Chairman: Dick Moody; Secretary: Leucha Veneer; Treasurer: Beris Cox and Ordinary members: Tony Brook, David Earle, Nina Morgan, Martin Rudwick, Bob Symes and Hugh Torrens.

In April there was a meeting at the University of Manchester on 'Geology in the history of provincial scientific societies'. The presentations were: John Pollard, 'The contributions of Edward Binney FRS FGS, the geologist, to the Manchester scientific scene and societies 1836-1881'; Geoff Tresise, 'Liverpool: a tale of two societies 1860-1910'; Ronald Austin, 'Geology in the history of scientific societies in Swansea, South Wales'; Noel Worley, 'The Yorkshire Geological Society: its history and contribution to geological science'; Patrick Boylan, 'Geology and the Leicester Lit. & Phil., 1835-2010'; Hugh Torrens, 'A forgotten English museological initiative: the Midland counties natural history societies and museums of the 1830s'; Norman Butcher, 'The Devonshire Association - a unique organisation'; Simon Naylor, 'The Royal Geological Society of Cornwall and the mapping of Cornwall's geology'; Leucha Veneer 'Local geology and mining in Newcastle, 1790-1840'; and Stephen Donovan, 'Lawrence Chubb, Verners Zans and the Jamaica Group of the Geologists' Association (1955-1959)'.

In May, there was a visit 'behind the scenes' at the Oxford University Museum of Natural History, which is home to some of the largest collections of maps, letters, diaries and other material related to important 19th century geologists including William Smith, John Phillips and William Buckland.

In November, there was a two-day meeting at the Geological Society of London, on the History of Applied Geology. The presentations were: Hugh Torrens, 'Anglo-Irish "advances"?: William Smith (1769-1839), James Ryan (c.1770-1847) and the invention of scientific mineral prospecting'; David Greenwood, 'The life and work of Thomas Sopwith (1803-1879): mining engineer & surveyor and geologist'; Martin Culshaw & Alan Forster, 'W. Henry Penning: A 19th century applied geologist'; Dick Selley, 'The contribution of the Royal School of Mines to Applied Geology'; Richard Howarth, 'John Stuart Webb FREng and Applied Geochemistry at the Imperial College of Science and technology, London'; John Mather, 'The ideas, social pressures and practical needs driving the development of groundwater supplies in the UK over the past 400 years'; Steven Wainwright, 'Luna B. Leopold – hydrogeologist'; Paul Kabrna, 'John Milne: father of modern seismology - his life and work'; Michael Welland, 'Sand, wind, war and water - the extraordinary work of Ralph Bagnold'; Alan Bowden, 'Agates and WW2'; Clive Edmonds, 'The ground instability legacy resulting from historical chalk mining in south-east England'; Haydon Bailey, 'European "schools" of applied micropalaeontology: science driven by conflict and competition'; Dick Moody, 'Interesting claims for Nummulites from Herodotus to madness!'; Ken Chew & Anthony Spencer, 'The history of petroleum exploration: multiple evolving technologies based on a handful of underlying principles'; Geoff Walton, 'Aspects of geological employment in the extractive industries and the rise of the EIG'; Ian Simms, 'Geomaterials'; Tim Coleman, 'Mineral exploration in Britain - the last 50 years'; Richard Shaw, 'Peak District mining'; Anthony Brook, 'Scientific advice vs government policy: the case of the Haswell Colliery disaster (1844)'; Paul Nathanail, 'Contaminated land'; Ed Bromhead, 'Geology and landslips'; and Max Barton, 'UK site investigation in the early 1960s.'

The papers resulting from a HOGG meeting held in May 2008 have just been published as: Moody, R.T.J., Buffetaut, E., Naish, D., & Martill, D.M. 2010 'Dinosaurs and Other Extinct Saurians: A Historical Perspective'. Geological Society, London, Special Publication 343.

Richard Howarth

United States

Vic Baker (University of Arizona) completed his term as Chair of the History of Geology Division of The Geological Society of America (GSA). During his term the Division changed its name to the "History and Philosophy of Geology Division." In that spirit, Vic co-organized, along with Gary Rosenberg (Indiana University-Purdue University Indianapolis), a GSA special session at the 2010 annual meeting of the society: "High Country of the Geological Mind: Philosophy of Geohistory." He also presented a paper in that session entitled, "Philosophers and Geology." Vic continued to serve as Book Review Editor for the journal *Earth Sciences History*. He contributed a review to that journal of the book *For the Rock Record: Geologists on Intelligent Design*. He also continued with his historical and philosophical studies of the American polymath logician and geophysicist, Charles Sanders Peirce.

Kennard B. Bork was pleased to serve as Citationist for Professor Gabriel Gohau (INHIGEO, France) at the 2010 annual meeting of the Geological Society of America (GSA). In November 2010, Dr. Gohau received the Mary C. Rabbitt Award, the world-wide recognition of achievement by the History and Philosophy Division of GSA. The Citation and Gohau's Acceptance statement, as translated and presented by Kenneth L. Taylor, were posted on the GSA website and are included in this INHIGEO Newsletter. Also in this newsletter, but written in 2010, is a review of GSA Memoir 203, *The Revolution in Geology from the Renaissance to the Enlightenment*, as edited by Gary D. Rosenberg. Ken's article on Grove Karl Gilbert (1843–1918) and the "Gilbert Collection" in the library of Denison University appeared in *INHIGEO Newsletter No. 42*. His review of Dan Merriam's book on *Geology at the University of Kansas* was published in *Earth Sciences History*, 29, 174–175. Enjoyable "service functions" in 2010 included involvement with the INHIGEO Board, the "Rock Star Committee" of GSA, and as an associate editor of *Earth Sciences History*.

The historical activities of **Robert H. Dott, Jr.,** were limited to two forms in 2010. The first was the formal listing on both the State of Wisconsin and the National Registers of Historic Places of an important outcrop in the Baraboo District of Wisconsin. This was a very satisfying culmination of a five-year effort by myself and other Wisconsin geologists to gain historic status for this outcrop, called the Point of Rocks, in order to protect it from destruction for highway realignment or other possible development. The Point of Rocks was one of a handful of outcrops in the Baraboo District that were important to the pioneering recognition of such fundamentals of structural geology as slaty cleavage. The Wisconsin School of structural geology led by Charles R. Van Hise and Charles K. Leith and their students used the Baraboo outcrops to demonstrate those principles to their countless geological colleagues and students around the turn of the twentieth century. The District is still visited by groups from dozens of colleges and universities. The Point of Rocks now joins Van

Hise Rock, a National Historic Landmark, and outcrops in Devils Lake State Park as another protected site of critical geological importance in a district, which provides a unique outdoor laboratory for geologists.

Robert Dott's second historic activity was continuing research with Professor Ian W.D. Dalziel of the University of Texas about the young Charles Darwin as a geologist and particularly his important pioneer geological investigations in southern South America during the first four years of *H.M.S. Beagle's* round-the-world explorations (1830-34). He returned to England already recognized as a full-fledged geologist to become active in the Geological Society of London and to publish four books and many papers on geology before he undertook his more famous biological researches. During 2010, I presented two oral talks about this geological phase of Darwin's career.

Greg Good published two articles in 2010 relevant to history of geoscience: "Rutherford's Geophysicists," in *Physics Today*, July 2010, 42-47, and "Sydney Chapman: Dynamo behind the International Geophysical Year," in *Globalizing Polar Science: Reconsidering the Social and Intellectual Implications of the International Polar and Geophysical Years*, eds. Roger Launius and James Rodger Fleming (New York: Palgrave-Macmillan), 177-203. He also presented papers at several meetings: "CIW Geophysicists in South America, 1905-IGY: Changing Meanings of International Science," AGU Meeting of the Americas, Foz du Iguassu, Brazil; "Earth: Ancients and a New World," Campinas University, Brazil; "Earth: New Worlds to be Explored and Explained," Campinas; "Alexander von Humboldt's Roles in Encouraging Geomagnetic Research," Campinas; "Geoscience in the 20th Century," Campinas; "Inaccessible Earth," University of Bahia, Salvador, Brazil, Niels Bohr Institute, Copenhagen, Denmark, and University of Aarhus, Aarhus, Denmark; "Geomagnetic Science at the Time of Hansteen: Ideas, Instruments, and Individuals," Plenary talk to the Christopher Hansteen Symposium, University of Oslo, Norway; and "Many Things to Many People: Encounters with the Home Planet," at Symposium *Earth Science, Global Science*, York University, Toronto, Canada.

During the Darwin centennial in 2009 and throughout 2010 **Mott Greene** defended Darwin's reputation and thought processes as those of a geologist, in invited lectures at Oregon State University, The University of Calgary, and the University of Washington. His "always about to appear but never quite finished" biography of Alfred Wegener will come out from Johns Hopkins U Press in Spring 2012 to coincide with the centennial of Wegener's first paper on continental drift. He urges all members of INHIGEO to consider travelling to Athens in 2012 for the IX international congress on the history of oceanography – "we're geologists first but we're all 'earth scientists' now."

Clifford M. Nelson continued working on the multivolume history of the U.S. Geological Survey. Volumes 1-3 of the late Mary C. Rabbitt's *Minerals, Lands, and Geology for the Common Defence and General Welfare* are available on-line at www.archive.org/details/historyv1, <…/historyv2>, and <…/historyv3>. Volume 4 (1939-1961), by Mary and Cliff, is being edited internally and should be issued late in 2011. Cliff has begun writing Volume 5 (1961-1982). He also completed a draft article, intended for an international journal, about the USGS Military Geology Unit in World War II.

Sally Newcomb reports that the Geological Society of America's History Division has been renamed the History and Philosophy of Geology Division to better reflect the interests of the members. Vic Baker and Gary Rosenberg spearheaded the request to the GSA Council.

This interest was reflected in a very well attended session titled "High Country of the Geological Mind: Philosophy of Geohistory" during the meeting at Denver on 2 November 2010. Paper authors included five INHIGEO members. Sally's paper titled "Modeling Geology" was an investigation of the uses of modeling in geological theory and practice from its simple beginnings in the 18th century to the conundrums of the 21st where computers and much more data lead both to closer approximations and the introduction of more error. The Division also sponsored a day-long session titled "The Colorado Scientific Society and 150 Years of Geologic Research in Colorado".

Following her interest in Richard Kirwan, Sally's paper on "Irish Mining in Richard Kirwan's (1733-1812) Time" will be included in the symposium volume. The meeting in Madrid and field trips were superb, and the Spanish organizers are to be congratulated.

Steve Rowland presented a talk titled "The synchronous discovery of deep time and deep space, and the resulting shift in fundamental research questions in geology and astronomy," at the Geological Society of America annual meeting in Denver. He has also been finishing up a Russian-to-English translation of Mikhail Lomonosov's *On the Strata of the Earth*, published in 1763. It will be published as a Special Paper by the Geological Society of America.

Cecil Schneer reports that his web resource on William "Strata" Smith is now available once again at http://www.unh.edu/esci/WilliamSmiths-StrataIdentified/index.html. He continues to update the site, which is already most useful and interesting.

Ken Taylor reports that lately he has been busy, with distressing frequency, writing obituary notices for deceased colleagues. At the 2010 Annual Meeting of the Geological Society of America he presented a paper on "Impediments to Geohistorical Thinking in the 18th Century," and he also had the privilege of presenting Gabriel Gohau's response statement on the latter's receipt of the Society's Mary C. Rabbitt History of Geology Award. One of his reviews (of the English edition of Pascal Richet's *A Natural History of Time*) appeared in the online journal *History of Geo- and Space Sciences* (HGSS), a free-access journal that deserves to be better known among historians of the earth sciences.

Dave Young published "Origin of the American quantitative igneous Rock classification: part 3," *Earth Sciences History* 29, 2010, 264-290.

Uzbekistan

The most striking events in the history of geology have been associated with memorable anniversaries involving outstanding geologists of Uzbekistan.

For the 100th anniversary of Academician G. A. Mavlyanov (1910-1988), Institute of Seismology, the Uzbekistan Academy of Sciences released:

- Two volumes of abstracts for the International Conference "Modern Problems of Seismology, Hydrogeology and Engineering Geology", dedicated to this anniversary, Tashkent, 2010. Volume I - 230p; Volume.II, 268p.
- A book of memoirs - "Mavlyanov Gani Arifhonovich, Tashkent, 2010, 230p.
- A book from his wife F. Mavlyanova "Umr saboklari" in Uzbek, Tashkent, 2010, 160p.
- An article by Academician K. N. Abdullabekov in the journal "Geology and Mineral Resources" – 2010, № 2.

These materials chronicle the XX century. They reflect the results of various institutions and services of the former Soviet Union: Moscow, St. Petersburg, Caucasus, Central Asia, Siberia, and others to develop the monitoring of soils, water reservoirs, state of groundwater pollution, conservation of monuments and other issues. The role of G.A Mavlyanov in the history of geotechnical engineering and seismological research, loess of Central Asia has been presented. G.A. Mavlyanov was behind the organization of geological science in Uzbekistan. He was the author and editor of more than 400 works including 20 monographs. He supervised 11 doctors and 52 candidates of science. On him there is written about 60 works. He was head of the leading academic institutions of geological profile in Uzbekistan: Institute of Geology, Hydrogeology and Engineering Geology, Institute of Seismology, Department of Geology of the Academy of Sciences. He made presentations at international symposiums and conferences in India, USA, France and Denmark. He was the author of scientific discovery paper: "Changes in the chemical composition of groundwater during earthquakes." Under his leadership were prepared a series of maps showing the seismic zoning of 26 cities and all Uzbekistan. His name has been given to the Institute of Seismology, Academy of Sciences of Uzbekistan.

For the 90th anniversary of Academician, I.Kh. Khamrabaev (1920-2002), the Republican Scientific Conference "Ore-magmatic systems of orogenic areas" was dedicated on 5-7 May 2010, organized by the Institute of Geology and Geophysics (named after Kh.M. Abdullaev), Uzbekistan Academy of Sciences, the National Committee of Geologists of Uzbekistan and Uzbek Petrographic Commission. The conference was attended by over 150 people of various organizations of the CIS countries: Russia, Ukraine, Kazakhstan, Azerbaijan and the republics of Central Asia.

At the plenary session, L.N. Lordkipanidze highlighted the importance of international scientific heritage of I.Kh.Khamrabaev. Published materials of conference (Edited by S.Kh. Maksudov) - Tashkent, 2010, 413 p. contains an article on the life and work of I.Kh.Khamrabaev together with more than 90 abstracts from various organizations of the CIS countries, Britain, France, Czech Republic, in which the results of geodynamic, petrological, mineralogical and geochemical studies are discussed. Many reports focus on the development of ideas of I.Kh.Khamrabaev. Many papers are devoted to the evolution of his ideas. Thus in the report D.B. Jamalov, L.N. Lordkipanidze and R.N. Abdullaev "On the selection paleotransform faults of the Tien Shan" deals with the basis of studying the history of this type of faults and important idea of their existence in the Tien Shan. A report by D.O. Mordvintsev is dedicated to the development of opinions and current knowledge about the deep structure of the Ferghana valley. B.S. Nurtaev, V.D. Kharin, in their report summed up the results of study of North-Nuratau deep fault, which results in the establishment of the characteristic features of the Bukantau -South-Fergana fault system and it relationship with the ophiolite structure.

At the Institute of Mineral Resources, the State Committee of Uzbekistan on geology and mineral resources (Director M.U. Isokov) in December, celebrated the 100th anniversary of K. L. Babayev - the first Director of the Institute, which was set up in 1959 and a Doctor of Geological and Mineralogical Sciences, Professor, Honored Worker of Science of Uzbekistan. A book was released, illuminating the activities of the Institute, with a bibliography, memories of him: "Babaev Kurban Latypovich" - Tashkent, 2010. The book is prefaced by an article by Kh.A. Akbarov - Academician of the Academy of Sciences of Uzbekistan, foreign member of the Academy of Natural Sciences, containing many rare photos of different years with the leading scientists of the USSR (D.I. Shcherbakov, A.A. Saukov), Ukraine (Ya.N. Belevtsev, A.S. Povarennykh), Georgia (G.A. Tvalchrelidze), Azerbaijan (M.S. Qashqai), etc.

On this date (24 December) was also timed the Republican Youth Conference "Innovative ideas for young scientists geologists and specialists in the development of mineral resources of the Republic of Uzbekistan" under the auspices of the State Committee (I.B. Turamuratov), MRI, GIDROINGEO, and Geological Museum. Abstracts were issued (Editor Turamuratov I.B.). - Tashkent, 2010.-120p. A special section was devoted to the geological heritage of the Uzbek school, and the continuity of the younger generations with its achievements. It contains a report by the Professor of Tashkent Technical University B.A. Isakhodjaev, which discusses the main stages of study of the mineral resources of Uzbekistan from ancient times to the twenty-first century, and considers the three branches of geological investigations: university, industry and academic (with photos). The report of O.A. Sidorova marked the recognition of geological and geomorphological heritage in the world community: national programs, UNESCO Geoparks Program (founded in 1961), recognition of objects in the "Agreement of the World Heritage" (1972). In 2008, the tentative World Heritage List included as a nature sanctuary, Sarmyshsay, Uzbekistan. The reports of the other sections include historical data on oil occurrences in the Zarafshan basin from 1931 (E.A. Sidorova), of gold ore fields in the mountains Bukantau from 1950 (A.I. Tagirov), and the opening of Uchkuduk uranium deposit in 1953 (A.A. Khalilov).

In the program of the meeting was included also a report of A.D Djuraev "On the contribution of V.G. Garkovets to the development of mineral resources of Uzbekistan" on the occasion of Garkovets 100th anniversary. He was Doctor of Geological and Mineralogical Sciences, served for many years as Deputy Minister of Geology and developed the scientific basis for prospecting and exploration of mineral resources (idea of metallogenic links of the Tien Shan to the Urals, the zone of magnetite deposits, the role of transverse faults in metallogeny, etc.).

Among other publications should be noted the MRI report of I.B. Turamuratov, M.M. Pirnazarov about compilation of geological and geochemical investigation of Uzbekistan in the Proceedings of the International Scientific Conference "Uzgeoinnovation -2010" .- Tashkent, 2010.-p.5-10 .

A number of articles on the history of geology have also been published in the journal "Geology and Mineral Resources":

- D.B. Jamalov, L.N. Lordkipanidze, R.N.Abdullaev-"Evolution of concepts of transform faults", in which detailed analysis since their introduction by J. Wilson in 1965, the stages of their study, noted the contribution of individual researchers: A. Peyve, V.E. Khain, etc. - № 5, p. 3-12.,
- A.N. Sultanhodjaev, G.Y. Azizov – "Hydroseismological study in Uzbekistan, results and perspectives - № 2; Bahtierzoda Oydihon – "International cooperation of academician I.Kh. Khamrobaye". № 5. Journal of the Uzbek oil and gas № 3 published two articles devoted to the memory of eminent experts in the field of petroleum geology: Academician A. M. Akramhodjaev (p.77) and Sh. D. Davlyatov (1920-1989), p.76.

The Uzbekistan hydrogeological school has suffered an irreparable loss in October with the death of Yu. Kovalev (1935-2010) - an outstanding scholar and practitioner in the field of resources and reserves of groundwater, mine reclamation and hydrogeology. In December, B. Gribanov (1931-2010) the oldest hydrogeophysicist, who, for many years headed the Department, Laboratory in GIDROINGEO also passed away. In November Ibragimov Z. S. (1930-2010) - Doctor of geology and mineralogy - an authority on the collector properties of rock of oil and gas complexes, founder and CEO of the new Faculty of Oil and Gas in Tashkent Technical University also died.

Lora N. Lordkipanidze,
Tashkent

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