

*International Commission  
on the  
History of Geological Sciences*

**INHIGEO**

**ANNUAL RECORD**

No. 47

Covering activities generally in 2014

Issued in 2015

INHIGEO

is

*A Commission of the International Union of Geological Sciences*

&

*An affiliate of the International Union of the History and Philosophy of  
Science and Technology*

**Compiled and Edited by Wolf Mayer  
INHIGEO Editor**

**Printed in Canberra on request  
Available at [www.inhigeo.org](http://www.inhigeo.org)**

ISSN 1028-1533

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(Published in June 2015 and covering events generally in 2014)

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## PRESIDENT'S MESSAGE

Dear Members,

As nearly all of you must know, this 47<sup>th</sup> number of the *INHIGEO Annual Record* is in fact the second to be published under that title. The first 45 issues appeared under the heading of the *INHIGEO Newsletter*. Practically every year our annual publication grows a bit longer and more informative. I trust that INHIGEO members (and, I hope, others as well) will find the contents of this latest number interesting and valuable.

In reviewing INHIGEO activities during 2014, I have special reason to acknowledge the many people who contributed to the success of the 39<sup>th</sup> INHIGEO Symposium, held in July at the Asilomar Conference Grounds in Pacific Grove, California. Individuals who took part in the organization and operation of the conference and associated field trips are (in alphabetical order) Kenneth R. Aalto, Michele L. Aldrich, Victor R. Baker, Kennard B. Bork, Renee M. Clary, H. Edward Clifton, James C. Dawson, Robert E. Garrison, Gregory A. Good, Mott T. Greene, Léo F. Laporte, Alan E. Leviton, Sally Newcomb, Amalie Jo Orme, Antony R. Orme, Stephen M. Rowland, and Greg M. Stock. I wish to express my heartfelt gratitude to each person I have just named for the contributions they made. I also want to thank the excellent keynote and other featured conference speakers: Claudine Cohen, William R. Dickinson, Henry R. Frankel, Ernst Hamm, Eldridge M. Moores and Charles Paull. Recognition is also due for the participation of and material contributions made by our conference partner, the History and Philosophy of Geology Division of the Geological Society of America. For logistical and organizational support we depended heavily on staff in the main offices of the Geological Society of America, at Boulder, Colorado. I am particularly grateful for the work done on our behalf by Melissa Cumiskey and Nicole Dillon in the GSA Meetings and Events Department. Finally, thanks to all—representing six continents—who came from near and far to Asilomar to enliven what I believe was a memorable conference.

Swiftly approaching is the 40<sup>th</sup> INHIGEO Symposium, to be held this year at the Geosciences International Conference Centre in Beijing, 24 through 27 June. The hosts are also organizing a mid-meeting single-day excursion to the Peking Man Site and its Museum, as well as a five-day post-meeting field trip to visit several localities in the province of Shandong. This promises to be a most interesting meeting, and we hope many will be able to take part.

A major INHIGEO initiative now in progress is a volume of historical papers, titled *History of Geoscience: Celebrating 50 Years of INHIGEO*. The effort is being coordinated by Wolf Mayer, who will be the book's chief editor. Renee Clary will work with Wolf, as Associate Editor.

On a more somber note, in 2014 INHIGEO suffered the loss of eight members: Albert V. Carozzi, Gordon Y. Craig, Alexey Ievlev, Alan Mason, David R. Oldroyd, Nazario Pavoni, Carmina Virgili, and Dan Yaalon. Tributes to each of these colleagues are found within these pages. Five of them were Honorary Senior Members (Carozzi, Craig, Mason, Oldroyd, and Yaalon). Gordon Craig was INHIGEO President from 1984 to 1989. David Oldroyd served two terms as INHIGEO's Secretary-General (1996 to 2004), and then continued on the Board as Vice-President for Australasia and Oceania (2004 to 2012).

INHIGEO's regular business is looked after in a thoroughly professional manner by the dedicated members of the Board: Barry Cooper, Wolf Mayer, Silvia Figueirôa, Martina Kölbl-Ebert, Greg Good, Luz Azuela, Jiuchen Zhang, Mike Johnston, and (ex officio) Ken Bork and Karen Cook. They all deserve our sincere thanks. Let me also express gratitude especially to Wolf Mayer for the excellent work he does in editing this *Annual Record* as well as in forwarding the 50<sup>th</sup> anniversary book project, and to Barry Cooper for continuing to uphold the high performance standard to which we have become accustomed in the work of our Secretary-General.

Ken Taylor



## SECRETARY-GENERAL'S REPORT

Dear Members,

During 2014, INHIGEO has continued to thrive.

87 registrants (including accompanying persons) attended our annual meeting in 2014 at the Asilomar Conference Grounds, Pacific Grove near Monterey, California in July. I do not recall a more successful INHIGEO meeting in terms of numbers so our long overdue return to the United States was certainly worth the fine efforts of our US delegation and especially our President Ken Taylor. A full report on this event by Mike Johnston, including two wonderful field trips, is found elsewhere in this Annual Record.

During the year, our Editor has not only published a bigger and better Annual Record but has continued to develop a proposal to produce a special INHIGEO 50th anniversary volume for 2017. A significant number of INHIGEO members are now involved and compilation/ publication plans have been finalised with the Geological Society of London.

As of April 2015, INHIGEO has 286 members (from 57 countries), up from 265 members (from 54 countries) over the past year. If the small number of new nominations currently being considered is any indication, it seems that membership numbers are plateauing following the removal of the “ten members per country” rule in 2012. In the next few weeks, the INHIGEO Board will also be considering the first nominations for “INHIGEO Affiliated Associations”.

As already noted by our President, 2014 was an especially sad year as a consequence of the loss of several members who have made a huge contribution to INHIGEO. Many had been recognised as INHIGEO Honorary Senior Members. Most notably, from a personal perspective, I miss most of all, David Oldroyd, who gave so much to INHIGEO and to the history of geology discipline. It was David who “tapped me on the shoulder” and asked me to offer myself as INHIGEO Secretary-General, back in 2008. It was also David who continued to print and distribute the “INHIGEO Annual Newsletter” from Sydney until 2011 even though he had already long retired after 8 years as INHIGEO Secretary-General, in 2004. And it was David who continued to provide larger-than-life guidance on the INHIGEO Board until his final retirement at the International Geological Congress in Brisbane in 2012. And such guidance, advice and activity continued until his last few months with us. As a consequence he is more than greatly missed.

Very soon, INHIGEO will have our annual meeting in Beijing. INHIGEO has a very strong Chinese delegation yet has rarely met in China, so I look forward to a wonderful meeting and to seeing many of you there.

Next year, INHIGEO will meet again with the International Geological Congress, on this occasion in Cape Town, South Africa. INHIGEO's membership is not strong in Africa yet it is hoped that many of you will make the long trip to Cape Town from distant parts. “History of Geoscience” has been accepted without question as a theme, as have been our suggested historical symposia topics that focus on subjects which should interest geologists with African interests. In addition we are hoping to have historical field trips.

In 2017, INHIGEO members will journey to Yerevan, Armenia, the place of our first meeting in 1967, for our 50th anniversary. As this report goes to press, I will have returned from a brief visit to this little known, yet fascinating part of the world. It contains aspects relating to the history of geology that extend back to the prehistoric utilisation of metals, and holds amazing medieval records in a huge national repository. Given the country's ongoing seismicity and vulcanicity, there are also records on significant issues of modern geology. Unique architecture, ancient and modern, utilising volcanic tuff as building stone, is also characteristic. Our Armenian delegation is already at work with planning. More information will be available at our Beijing conference and soon also at a conference website.

As per INHIGEO practice I will step down, after two terms, as INHIGEO Secretary-General in Cape Town, in August 2016, in order that another member can undertake this enjoyable responsibility. Over the next 12 months, the INHIGEO Board will be searching for a replacement.

Last, but certainly not least, my thanks go to the full INHIGEO Board and especially President Ken Taylor, who is always there to provide advice and support when it is needed.

My Best Wishes to all INHIGEO members,  
Barry Cooper

## **EDITOR'S MESSAGE**

Dear Members,

This is the third volume, and the second under its new title of *INHIGEO Annual Record*, which I have had the pleasure and the privilege to edit. As in previous years, I would again like to thank the many INHIGEO members who have sent in their contributions on a range of subjects. I am particularly grateful to Mike Johnston who, as in a number of previous years, prepared reports on our annual meeting and on the two field excursions associated with it. These records will in time provide valuable source material to future chroniclers of INHIGEO's own history.

Activity reports have been received from only about half of INHIGEO member countries. While it is likely that many of our scholars are only intermittently engaged in research in the field of the history of geology, an annual message from them would nevertheless be appreciated.

This volume contains a number of articles on a variety of topics on the history of geology. They range in content from views held, in medieval times, on the operation of geological processes, to the more contemporary issue regarding the appropriateness of the term 'plate tectonics'.

More than half of the books reviewed in this volume have been published in a language other than English. Such reviews help to acquaint many of our members with work on the history of geology of which they would not otherwise have been aware. However, the editor would welcome the receipt of more reviews of publications on/or relating to the history of geology, and published in English. A number of outstanding books have recently appeared on this subject for which the editor has struggled to find reviewers.

Sadly, this volume contains an unusually large number of obituaries, honouring distinguished former members, many of long standing.

The commendable initiative taken by Francesco Gerali to produce an INHIGEO Virtual Bibliography has born its first fruits. In Appendix A (p. 174), readers will find a message from Francesco on the current state of this undertaking and an appeal to members to contribute information that will lead towards the completion of the project. This is followed by a small sample of the bibliography, presenting data supplied by some Australian members.

The contributions which the editor receives from members in many countries are generally written in a variety of styles and arranged in differing formats. These differences may reflect the usage in a particular country or conform to authors' guides of individual journals. Such contrasts are particularly apparent in the increasing, and most welcome, number of articles submitted for publication in the *Annual Record*. As these articles are not peer reviewed, the editor has made few changes to their substance, except to attempt, as far as possible, to render the texts in Standard English and to bring some uniformity to the lists of references. He has also used a format, similar to that of *Earth Sciences History*, as a model in the presentation of these articles. As items submitted to the *Annual Record* seem to increase each year, in both kind and number, future editors may wish to introduce a 'house style', for articles as well as for other contributions.

The INHIGEO meeting in August/September 2016, in Cape Town, coincides with the ending of the term of the current Board, as well as my own term as INHIGEO Editor. To allow for adequate time in which to find a successor, I would like to make it known here that I will not nominate for a second term. I will however continue my involvement with the INHIGEO 50<sup>th</sup> Anniversary Project, which will culminate in the publication of an anniversary volume, either late in 2016 or early in 2017.

I extend my very best wishes to all INHIGEO members.

Wolf Mayer, Canberra

## **INHIGEO CONFERENCES**

### **40<sup>th</sup> INHIGEO Symposium Geosciences International Conference Centre, Beijing, China Wednesday 24 June-Saturday, 27 June 2015**

The 40<sup>th</sup> INHIGEO Symposium will be held in the Geosciences International Conference Centre at the China University of Geosciences, Beijing 24-27 June 2015. It is organized jointly by the China University of Geosciences and the Committee of the History of Geology of the Geological Society of China.

All INHIGEO members and those interested in the history of geology are invited to attend. The meeting locality, the Geosciences International Conference Centre, is a noted international meeting facility located at the China University of Geosciences. More information about the meeting venue can be found at [www.bjgicc.com](http://www.bjgicc.com).

#### ***Background***

In 1990, the 15<sup>th</sup> INHIGEO Symposium was held in Peking University. The theme was the history of geological communication between Chinese and western scholars. The meeting strengthened the academic exchanges of Chinese and foreign geological historians and further promoted the development of research on the history of geology.

It has been 24 year since the 15th INHIGEO Symposium. Now we are going to hold the 40<sup>th</sup> INHIGEO conference at the China University of Geosciences, in 2015. Chinese and foreign geological science historians will again meet in China. The meeting will provide a valuable opportunity for communication among those attending and will showcase the development of the history of geology in China.

#### ***Conference Theme and Symposia***

The selected theme for the 40th INHIGEO conference is “Geology and the Development of Economy and Society”

The symposia topics include:

- Research on geological science and technological development
- History of mining development
- Conservation of geological relics
- Biographies of geologists

***Mid-meeting excursion, Peking Man Site, 26 June 2015***

On 26 June 2015, the group will travel by bus to visit the Peking Man Site Museum and the Peking Man Site in Zhoukoudian of Beijing. We will be return to Beijing in the afternoon.

***Post-meeting field trip, 28 June - 2 July 2015***

A 5-day post-meeting field excursion is planned. The itinerary will take the group from Beijing to Shandong.

On the morning of 28 June, we will set off from Beijing by high-speed rail. The group will arrive at Qufu at noon (lunch at Qufu) to visit the Confucian temple and the Mansion of Confucius. Following this visit, the group will have dinner at Taian and stay there overnight.

On 29 June, the group will visit Mountain Tai and the geological park; On 30 June, the group will take a bus to Zhaoyuan (about 5 hours) to visit the Golden City.

On 1 July, the group will visit the Zhaoyuan Gold Mine and the Gold Mine Museum, before returning to Beijing.

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The conference website is [www.inhigeo2015.com](http://www.inhigeo2015.com)

**41<sup>st</sup> INHIGEO Symposium - Cape Town, South Africa  
(in association with the 35<sup>th</sup> International Geological Congress, 27 August – 4 September 2016)**

The 41st INHIGEO Symposium will be part of 35th IGC scheduled for Cape Town, South Africa.

The Second Circular is already available at:

[www.35igc.org/Content/Downloads/35th\\_IGC\\_Announcement\\_SecondCircular.pdf](http://www.35igc.org/Content/Downloads/35th_IGC_Announcement_SecondCircular.pdf)

Abstract submission will open on 1 July 2015 with Registration commencing on 1 September 2015.

***Symposia***

A “History of Geoscience” theme is listed under a Core Topic of “Geoscience and Society” with the INHIGEO Secretary-General being the designated co-ordinator.

The historical symposia suggestions under the “History of Geoscience” theme for the 41st INHIGEO conference are listed as:

- General contributions on the history of geology

- Historical studies of Gondwana
- Local understanding of geology
- History of fossil man investigations
- History of geology over the past 50 years

### ***Field Trips***

A field trip is being considered that will cater primarily for INHIGEO members. Otherwise it is anticipated that some general Congress field trips will have an historical theme.

### ***Critical Dates***

- 1 July 2015 - Opening of abstract submissions
- 1 September 2015 - 'Super Early-bird' registration opens
- 1 October 2015 - Third Circular released.
- 31 January 2016 - Abstract submissions close.
- 1 March 2016 - Fourth Circular released
- 31 March 2016 - Formal notifications to authors on their abstracts
- 1 May 2016 - Accommodation bookings close
- 1 July 2016 - Fifth Circular released - Preliminary Programme

The conference website is [www.35igc.org](http://www.35igc.org)

## **42<sup>nd</sup> INHIGEO Symposium - Yerevan, Armenia, 12-18 September 2017**

This conference is being planned as a 50th Anniversary INHIGEO conference at Yerevan, where the first INHIGEO meeting was held, in 1967.

The conference will be held at the Armenian Academy of Sciences in Yerevan, which is also the same venue as that used for the 1967 meeting.

Current conference themes being considered are:

- 50 years of INHIGEO
- History of geology in Armenia
- Ancient knowledge of stones and metals
- Studies of historic and prehistoric evidences of seismic and volcanic activity
- General contributions and biographies of famous geologists

Both mid-conference and post-conference field trips are being planned to ancient and medieval monuments around Armenia, as well as to museums and to the famous Armenian repository of ancient manuscripts (Matenadaran).

Additional information will be available at the 2015 Beijing conference.

More details can be obtained from:

Dr. Khachatur Meliksetian, email: [km@geology.am](mailto:km@geology.am)

Gourgen Malkhassyan, email: [gmalkhas@mail.ru](mailto:gmalkhas@mail.ru).

### **Scheduled Future INHIGEO Conference 2018-2020**

Future INHIGEO conferences for this period are planned as follows:

2018 – 43<sup>rd</sup> INHIGEO Symposium, Mexico City, Mexico  
Contact INHIGEO member Luz Azuela (Mexico)

2019 – 44<sup>th</sup> INHIGEO Symposium Como/Varese, Italy  
Contact INHIGEO member Ezio Vaccari (Italy)

2020 – 5<sup>th</sup> INHIGEO Symposium New Delhi, India (in association with the 36th International Geological Congress)

### **INHIGEO ANNIVERSARY VOLUME**

It gives the editor much pleasure to announce to members that our proposal to prepare a book, commemorating the 50<sup>th</sup> anniversary of INHIGEO, has now been accepted by the Geological Society Publishing House. It is expected to be published as part of the Society's Special Publications series under the title:

#### ***History of Geoscience: Celebrating 50 Years of INHIGEO***

The volume will be edited by Wolf Mayer (Corresponding Editor) and Renee Clary (Editor). The contents of the book have been divided into three parts:

**Part 1 – *Tracing the history of INHIGEO***

**Part 2 – *Reflections on the history of geology and its importance in geological education and practice***

**Part 3 – *Studies and reviews on the history of geology in countries and regions***

More than 40 articles on a wide range of topics, relating to the history of geology, have been offered by INHIGEO members for publication in this volume. It is expected that the book will have close to 400 pages. The publisher has set a deadline for submission of contribution of 1 December 2015. All articles accepted for inclusion in the volume will appear online, before they are published in hard copy.

### **INTRODUCTION OF THE “INHIGEO AFFILIATED ASSOCIATION” CATEGORY**

A proposal to establish an “INHIGEO Affiliated Association” category was approved during the INHIGEO Business Meeting in Asilomar last year.

The first applications for INHIGEO Affiliated Association-status were called towards the end of 2014, in conjunction with the 2015 Membership Ballot. The first approvals of INHIGEO Affiliated Association-status will be finalised during the coming INHIGEO Business Meeting in Beijing.

The following conditions apply to “INHIGEO Affiliated Associations”.

- An “INHIGEO Affiliated Association” is defined as an organisation, with similar objectives to the Commission, which has specifically been approved by the INHIGEO Board to have the status of “INHIGEO Affiliated Association”. National and regional history of geology groups are encouraged, in particular, to affiliate.
- The Secretary of Affiliated Associations shall receive all routine communications from INHIGEO with the expectation that similar information will be provided in exchange to either the INHIGEO Secretary-General or INHIGEO Editor or both.
- A summary annual report of an Affiliate shall, where possible, be published in the INHIGEO Annual Record, together with a list of all INHIGEO Affiliated Associations.
- Affiliates are encouraged to report on INHIGEO activities as well as to advertise and promote INHIGEO, its conferences and publications, via their communication channels.
- Individual members of Affiliates shall receive no additional privileges from INHIGEO.
- Affiliated Associations will be permitted to state formally in their publications and official correspondence that they are “Affiliated with the International Commission on the History of Geological Sciences (INHIGEO)”.
- Prospective INHIGEO Affiliated Associations can approach the INHIGEO Board via the Secretary-General in order to gain affiliated status. Alternatively the INHIGEO Board may approach potentially suitable Affiliates.
- The status of “INHIGEO Affiliated Association” is ongoing unless terminated by the INHIGEO Board on recommendation from the Secretary-General or by the Affiliate itself.

Barry Cooper, Adelaide

## **CONFERENCE AND EXCURSION REPORTS**

### **INHIGEO Symposium, Asilomar, California, USA, 6 to 10 July 2014,**

#### **with intra and post-meeting field trips to Point Lobos and the Sierra Nevada**

After two years of our annual meetings being held in conjunction with other much larger conferences, the 39th INHIGEO Meeting and Symposium reverted to its more traditional format. It was co-sponsored by the Geological Society of America, and attracted 68 participants, along with 19 accompanying persons.

Most attendees took advantage of the accommodation offered at the meeting venue, the Asilomar Conference Grounds, Pacific Grove. The conference grounds comprise over 40 ha of rolling granite country, mantled by dunes, on the Monterey Peninsula, some 140 km south of San Francisco. Many of the buildings were designed in the early 20th century in an “Arts & Crafts style” by the renowned Californian architect Julia Morgan (1872-1957). Perhaps the most famous of the over 700 buildings she designed was the Californian mansion for the newspaper tycoon William Randolph Hearst.

The meeting was held in the Merrill Hall with meals in the nearby Crocker Dining Hall. These and other buildings in the conference grounds are dispersed amongst groves of *Pinus radiata* and *Cupressus macrocarpa*. Interestingly for a New Zealander, these trees are now the main

commercial forestry species “down under”. They were introduced into New Zealand by Sir James Hector when he was Director of the New Zealand Geological Survey and Manager of the country’s Botanical Gardens. Although mid-summer at Asilomar, temperatures were pleasantly cool, due to fog and low cloud condensing as warm humid air from the Pacific Ocean moved over cooler water flowing south along coastal California.

On the evening of Sunday 6 July, the meeting commenced with a short reception in Merrill Hall. Following dinner, INHIGEO president Professor Ken Taylor gave a more formal welcoming address. In doing so he acknowledged the hard work done by the committee that had successfully brought the meeting to fruition, and introduced some of its members who were present.

Next morning Professor Taylor chaired the opening session of the meeting, the first of several dedicated to prestigious, mostly American, historians of geology and to all Honorary Senior Members of INHIGEO.



*Participants at the 39<sup>th</sup> INHIGEO Conference in Asilomar, California, USA*

## **Monday, 7 July**

### **Session 1**

This session was dedicated to Albert V. Carozzi (1925-2014), who was born in Switzerland but took up teaching positions at the University of Illinois, from 1955. As well as having a distinguished career in sedimentology, he was a much respected historian with numerous publications on the early development of geology as a science in Europe. He was also President of the History of the Earth Sciences Society and the recipient of several international awards.

Session 1a: Chair Ken Taylor

Ernst Hamm, Keynote Address – *Doing the History of the Earth Sciences: What and Why?*



- Wolf Mayer – *Early Attempts by François Péron and Louis Depuch to Measure the Temperature of Seawater at Various Depths in the Ocean.*
- Ivan P. Vtorov – *The Role of Geology in the Development of Soil Science: From Lomonosov to Dokuchaev.*
- Gregory A. Good – *John Herschel's Cosmic View of Earth: Another Approach to the History of Earth Science.*

Session 1b: Moderator Greg Good

Panel A: *We belong too: Inclusion of 'outlier disciplines' in the History of Earth Sciences*

- Edward R. Landa – *Home a Loam: A Place for Soil Science at the History of Earth Sciences Table.*
- Johannes Mattes – *Disciplinary Identities and Crossing Boundaries: The Academisation of Speleology in the First Half of the 20<sup>th</sup> Century.*
- Joseph P. Bassi – *Successfully Navigating Scientific Borderlands and Subcultures: Walter Orr Roberts, The Sun-Earth and the National Center of Atmospheric Research.*
- David I. Spanagel – *The Ideological and Practical Consequences of Including Geography and Cartography within Historical Studies of the Earth Sciences.*

## Session 2

The second session was dedicated to Robert H. Dott, Jr., who joined the Geology Faculty at the University of Wisconsin in 1958 and is the co-author of the textbook *Evolution of the Earth*. As a historian of geology he has written about many of the important figures of geology's past.

Session 2a: Chair Vic Baker

- Eldridge M. Moores, Keynote Address - *'Gold in Them Thar Hills' and Valleys: California's Gifts to Geology.*
- Paul Lucier – *Understanding the First Geological Survey of California (1860-1874).*
- Antony R. Orme – *The Williamson Railroad Survey of 1853: William Phipps Blake set the Geoscience Stage in California.*
- Sandra Herbert – *Darwinian Evolution Comes to American Geology: Scientific and Non-scientific Factors in the Initial Acceptance of the Theory.*

Session 2b: Chair Renee Clary

- Amalie Jo Orme – *Gilbert's Studies of Fluvial Processes, Sediment Transport and Sedimentation in California.*
- Jere H. Lipps – *Joseph LeConte, Pioneer California Geologist and Gentle Prince of Evolution.*
- Michele L. Aldrich & Alan E. Leviton – *James Blake and the Practice of Geology in 19<sup>th</sup>-century California.*
- David Branagan – *Alfred Selwyn and some Canadian-United States Geological Controversies.*

### Session 3: Posters

- Kenneth R. Aalto – *Pioneering Geologic Studies in Yosemite and the Mono Basin/Long Valley Caldera Regions of the Sierra Nevada, California.*
- Mayen Adiuku-Brown – *The History of Geoscience in the Scriptures.*
- Libera Paola Arena & Ezio Vaccari – *When History of Geology Meets Tourism: Historical Routes, Geosciences in the Alps.*
- Joanne (Jody) Bourgeois – *Studies Emerging from the Mining of California's Auriferous Gravels.*
- Chen Baoguo – *Analysis of the Social Attribute of History of Geological Sciences.*
- John A. Diemer – *The Utility of Cross-sections in Early 19<sup>th</sup> Century Geological Investigations, and as Records of Evolving Stratigraphic Nomenclature.*
- Michiya Inomata – *History of Academic Exchanges between Japanese Geologists and Geologists of China and Korea.*
- Markes E. Johnson & B. Gudveig Baarli – *On the Origin and Demise of Oceanic Islands; Towards a Global Theory following from the Pioneering Studies of Charles Darwin and James Dwight Dana.*
- Kenneth L. Taylor – *Names on the Range: Scientists and Science in Naming of Sierra Nevada Features.*
- Thi Truong – *Darwin's 1835 Report of Anomalous Activity of an Extinct Volcano at Juan Fernandez Islands, SE Pacific.*

## Tuesday, 8 July

### Session 4

This session was dedicated to Martin Guntau, an Honorary Senior Member of INHIGEO and a former President and Secretary-General of the Commission. With doctorates in philosophy and the history of natural sciences, he has published on the development of geology in the 18<sup>th</sup> and 19<sup>th</sup> centuries and is the recipient of numerous international awards. Until his retirement he held appointments in the history of science at the University of Rostock.

Session 4a: Chair Ken Bork

- Claudine Cohen, Keynote address – *How Should the History of Geology be Done? Exploring Scientific Knowledge, Practices and Culture.*
- Francesco Luzzini – *Through Dark and Mysterious Paths. The Search for the Origin of Springs from the 16<sup>th</sup> to the 18<sup>th</sup> Century.*
- Marianne Klemun – *Contextualising "Context" – Plastic-Word or Methodological Concept in the History of Earth Sciences?*
- Kerwin Lee Klein – *Ice Time: The Alps and the Invention of Deep History.*

Session 4b: Moderator Vic Baker

Panel B – *Approaches to how one does the history of the Earth Sciences*

- Philippe Taquet – *Why and How another Biography on Georges Cuvier?*
- Marita Huebner – *Geology as Material Culture and Religious Practice.*
- Zoya Bessudnova – *Why it is Necessary to Do the History of Earth Sciences*

*Scrupulously, without Drawing Hasty Conclusions.*

Victor R. Baker – *On the Logic of Doing History of Science: The Insider's Viewpoint.*

### Session 5

The fifth session was dedicated to Ursula B. Marvin, an outstanding United States scientist and a pioneer woman in geology. She was President of the History of the Earth Sciences Society and Secretary-General of INHIGEO. Her work has been recognised by prestigious awards.

Session 5a: Chair Ken Aalto

William R. Dickinson, Keynote Address – From California Geology to Plate Tectonics and a Circum-Pacific Perspective on Global Geology.

Kenneth R. Aalto – Franciscan Complex, California-Mélanges, Terrains and their Plate Tectonic Interpretation.

Markes E. Johnson – Voyages of the Western Flyer and E. W. Scripps to the Gulf of California in 1940, and the marriage of Ecology and Paleoecology: Influences of Ricketts and Steinbeck complemented by Anderson, Durham and Shepard.

Francesco Gerali – The Art of Prospecting for Oil: Everette Lee DeGolyner in Mexico, 1909-1914.



*Three leading researchers on Plate Tectonics in California: Eldridge Moores, Ken Aalto and Bob Dickinson*

Session 5b: Chair Sally Newcomb

Daniel Minisini – Interviews with the Giants of Geological Sciences.

Toshihiro Yamada – Between Fields and Classrooms: Using and Making Geoscience History in Meiji-Taisho Japan.

Silvia Fernanda de Mendonça Figueirôa – ‘What on Earth can be interesting in textbooks?’ Reflections on a Neglected Subject.

Leonid R. Kolbantsev & Olga A. Krasknikova – Innokenty Tolmachoff, Russian and American Geologist: From Geological Museum of Peter the Great (St. Petersburg, Russia), to the Carnegie Museum of Natural History (Pittsburgh, USA).

Paul Belasky – Geopoetry – the Geological School of 20th-century Poetry in St. Petersburg, Russia.

### **Tuesday Evening: Guest Lecture**

Charles Paull, Monterey Bay Aquarium Research Institute – *Monterey Canyon: Super Highway to the Deep-Sea*.

### **Wednesday, 9 July**

#### **Intra-symposium Field Trip: Excursion to Point Lobos State Natural Reserve.**

**Leaders: Léo F. Laporte, H. Edward (Ed) Clifton, Robert E. (Bob) Garrison & Stephen M. (Steve) Rowland**

In contrast to the weather on the previous and following days of the meeting, the all too familiar low cloud retreated seaward leaving mostly clear skies – ideal for taking advantage of the coastal scenery and continuous geological exposures along the shoreline. The geology is relatively straight forward with Upper Cretaceous granodiorite unconformably overlain by the Paleogene Carmelo Formation, although the latter is stratigraphically complex. Because of dextral strike-slip movement on the San Andreas and other Californian faults, these rocks are now well north of the locations where they were formed. The rocks we examined are part of the Salinia Terrain that extends from Santa Barbara to the north of Monterey Bay.

Debussing at Whalers Cove, at a car park in a former quarry of foliated orthoclase granodiorite, we were introduced to the reserve and also to the immense Monterey Submarine Canyon, penetrating the continental shelf almost to the coast. A pleasant walk northwards on a raised shore platform brought us to Granite Point where conglomerate at the base of the Carmelo Formation is in depositional contact with the granodiorite. The formation is interpreted as an ancient submarine complex so the highly variable dips reflect primary depositional features rather than later tectonics. Returning to the car park we visited a museum in a restored whaler’s cottage and learned not only about whaling in the area but also how low-grade Miocene coal was exported from the cove to San Francisco.

Relocating about 1 km southwards to Piney Wood, a packed lunch was heartily devoured, and then it was back to examine the adjacent coast in one of two options. Option one was a walk along the Cypress Grove Trail, which did a circuit over weathered granodiorite, whereas the other option was on the coast at Weston Beach, examining the contact between the two major rock units and particularly the finer grained parts of the Carmelo Formation. The structural complexity of the formation, whether depositional, tectonic or both, led to much debate. However, the structure was no match for the magnificent sedimentary structures and trace fossils that were beautifully exposed in the intertidal rocks.

Mid-afternoon we returned to Asilomar in time for the 39<sup>th</sup> INHIGEO Meeting.



*The Point Lobos fieldtrip participants assembled at Whaler's Cove*

**Thursday, 10 July**

### **Session 6**

This session was dedicated to David Oldroyd (1936-2014), former Secretary-General of INHIGEO, prolific author, outstanding editor and gentleman, who died not long after the meeting at Asilomar (see separate obituary in this publication).

Session 6a: Chair Léo Laporte

Roger D. K. Thomas – *James Hutton's Concept of Time is that of Leibniz, not that of Newton: The Nature of the Evidence.*

Sally Newcomb – *With a Little Help from Friends: Pierre-Louis-Antoine Cordier (1777-1861).*

Tatiana Ivanova & Elena Poludetkina – *Nikolai Porfirievich Ermakov: Distinguished Scientist and Founding Director of the Museum of Earth Sciences at Lomonosov Moscow State University.*

Michiko Yajima & Naotoshi Yamada – *Edmund Naumann (1854-1927) and Mount Fuji.*

Glenn Dolphin – *Developing Historical Case Studies for Teaching Geoscience Concepts.*

Session 6b: Moderator Silvia Figueirôa

Panel C – *What can Historians of Geology do in the World?*

Rex Buchanan – *The Role of Geoscience History, Philosophy in Shaping Public Policy.*

- Renee Clary & James H. Wandersee – *The History of Science in the Science Classroom: The Past as Key to the Future in Science Education.*
- Kerry V. Magruder – *What can Historians of Geology Do in the World? New Opportunities for Libraries and Special Collections.*
- Karl Kadletz & Marianne Klemun – *Editing: Method and Potential.*

### Session 7

The last session was dedicated to Cecil J. Schneer, a Harvard and Cornell graduate, who taught at the University of New Hampshire. He is one of the founding members of INHIGEO and is now an Honorary Senior Member.

Session 7a: Chair Philippe Taquet

- Kenneth L. Taylor – *What did they think that they didn't know they thought? One aspect of inquiring into geosciences historical development.*
- John A. Norris – *Understanding Metallic Ore Minerals in the Sixteenth Century: The Case of Pyrites.*
- Alan E. Leviton & Michele L. Aldrich – *The Geological Survey of India, 1851-1879 and the Manual of Geology of India, 1879-1887, and the Origin of the Notion of a Vast Palaeozoic Southern Continent, Gondwanaland.*
- Barry J. Cooper – *Changing Reflections on the History of Geology: An Australian Perspective.*

Session 7b: Moderator Barry Cooper

Panel D: Some national or culture-group perspectives on doing the history of the geosciences

- Jiuchen Zhang – *Regional Distribution and regional Transfer: The Institutionalisation of Chinese Geology.*
- Irena G. Malakhova – *The History of Geology in Russia: Vernadsky – Obručev.*
- Fumihiko Tochinai – *Japanese Petrologist Seitaro Tsuboi, his Presence in the Japanese Geological Community.*
- Óscar Moisés Torres Montúfar – *Ten Years of History of Geological Sciences of the United States.*

In the evening a farewell reception and dinner at Asilomar was followed by a talk by Henry R. Frankel on, *Getting Submerged for 36 years in the Drift Controversy.*

### **Post-congress fieldtrip: The Sierra Nevada, California.**

**Leaders: Antony (Tony) Orme, Ken Aalto, Amalie Orme and Greg Stock**

The fieldtrip bus left Asilomar promptly at 8.30 am on Friday 11 July, to see many of the places and the geology we had heard about in the papers presented over the previous few days. Under low cloud with sporadic drizzle the bus headed east across the Coast Ranges towards the Sierra Nevada Range. Traversing low rolling hills of the Franciscan Complex, a somewhat chaotic collection of Mesozoic trench rocks that were scraped off by subduction beneath the North American Plate, we arrived before long at the mission station in the small town of San Juan Bautista, named after Lieutenant Colonel Juan Bautista de Anza (1736-1788), a future governor of what was then the

Spanish territory of New Mexico. By the decree of King Carlos III of Spain, he led an expedition through the Coast Ranges in 1775-1776. The mission station, founded in 1797, with well restored and maintained buildings, overlooks a prominent and very linear escarpment. Rather than a terrace riser, the escarpment is the celebrated San Andreas Fault, which stretches for 1300 km through the US western coastal states. Its northern section was recognised in 1895, but its full extent became only apparent after the 1906 San Francisco earthquake. It was one of the earliest faults on which horizontal movement was recognised and is a dextral strike-slip transform fault, separating the Pacific and North American plates.

Continuing eastwards we were now well inland from the coastal cloud and, despite the air-conditioned bus, we soon became aware of the high temperatures characteristic of summer in California. Except where irrigated, the land was dry and brown as a result of prolonged drought. The lack of water was brought home to us when we stopped at the San Luis Reservoir, capacity 2,500,000 dam<sup>3</sup>, where the surface of the lake was tens of metres below its maximum level. This did, however, provide good exposures of the turbidite rocks of the Great Valley Sequence. In heading around one arm of the reservoir we crossed a major fault separating weakly and strongly deformed rocks of that sequence. Lunch was at the Visitors Centre overlooking the lake, where the recharging of this reservoir and how it fits into the complex but integrated water supply for the Great Valley, was clearly explained.

In the afternoon we crossed the Great Valley and climbed into the Sierra Nevada foothills to the old gold mining town of Mariposa. The source of the gold is in quartz veins in the Jurassic mudstones and sandstones that are well exposed in road cuttings. Taking refuge from the heat we visited the local museum with its excellent displays on the history of the area, particularly mining. In the adjacent grounds we examined a great variety of mining machinery, from simple ripple boxes and cradles, used in placer mining, to a working stamper battery that crushed the quartz to paste in order to release its gold. Back in the bus we steadily drove deeper into the mountains until the bold outcrops of granitic rocks heralded our entrance into Yosemite National Park. Passing well known features, such as El Capitan, we settled into our accommodation for the night. In the evening we were given an introduction to the local geology, and a foretaste of some of the things we would be seeing over the next two days, by the park geologist of eight years standing, Greg Stock. We had also been provided with the lavishly illustrated handbook *Geology Underfoot in Yosemite National Park*, written by Greg and his co-author Allen F. Glazner.



*Park geologist, Greg Stock, pointing out features in the Yosemite Valley to excursion participants*

Next morning, July 12, the day promised to be hot, and it was. The first stop was to admire El Capitan, and his equally impressive neighbours from the grassy meadows interspersed with patches of ponderosa pine flooring the valley of the Merced River. It was then into the bus to see these impressive mountains from above, well almost. Stopping briefly at the entrance to a road tunnel, where in the haze the classic glaciated U-shaped profile of the Yosemite Valley was silhouetted against the sun. Next stop was at Glacier Point to gaze, almost at eye level with Half Dome and from various adjacent lookout points, vertically downwards to the valley floor. The Sierra Nevada, although exposing the roots of an Early Cretaceous volcanic arc that was more or less contemporaneous with the Franciscan Complex, is in geological terms very young. Ice sculpturing, from Pleistocene glaciations, and weathering in the form of exfoliation of the granitic faces are characteristic features of the park. We were also told about the early geologists who visited this area, including Josiah Whitney and Clarence King, amongst many others. After lunch amongst the pines it was back to the buses, apart from a few hardy souls who decided to walk to return to the valley floor. Greg then took us for a ramble down the valley where the greatest risk was not bears or tourist cars, but rock falls. Much work has been done dating the rock falls in an attempt to identify and quantify the high risk areas. Also increasing in frequency are devastating floods in the Merced River as climate change is bringing in warmer rainstorm events resulting in rapid snow melts.

The next day, coincidentally being a Sunday, we took a leisurely bus ride along Route 120, the Tioga Pass Road, which gradually climbs up the broad western flank of the Sierra Nevada. Although forested, evidence of bush fires was in many places only too evident. The first stop of the day was at Olmsted Point, just above the tree line, which allowed us to look southwest about 10 kms towards Half Dome and other peaks we had seen at close quarters the day before. Spectacular though the view was, it was almost eclipsed by the superb examples of exfoliation of the granite. Erratics left behind by the retreating ice littered a beautifully polished and striated pavement of granite showing wisps of mica and hornblende schlieren and other meso-structures.



*Excursion participants standing on a surface of glacially polished granite at Olmsted Point*



From here on it was across high mountain topography with characteristic *roche moutonnées* carved from granite domes by ice and more jagged peaks of sedimentary rock that were above the former ice field. Other features along the way included Tenaya Lake occupying a glacially scoured depression in granite. The lake has trunks of long dead trees poking through to its surface and they have been interpreted as having grown during very dry periods when the lake ceased to exist, approximately 1,000 years ago. Such periods would translate into mega droughts at lower levels making the dry conditions we had seen in crossing the Great Valley pale into insignificance. Beyond the lake, lunch was taken in the relaxing Tuolumne Meadows through which the river of the same name meanders. At the head of the river, amongst rugged mountains of metamorphic rock, we reached 3031m at the summit of Tioga Pass and the eastern entry point to Yosemite National Park. From there it was a rapid descent down the steep eastern face of the Sierra Nevada range to the much drier climate of Mono Lake.



*Excursion participants admire the view of Tenaya Lake and the surrounding outcrops of granite. The depression occupied by the lake was excavated by glaciers.*

Alkaline shallow Mono Lake lies within a large depression that formed as part of the basin and range province that resulted from crustal shortening, beginning in the Pliocene. With the Sierra Nevada rising to the west and volcanic activity in the east, drainage to the ocean is now blocked. As evidenced by numerous strandlines on the gentle slopes surrounding it, the lake is a remnant of a much larger Lake Russell, so named for the geologist Israel Russell, who mapped the area in the 1880s. Shrinking of the lake was accelerated when water draining into it was, beginning in 1941, diverted south to Los Angeles. This process has been partly reversed in that the water take has been reduced thus allowing the lake level to slowly rise, but it will still not reach its pre-1941 position. All of this was graphically explained in the Mono Basin Lake Visitor Centre overlooking the lake.

It was then round to the southern shore of the lake, passing on the way the small, well preserved, Mono volcanic craters. At the lake fragile tufa columns rise grotesquely from the exposed lake bed to heights of up to 5m. The columns are of calcium carbonate deposited by

underwater springs but are now exposed due to the man-induced, rather than natural drop in the level of the lake. Heading south from the lake along highway 395, there was more evidence of geologically young volcanism, including tuff rings, rhyolite domes and plugs of obsidian. To the west, in small valleys in the flanks of the Sierra Nevada, lateral and terminal moraines record multiple glacial advances. Our destination for the night was Mammoth Lakes ski resort.

In the morning a gondola ride took us to the top of the ski field. Although not much snow was in evidence, the ski field is popular with hikers, mountain bikers and those who just appreciate a good view of the basin and range topography. Glacial and volcanic features were prominent and we were given an insight into the wide variety of scientific research that is being undertaken in this superb natural laboratory. After lunch at Convict Lake, at the toe of the range front of the Sierra Nevada, it was further southeast to the Owens Valley and the side valley of Bishop Creek draining the Sierra Nevada, with more glacial landforms. Although the range front is marked by a number of active normal faults the sun was not in the right position to highlight scarps that can often be seen in this treeless landscape. Well exposed in the Sierra Nevada and in the White Mountains opposite, are well bedded and folded Paleozoic sedimentary rocks. On this part of the trip, Jere Lipps treated us to a very enlightening talk on the paleontology and paleoecology of the rocks of the White Mountains. On the way back to Mammoth Lakes we stopped at Hot Creek within the large Long Valley Caldera. Although igneous activity is extinct, the rocks under the caldera host an extensive geothermal system, including hot springs, and support a thermal power station. In the evening we helped Claudine Cohen celebrate Bastille Day.

First thing on Tuesday 15 July saw us retrace our route northwest to Mono Lake and then continue along the eastern flank of the Sierra Nevada, crossing the 2480m Conway Summit to the small farming town of Bridgeport, with its outdoor display of mining and other machinery. Lunch was at Lake Tahoe, which at 1900m above sea level, and in contrast to Mono Lake, is deep and surrounded by forested granite terrain. The lake occupies a graben whose lower end has been sealed by volcanic activity. At the lake we learnt of the environmental and planning challenges arising from competing demands of conservation and development, compounded by the lake straddling the Nevada-California state line. After lunch in Nevada we continued round the eastern side of the lake and, on reaching the Truckee River, crossed over the Sierra Nevada by way of the Donner Pass. The pass was part of the major route for those making their way overland from the eastern states to California, particularly its gold fields. The pass gained its name from the Donner party whose waggon train got trapped by snow in the winter of 1846-47. After a steep climb it was a gentle descent to Grass Valley, a former gold fields' town. Grass Valley has preserved many of its mid-19<sup>th</sup> century buildings, as has nearby Nevada City, where we had a convivial evening meal at a restaurant after being warmly welcomed by the locals.

The last day of the trip was to the Yuba River gold mining area. Unfortunately there was trouble getting the bus started in the morning so activities were a little curtailed. Nevertheless we were able to observe in the mother lode country extensive alluvial workings in the Tertiary quartz conglomerate, resting on bedrock and buried beneath late Miocene to Pliocene volcanics. While a lot of the placer gold was derived from the bedrock a significant proportion of it was transported by rivers flowing westward from Nevada prior to the uplift of the Sierra Nevada. The Pliocene paleogeography had an important bearing on the distribution of the payable gold deposits. Geologists at the peak of the placer mining were William Phipps Blake, Joseph Le Conte, along with Grove Karl Gilbert, who assessed the downstream effects of large scale mining, and with whom we were already familiar after hearing a number of presentations at Asilomar. From the mountains we followed the drainage southwest through Sacramento and into the Great Valley. Along the way several participants left at Sacramento or Dublin to make their own way to San Francisco. Those who remained on board arrived at Asilomar in the evening after a fabulous trip of about 2000 kilometres that crossed contrasting and spectacular country with a rich history, including in geology and mining.



*Conference attendees enjoy dinner*



*Another table showing contented diners*

The fieldtrip, along with the Point Lobos trip and the meeting were superbly organised. The meeting programme and field trip notes were well laid out with the latter containing copious amounts of information on the geology, geomorphology and history of the areas covered. For making the meeting such a success grateful thanks go to Ken Taylor and the organising Committee of Ken Aalto, Vic Baker, Ken Bork, Renee Clary, James Dawson, Greg Good and Léo Laporte. In addition, those assisting with the scientific programme, publicity and materials, were Mott Greene, Sally Newcomb, Michele Aldrich and Alan Leviton. Also a special thanks to the field trip leaders, all experienced researchers and historians of Californian geology and geologists: Léo Laporte, Edward Clifton, Bob Garrison, Stephen Rowland, Antony and Amalie Orme, Ken Aalto and Greg Stock, as well as to the bus drivers for safely conveyed us around Point Lobos and the Sierra Nevada. The input of the Geological Society of America's History & Philosophy Division is appreciated. Finally I thank Ken Taylor for his helpful guidance in compiling this report.

Mike Johnston, Nelson, New Zealand

## OTHER CONFERENCE REPORTS

### **The Soviet Arctic: Exploration, Investigation, Representation**

German Historical Institute, Moscow, 20-21 February 2014

The German Historical Institute at Moscow organized a very interesting multidisciplinary conference on *The Soviet Arctic: Exploration, Investigation and Representation* from 20-21 February 2014. Thirteen participants came from Russia, ten from Germany and three from the United States, which led to very fruitful discussions.

During the first session on *Man and the Force of Nature at the Polar Circle*, Galina Orlova described the scriptural economy of the Arctic as a dramatic medialization of Cheliuskin robinsonade and its effects. Bathsheba Demuth talked about natural history as human history, when showing the Soviet development and the Arctic environment in Chukotka in the Far East. Sergey Lar'kov's and Fiodor Romanenko's presentation focussed on GULAG, GUSMP and exploration of the Arctic. Ekaterina Kalemeneva turned to the *The Cosy Arctic* and explained the attempts to create a favourable living environment in the Far North in the 1960s.

During the second session on *Science and Technology in the Space of Coldness*, Cornelia Lüdecke introduced a survey of the unknown Arctic by a German-Russian cooperation under Schmidt-Ott (1930-1933). Barbara Schennerlein continued in talking on the aerophotogrammetric works during the Arctic ride by the Airship "Graf Zeppelin", LZ 127, in the context of exploration of the Soviet polar regions. Olga Krasnikova specialized on scientific research in the Arctic and the Polar Committee (1914-1936) of the Academy of Sciences. Julia Lajus concentrated on the controversial perceptions of Arctic warming in the context of Soviet polar exploration and resource use during the 1930s – 1950s. Finally a co-operation of Elena Kuligina, Peder Roberts and Julia Lajus resulted in a paper on seeing the Soviet Arctic through British eyes by the example of Terence Armstrong and the evolution of East-West relations in polar research in the period 1947-1965. A discussion of scientific research in the Arctic followed in the late afternoon.

The third session was devoted to the Arctic as a deployment zone. Mikhail Suprun presented the Arctic in the focus of strategic plans of the world powers during the Second World War. He was followed by Ronald Doel's outline of exploring the Cold War Soviet Arctic from Washington, DC, when assessing from afar. Matthias Uhl added the Soviet plans for the Arctic region in the Cold War.

The fourth session dealt with representations of the Arctic in Soviet art. Alexander Schwarz talked about the journey of heroes crossing the Arctic and moving in the Ice, while Ekaterina

Voicickaya focussed on the Arctic in the Soviet music referring to images, genres, and personalities. Finally Alexander Ananyev introduced the Arctic and the polar explorers through the caricature.

The conference closed with the fifth and last session on the Arctic in fiction, myths and legends. Heinrich Kirschbaum started with a talk on *Crowned with an Icy Tiara*, as synonym for multifunctional topic of the northern Arctic in the works of late Zabolockiy. Alexander Andreyev and Mariya Dukal'skaya focussed on the epic land of the Soviet Arctic. The conference ended with Matthias Schwartz's final presentation on Arktaniya - the North Pole in adventure literature and science fiction of the Stalin era.

This conference brought together people representing history, polar historians, natural science and humanities which resulted in very interesting discussions about various aspects, seen from different point of views.

Cornelia Lüdecke, Munich

### **Session “Presence of the past and methods and innovations in polar social sciences”**

33<sup>th</sup> SCAR Biennial Meeting and Open Science Conference, Auckland, New Zealand, 28 August 2014

During the 33<sup>th</sup> SCAR Biennial Meeting and Open Science Conference at Auckland, New Zealand on 28 August 2014, a session on the presence of the past and methods and innovations in polar social sciences, was organized by Daniela Liggett (New Zealand) and Cornelia Lüdecke (Germany). Unfortunately there was too little time for more talks during such big conferences, resulting in a small session with only six talks, although many more abstracts had been submitted.

Anne-Marie Brady (New Zealand) focussed on Antarctica in China's national narrative in the context of the presence of the past. Cornelia Lüdecke (Germany) showed how the discovery of the extinct volcano Gaussberg – an island in the ice – served as a representation of Antarctica for German scientists in 1902/03. Elizabeth Leane (Australia) gave the Lewander Lecture and introduced a very prominent controversy on the Macquarie Island penguin-harvesting, referring to science, celebrity and media in a sub-Antarctic wildlife campaign in the 1920s. Stuart Prior (New Zealand) explained the influence of Soviet Antarctic expeditions on the future of Russia's southern polar interests, while Alessandro Antonello (Australia) analysed the verbatim records and sound recordings of Treaty diplomacy in listening in on “life” Antarctic history. Daniella McCahey (USA) presented extreme environment and the shaping of scientific knowledge with an example of the Royal Society expedition to Halley Bay in the period 1955-1959.

Cornelia Lüdecke, Munich

### **History of Geology Group (HOGG) – annual record for 2014**

HOGG was founded in 1994 as an affiliated special interest group of the Geological Society of London. Membership is open to all with an interest in the history of geology; fellowship of the GSL is not a prerequisite. At the end of 2014 HOGG has 158 members. The membership is kept informed by a newsletter every four months and by our website, [www.historyofgeologygroup.co.uk](http://www.historyofgeologygroup.co.uk). Both keep us abreast of meetings and include short articles and book reviews. News and information of common interest is shared via an email jisc-mail that may be used by all members and goes to all members.

Activities are organised by a committee of ten who are elected for a period of three years and who, in their term, are expected to organise at least one event as well as support other events. Typically an annual programme consists of 3 to 4 meetings including field trips.

The HOGG Committee for 2014 comprised: Chair John Henry, Vice-Chair Dick Moody, Secretary Leucha Veneer, Treasurer David Earle, Membership Secretary Cherry Lewis, Alan Bowden, Chris Duffin, Tom Hose, Tom Sharpe, Dave Williams and co-opted member Beris Cox (newsletter editor).

In 2014, HOGG's activities included:

Field trip to Burgundy, France – 13-19 April, organised by Dick Moody and John Mather. In Dijon we visited the hydraulic engineering projects of Henry Darcy (1803-1858), the 'Father of Hydrogeology'. South of Dijon, we studied the influence of lithology, topography and soils as they combined to influence the production of fine wines.

Field trip to Brecon, Wales – 18-20 July, organised by Duncan Hawley and John Henry (Fig. 1). We followed in the footsteps of Roderick Impey Murchison (1792-1871) to locations he visited which lead to his 'Discovery' and defining of the Silurian System.

Geology and Medicine, part 2, at Burlington House, home of the GSL – 2-4 November, organised by Chris Duffin, Dick Moody and Christopher Gardner-Thorpe, who had also organised part 1, in 2012, the success of which encouraged part 2. This conference investigated the work of physicians who contributed to geology and the historical links between geology and disease and was preceded by a visit to Hoxton, East London to see the neighbourhood and buildings associated with James Parkinson (1755-1824).

In addition:

HOGG secretary, Leucha Veneer, spoke on BBC 4's *In Our Time* broadcast, 30 January, about Catastrophism. *In Our Time* is a weekly broadcast in which three studio guests discuss an aspect of the history of ideas. It has a reported weekly audience of 2 million listeners.

HOGG sponsored the organisers of the Arthur Smith Woodward 150th Anniversary Symposium, on 21 May, at the Natural History Museum, London. Woodward (1864-1944) was Keeper of Geology at the NHM from 1901-24 and the 'greatest palaeo-ichthyologist of his generation'.

HOGG hosted a visit on 21 May from the Société Palaeontologique de Ville-sur-Mer of Normandy, organised by Dick Moody and John Henry. The visit included a building stones tour and the GSL library to view William Smith's map and historic geological maps of Normandy. GSL library head Fabienne Michaud, was our hostess and very welcome after the halting French of the tour leader.

Four HOGG members paid for the conservation of an early un-numbered William Smith map, *Delineations of the Strata of England and Wales with part of Scotland*, 1815, which was discovered in February in the archives of the GSL. It had been lost for more than 40 years, having been put in a 'safe place'. HOGG supports the effort and achievements of the GSL's professional archivist, Caroline Lam.

HOGG supported two historical re-enactments organised in the Upper Library of the Geological Society by archivist Caroline Lam and the Library Staff. On 10th July, they staged a reconstruction of a lecture given at the end of WWI by Lt Col. Tannatt William Edgeworth David (1858–1934), known as Edgeworth David. Caroline had recently discovered a draft of his lecture; hitherto, the only evidence of it was a note in the GSL Proceedings. Her find inspired the restaging of the event. Professor Ted Rose was invited to read Lt Col. David's lecture, and comment upon it, in the Upper Library which was reconfigured to represent the parliamentary style of the original GSL lecture theatre (Fig. 2). Relevant maps were placed on the tables in the centre for inspection.

Copies of portraits of illustrious past presidents were hung over the bookcases to recreate the atmosphere of that earlier meeting room.

On 6th November 2014, the Upper Library was transformed to its previous incarnation as the GSL's Museum to provide the venue for "an elementary class on fossils" given by Edward Charlesworth (1813–1883), geologist and would-be curator of the Museum. The Library was arranged as class room with 'lanterns' on the student tables, a pair of great elk horns above the black board, and a large real fossil rhinoceros skull at the entrance. The shelves surrounding the students on the main floor were labelled by Period for the imagined fossils. In this theatrical setting, our instructor, Charlesworth was played by Ted Nield (editor of *Geoscientist*) in academic gown. The actual class never actually happened but Charlesworth lived and applied for the curatorship. He was rejected for previous editorial attacks on the GSL. On the other hand, early in his career Ted had written and illustrated *Drawing and Understanding Fossils* (1987) and (with V C T Tucker) *Palaeontology: an Introduction* (1985) for Pergamon Press. The amalgam worked and what might have been felt very 'real'.

HOGG member, Dr Ted Rose was awarded the Geological Society's Sue Tyler Friedman medal for excellence into the history of geology. Ted has co-edited two books published by the Society, *Geology and Warfare and Military Aspects of Hydrogeology*, and was senior co-author of a *Geologists' Association Guide to the Geology of the D Day Landings in Normandy, 1944*. He has been an indefatigable promoter and supporter of the International Conference on Military Geosciences Series. Since retiring from lecturing at Royal Holloway in 2003, his research output has increased—firmly establishing him throughout Europe and North America as doyen of military geology historians.



*Figure 1. Brecon field trip leader, Duncan Hawley, links the landscape to descriptions in Murchison's field notes. In HOGG field trips we attempt to see the geological evidence in the context of the historical character whose work we are tracking.*



*Figure 2. Professor Ted Rose, delivering Edgeworth David's post-World War One lecture of his experience as a geologist on the Western Front. The setting of parliamentary format of Society meetings until 1972 was reconstructed in the Upper Library of the Geological Society.*

John Henry (Chair), London, UK



## AWARDS

### ***ROBERT H. DOTT, JR. – 2014 GERALD M. AND SUE T. FRIEDMAN AWARD for DISTINGUISHED SERVICE TO THE HISTORY AND PHILOSOPHY OF GEOLOGY***

The History and Philosophy of Geology Division, Geological Society of America (HPG-GSA) is privileged to present its 2014 Gerald M. and Sue T. Friedman Distinguished Service Award to Robert H. Dott, Jr., Emeritus Professor of Geoscience, University of Wisconsin, Madison.

Bob's long record of service to the history and philosophy of geology includes a term as Chair, U.S. Committee on the History of Geology, National Research Council (1981-1983); President, History of the Earth Sciences Society (1990); and Chair, History of Geology Division GSA (1990). In addition, Bob was a member of the ad hoc committee to determine guidelines for the Mary C. Rabbitt Bequest, HPG-GSA (2006). In his capacity as a founding member of GSA's Rock Star Series and in additional papers, Bob published on such historically important figures as Lyell, Hutton, Chamberlin, Van Hise, Twenhofel, Sloss, Davy, and Kay. He has also published papers countering creationists' claims of a young Earth and their assertions that geologic history is a series of divinely determined events.

Bob has received numerous awards for his research in sedimentology as well as history of geology. Most relevant here is the History of Geology Award (1995), now known as the Mary C. Rabbitt Award, given by the History and Philosophy of Geology Division, GSA.

Moreover, Bob has had an unmatched ability to get others involved in the history of our science via teaching and mentoring. Numerous chairs of this Division and speakers in our symposia were students of Bob's at the University of Wisconsin, Madison or were colleagues who associated with him at Madison and elsewhere.

Bob designed a potent seminar course, History of Geologic Thought, in which readings from Geike, Albritton, Kuhn, Collingwood, Playfair, Hutton, Van Hise, Chamberlin, and others engaged students in the drama of the development of our science and its philosophy from biblical to contemporary times. For me personally and for decades after first reading Geike, vignettes on Leonardo da Vinci gestated in my mind and compelled me to explore the nexus of art history and history of geology.

Bob's respect for the founders and philosophy of geology informs his text, "Evolution of the Earth." Co authored with Roger Batten and Donald Prothero, "Evolution of the Earth" established itself as contemporary geology's preeminent historical text from the moment it was first published in 1971. I vividly remember the prototype, the maps and sections that Bob had us work on when I was a student at Wisconsin in the '60's, because they involved us in using facies distributions and structural relationships to recreate the past, to find ancient shorelines, cratons, and mobile belts, and to define sea level changes and ancient environments the same way that the founders of geology discovered how to do.

As publicity for the book states, the key word is "involving" students in, "How do we know?" rather than merely, "What do we know?" That inclusiveness engenders a sense of belonging in the science, a sense of understanding not only how geology's founders made connections between the rock and fossil record and the history of the planet, but also why they occasionally bumped up against each other in debate and why the our science has not simply progressed in a straight line towards absolute truth about our planet. Our involvement in the process of geology and insight into our founders' mistakes and triumphs undoubtedly have much to do with the number of us whom Bob inspired.

Bob's teaching and mentoring are vital to acknowledge in the context of our times. There is a troubling trend to devalue historical geology within geology curricula; historical geology is disappearing as a course offering and as it fades so does appreciation of the history of the science, which is integral to the course. One publisher estimates that approximately 225,000-250,000

undergrads take physical geology at American universities each year, but that only a tenth of those take historical geology and most of those are majors.

This publisher reports a “definite decline” in historical enrollments but an increase in numbers taking “geological hazards,” “global change,” and “environmental geology” although he believes that enrollments in the last of these are leveling off. He reports that the “death and destruction” courses as he calls them have become preferred options for general education requirements in most states. Oddly, one exception appears to be Texas, a creationist stronghold, where historical remains a “gen ed” option in many areas.

The publisher of Bob’s text agrees that institutions are either eliminating historical altogether or offering only small sections of the class. In response, his company is marketing chapters of Bob’s book as separates that instructors can assemble into course packs so that even historical for majors can be squeezed into one or two weeks in physical or environmental geology.

I submit that students cannot internalize the concept of deep time during a week or two in an introductory class, let alone when it is reduced to a brief survey in an advanced geology course for majors. Deep time is what makes our science unique. Historical geology is the one course that shows how the past is key to understanding the web of interrelationships of geologic processes operating today and how that understanding came to generate the ethical structure of our science. It’s imperative to help students begin to understand early in the curriculum that they are successors and conveyors of that tradition. Geologists, not creationists, speak for the ethics of our science.

Take environmentalism for example. Bob tells me that Aldo Leopold is one of his heroes. As I reported at GSA’s 2014 annual convention in Vancouver, Leopold’s, “A Sand County Almanac,” a founding text of modern environmentalism, is imbued with Leopold’s awareness of the long history of the Earth. Leopold uses every mention of deep time to reinforce his assertion that there are profound and unfortunate consequences of the single-minded commodification of the land. As Leopold lamented, the harmony between humankind and nature that has evolved over millennia is being destroyed in a geological instant. Bob reinforces this ethical lesson from Earth history in, “The Best of All Possible Worlds?” the final chapter of his text. And because he has shown that it has taken human beings millennia to comprehend and give voice to this ethic, he compels us not to forget it.

More generally, education in America is suffering a malaise; it has become commodified according to business models that are administratively rather than pedagogically driven and co-opted by political demagoguery that has demonized teachers and diverted resources to privileged groups. All of this runs counter to the role that education has played in American democracy and our democracy will suffer if this trend persists.

We are thus obliged to laud great teachers and fortunately we can say that geology has Bob Dott as preeminent exemplar for historical geology and history of our science. We can confidently assert that Bob’s teaching and mentorship serve as paradigms for a bright future for the geosciences because they build on vital lessons from the past and we are delighted to assert this recognition of Bob with the Gerald M. and Sue T. Friedman Award.

The above citation was prepared by Gary D. Rosenberg.

***DR GREGORY A. GOOD – HONORARY DOCTOR OF HUMANE LETTERS DEGREE***

Dr. Gregory Good, a Saint Vincent College graduate who is director of the American Institute of Physics Center for the History of Physics, was the main speaker at the annual spring honors convocation of Saint Vincent College on Wednesday, April 23 in the Saint Vincent Archabbey Basilica. His talk was entitled, “A Life Built on the Liberal Arts.” He was also honored with the

conferral of an honorary Doctor of Humane Letters degree.

The degree citation, read during the presentation, summarized Good's extraordinary career. "If you travel to Marilla Park in Morgantown, W.Va., and you are near Deckers Creek, take time to read a small metal plaque near the pedestrian bridge. You will note that it is named the 'Good Bridge,' not a good bridge in the sense of architecture or construction, but named for Dr. Greg Good. This plaque honors Good, who spent nearly a quarter of a century as a history professor at West Virginia University and is currently Director of the American Institute of Physics Center for the History of Physics in College Park, Md., for his advocacy of urban green spaces and walking trails in the Morgantown area. Teaching, research, in particular the history of geophysics, and his work with the Greenspace Coalition in West Virginia are characteristic of this Latrobe native who exemplifies the values of a Saint Vincent College Catholic, Benedictine and liberal arts education. When he received the Mary C. Rabbitt History of Geology Award in 2008, Dr. Good remarked that his first love was astronomy—he bought telescopes, built an observatory and lectured to school children at planetariums—all of this led him to become a physics major at Saint Vincent. Dr. Good was nurtured and encouraged by members of this department, but he also fondly recalls the influences of his German, history and philosophy teachers. A good liberal arts education prepared him for an unforeseen career. As he was applying for graduate school in 1974, he discovered a new option: history of science. 'When I was filling out applications to graduate schools for astronomy, I noticed that three had programs in the history of science. Two seconds with an eraser changed my future.' After he earned a Ph.D. in history and philosophy of science from the University of Toronto in 1982, Good began his academic vocation as an author, educator and historian of science at West Virginia University, and in 2009 he became Director of the American Institute of Physics Center for the History of Physics. The mission of the Center is 'to preserve and make known the history of modern physics and allied fields' through education programs and by assisting scholars in their research, Greg Good's academic background and love of the liberal arts and physics, which began at Saint Vincent College, continues and will continue to guide and inspire him. For a life devoted to scholarship, teaching, mentoring of students and concern for the environment, Saint Vincent College is proud to present the degree, Doctor of Humane Letters, honoris causa, to you, Gregory A. Good."

Good has described his work as "a repository for our memories of what we have tried, of what has been good and what has not . . . based on an honest, hard-nosed evaluation of what we have known about the Earth." He has also written that "a passion for the world and the living augments scholarship."

A 1974 graduate of Saint Vincent College who earned a bachelor of science degree in physics with highest honor, he earned a master of arts and Ph.D. in history and philosophy of science from the University of Toronto. He is the son of the late Albert and Hilde (Stauffer) Good, of Latrobe, and a 1970 graduate of Derry Area High School. He and his wife, Lynn Sobolov, live in Takoma Park, Md. Their two daughters, Colleen and Anna, graduated from Macalester College and Allegheny College, respectively.

A distinguished historian of science, Good's numerous publications include works on the history of astronomy, geophysics, geoscience and physics of the 19th and 20th centuries. He edited a history of the Carnegie Institution of Washington. His two-volume *Sciences of the Earth: An Encyclopedia of Events, People and Phenomena* published in 1998 remains a definitive resource in the history of geology. Today, he authors a blog – *GEOcosmoHISTORY – Human stories at the boundaries of Earth and Cosmos: science, technology and environment.*

Good held a variety of distinguished positions during his career. These include a postdoctoral position with the Smithsonian Institution, a research associate at the Carnegie Institution and a visiting scholar at Cambridge University. He served as editor of *Earth Science History* from 1998-2004. He was the chairperson of the history department and director of graduate studies in history at West Virginia University until 2009 when he became the director of the American Institute of Physics' Center for the History of Physics. In that position, he carries forward its mission "to preserve and make known the history of modern physics and allied fields." This includes documentation programs, educational programs (including Web exhibits), and support for the next generation of historians of physics. He is a member of the International Commission on the History of Geological Sciences and chaired the American Institute of Physics' History Advisory Committee from 2004 to 2008. He is an officer of the International Commission for the History of Physics.

In 2008, Good was awarded the Mary C. Rabbitt History of Geology Award. The citation for the award stated that Good's ability to make connections between various disciplines and establish community among scholars were his defining characteristics. Good "creates essential connections within the subject matter by drawing together multiple threads of the earth sciences in his own scholarship and by his editorial work." In addition to his numerous professional accomplishments, Good has also assisted local schools in grant writing for science and environmental education.

The above citation has been copied from the Saint Vincent College website.

***Renee Clary – Dean's Eminent Scholar Award***

This award is presented annually to the outstanding researcher in the College of Arts & Sciences (physical sciences) at Mississippi State University.

***Andrea Candela – Moran Award***

Andrea Candela has been awarded the Moran Award for the History of Science Research at the Australian Academy of Science. The award will be used to carry out a post-doctoral research about the history of uranium in the 20th century at the Basser Library in Canberra.

## OBITUARIES

**David Roger Oldroyd (1936 –2014)**

*David Oldroyd (1936-2014)*

David Oldroyd died of cancer in Sydney, Australia, on 7 November 2014, after a long illness. His death brought memories of his life and works from all parts of the globe, as he had been a good friend to so many over the years. It was fitting that tribute was paid to his work in the History of the Earth Sciences at the June 2014 INHIGEO meeting at Asilomar, California, and that his last published paper on his favoured subject ‘geological maps’ arrived in Australia just before his death.

Fortunately we have an interesting autobiographical record of much of David’s life, recorded through an interview by his friend, Jiuchen Zhang, Institute for the History of Natural Science, *Academica Sinica*, Beijing, in Oslo, Norway, at the International Geological Congress in August 2008. David was always a very well-organised person, and we can rely on his memories.

David was born at Luton, thirty miles (48 km) north of London, and lived in a nearby country village for his first ten years. In the war years he was sent, with many other children, to the Lake District, in the north of England, to escape from bombing raids.

David’s father had hoped that he would become a medical doctor, so David took appropriate subjects in high school, but found some of the teachers uninspiring. In the event he spent an extra year at high school to improve his marks for entrance to Cambridge University. In 1955 he went to Emmanuel College, Cambridge, hoping to study medicine, but there were no available places, so he entered science, thinking to study physics. However he found the physics teaching dull, so

concentrated on chemistry, but included some geology and mathematics in his studies. His major subject for graduation was chemistry, but, as he said, he preferred geology, and in particular the fieldwork.

One of the problems which affected his science studies was that he had learnt to play the cello, and he spent a considerable time on this ‘amusement’. Another was the death of his mother, just before graduation exams, so his final results were not good enough to allow him to continue for a research degree. Thus he became a high school teacher at John Lyon School, Harrow, northwest of London. He also married Jane Dawes, whom he met when she was an oboist in the same quality youth orchestra.

Several years into teaching David learnt of a Master’s degree in History and Philosophy of Science. He felt that a Master’s degree might help his advancement in the education field, and so attended the evening course at University College, London, three evenings a week. While he found the history lectures interesting he thought the philosophy lectures were poor.

It was the Cuban crisis which decided the family to migrate, in 1962, to New Zealand whose Government was prepared to pay the family’s fares, and the move would be an adventure. One problem was that David had not taken the Master’s exam before they left England. However, the following year, London University sent the exam to him in New Zealand, and after he completed that he was asked to write a dissertation, choosing the subject himself. He decided on ‘Geology in New Zealand prior to 1900’. This gave the family the opportunity to travel to various parts of the country on ‘camping holidays’. The thesis was passed, and was one of the earliest summaries of early New Zealand geological work, still referred to today.

David taught at two New Zealand high schools, in Hastings and then Christchurch, enjoying the second more because of its ‘English’ approach, although he was not enthusiastic about its emphasis on rugby and religion!

Having obtained his Master’s degree David thought it might be possible to obtain a University teaching position, as there was growing interest in Australia and New Zealand in establishing courses in the history and philosophy of science, such as had become well-established in the USA and elsewhere. When the University of New South Wales advertised such a position David was appointed, being the sole applicant! As he later said, getting such an appointment today would be impossible for such as he was, having no publications and only a Master’s degree. When he arrived in Sydney his Head of School said “you must get a doctorate, and if it has not been achieved in five years you will not be appointed permanently”.

Receiving advice from his earlier examiner, Victor Eyles, doyen of English historians of geology, David made contact with Dr Tom Vallance, at the University of Sydney Geology School, who was already known for his historical work. The contact was the beginning of a life-long friendship. David found the study and writing of a doctoral thesis relatively easier than his previous studies under exam conditions. He decided on the topic: “The relationship between mineralogy and chemistry”. A period of study leave greatly helped the completion of his thesis, entitled “From Paracelsus to Haüy: the development of mineralogy in relation to chemistry”, and it was submitted in 1974.

Based on his own lecture courses, David published his first book *Darwinian Impacts: An Introduction to the Darwinian Revolution* (1980, reprinted 1983, 1988). This was followed (1986) by *The Arch of Knowledge: an Introductory Study of the History and Philosophy and Methodology of Science*, reprinted 1989, and translated into Italian, Spanish and Chinese (2008).

In 1990 *The Highlands Controversy: Constructing Geological Knowledge through Fieldwork in Nineteenth-Century Britain* was published. David suggested that this was the reason, that, shortly after, in 1994, he was awarded the Sue Tyler Friedman Medal of the Geological Society of London. Five years later his work was acknowledged by the American History of Science confraternity, with the History of Geology Award of the Geological Society of America, in 1999, and a Centenary Medal from the Commonwealth of Australia Government. David was

elected a Fellow of the Australian Academy of the Humanities in 1994, the first historian of science to be so elected, and later he was elected a Member of the International Academy for the History of Science in 2002.

Though these awards were certainly greatly appreciated by David, he probably achieved his greatest satisfaction in the help he gave to many colleagues, from innumerable countries, whose first language was other than English, in preparing their papers for publication. The amount of time he devoted to such tasks must have been enormous. He did this for papers given at innumerable conferences, and for issues of *Earth Sciences History*, which he edited between 2007 and 2013, and earlier for *Annals of Science*, *Metascience* (in the formation of which he played a seminal role), and other journals.

His most recent award was the Vallance Medal, funded in memory of David's good friend, the noted Australian historian of science (although Tom Vallance would probably have preferred to be remembered as a distinguished metamorphic petrologist). This was awarded, in absentia, by the Earth Sciences History Group of the Geological Society of Australia, of which David was a member, at the 2014 National Convention held at Newcastle, New South Wales.

My wife and I were privileged to travel with David and Jane to many parts of eastern Australia and overseas. We were 'on the spot' to see the beginning of his fieldwork on the book *Earth Cycles* (2006) which begins with an interesting discussion on the Yorkshire song '*On Ilkla Moor bah't 'at*'. A particularly special memory remains of our visit to the Lake District, in northern England, in 1987. Here, in addition to recalling his memories of the WW2 years, we were able to visit localities and remember personalities which David had brought to life in his *Earth, Fire, Water and Ice: Two hundred Years of Geological Research in the English Lake District*. The study had taken him back to his war years as a young boy, when he was first in that beautiful locality. It was probably appropriate that David's last field trip was to that same locality at the History of Science meeting in 2013.

David and Jane suffered a heavy loss in 2013, with the sudden death of their younger son, Nicholas.

David was given an affectionate farewell by many friends from a wide range of occupations. Fellow musicians from the Ku-ring-gai Orchestra paid tribute to his memory at his funeral, mixing music appropriately with spoken memories of a fulfilling life by his son Dr Ben Oldroyd, academic colleagues including David Miller and many friends.

We will not see another 'David' in our time. David's and Jane's dogs will be inconsolable.

David Branagan, Sydney, Australia

(This obituary was first published in *Earth Sciences History*, v. 34, no. 1, pp. 152-154, 2015)

### **David Oldroyd – outstanding historian of the geological sciences**

This essay is devoted to the memory of an outstanding historian of science, chemist and geologist, Professor David Oldroyd (1936-2014), Vice-President of the International Commission of History of Geological Sciences (INHIGEO), an INHIGEO Honorary Senior Member.

My relations with David Oldroyd were established in July 2002 during the International Symposium *Alcide d'Orbigny 1802-1857. His life and works. Stratigraphy: from d'Orbigny to the present*, which was held at the Museum of Natural History in Paris. He kindly reintroduced me to INHIGEO members after an interval of years, and has always paid great attention to my work on the history of geology in my country. During the last decade we met at annual INHIGEO conferences, talked at geological excursions and communicated by electronic means. The deepest remembrances I have of him are of a time in August 2008, when we met in Helsinki to discuss his

notable survey on early geological maps and their influence on the development of Earth science in Central and Eastern Europe.

David Oldroyd was a very talented historian of science, having a deep knowledge that allowed him to produce outstanding scientific work. His activities encompassed global thinking and and he had a critical attitude to questions under discussion. He is the author and scientific editor of fundamental books on the history of the geological sciences, of single book chapters, of encyclopaedias and dictionary articles. He particularly liked to write book reviews and essays on actual historical surveys. His journal articles were often devoted to some eminent scientist in the history of geology.

Being Secretary-General of the Commission on the History of Geological Sciences (INHIGEO) from 1996–2004 and Vice-President of that Commission for Australasia and Oceania from 2004-2012, David Oldroyd gave much to INHIGEO, in particular he supported its activity in non-English speaking countries. For his distinguished contribution to the recording of history of geological sciences he was awarded the Sue Tyler Friedman Medal of the Geological Society, London (1994), the History of Geology Award of the Geological Society of America (1999) and the Tom Vallance Medal of the Geological Society of Australia (2014). National Recognition by the Australian Commonwealth Government awarded him a Centenary Medal, “for services to Australian society and the humanities in the study of the history of science” (2003).

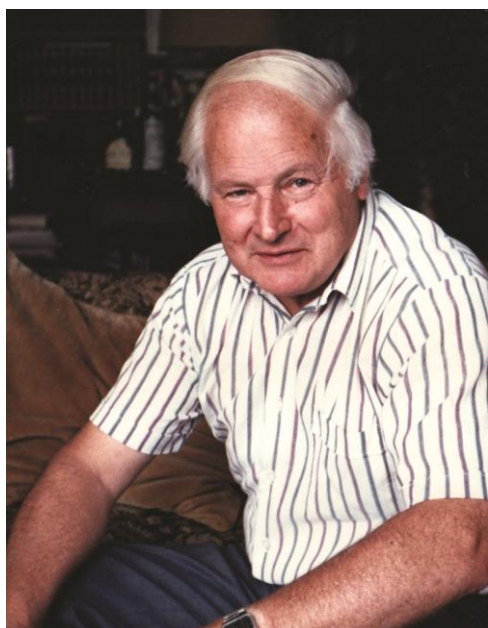
This wonderful scholar can be described as a classical in the history of geology. It was always good to be in his company. He was a man of sweet humour and had a kind heart.

Acknowledgment is given to Barry Cooper and Wolf Mayer for recent information on David Oldroyd.

Algimantas Grigelis, Vilnius, Lithuania

(The above tribute is a summary in English of an essay published by Algimantas Grigelis in *Geological Horizons*, a Journal of the Geological Society of Lithuania, 2015, No. 1)

### **Gordon Younger Craig, FRSE, 1925-2014**



Gordon Craig was born on the 17<sup>th</sup> January 1925 in Milngavie, the only son of James and Emily Maud Craig. Gordon’s father was an accountant with what was then the Zanaco Sugar Company and though in a relatively humble position was a self-taught man, reading novels in their original language. Gordon’s mother was a teacher and when his father died when Gordon was only 16, a strong relationship developed between Gordon and his mother though he always wished that he had known his father better. Gordon attended Hillhead High School and Bearsden Academy before entering Glasgow University, the period of study interrupted by wartime naval service. He was a bit of an entrepreneur, instigating Saturday night University Union Palais dances which boosted the funds of the University Geological Society and permitted bringing prestigious speakers to joint meetings with the Glasgow Geological Society. He graduated in 1946 with a first class honours degree and was a demonstrator in the Glasgow department

*Gordon Younger Craig 1925-2014*



from 1946-47.

Prof T Neville George recommended Gordon for a lectureship in Palaeontology at the University of Edinburgh, and in 1947 he took up that position at the princely salary of £500 per annum. He arrived in Edinburgh as a babe-in-arms at the age of 22 to rub shoulders with rather older colleagues Dr Campbell (Petrology), Dr Craig (Economic Geology), a more youthful Dr Cockburn (Stratigraphy) an extremely youthful Bob Beveridge, all under the leadership of Professor Arthur Holmes and, above all, Miss Berry, the redoubtable departmental secretary. He went on to become Senior Lecturer and Reader in 1960 and the first James Hutton Professor of Geology at Edinburgh University in 1967. From 1981 to 84 he headed the Department of Geology.

Gordon counted himself very fortunate to have been a member of staff at Edinburgh University under both Holmes and subsequently, Fred Stewart, two very different personalities. Each supported Gordon in his research in the emerging topic of palaeoecology, taking a holistic view of the geological environment and the species therein linking the fossils with the sedimentary environment. However, Gordon's main contribution to the geological world was in his ability to see the "big picture". In the same way that students over the years have treasured Holmes' "Principles of Physical Geology" so has Craig's "Geology of Scotland" become one of those books that both sums up and gives a contemporary view of the diverse geology of Scotland. This bible of Scottish geological interpretation ran to three editions under the editorial guidance of Gordon Craig with a fourth edition published in 2002, edited by Nigel Trewin. Gordon had the gift of being able to communicate important ideas in the most succinct way. In 1969, his presidential address to the Edinburgh Geological Society was published in the *Scottish Journal of Geology* on "Communication in Geology". In this paper he sums up most eloquently his early research into the paleoecology of *Lingula* as follows; "*Lingula* burrows vertically, anterior end uppermost and always did"!

Gordon, the James Hutton Professor of Geology together with Fred Stewart as Regius Professor, made a formidable team. The term hard man / soft man has been used, Fred the stiletto, Gordon the velvet glove; Fred on what should be done and Gordon on how to do it. During the turbulent times of the Oxburgh Review when Earth Science departments across the UK were subject to critical examination, Edinburgh had to present its case. A comment from Gordon was remembered, "It pays to have a snappy hack on your team. Matthew did the crucifixion in 2000 words and it has lasted 2000 years". A snappy hack was put to the task – he was Gordon Craig.

Gordon was always enthusiastic about ensuring that the science done in geology departments throughout Scotland and elsewhere was accessible to a global audience. He was a prime mover in the merging of the Transactions of the Geological Societies of Glasgow and Edinburgh into a single, prestigious journal, the *Scottish Journal of Geology*. Today this journal stands pre-eminent as the vehicle for the academic communication of contemporary Scottish geological thought.

Gordon's broad perspective on geology was fostered by engagement with departments across the world, in Los Angeles, British Columbia, Canberra and Texas. Gordon became interested in the work of the International Commission on the History of Geological Sciences (INHIGEO) and was its President from 1984-89. He was keen to share the importance of the heritage aspects of the geological sciences and was involved in setting up international conferences for the Commission in Moscow, Pisa, Washington, Edinburgh and Budapest. Through this engagement, he promoted the significance of Edinburgh as the home of the father of Modern Geology, James Hutton. The Mary C. Rabbitt History of Geology Award is presented annually by the Geological Society of America's History of Geology Division to an individual for exceptional scholarly contributions of fundamental importance to our understanding of the history of the geological sciences; in 1990 Gordon Craig was its recipient.

When the Clerk family of Penicuik House were researching their own family papers they found drawings by Sir John Clerk of Eldin which looked geological. They took them to the National Museum of Scotland where Charles Waterston was in charge of the Geology Department. They made this pilgrimage and left the drawings with Charles, in shock, in his office! Just as they were leaving, they passed Professor Donald McIntyre, on sabbatical leave from Pomona College in California on the stairs on his way to visit Charles about something else. Together Charles and Donald shared their astonishment and pleasure over this remarkable discovery and, of course, identified immediately what they were, and of their importance. Together with Gordon Craig they researched the localities and “The Lost Drawings” which were meant to illustrate Hutton’s second volume of the “Theory of the Earth” were published with Gordon as editor in 1978. Subsequently in 1997, Gordon was involved in the organisation of an Edinburgh and London-based symposium to celebrate the bi-centenary of Hutton’s death and the birth of Charles Lyell. One of the highlights of the Edinburgh part was a pilgrimage to Siccar Point where Hutton had revealed to Sir James Hall and John Playfair the evidence for the enormity of geological time. In typical Gordon style, he also organised a substantial lunch of beer and sandwiches in the nearby swede packing factory at the cost, apparently, of some rather expensive rugby club raffle tickets! One of Gordon’s most successful publications was the book, “A Geological Miscellany” which is a wonderful compilation of stories by Gordon and Jean Jones about geology and geologists and is a “potpourri of adventure, anecdote, epigram, autobiography, discovery, hypothesis and bureaucratic absurdity”.

Gordon’s concern for the effective communication of Earth Science stories is exemplified in his role as one of the founding Trustees of Our Dynamic Earth, a position he held from 1995 till 2001. This was a project which was a long time in gestation, triggered by the generous donation of land by the late Sir Alick Rankin then Chairman of Scottish and Newcastle Brewers Ltd. He saw it through all the turbulent early years and the final successful bid to the Millennium Commission for funding but continued to take a keen interest in its development right up until his death. It was Gordon who involved me in Dynamic Earth, assisting Sandy Crosbie in the writing of the scientific story and working with the designers to produce the initial exhibition. I owe Gordon a great deal.

Despite all of these contributions to Earth Science, all of us who knew Gordon will remember a man who gave us all that most precious of gifts, the gift of time. He had time for all of his academic colleagues, he had time for his students, and he had time for his wide circle of friends, neighbours and family. His family life had its ups and downs. Losing his first wife, Molly was a devastating experience but his later years were enriched by Mary with whom he had many years of happiness and laughter as visitors from around the world came to visit him in Lasswade. He was a keen golfer and was captain of the Mortonhall Golf Club from 1972-73. His garden too meant so much to him and he enjoyed its ever changing vista to the very end. He was a man who meant so much to so many. He will be sorely missed.

Professor Stuart K Monro, OBE, DUniv, DSc, FRSE, Edinburgh

### **Remembering Gordon Y. Craig**

Gordon Craig was INHIGEO’s third President, serving from 1984 to 1989. He was a great advocate of public understanding of the earth sciences, and as an author, teacher, and organizer he did much to promote the historical study of geology.

I first learned about Gordon Craig and his historical work from his 1978 publication (with Donald McIntyre and Charles Waterston) of the remarkable “lost drawings” by John Clerk of Eldin intended for James Hutton’s *Theory of the Earth*. And I recall that when I first met Gordon several years later, I was predisposed to be at least a little intimidated because of his academic title, the grandeur of which seemed to me nearly impossible to surpass: the *James Hutton Professor of*

*Geology*. But I soon learned that Gordon was quite unassuming and exceedingly companionable, blessed with personal charm and good humour as well as lots of good sense.

Gordon was deeply involved in organizing two important historical conferences at Edinburgh, first in 1985 and then in 1997. Only the first of these was, strictly speaking, an INHIGEO conference — its twelfth symposium, the theme of which was “The Influence of Scientific Organizations on the Development of Geology.” In 1997 the gathering at Edinburgh followed immediately upon a London meeting, in a two-part travelling commemoration of the 200<sup>th</sup> anniversary of the birth of Charles Lyell and the death of James Hutton. These events were organized through the Geological Society and the Royal Society of Edinburgh, with a considerable number of INHIGEO members participating.

On both occasions Gordon led the organization of the Edinburgh presentation sessions (sharing this role with Gordon Herries Davies in 1985). He was co-editor (with J. H. Hull) of the volume of papers resulting from the 1997 Hutton bicentenary. Also, in both cases he carried a major part of the responsibility for mounting outstanding historical field excursions. The destinations for these highly instructive and enjoyable field trips, in both 1985 and 1997, included the volcanic exposures at Edinburgh around Arthur’s Seat and Salisbury Crags in Holyrood Park, Siccar Point in Berwickshire, Charles Lyell’s Kinnordy House manor near Kirriemuir in Angus, and Glen Tilt in the Southern Highlands.

To my wife Mike and myself, Gordon Craig was a cherished personal friend, a delightfully witty and kind man. We retain the fondest memories of the time Gordon and his lovely wife Mary came to stay with us in Oklahoma, and of the wonderful hospitality with which they welcomed us as guests at their beautiful home in Lasswade just south of Edinburgh.

Kenneth L. Taylor, Norman, Oklahoma

### **Farewell to a lost friend**

Professor Gordon Young Craig is gone forever. However he is alive not only in my memory but also in my heart.

He was a widely respected colleague, an acknowledged expert both in geology and history, a kind person with an exceptional sense of humour, a most reliable partner in INHIGEO as its President in the diplomatic “rope walking” between Moscow 1984 and Washington D.C. 1989 – as he put it, “between Vodka and Whisky”.

I am grateful to Providence for the privilege of working with him.

Endre Dudich, Budapest, former Secretary-General of INHIGEO

**ALBERT V. CAROZZI (1925–2014)**KENNARD B. BORK<sup>1</sup> and KENNETH L. TAYLOR<sup>2</sup>*1 Department of Geosciences, Denison University, Granville, OH 43023 USA  
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Albert V. Carozzi died on 5 July 2014, at Raleigh, North Carolina, one day prior to the beginning of the 39th INHIGEO (International Commission on the History of Geological Sciences) Symposium at the Asilomar Conference Grounds in Pacific Grove, California. The first session of the conference, on 7 July 2014, had already been dedicated to Dr Carozzi, one of six Honorary Senior Members celebrated with a dedicated session. Dr Kenneth L. Taylor, INHIGEO President, announced Albert's passing, at age 89, as he called attention to Albert's photograph and biographic sketch in the official program for the Symposium.

*Albert V. Carozzi (1925–2014)*

Albert V. Carozzi was born on 26 April 1925, in Geneva, Switzerland. His father, Dr Luigi Carozzi (1880–1963), was a respected Italian surgeon working with the United Nations in Geneva. The love of learning, belief in the importance of multi-lingual ability, appreciation of science, and recognition of the merit of close observation were all attributes passed from father to son. As Albert commented in an interview conducted by one of us (KBB, in *INHIGEO Newsletter* 39, 2007), he had a rather 'golden youth.' Exposure to the beauties and mysteries of nature around Geneva led him to geology as a profession. The specific field of interest for young Albert was sedimentology, with a focus on carbonates. Degrees from the University of Geneva included B.S., M.S. (1947), and D.Sc. *summa cum laude* (1948) in geology and mineralogy. The dissertation topic, Upper Jurassic freshwater limestones, set the stage for Dr Carozzi's many contributions to sedimentary petrology. It is likely that a number of you, geologists of a certain age, used his classic work *Microscopic Sedimentary Petrography* (1960) or ensuing texts, including the post-retirement *Sedimentary Petrography* (1993). His total publication record in sedimentology was in excess of 300 articles and books.

A significant question is how young Dr Carozzi, happily ensconced amidst the mountainous vistas of Geneva, arrived on the plains of Illinois. The broad response is that the "academic pyramid" and tradition-bound aspects of European universities contrasted, in Albert's view, with the exciting mobility and research options of American institutions. Illinois had welcomed Albert as a one-year Visiting Assistant Professor, in 1954, upon the recommendation of Dr Ralph E. Grim, who had been impressed by a Carozzi presentation at an international conference on sedimentology. In due course, Dr George W. White, Head of the Geology Department at Illinois, called Geneva to report that the faculty had voted unanimously to invite their Swiss colleague back for a permanent position, beginning in the fall of 1957. Albert and his wife Marguerite were elated at the news, and were soon headed back to Champaign-Urbana. Over the course of a full and enjoyable career at Illinois, Professor Carozzi worked with 34 Ph.D. and 16 M.S. students, prior to taking early retirement in 1989 so as to pursue personal research and activities. Faculty colleagues applauded his collegiality and ability as a mentor. A recurring theme among students was how eloquent, animated, and well-informed his lectures were. They also enjoyed excellent dinners and conversation at the Carozzi home. Visitors were impressed by the richness of art and world artifacts on display, most of them gathered by Albert in his extensive world travels doing consulting work for petroleum companies. Prized elements of the art collection were donated to the Spurlock Museum of the University of Illinois, while outstanding mineral specimens went to the University of Geneva.

Albert's attachment to historical study of the science in which he was engaged came naturally. As a child he had been immersed in reading natural history in the family's rich library, and he had been fascinated with his father's work in the history of medicine. Young Albert became familiar with the works of Pliny, Agricola, and other naturalists. But on the professional level it is safe to say that George White was a key catalyst. Dr White was already building a valuable library of books pertaining to the history of geology when Prof. Carozzi joined the Illinois staff. And White was a true pioneer in supporting the history of geology in the United States, as well as working with Russian and European colleagues in founding INHIGEO. Albert had been hired in 1954 to introduce elements of alpine geology to the "flatlanders," but his primary role, beginning in 1957, was to teach sedimentary petrology. As the years passed, he increasingly incorporated history into his teaching and research. Given his gift with languages, a natural first step was to translate classic European works for an anglophone readership. (At the 1972 International Geological Congress in Montreal, where the colour-coded badges worn by most of us cited capability in just one language, Albert's badge was a veritable rainbow of colours denoting knowledge of English, French, German, and Italian.) Thus, we see a parade of significant books being translated by Carozzi into English: Werner's 1774 *On the External Characters of Minerals* (1962); Lamarck's 1802 *Hydrogeology* (1964); Agassiz's 1840 *Studies on Glaciers* (1967); Pallas' 1778 *Theory of the Earth* (with Marguerite Carozzi, 1991); and, of course, de Maillet's amazing *Telliamed*, written in 1722 to 1732 (1968). For many Americans interested in the history of geology, two Carozzi projects probably had the most impact: the illustrated and informative catalogue *Geology Emerging* (1984), co-authored with University of Illinois librarian Dederick C. Ward; and Albert and Marguerite's team effort on revising and translating Gabriel Gohau's instant French classic *Histoire de la géologie* (1989) as *A History of Geology* (1990).

The preponderance of Albert Carozzi's active research in the history of geology was devoted to Horace-Bénédict de Saussure (1740–1799). Not only was de Saussure a Genevois, he was an exemplar of eighteenth-century science, a pioneer in alpinism, an educational reformer, a polymath, and a close observer of nature. Each of those attributes drew the admiring interest of Professor Carozzi. His impressive body of work on de Saussure includes meticulous studies (sometimes in collaboration with others) of that savant's scientific library, his researches on glaciers and on basalt, and his lectures on physical geography. Albert's last book (2005) comprehensively traces de Saussure's life and pioneering work in geology. Another of Albert's major contributions, with a focus on Geneva, was *Histoire des sciences de la terre entre 1790 et 1815...Trois grands*

*protagonistes: Marc-Auguste Pictet, Guillaume-Antoine Deluc, et Jean Tollot* (1990). These books reflect Albert's typical determination to seek out and utilize unpublished as well as printed sources. An important part of his scholarly legacy is represented in the edited documentation presented in these works.

In his stance as an analyst of the investigations and writings of past geological authors, Albert viewed a firm grasp of modern geological knowledge as essential. He felt that only with this competence was it possible to appreciate and gauge the experiences and judgments of geological predecessors. He was critical of historians who lacked this scientific capability, or who abstained from assessing past geoscientific work by scientific criteria developed in later periods.

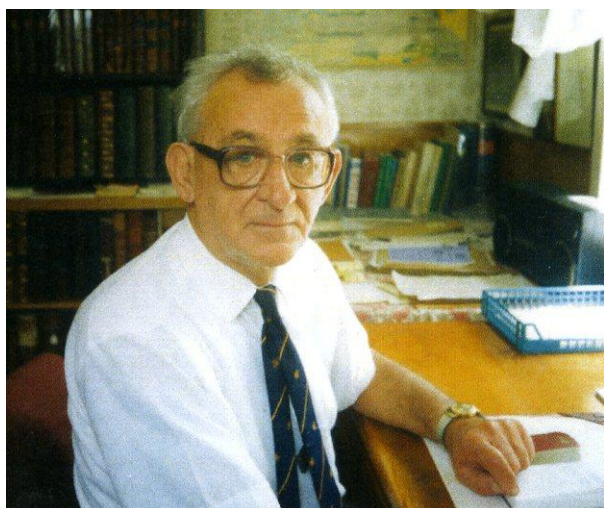
Albert and Marguerite were a thriving team for 65 years, right until her death in January 2014. Their daughters, Viviane Marrocco and Nadine Carozzi, retain loving memories of their parents. They understood Albert's passionate dedication to science and scholarship, while recalling as well the humour and humanity that colleagues and students also found so appealing. For years he carried Nadine's "good luck" stuffed mouse on his journeys. Albert took special pride in Marguerite's accomplishments. After she earned her Ph.D. in French and the history of Geology (University of Illinois), with a study of Voltaire's geologic views, they worked together on a number of projects. Their translation of Professor Gohau's book was noted above. Their joint researches, typically focused on the eighteenth century, included their work on the ideas of the Swiss pastor/naturalist Elie Bertrand on theories of the earth, and on the theories on mountain origins proposed by the polymath Johann Sulzer.

Sedimentologists recognized Professor Carozzi's contributions with AAPG (American Association of Petroleum Geologists) distinguished lectureships and the AAPG teaching award (2003). For his distinguished historical work he received the Geological Society of America's History of Geology Division Award (1989), the first Marc-Auguste Pictet Medal for excellence in the history of science (from the Société de Physique et d'Histoire Naturelle de Genève, 1990), and the Prix Wegmann (from the Société Géologique de France, 1999). Albert served as President of the History of Earth Sciences Society (1984) and was elected an Honorary Senior Member of INHIGEO (2004).

We thank Gabriel Gohau, Kathleen Marsaglia, and the Carozzi daughters, Nadine and Viviane, for their contributions to this elege.

(This obituary was first published in *Earth Sciences History*, v. 34, no. 1, pp. 155-157, 2015)

### Alan Mason (1923-2014)



Alan Patrick Mason was born on St Patrick's Day in 1923, and grew up in Auckland where he lived all his life. His father, Harold Mason, ran a family engineering business, 'Mason Brothers Engineering'. Alan enrolled at Auckland University College in 1941 to study for a BSc majoring in Geology, largely under the influence of his older brother Brian who was then undertaking postgraduate studies overseas. In the 1942-43 and 1943-44 summers Alan worked as a student assistant for the New Zealand Geological Survey in Northland. He recalled in later years that he had hoped to learn a lot of practical geology, but in reality he spent most of his time

*Alan Mason (1923-2014)*

on the end of a post-hole borer prospecting for clay. Early in 1944 he received a telegram informing him that his brother Paul had been killed when the Lancaster bomber he was navigating was shot down over Germany. It was an event that was to influence the future direction of his life, as he knew that it was his duty to join the family firm.

After overseas war service in 1944-46, Alan completed his MSc degree in 1948, then went to work for the family business, starting in the Shipping Department. Mason Brothers Engineering became a public company in 1952. Over the years Alan held a number of senior positions, including managing the steel works.

Alan managed to retain his interest in geology, working in his spare time as an assistant geologist at the Auckland War Memorial Museum. Over the years he built up a large collection of ammonites from concretions around Kaipara harbour which he eventually presented to the Geology Department. This material was later used in a PhD study of Cretaceous ammonites by Bob Henderson, who described a new genus, *Masonites*, named after Alan.

Alan was always interested in the history of geology, and he quietly started to collect books and articles whenever he had the opportunity to acquire them. As the years passed, his collection gradually expanded to fill his office and then other rooms in his house. Of particular interest to him were nineteenth century books on geology, books on the Antarctic and on early New Zealand, as well as on the voyages of Captain Cook.

When Mason Brothers Engineering was sold in 1979, Alan had the opportunity to take up geology again. He quickly realised that the discipline had greatly changed in the intervening years, and a return to practical geology required a lot more than blowing the dust off his boots. But he greatly enjoyed going in the field whenever the opportunity arose, and especially assisting his brother, Brian, in meteorite-collecting trips in the Australian outback, and examining granites and metamorphic rocks on the West Coast.



*Brian and Alan Mason on a meteorite hunting expedition in Australia*

From 1980 onwards Alan devoted most of his time to the history of geology in New Zealand.

He became convenor of the group (which subsequently became known as the Historical Studies Group), and decided to start a newsletter among members. Issue No. 1 appeared in September 1990, and by the time Alan retired as editor in 2004 he had produced 29 issues, researching and writing many of the articles himself as well as persuading others to contribute.

The Dictionary of New Zealand Biography was started in the late 1980s as a sesquicentennial project, and working parties were set up to consider who should be included. Alan represented the geological community enthusiastically, gathering information on the contributions of past earth scientists and arguing for their inclusion. As a result of his advocacy there are more geologists in the Dictionary than members of any other scientific discipline, from Dieffenbach and Hochstetter, in volume 1, to Fleming and Wellman in volume 5. Alan himself contributed articles on J.M. Bell, J.A. Bartrum, and M. Ongley.

In 1994 Alan was elected a New Zealand delegate to the International Commission on the History of the Geological Sciences (INHIGEO). Later that year he attended an INHIGEO symposium in Sydney, held in conjunction with the International Geological Congress. In 1999 Alan's contribution to the history of science was recognised with the award of a New Zealand Science and Technology Medal. The following year, when he decided to step down as convenor of the Historical Studies Group, the Geological Society of New Zealand decided to set up the Alan Mason Historical Studies Fund to provide financial assistance for research in the history of Earth science in New Zealand.





*Alan accepts his New Zealand Science & Technology Medal from Sir Edmund Hillary in 1999.*

Brian Mason had settled in the USA in the late 1940s and become a US citizen. After the death of his only son in the 1980s he decided to use his New Zealand money to set up several trust funds to assist scientific work in Canterbury. For many years Alan was a trustee and advisor, and in his autobiography, *From Mountains to Meteorites*, Brian paid tribute to Alan for his wise stewardship that had allowed the funds to greatly increase in value over two decades.

As Alan became older, his eyesight gradually deteriorated. After retiring as editor of the Historical Studies Newsletter in 2004 he still continued to contribute articles, but by 2010 he found that he could no longer read. He gave much of his valuable geology collection to the Auckland University geology department, and donated his collection of reprints and other manuscript material to the library of GNS Science in Lower Hutt, where it forms a valuable research source.

New Zealand earth scientists remember Alan with affection as a friend and advisor. Through his dedication, much information on the history of geology has been preserved. The large amount of material published on the history of geoscience in New Zealand over the last 35 years remains as a permanent memorial to his inspiration.

Simon Nathan, Wellington

#### **Nazario Pavoni. 1929-2014**

Nazario Pavoni, INHIGEO member since 1998, passed away quietly November 20, 2014 in his home in Adliswil near Zurich. Nazario had a lifelong passion for both the history of our mother planet Earth and the history of the scientific enterprise that aimed to unravel the former. From his early youth onward, he was fascinated by the local geology of the hills and valleys surrounding his hometown Zurich and he accordingly decided to study geology at the Swiss Federal Institute of Technology (ETH). He got his diploma (Master's) degree in 1952 and continued his studies in Zurich resulting in his 1956 PhD thesis dealing with the stratigraphy and tectonics of the Miocene Alpine Molasse deposits in the Lake Zurich area. Already in this early publication the reader can feel Nazario's passion for the history of geology as he spent a considerable effort to document earlier attempts to understand the geologic history of the Swiss Molasse deposits.



Upon graduating, Nazario and his wife Ruth left for Turkey in 1956 where he had taken a position as an exploration geologist with the short-lived “Marmara Oil Corporation”. There, in the European part of Turkey (Southern Thracia), he conducted reconnaissance mapping together with his close friend Conrad Schindler (later full professor of engineering geology at ETH Zurich). In 1959 Nazario and his wife returned to Switzerland where he got a position as senior scientist at the Institute of Geophysics at ETH Zurich.

In the following years, his interest in recent tectonic deformations of the upper Earth’s crust – a rather new and rapidly developing field of research at that time – guided him into the field of seismology, and he soon became one of the leading earthquake experts of the Swiss Seismological Survey (SED). Inspired by his work in Turkey – where he had the occasion to study parts of the giant North Anatolian strike-slip fault – Nazario’s interest in global geodynamics (personally,

*Nazario Pavoni 1929-2014*

he preferred the term “geotectonics”) was growing during the fascinating transition time of the 1960s, when the older and often contradicting concepts of global tectonics were gradually replaced by the unifying scheme of new global tectonics (plate tectonics).

Due to his somewhat special position as a geologist working in geophysics (an almost unique combination in the rather conservative Swiss Earth Science community of the early 1960s), Nazario was well prepared to appreciate the fundamental importance of new geophysical data sets (mostly marine) for geology, and hence he was one of the earliest Swiss geologists to publish on topics of plate tectonics. Being an independent mind, he developed in the late 1960s his own view of global geodynamics – the global model of tectonic bipolarity (first published in the *Geologische Rundschau* in 1969).

Besides his work on global topics, Nazario remained firmly rooted in regional geology, especially in the field of seismology and the measurements of recent deformations of the Earth’s crust by means of high-precision geodesy. To deepen his knowledge in this realm of science, he, together with his wife, and their four children, left for a sabbatical leave at the National Center for Earthquake Research of the US Geological Survey in Menlo Park, in California, in 1972. Nazario very much enjoyed his stay in the US, and he was heavily impressed by both the intense recent tectonics going on in California, and the very sophisticated means to survey these deformations.

Nazario kept his job at the Institute of Geophysics for the rest of his professional life and remained an inspired and very dedicated scientist and teacher. Especially his field courses in Geophysics (geomagnetism, geoelectricity, gravimetry, seismics etc.) have left profound impressions in the memories of many former students at ETH.

Besides his professional scientific activities in the fields of regional geology, geophysics, and global geodynamics, Nazario had a lifelong passion for both the history of geology and old books. His bibliophilia seem to have started in the early 1950s when he purchased his first old books on geology. Over the decades he managed to assemble an incredible amount of old and often very expensive books on geology, philosophy, and many other topics which he was interested in. Nazario came first into contact with INHIGEO in September 1998, on the occasion of the INHIGEO meeting in Neuchâtel (Western Switzerland). He also joined the subsequent excursion to the Alps from which he kept fond memories especially of his discussions with the late David

Oldroyd. Even though Nazario had a vivid interest in INHIGEO activities, his many other duties and interests did not allow him to make many contributions to the Annual Report or other publication organs. However, during the last year of his life he prepared a short but pertinent account on some open points in the modern plate tectonics theory. This comment, his last publication, will posthumously appear in the Annual Report and is a fitting memorial to the amiable man and inspiring geologists that the Earth Sciences community has lost (see article, p. 61).

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### Carmina Virgili (1927-2014)



Carmina Virgili was born in Barcelona, on 19 July 1927, and died in her native town, at the age of eighty seven. Her father, Guillem Virgili was Head of the Revenue Office of the Generalitat of Catalonia, during the second Spanish Republic. He displeased the Catholic community when required by the Catholic Church to pay taxes. Her mother, Carme Rodón, was a pharmacist, and a professor in the Agricultural High School. After the Spanish Civil War, due to their political thoughts, both parents were removed from their workplaces. During her childhood and youth, Virgili stood out as a good student. She did her primary and secondary studies in her hometown, and then she completed teacher training in Tarragona. She obtained her degree in Natural History from the University of Barcelona in 1949, where

#### *Carmina Virgili 1927-2014*

she won the special award of the University. In 1953, Natural History studies were divided in two new branches: Geology and Biology. Carmina Virgili was appointed as associate lecturer in the School of Geology at Barcelona University.

Three years later, in 1956, she presented her PhD: *El Triásico de los Catalánides*, under the supervision of Professor Lluís Solé Sabarís (1908-1995), and won the Torres Quevedo award (CSIC, 1957) and the special PhD awards of the University of Barcelona (1959).

Her love for Nature led her, in 1960, to join the *Centre Excursionista de Catalunya*.

In 1963, Carmina Virgili obtained the professorship in Stratigraphy and Historical Geology at Oviedo University. It is worth noting that she was the first woman to be appointed as professor at the Oviedo University. The integration of women in teaching activities and research has been a long process. The pioneer in Spain was Lucía Medrano (1484-1527?), who was Latin teacher at the Salamanca University. Four centuries passed before another woman, the Galician writer Emilia Pardo Bazán (1851-1921), was appointed professor at the Central University of Madrid, in 1916. In 1953, María de los Ángeles Galindo Carrillo (1915-2014) was appointed professor of History of Pedagogy at the University of Madrid. Carmina Virgili has the merit of being among the first women at the top level of university teaching.

Carmina Virgili moved to the Faculty of Geology, Complutense University of Madrid, in 1968, and when Professor Noel Llopi Lladó died (1911-1968), she filled the vacancy. They had a lot in common: both were born in Barcelona and their doctoral thesis was about the Catalanides Range. Carmina Virgili created a research team in Permian and Triassic stratigraphy and sedimentology studies, after her arrival at the university. The discovery of Permian strata in the Iberian and Central System was this research team's main discovery.

At the International Geological Congress in Algeria in 1952, the International Association of Sedimentologists (IAS) was formally founded, and in 1962 IAS's Journal of Sedimentology was first published. Since the early sixties, geologists realized the importance of sedimentological studies and their application to basin analysis. The first Spanish Meeting of sedimentology, held in Sevilla, registered the birth of the Spanish Group of Sedimentology, promoted by Carmina among others. She also became part of the Spanish Mesozoic Group, which she headed from 1976 to 1980.

The Economic Geological Institute (*Instituto de Geología Económica* (IGE), also headed by Carmina, was founded in 1971, as the result of an agreement between the Consejo Superior de Investigaciones Científicas (CSIC) and the Faculty of Geology. While in charge of these activities, Carmina also maintained her places as associate lecturer at the Louis Pasteur University of Strasbourg and at Utrecht University. Thanks to the experience she gained in these international research laboratories, she was the first to introduce palynological techniques to Madrid University.

Carmina was involved in the political changes in Spain. She joined the Socialist Party in 1972, before the arrival of democracy in Spain. In 1977 when the first democratically elected government took its place, she was appointed Dean of the Faculty of Geology. At that time she also headed the Pablo Iglesias Foundation, a cultural society linked to the socialist party. As a Catalan in origin, Carmina tried to disseminate the Catalan culture to the rest of Spain building bridges to two cultures. As an example she was involved in the organization of the Catalan Culture Congress in Madrid in 1976. The Spanish UNESCO Committee was founded in 1952. Carmina headed this committee between 1982 and 1996 always promoting the collaboration between different countries and cultures.

In 1982, Felipe González, head of the socialist party won the national election. Carmina was appointed Secretary of State for Universities and Research from 1982 to 1988, in the very first socialist government in Spain. Due to her political engagement, she was forced to abandon her beloved research activities. The modernization of the Spanish universities by the socialist government was expressed in the LRU (University Reform Law). This norm introduced the departments as a new player in the University administration. But her most important efforts were dedicated to the internationalization of the university, providing the necessary means that facilitated students' international mobility.

In 1987 Carmina was appointed president of the Spanish College in Paris. Numerous cultural events took place during her mandate. This position led her to restore the old relationship with France, the country she so admired. Carmina Virgili had been named Vice President of the *Société Géologique de France* in 1974. She was awarded with the *Ordre des Palmes Académiques* (*Order of Academic Palms*) (1990), a prize that is awarded for contributions to culture and education. She was also the recipient of the *Officer of the Legion of Honour* in 1993, in recognition of her personal contribution to the dissemination of Spanish culture in France. In 1996, she was elected Senator, as a member of the Socialist Party (PSOE), representing the province of Barcelona, at which time she left Paris.

From 2003 to 2007 Virgili was a member of the *Comité Asesor para el Desarrollo Sostenible de la Generalitat de Cataluña*. She was also a member of the Bio-ethics and Law Observatory (Barcelona University) and a teacher for the Master in Bio-ethics of the UNESCO chair. She was also a member of the Interdepartmental Council of research and technological innovation of Catalonia (CIRIT).

Furthermore, she has received many honors and awards, including the medal *Gran Cruz de la Orden Civil de Alfonso X El Sabio* (1985). In the year 1986, the Regional Government of Catalonia awarded her the Medal *Narcís Monturiol*, an award presented to persons who have made a contribution towards progress in science or technology in Catalonia. She was member of the Royal Academy of Sciences and Arts of Barcelona (1993) and *Cruz de San Jorge* (1995). In 2006, her fellow geologists honored her when she was named geologist of the year (ICOG, 2004), and one

year later, with honorary membership of the *Ilustre Colegio Oficial de Geólogos* (ICOG, 2005). She also received the *President Maciá Medal for Work* (2008), an *Honoris Causa Doctorate from Gerona University* (2008), the *Gold Medal from Barcelona University* (2011) and the *Medal of Honour from Madrid Complutense University* (2013).

She was a feminist militant and pioneer of her time. She served at a number of different positions which are traditionally the preserve of men (Consejo de Universidades, Real Academia de Ciencias y Artes de Barcelona, etc.). She also played an important role in the recognition of the rights of women, including work in the *Seminar: Women in science and technology* (2009) coordinated by: Maria Jesús Buxó; María Casado and Carmina Virgili.

Virgili started to study the history of geology in 1979, when she wrote a paper about her teacher and mentor: *Luis Solé Sabarís y la Escuela Catalana de Geología*. Nevertheless her main contribution to this subject was produced after her retirement. Her most important work was: *Lyell. El fin de los mitos geológicos* (2003). Also noteworthy is the paper: *Els pioners de la Geologia a Catalunya* (2006) and *Los inicios del pensamiento científico en Geología: Charles Lyell*, a lecture at Academia de Ciencias y Artes de Barcelona. Some of her recent publications are: *La història de la Geologia a Catalunya* (2012) and *Scientific Premises of Geology in the Enciclopedia de Diderot and d'Alembert* (in litt.). She has been a member of the INHIGEO since 2004.

Octavio Puche, Madrid

### **In memoriam: Dan Hardy Yaalon 1924–2014**



*Dan Yaalon 1924-2014*

Dan H. Yaalon was one of the most influential soil scientists in many decades, a long-standing faculty member of the Institute of Earth Sciences of the Hebrew University of Jerusalem, a much decorated scientist with colleagues in many disciplines, and a devoted family man. Dan passed away on Wednesday 29 January 2014. He was 89. Dan touched the ideas, the research, and students of many scientists. He travelled widely as a way to encourage soil science, to accelerate his own soils education, and to represent soil science to the world. I never met Dan, but I corresponded with him electronically over many years, as did many. Recently, we co-wrote two papers, and throughout the writing he worried that he was not up on the literature and thus not a strong co-author. His contributions as co-author were classic Yaalon – intense, critical, and creative.

Dan's soil scholarship was remarkable for both its fundamental nature and its breadth. He was one of only three winners of the V.V. Dokuchaev Prize, awarded by the International Union of Soil Sciences. By the end of his career, he had made signature contributions to:

- deserts and desert soils – for demonstrating how soils in xeric environments are formed by dynamic pedogenetic processes, and especially from wind deposited loess
- paleo-pedology – for conceptualizing how past records of climates, biota, and geomorphologies are contained within paleosols, i.e., fossilized and buried soils
- anthro-pedology – for articulating how naturally formed soils are becoming the parent material for human-formed soils

- pedology — for how Earth's soils are often poly-genetic, i.e., palimpsests with paleosolic features
- soil science history, philosophy and sociology – for establishing a whole, new sub-discipline of soil science

While all five are important, two of these, polygenesis and anthropedology, are some of the most significant developments in the history of soil science itself.

This *In Memoriam* will not detail specifics of Yaalon's research, they are widely accessible in the literature, but rather I write about the making of Dan Yaalon the scientist. I use this opportunity to describe how his life offers much to young scientists as they consider a life's work with the Earth's soil.

Born in Czechoslovakia in 1924, Yaalon lost his mother in Auschwitz-Birkenau, a mother who had put him on a train at age 15 bound for Denmark to save him from the Nazis. At the time his name was Hardy Berger and his idea was to travel through Denmark and Scandinavia on his way to Mandate Palestine.

After arriving in Denmark, Hardy was assigned manual farm labour, but he took up his interrupted studies at an agricultural high school and later formally enrolled at the Agricultural University in Copenhagen. When the Nazis occupied Denmark, the Danish underground moved him and many other Jews to Sweden, where he found a job at the Agricultural University in Uppsala. Quite by accident, he was assigned to the research laboratory of Sante Mattson, a great soil chemist.

Yaalon later recalled, “Working with Mattson...at research tasks far beyond my acquired learning, I delved into advanced publications and books, working my way backwards from difficult expressions, formulas or citations, to the basics which explained what I was doing...This was a kind of backtracking detective work that branded my later activities in basic soil science.” The experience with Mattson was life altering as it firmly turned Yaalon to the science of Earth's soil.

Late in the war and shortly thereafter, he travelled to Britain with the Czech Army and to Czechoslovakia where, viewing post-war desolation, he wrote with grave understatement, “visits to my hometown ... were not very uplifting.” By July 1948, he had completed his undergraduate B.Sc. degree, worked as an assistant in a Danish research laboratory, and finally travelled by ship for Haifa to enter the new nation of Israel, then two months old.

During a year in the Israeli army, he visited agricultural settlements, mixed with scientists, joined geological expeditions into the Negev, and was accepted at the Hebrew University of Jerusalem for PhD studies.

During these years he hebraized his name to “Dan Yaalon”, something that signaled an established life in Israel, and married Rita Singer. Together Rita and Dan shared nearly six decades and established a family that includes two sons and daughters-in-law, and seven grandchildren.

As a PhD student in the early 1950s, the soil chemist Avraham Adolf Reifenberg became Yaalon's advisor. Yaalon was impressed by the small Department of Soil Science's focus on arid zone soils, common worldwide but vastly understudied at that time with significant questions and needs that ranged from the local to global. In day-to-day terms however, Yaalon commented, “Doing research in those early days, with meager resources, involved overcoming many difficulties. Essentially self-taught we did our best to establish the research and teaching laboratories.”

These comments reveal perspectives strongly held by Yaalon about life and work. To Yaalon, “ingrained curiosity” was the basis for successful engagement with science. Yaalon's university education, in Denmark, Sweden, and Israel, challenged him in ways that fed his native curiosity and gave him confidence that Earth's soil was well worth a life's work. The making of a scientist according to Yaalon, included much that is fortuitous, unplanned, and even unfair, but what makes a successful scientist is “grabbing an opportunity when it arises”.

Whether in science or in life, he said, “much is due to accidental events, but what you make of it is very much subject to your choice and efforts”. Given the gravity of the “accidental events” in Yaalon's life, these words underscore an incredibly positive message about science, life, and living.

*Soil Science has no age but will always be remembered through its  
history*

These words were used in 2000 at the Ghent University to honour Dan Yaalon's contributions to the history of soil science. Dan was born in 1924 in a small town in the former Czechoslovakia. His original name was Hardy Berger but he changed it shortly after coming to Israel. “Yaalon” was a play on the German meaning of Berger (a mountain dweller), his mother's Czech surname Jelinek (a mountain goat) and the Hebrew word “Aliyah” (literally, ascent), which united the three concepts. Now it is our time to say good-bye to Dan and to honour his achievements. Dan was not the first to study the history of soil science, but he contributed richly and uniquely to its growing archive of scholarship, and was the moving force in creating a community in which it could prosper. And Dan saw history as but one component of the study of soils in the context of the human experience. While the philosophy and sociology of soil science remain in the incipient stage, Dan's vision made a place for them at the table and he actively encouraged other scientists to take up study of these topics.

Dan recognized that providing an institutional home and framework for such non-traditional studies could enhance the scattered activities of isolated investigators and attract new workers. Dan took that first step by initiating the founding of a Working Group on the History, Philosophy and Sociology of Soil Science within the International Society of Soil Science. The new committee spun off a Council in the Soil Science Society of America (SSSA) in 1990, and both groups began active programs of symposia and publications that continue to this day. Within the ISSS, symposia were organized and chaired by Dan at the World Congresses in 1990 (Kyoto; Historical, philosophical and sociological aspects of development in soil science), 1994 (Acapulco; Origin and transmission of ideas in soil science), and 1998 (Montpellier; Attitudes to soil care and land use through human history). Dan was also a central figure in organizing a symposium at the 2006 WCSS (Philadelphia; History of Soil Science in Developing Countries). Even though his health did not allow him to travel to the Congress and a co-organizer served as chair, Dan helped lead the symposium through the proposal stage and secured many commitments for presentations.

Dan edited the landmark volume *History of Soil Science* and he was a key player in the conceptualization of *Footprints in the Soil*. The former volume took some six years of work and at a time when one was still reliant on regular postal mail. The IUSS Committee on the History, Philosophy, and Sociology of Soil Science has also been active in producing newsletters since its founding, with 20 newsletters produced on a schedule that has alternated from annual to something less than that. For part of its run, Dan served as the editor and after those duties were completed he continued to take an active interest in the newsletters and was very helpful in finding contributors to it. In 2010 Dan received the Doukouchaev medal for his overall achievements in soil science.

In Dan's autobiography published in 2012 (“The Yaalon Story”) he provided us with a fitting epitaph: “I am overwhelmed by the fact that starting from a small town in Czechoslovakia, surviving that fateful and devastating Holocaust, I have succeeded in making a contribution for the benefit of mankind – which I consider as an acceptable criterion for evaluating my work.” Dan published extensively with a focus on the soils and geomorphology of arid regions, the effects of land use changes on soils, and paleosols. Quite recently, he collaborated on an important philosophical paper that proposed a new model of soil which posited the emerging science of anthropedology.

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### Alexey Ievlev (1970-2014)



Thank you, Alex!

When did he come into my life? How did it happen? Often we do not notice the arrival of major events in our lives. I think sometimes that it happened because it had to. It was not chance that brought us together in life, but some unknown regularity. I believe that, because I can't imagine my life without Alex Ievlev, or as we called him "Lyoshka", or just "Lyokha".

It happened like that: In October 1995, I escaped from some of life's circumstances (that is not the point) to the Syktyvkar Institute of Geology

*Alexey Ievlev 1970-2014*

to prepare my higher doctorate under academician Nicolay Yushkin. It was a sunny morning in a golden fall. On a crowded square near the railway station noisy taxi drivers asked "where to?" I entered the city with an unknown joy, the cause of which I discovered with the help of my smart and funny peers: Ievlev, Litoshko, Liutoev and Rakin. They were scientists, romanticists and even poets. Each of them had his own particular abilities, but all of them had great talents. They seemed to be like a harmonious orchestra. One seemed like the brass, another like a stringed instrument, and the conductor was of course Nikolay. I wanted to achieve and overachieve with such colleagues. We put a great deal of effort into our work. This must have been a year of solar activity. It seemed that it would be always like that.

Dima Litoshko was the first to leave us. It sounds absurd and foolish. He comes off at high speed, not on the roadside, but right to the chilled north autumn sky. The news caught up with me at the beginning of my internship in Paris and Fontainebleau. I had just arrived, had rented an apartment, and was sending letters to friends giving them my first impressions. However, this was the news I received in response. The Jardin du Luxembourg became sad, and gold turned to grey in the Palace of Fontainebleau. The French weather brought showers.

Then Alex left the institute. Fortunately he went to the nearest mining and geology department of the government in the Komi Republic. What made him take this step? Did he himself understand what he had done? I believe that he was not sure. It was a serious decision, because our chief Nikolay did not take back renegades. It seems that Alexey's poetic nature was looking for new paths, new emotions and feelings, and some form of escape. At that time, his poetry flowed from his fountain-pen.

Then Alex returned to the Institute to a new vacancy that had become available in tragic circumstances, as head the Chernov Geological Museum. Everything fell into place. The geologist returned to geology. The prodigal son returned home. And yet, it was not so. He came back as a



different person, with a new interest – the history of geology of the Komi region. One may say that it was not a big deal reading some official papers in the archives, and to publish some stories in a thin dusty book.

But I have to disappoint the skeptics. I have twice heard presentations by Alex in the Institute of History of Science and Technology. It was a great experience. Moreover, it was followed by a most interesting discussion about the fate of forgotten geologists, biologists, and arctic explorers from the Komi Republic. It was fun to witness how he gently corrected another expert:

You probably do not know about..., who made...

Not at all, my dear, not at all – he was born a year earlier – he visited us in that particular year – here are the documents to proof it – his tombstone is at ...

How about that! He answered all questions from memory, just wiping his steamy glasses from time to time. He lived inside great historical theme when he prepared his higher doctoral thesis. I was sure it would be a really deep and extensive work.

Alex came to the conference "Geological Museums of XXI century" (Apatity, Murmansk Region, 21-22 June, 2012), as the head of the Museum. He delivered a report, spread ideas during discussions, and read poems in his spare time. He also took a collection of Kola minerals for his exhibitions and visited the Museum of the Murmansk Geological Exploration Expedition. On the day before he went skiing with his son down the Khibiny Mountains, with childlike enthusiasm.

We planned our next regular conference together: "The unique geological features of the Kola Peninsula", correlated with the stromatolites of Riphean age of the Sredny Peninsula. Alex proposed to bring together professional geologists and museum workers: "The first will argue between themselves, and the second will learn and collect museum samples to educate the public. And all of them must have fun in this beautiful place". This was the idea.

And that in fact was exactly what happened but, unfortunately, without Alex. He died just a week before the conference. Miracles do not happen. The ninth day after his death was the day of the visit to the Peninsula, where he had dreamed to be. The geological excursion group paid him their respects according to custom. It was a moment of silence, with only the cry of sea gulls in a gray sky, raindrops were falling, and waves dashed against the Riphean stromatolites. I also remember a flickering campfire on the beach. Suddenly everything changed. The wind stopped blowing, and the sun painted the rocks in gold. It was like his soul was finally satisfied and ready to leave our world.

Alex has earned his place on the firmament, while we still drag our feet along the Earth surface. With his zest for life, his great energy, and continuous endeavor to achieve more, he richly deserves this.

Thank you, Alex!

Professor Yuri L. Voytekhevsky. Translated by Ivan P. Vtorov

### Boyan Vrablyanski ( 1922 – 2015)



Dr Boyan Vrablyanski was born on 23 September 1922, in the hamlet of Varbye, part of the small village of Zlogosh, in Kustendil district, of SW Bulgaria. He finished high school in 1942 in the town Kustendil, and graduated as geomorphologist from the University of Sofia in 1949. He worked as a field geologist for the Committee of Geology and became chief of the geological mapping group (1951-1962). He worked in different parts of Bulgaria and produced geological maps on a scale of 1:25 000. From 1962 he work as scientist in the Scientific Geological Institute (1962-1967) and between 1967 and 1982, as a scientist in the Geological Institute of the Bulgarian Academy of Sciences, when he retired. He worked principally in the area of neotectonics and merged his knowledge in geomorphology with his

#### *Boyan Vrablyanski 1922-2015*

rich experience in fieldgeology. He was the author or coauthor of more of 80 scientific publications, 20 popular scientific papers and many geological reports.

During the last years of his life Dr Boyan Vrablyanski wrote very romantic poetry. He died on 21 March 2015 in Sofia, at the age of 92 year.

Platon Tchoumatchenco, Bulgarian Academy of Sciences, Sofia

Please note that Boyan Vrablyanski was not a member of INHIGEO. However this brief tribute has here been inserted on the request of our Bulgarian members, who greatly value Dr Vrablanski's contributions to geology in their country and who hold him in high esteem. (Editor)

## ARTICLES

## ABU RAYHAN BIRUNI AND THE FORMATION OF GEODYNAMIC IDEAS IN GEOLOGY

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The emergence of new ideas in science is preceded by long periods of accumulation of actual data, most of which does not fit the old concepts of the physical essence of natural phenomena and processes. No less time is needed for the process of the perception of new scientific theories to reach acceptance. This is due to the fact that the revolutionary changes in science, as a rule, tend to affect long-standing ideas which have become habitual perceptions.

Abu Rayhan Biruni (973-1048) was a scientist-encyclopaedist, who wrote many fundamental works on the natural sciences, and who lived for much of his life in what is now Afghanistan. Some of his ideas did not receive serious consideration by scientists for some 500 years. His explanation of many aspects of geology was very progressive for its time. For example his mobilistic idea, i.e. the drift of continents, attracted much attention.

In his work "Clarifying the boundaries of the inhabited world to determine the distances between settlements", Biruni wrote:

*The sea has turned into land and land into sea; which changes, if they happened before the existence of man, are not known, and if they took place later they are not remembered because with the length of time the record of events become lost, especially if events happen gradually. This is realized by only a few (Geodesy, p. 94).*

He used the Arabian Desert as an example:

*This steppe of Arabia was at one time sea, and then was uplifted so that the traces are still visible when wells or ponds are dug, for they begin with layers of dust, sand and pebbles, then shells are found in the soil, as well as glass and bones which cannot possibly be said to have been buried there on purpose. Nay, even stones are brought up in which are embedded shells, cowries and what is called 'fish-ears', sometimes well-preserved, or the impressions of their shape where the animal has decayed.*

Biruni recorded similar findings from the the shores of the Khazar (Caspian) Sea:

*It is also possible that part of the spherical Earth [landmasses] moved away from [the main continent] because deep depressions had formed into which the waters of the surrounding [Sea] entered (Geodesy, p. 101).*

In the work "Science of Stars" Biruni presented a sketch map of the world – maybe the first one to have been preserved up to now. Tables of Biruni contain extensive information about the coordinates of 602 towns and cities of Central Asia, Iran, Afghanistan, India and China, which were unknown to ancient geographers. The factual information reported by Biruni was of course well known to Arab geographers of later periods.

Biruni believed that the main directions of displacement of land occurred in a north-south direction, leading to changes in latitudes.

*As far as the latitude of cities is concerned, they can change very noticeable ... Therefore, you should constantly monitor [for latitudes] and test them" (Geodesy, p. 105) ... The impact of this*

*shift on the longitude is, I think, insignificant, in term of any motion to the east or west. When the movement was to the south or north, the changes were greater (Geodesy, p. 105).*

The idea of the separation of Alpine belts (in modern terminology) from the Atlantic to the Pacific Oceans can also be attributed to Biruni:

*High mountains, connected with each other, as the vertebrae of the spine, which extends over the middle latitudes from east to west in length, passing through China, Tibet, [the country] of the Turks, then through Kabul, Badakhshan, Tocharistan, Bamiyan, al-Hur, Khorasan, Media, Azerbaijan, Armenia, Byzantium (Asia Minor), [the country] of Francs to al-Jali-lik.*

The surrounding seas, the western part of which the Greeks called the ocean, separate

*... the inhabited world of all the continents or inhabited islands that may be behind these seas in both directions [i.e. to the west and east] (India, p. 195).*

This was written three and a half centuries before Columbus discovered America in 1492!

In his theory of the seas, Biruni discussed many issues of modern marine geology, including the occurrence of seamounts. The seas themselves were formed by the splitting of the earth's surface, by its erosion and by the parting off the land. He believed that the depth of the sea, cleanness of the water and the degree of contamination and temperature could be estimated by examining the nature of pearls – their color and degree of corrosion. On the basis of this evidence, he denied the prevailing opinion that the Chinese Sea was very deep and cold. He considered the occurrence of tremors on the seabed, similar in nature to earthquakes on land.

Biruni gave a detailed description of all the seas, their different names, sea channels, bays and islands. He indicated the locations from which minerals were exported, the history of attempts to dig a channel between the seas, Kulzum (Red Sea) and Shama (Mediterranean). He described the inland nature of Abeskun (Caspian Sea) and all other waters recognized as lakes: Zugar (Dead Sea), Khorezm (Aral Sea), Issyk-Kul. This classification of the seas came to be known as the theory of the seas and was recognized as the best.

Based on the analysis of the traces of ancient riverbeds, Biruni concluded that the channel of the Amu Darya had changed repeatedly, due to the fact that:

*... the river gradually began to deposit the sediment it carried at its mouth, which would dry and form land. At another time all the water flowed toward the Khorezm, through gaps between the rocks of Tuya-Muyun ... the river eroded the rocks, flooded the area and created the lake. Due to the abundance of water and the strength of its current it was muddy. By extending the land formed by the river deposits the lake migrated northwards ... (Geodesy, p. 96).*

This conclusion of Biruni was brilliantly confirmed by recent scientific investigations.

The first ideas about continental drift were born in the minds of people soon after the discovery of Western World, when they compiled the first maps of continents on both sides of the Atlantic. The similarity of the coastlines of Africa, Europe and America drew the attention of Abraham Ortelius in 1596 and Sir Francis Bacon in 1620. But theirs was a brilliant guess rather than the beginning of a new theory, because at the end of the sixteenth and early seventeenth centuries geology as a science did not yet exist.

It seems that the first science-based hypothesis that examined causal relationships of geological phenomena was the contraction hypothesis of the French geologist Elie de Beaumont (1830).

The next major step in the development of mobilism was made by the outstanding German meteorologist Alfred Wegener (1912), who proposed his famous hypothesis of continental drift.

Alfred Wegener not just suggested the possibility of horizontal movements of continents, but also based his idea on sound evidence. Beside the similarities of the outlines of the western and eastern coastlines of the Atlantic Ocean, Wegener pointed out the similarity of the geological structure of adjacent continents surrounding this ocean, as well as the traces of almost simultaneous glaciation in South America, Africa, India and Australia. The revival of mobilistic ideas required the accumulation of new facts over a long period of time, as a result of which a new phenomenon, the spreading of the ocean floor was discovered. This followed from paleomagnetic studies on continents and large-scale geological and geophysical study of the ocean floor in the late 1950s.

Thus, born as a hypothesis, nearly a thousand years ago, plate tectonics obtained extensive validation in the 1960s and 1970s and became a geological theory. Later, it became an organic part of a more general science, that of geodynamics.

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## CONSIDERATIONS REGARDING THE TERM “ PLATE TECTONICS“

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### ABSTRACT

Tectonic motions and deformations of the lithosphere are linked to viscous convection within the Earth's mantle. Mantle convection is the engine that drives global tectonics. Plate tectonics may be a convenient term, as long as we are looking at tectonics of the lithosphere. However, it is an inadequate term if we want to characterize the whole of global tectonics, including convection in the mantle. Therefore, it is proposed to search for a new, more appropriate term to characterize global tectonics in which the word 'plate' does not appear.

### 1. INTRODUCTION

The early 1960s represent one of the most fascinating periods of exploration of our planet. Information regarding the geology of the oceanic lithosphere and the Earth's mantle was poor, at that time, and awaited exploration. Under the leadership of UNESCO, cooperation in Earth science research was promoted within the framework of special projects, such as the International Geophysical Year, I.G.Y., or the Upper Mantle Project, U.M.P.

The world-wide installation of modern seismograph networks in the 1960s permitted an accurate location of earthquakes and delivered valuable information about the global pattern of seismicity, marking the advent of the theory of plate tectonics. In the following years, new space techniques, such as Very Long Baseline Interferometry (VLBI), Satellite Laser Ranging (SLR) and the utilisation of the Global Positioning System (GPS), allowed an accurate determination of the Earth's gravitational field. The installation of the Proton-precession Magnetometer, a new type of magnetometer, in the 1950s, allowed a quick and accurate measurement of the total intensity of Earth's magnetic field, e.g. by towing the instrument behind a ship. The magnetic surveys performed in the late 1950s revealed the unique linear pattern of magnetic anomalies of the ocean

floor, the magnetic lineations (or magnetic stripes). The solution of the enigma led to the proposal of the seafloor spreading hypothesis in the early 1960s.

In this exciting period of geophysical and geological research a new theory of global tectonics emerged: Plate Tectonics. It was an attempt to unite the new knowledge of seafloor spreading, geomagnetic reversals and the global pattern of seismicity into a new theory. A short, modern description is given by J. Grotzinger et al., (2007, p.16):

*The lithosphere is not a continuous shell; it is broken into about a dozen large plates. Driven by convection in the mantle, plates move over Earth's surface at rates of a few centimetres per year. Each plate acts as a rigid unit, riding on the asthenosphere, which also is in motion. The lithosphere begins to form from rising hot mantle material where plates separate, cooling and becoming more rigid as it moves away from this divergent boundary. Eventually, it sinks into the asthenosphere, dragging material back into the mantle at boundaries where plates converge.*

A very remarkable fact regarding the development of plate tectonics is the small number of institutions involved, i.e. only four institutions worldwide: Cambridge University, Lamont Geological Observatory (Columbia University), Scripps Institution of Oceanography (University of California), and Princeton University. In contrast to the small number of institutions, the development of plate tectonics involved a large number of individuals. It is striking to see how many scientists moved back and forth between Cambridge, Scripps, Lamont and Princeton, how data-sharing promoted and encouraged the rapid development of ideas (N. Oreskes, 2001; A. Cox, 1973, p.43). Concurrently with the emergence of plate tectonics, comparable, and from a physical point of view, equivalent hypotheses regarding global tectonics were put forward, such as the New Global Tectonics (Isacks et al., 1968) or the Bipolar Geotectonic Model of the Earth displaying a distinct hemispherical symmetry (bipolarity) in global tectonics (Pavoni, 1967).

The acceptance of plate tectonics was rapid, owing to the concerted enthusiasm of its promoters and the simplicity of its presuppositions. By the early 1970s, almost all Earth scientists accepted the new theory. Very stimulating was the fact that it allowed for the comparison of satellite derived data with terrestrial observations, so that it was possible to describe and comprehend tectonic processes mathematically on a global scale. This provided a stimulus for the study of active tectonics.

## 2. CRITICAL OBSERVATIONS

The further development of Earth sciences showed that some presuppositions of plate tectonics were oversimplified:

The plates are not really rigid. Intraplate seismicity and tectonic deformation are definitely observed. Joints are found in almost every outcrop, even in late-Cenozoic sediments.

The precise number of plates remains unknown, because the boundaries between the plates represent tectonic zones of great variety and complexity. The limits of these boundary zones adjacent to the plates are in general not well defined.

In the meantime it has become clear that the forces which drive the plates and define the pattern of their global arrangement are related to convection in the Earth's mantle ("The plate tectonic system", Grotzinger et al., 2007).

The active oceanic ridges are not fixed in their position. This fact was already well known to the scientists who were involved in the development of plate tectonics (Morgan, 1968). The idea of fixity of the active oceanic ridges has been postulated, repeatedly, due to a misinterpretation of the observed symmetric accretion of plates adjacent to the active ridge: Upwelling mantle material below the ridge axis is supposed to diverge at the base of the lithosphere and so cause the regular

drift of the neighbouring plates away from the ridge axis. In a cross section of an active oceanic ridge, a pair of arrows of equal length, pointing away from the ridge axis, shows the diverging movement of plates. Below the ridge, an ascending flow of mantle material, symmetrically diverging beneath the ridge, is often presented. The ridge axis remains in a fixed position. This incorrect picture corresponds to the widely used model of seafloor spreading, as illustrated in many textbooks of geophysics and geology.

Actually, there is no active upwelling in the mantle below the ridge axis to drive the neighbouring plates apart. Oceanic ridges originate where the lithosphere is torn apart. The mantle material intrudes passively into the hot, weak axial zone of the ridge. Very probably, there is unidirectional, horizontal flow to be found in the mantle beneath the ridge.

### 3. PROPOSAL REGARDING THE TERM „PLATE TECTONICS“

For several decades plate tectonics has dominated the thinking of Earth scientists in regard to global tectonics. Plate tectonics may be a convenient term, as long as we are looking at tectonics of the lithosphere. However, it is an inadequate term if we want to characterize the whole of global tectonics, including convection in the mantle. Original definitions of the theory, such as the rigidity of plates and the definition of plate boundaries, as well as the repeatedly proposed idea that the axis of a spreading ridge remains in a fixed position, proved inaccurate and inadequate, but are still in use. No one knows the precise number of plates.

Essentially, the ideas of plate tectonics originated from the fixed global pattern of distribution of epicentres of earthquakes. However, tectonics at the Earth's surface represents only a minor part of global tectonics which also includes the tectonic processes in the Earth's mantle, i.e. convection. These are not at all plate-like!

Plate tectonics is a remarkable theory to describe and interpret tectonics on a global scale. It is understandable that after a long period of intensive research some presuppositions are no longer strictly valid. They should be clearly corrected according to the latest results of recent research. Therefore, it is proposed to search for a new, more appropriate term to characterize global tectonics (e.g. "global tectonics", "geotectonics", "flow tectonics") in which the word plate does not appear.

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**KAROL BOHDANOWICZ (1864-1947): FAMOUS POLISH GEOLOGIST - GREAT EXPERT ON THE GEOLOGY OF ASIA - DIRECTOR OF THE RUSSIAN AND POLISH GEOLOGICAL SURVEYS**

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Karol Bohdanowicz (Fig. 1) was born on December 10, 1864 in Lucyn (Polish Inflants, presently Ludze, in Latvia) near Witebsk. He studied at the Mining Institute in St. Petersburg (1881-1886) graduating with a diploma in mining engineering. In 1885, as a student, he took part in the Urals expedition lead by F. Tchernyshev. In the period 1886-1901 Bohdanowicz was employed in the Department of Mining in St. Petersburg and from January 1901, as geologist in the Geological Committee.



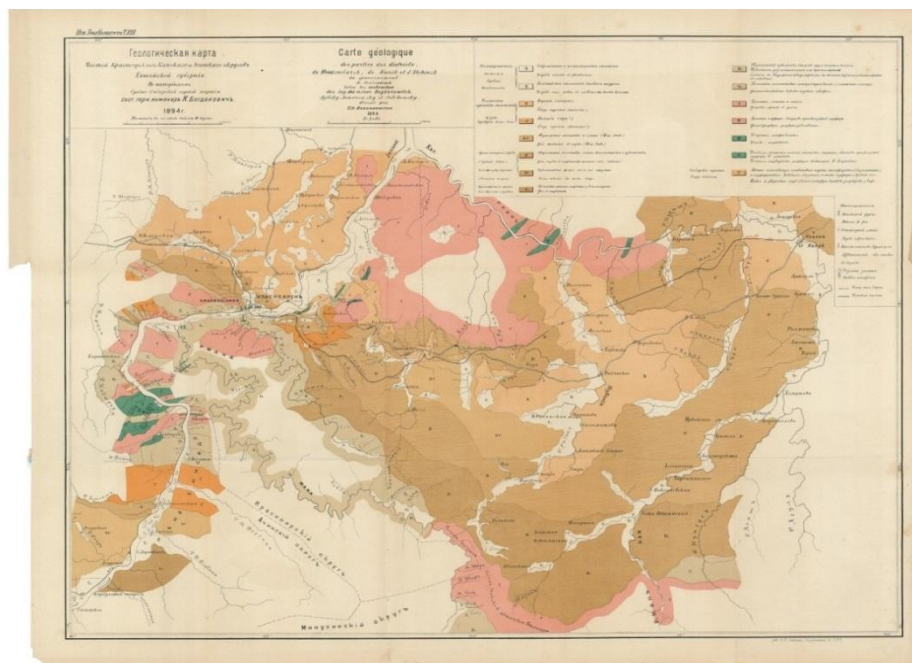
*Fig. 1 Karol Bodhanowicz*



In the years 1886-1888 he was carrying out geological and hydrogeological investigations, related to railway construction, at the Russian-Persian frontier. During this expedition, he examined the borderland of the Kopet-dag Mountains and the mountain chains of Elbrus and Chorasan, developing an outline of the previously little known orography of these regions and their geological structure. The results of this expedition, announced in 1888, led to the award to Bohdanowicz of the Silver Medal of the Russian Geographical Society and brought him to the attention of the geological community.

A year later, M.W. Piewcow offered him participation in an expedition into Asia, to the so-called Tibetan area. The aim of the expedition, which started from Przewalsk (presently Karakol in Kyrgystan), was to investigate the Kulon mountain chain and the northern edge of the Tibetan Plateau, up to the meridian Lop-nor Lake. The pace and intensity of the trip was fast: for example, within 19 days they covered a distance of about 460 km, in the difficult mountainous terrain between Yarkend- Daria and Tyznaf, where they discovered deposits of jade. The outcome of these investigations was the production, by Bohdanowicz, of a schematic geological map and an elaboration of the orography of the Kunlun and eastern Tien Shan, as well as descriptions of gold and jade deposits and the gathering of a geological collection. In addition, Bohdanowicz took an interest in the ethnography and archeology of these areas. The expedition, on the return trip, reached the Chinese and Russian border and then Zaysan, where it ended, in January 1891. His contribution to this expedition led to promotion for Bohdanowicz, he also received the Silver Medal named Przewalski and a fixed annual salary of 150 rubles.

In the following year he set out on another expedition, connected with the construction of the Siberian railway. He was nominated as leader of one geological team which was given the task to investigate the geological conditions and the identification of mineral deposits along the constructed railway. Researches were conducted initially between the Irtysh and Ishim and then between the Kuznetsk Alatau and the Yenisei River. In the region of the Kuznetsk Alatau he discovered several gold occurrences, before travelling to the western Saian. During that time he prepared a geological map of part of the Yenisei Guberniya (Fig. 2).



*Fig. 2 Geological map of part of the Krasnojarsk, Kansk and Aczynsk districts of Yenisei Guberniya (Bohdanowicz, 1894).*

The next expedition to areas located west of Baikal Lake, parallel to the northern margin of the Saian western section was extremely fruitful. Along the 700 km long route from Irkutsk to Kansk, Bohdanowicz discovered many different mineral deposits, including coal near Tcheremchow. Today, a huge coal basin is exploited there. In addition, the expedition encountered occurrences of jade in the Angara River basin and deposits of iron ore.

In the years 1895 – 1898, Bohdanowicz conducted geological investigations near the Okhotsk Sea in the Khabarovsk Country, north of the Amur River outlet, a vast area stretching 600 km along the coast, and in Kamchatka. He discovered gold-bearing deposits in the Khabarovsk Country. In Kamchatka, he undertook a study of volcanic phenomena and glaciers. He also discovered a number of hot springs and compiled geological and topographic maps of the peninsula. In 1898, the subject of his researches focused on Southern Manchuria (in vicinity of Port Arthur), where he was searching for gold on the Laodun Peninsula.

Two years later, still in search for gold, he went north to the eastern edge of Asia, on the Chukchi Peninsula. This expedition brought also positive results. He conducted systematic meteorological and climatological observations in the Bering Strait and the Arctic Ocean. Making use of the proximity to the American continent, he went twice to Alaska, exploring the gold-bearing areas there. The wide range of his interests become apparent in his report, in which diverse information concerning the history of the discovery of gold deposits in Canada and Alaska, as well as population problems in Alaska, are included.

This journey concluded fifteen years of productive expeditions in Asia, which brought him international fame, at the age of only 36 years. After returning to St. Petersburg he was immediately elected as a geologist of the Geological Committee (13.01.1901). This choice was approved by the highest authorities. Despite the success he had achieved in the field, Bohdanowicz accepted a position at the Mining Institute in St. Petersburg as a professor of economic geology. However despite his commitments at the Institute and his work with the Committee, he did not neglect his fieldwork. He studied oil fields and mineral waters in the Caucasus, the geological structure of the tunnel through the main ridge of the Caucasus Mountains and the effects of earthquakes in Messina (1908) and Tian – Shan (1911). In 1905, he began to investigate aspects of the geology of Poland, making a reconnaissance of the Triassic deposits of zinc and lead in the Dąbrowski Basin.

In January 1913, Bohdanowicz was appointed Vice-Director and later Director of the Geological Committee (the Russian Geological Survey) in St. Petersburg (following the death of its former director F. Tchernyshev in January 1914). His nomination was signed by Tsar Nicholas II, one year later. Most probably, the final confirmation of his appointment was delayed because of his Polish roots. He remained at this post for nearly four years, until March 1917. Following the outbreak of the October Revolution in Russia he decided, albeit with some difficulty, to return to Poland in 1919. By this time his native country had regained its independence. His attempt to reach an agreement with Józef Morozewicz to replace him in the post of Director of the Polish Geological Institute (PGI) did not succeed. In mid-1921, he was appointed Professor of Applied Geology of the Mining Academy in Cracow, where he remained until 1935. He developed there new teaching methods to enable the teaching of a large groups of students – young geologists and miners. In 1935, the Mining Academy celebrated the 50<sup>th</sup> anniversary of his engagement in scientific work, bestowing on him the title of Doctor of Technical Sciences, *honoris causa*, and that of Honorary Professor.

In the mid-nineteen thirties, the Polish Government decided to change its raw materials policy. This was in response to the growing predominance of militarization by Germany and the Soviet Union, and the need for industrialization of the country. Therefore, in 1937, in a curious development, the General Headquarters of the Polish Army attempted to reorganize the Polish Geological Institute (PGI), at the same time recognizing it as the main center of the country's geological research. Following these initiatives, the Minister of Industry and Trade appointed a PGI Reorganization Committee, with Professor Bohdanowicz as its Chairman. The influence of the

military probably played an important role in Bohdanowicz's appointment as Director of PGI, on the 4<sup>th</sup> of April 1938.

The reorganization, carried out in 1938, allowed for the effective implementation of new policies that solved problems with regard to the exploitation and utilization of the country's raw materials. The growing importance of geological research in Poland is reflected in the budget increase allocated to it between 1924 and 1939. In that period it rose from 238 637 Polish Zloty (25% of an US Dollar at that time) to 2 000 000 Polish Zloty (nearly ten times more). The significant sums awarded to the Institute led to the launch of new direction of studies and methods of research. For the first time geological studies were supported by drilling on a large scale. Many boreholes were drilled into the Kujawy salt structures, on the margin of the Holy Cross Mountains, in Polesie and Volhynia (in eastern Poland). To a much greater extent geophysical surveys were used, applying gravimetric, magnetic, seismic and geo-electric methods. During structural reorganization, the Department of Oil and Gas was reactivated and a Quaternary Branch was created. More attention was directed towards the Registration Office (archives) and the Geological Museum Department, which began the systematic collection of the cores, samples and other geological materials and information. Most of the work was carried out with great zeal and enthusiasm, following the appeal of Director Bohdanowicz: *"Time is running out and it is necessary to develop the largest efforts in the near future to bring the Geological Institute to a state of responsibility for national economic tasks"*. His great plans and ambitions were shattered by the war. From 5 to 6<sup>th</sup> September 1939, the Institute's staff, following order of the Minister of Industry and Trade, was evacuated from Warsaw. Only a small group of employees remained to take care of the entire assets of the Institute.

Professor Bohdanowicz continued in his position as PGI Director after the war. Officially PGI was reestablished by the order of Hilary Minc, Minister of Industry in 1945, in accordance with the Decree of the President of Republic of 31.03.1938. In those difficult months, in addition to the basic operation, much effort was directed towards the organization of different departments and units of the Institute, to undertake as soon as possible geological investigation to support the ruined economy of the country. The division of the Institute into four main Departments was adopted: Coal, Mineral Resources, Regional Geology and Applied Geophysics. In addition there was a chemical laboratory, an archive (manuscripts and maps) and a library. Much attention was paid to the acquisition of materials left by the occupation authorities. A number of trips, especially to Silesia, enriched the library, archives and the equipment of PGI. Other efforts were also undertaken to regain material and equipment taken to Germany during the occupation, through committees for restitution.

His 2.5 year term as Director in the postwar period can be considered as extremely significant. Rebuilding the Headquarter in Warsaw, organizing major laboratories and equipment; chemical, micropalaeontological and palaeontological, and partial restoration of archival and library collections as a result of their recovery in the country and abroad, as well as making new purchases. On the initiative of director Bohdanowicz, large-scale cooperation was established with industry, mining and other sectors of the economy that required knowledge and geological information.

At that time he was referred to as the "Old Man". He died after a long illness in Warsaw on June 5<sup>th</sup> 1947. We can say that with him an entire epoch had ended. He was after all one of the first who endeavored to establish PGI.

Karol Bohdanowicz was an uncommon scientist. His professional activities included a broad spectrum of the earth sciences, ranging from geography, geology, economic geology, hydrogeology and seismology. His interest focused primarily on issues of mineral resources. This is evidenced by an extremely rich legacy that includes 217 items: books, papers, articles and reports. Sixty of these are devoted to mineral resources, forty to petroleum geology and five to coal geology. The remaining 112 works are related to other fields of geology. He was also the author of an impressive three-volume monograph *"Mineral Resources of the World"*, published by PGI in 1952. The

lengthy period of his activity is also remarkable: it ranges over 62 years, from 1885 to 1947. During the first 34 years he was based in Russia, over the remaining 28 years he worked in Poland. During this time he was Director of both the Russian and the Polish Geological Surveys. The first of these periods must be considered more important in terms of his scientific achievements, as it brought him worldwide fame.

## **SCENARIOS OF MEXICAN PALAEOLOGY IN THE LATE NINETEENTH CENTURY<sup>1</sup>**

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### **ABSTRACT**

The scientific study of fossils in Mexico had its origins in the nineteenth century. Foreign scientists and Mexican naturalists institutionalized the scientific practice under the influence of the theories of Charles Darwin (1809-1882). In the works of palaeontological nature, multiple data yielded evidence of a succession of strata and fossil deposits of different nature and age, giving support to the theories of Darwin on biological evolution. The Mexican naturalists, based on the literature produced by foreign colleagues about the geological changes of the Earth's crust and the succession of plants and wildlife, managed to locate fossil remains found in the sequence of time, but apparently the discussion of the concept of evolution was left for another time.

Keywords: Naturalists, palaeontology, Mexico nineteenth century.

### **1. INTRODUCTION, THEORY AND METHODOLOGY**

The objective of this paper is to discuss the relationship between knowledge and truth in the work of Andrés del Río, Antonio del Castillo, Mariano Barcena, Alfonso Luis Herrera López, Manuel María Villada, José Guadalupe Aguilera and Ezequiel Ordóñez, who took up the study of nature in the second half of the nineteenth century and contributed to the establishment of palaeontological knowledge in Mexico with certain rules of verification and consistency.

The methodology, collection and analysis of material that gives support to this approach, was organized around three themes: a) biography and timeline of palaeontology in Mexico, b) social and institutional conditions of emergence and production of knowledge and c) stresses, continuities or fractures in the appropriation of Darwinism. These axes make up what in this work is understood as conditions or surface emergence of the scientific object, in other words, palaeontology as a model or parameter of criticism.

The theoretical perspective tested, in order to size the historical knowledge of palaeontology and the formation of the scientific object, was made by the Frenchman Michel Foucault (1926-1984), historian of ideas, social theorist, psychologist and philosopher, and was essentially based on the approaches of the relationship between knowledge and truth in three core texts of his work: *The Order of Things* (1966), *The Archaeology of Knowledge* (1969) and *The Order of Discourse* (1970).

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<sup>1</sup> This work was supported by CONACYT / Mexico for Sabbaticals Abroad 2014, and is part of a broader research linked to scientific project directed by Dr. Miguel Ángel Puig-Samper at the Institute of History of the CCHS / CSIC: *Science and spectacle of Nature. Scientists Travel and Natural History*. Reference: HAR2013-48065-C2-2-P. Madrid, Spain, 2015-2016.

In this case I have tried to combine three analytical concepts of his work – Archaeological Threshold, Threshold of Positivity and Epistemological Threshold – with the presence of three generations of palaeontologists who travelled and explored the Mexican territory at different times of the nineteenth century and contributed the formalization of palaeontology as an autonomous and specialized discipline through discourse and scientific practice.

## 2. THREE GENERATIONS OF PALAEOLOGISTS

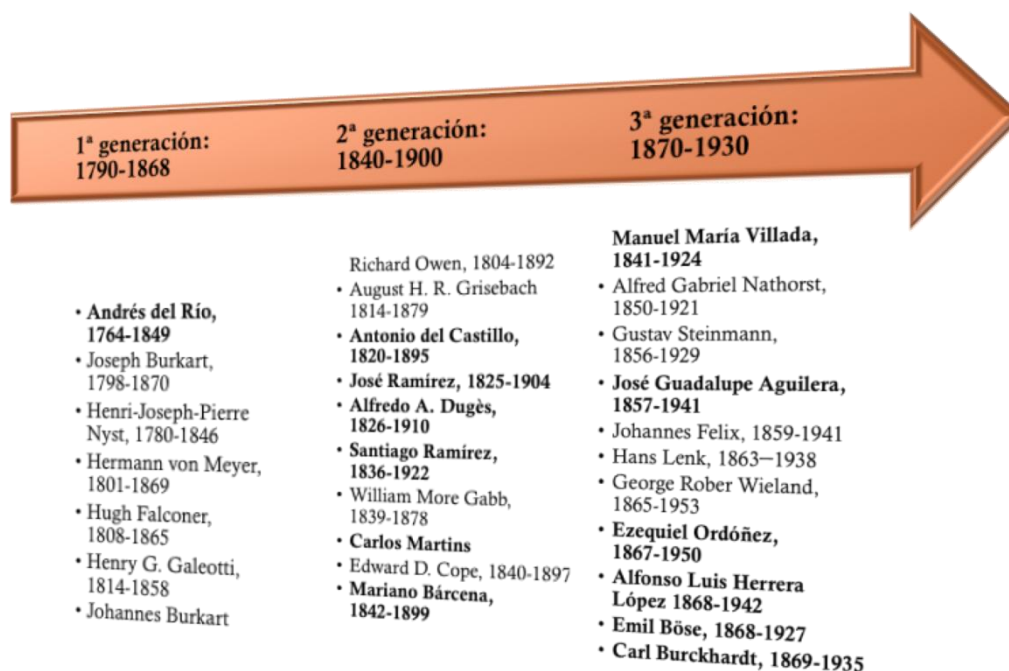
In the nineteenth century Mexican succession of three generations of naturalists and scholars (foreign and Mexican), who were interested in fossils in order to identify the stratigraphy of the Earth's crust and to date its age, deepened into a discussion of the evolution of species and natural selection. The first generation consisted of the Spaniard Andrés Manuel del Río (1764-1849), the Germans Alexander von Humboldt (1769-1859), Joseph Burkart (1798-1870), Hermann von Meyer (1801-1869) and Johannes Burkart, the Belgians Pierre Nyst (1780-1846) and Henry G. Galeotti (1814-1858), the Englishman Hugh Falconer (1808-1865) and the American William More Gabb (1863-1864). It was they who introduced the discipline of palaeontology into Mexico through their studies (Gio-Argaez, 2004, pp. 4-7).<sup>2</sup> But we must also say that works regarding natural phenomena on Earth have existed from ancient times. *Archaeological thresholds*, according to Foucault, are the transition of knowledge from discourse to formal practice. Over a long period "connoisseurs" of paleontological phenomena were naturalists who dealt with the study of nature between the sixteenth and nineteenth centuries.

The second generation was represented by Mexicans and foreign naturalists, such as Richard Owen (1804-1892), Antonio del Castillo (1820-1895), José Ramírez (1825-1904), Alfredo A. Dugès (1826 -1910), Santiago Ramírez (1836-1922), Mariano Barcena (1842-1899), among others, whose explorations and studies of fossils were organized into a body of knowledge. This specialized knowledge was different from previous understanding, due to the specific object of the matters it was dealing with. It is also about the transition to the threshold of positivity when individuals or groups of "knowing" of such phenomena are integrated and define cognitive strategies collectively, as well as in formal environments such as laboratories, institutes and/or scientific societies.

The third generation was led by Manuel María Villada (1841-1924), José Guadalupe Aguilera (1857-1941), Ezequiel Ordóñez (1867-1950), Alfonso Luis Herrera López (1868-1942), Emil Böse (1868 -1927), Carl Burckhardt (1869-1935), among others, who made the discipline of palaeontology a structured and systematic discourse capable of exercising a dominant role in trying to impose certain rules of verification or parameters of critical paleontological knowledge. At that time, Foucault conceptualized it as epistemological threshold of knowledge. Therefore, the formulation of a theoretical model as a parameter of criticism and validation belongs to this third generation of palaeontologists.

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<sup>2</sup> It is also important to mention the contributions made by the US Committee appointed to draft the new US-Mexico border as a result of the US invasion of Mexico between 1846-1847, integrated by the geologists and palaeontologists JR Bartlett, J. Hall, A. Schott and T. Conrad, who published a report with the stratigraphy, petrography and palaeontology of the border area. Or the *Commission Scientifique du Mexique* (1867), now as an expression of the French military intervention in Mexico, where the zoologist M. Edwards, Mine and geologists Tarayre G., A. Dollfus, Montserrat E. and P. Pavie participated.



*Fig. 1. Three generations of geologists and palaeontologists in Mexico, in the nineteenth century.*

Source: Authors. The names of Mexican palaeontologists are indicated in bold.

### 3. PALAEOLOGY IN MEXICO

This paper refers specifically to the group of Mexicans and to those who came from other countries, but who remained in Mexico, and who were hired by the country's institutions and therefore contributed through their studies of palaeontology to its institutionalization and professionalization in the nineteenth century. It also deals with the slow development of palaeontology in Mexico and with the social and cultural conditions in the country; at that time, these conditions were undermined and violated the founding values of the new national state with regard to the beliefs, traditions and values of the Mexican people (Moreno de los Arcos 1984).

In any case, Mexican and foreign travellers explored much of the territory during the nineteenth century, specially the regions of central Mexico, the southeast, the Gulf and a portion of the north of the country. Many of the foreign expeditions focussed on practical objectives such as the exploration and study of the existence, quality and quantity of certain natural resources or useful substances for industrial processes in their countries (Gio-Argáez and Rodrigo Arévalos 2003). But their exploration also led them to collect and describe different objects or substances from the fossilized flora and fauna, and then make certain assumptions contrary to the divine idea about the origin of the Earth, to the catastrophic explanations for the disappearance of plants and animals, or to document the evolution of species and natural selection (Ruiz Gutiérrez 1987). Mexican researchers in the same scheme provided useful knowledge for the development of the country, arising from their natural history studies of natural resources and, progressively incorporated into their studies new conceptual tools that led them to move from mineralogy to geology (Uribe Salas 2013; Valdivia Moreno 2013), and on from there to palaeontology, making each discipline a field of knowledge with its own range of autonomy and verification criteria. Altogether, during the 1800s the palaeontological knowledge grew with the contribution of many researchers as is largely reflected in the published works of Antonio del Castillo (1863, 1869, 1875, 1879, 1880, 1884, 1891, 1894), Mariano Barcena (1871, 1874, 1875, 1877, 1881, 1884, 1886, 1897), José Ramírez (1879,

1898, 1900, 1903), Alfonso Luis Herrera (1870, 1890, 1891, 1896), Manuel Mary Villada (1903, 1905) and Jose Guadalupe Aguilera (1893, 1894, 1896, 1898, 1905, 1906), at the end of that century.<sup>3</sup>

*Table 1. Authors, regions, type of fossils and years of study*

Author	Region	Fossil and / or disciplinary approaches	Year of study
Andrés del Río 1764-1849	Zacatecas, Michoacán, Hidalgo, Valle de Mexico, Oaxaca	Vertebrates, fossil of ammonites and invertebrates	1795, 1805, 1841, 1849
Joseph Burkart 1798-1870	Michoacán, Hidalgo	Geology, Geography, Meteorology	1826, 1869
Hermann von Meyer 1801-1869	Michoacan and Mexico Valley	Vertebrates, proboscides Pleistocene	1840
Henri-Joseph- Pierre Nyst, 1780- 1846	Tehuacan, Puebla, San Juan de Raya	Invertebrates, echinoids	1840
Henry G. Galeotti 1814-1858	Jalapa, Veracruz	Invertebrates, molluscs and foraminifera	1839, 1840
Hugh Falconer 1808-1865	Gulf of Mexico	Vertebrates, Elephant Fossil	1863
Johannes Burkart	Valley of Mexico	Quaternary deposits	1864
William More Gabb 1839-1878	Sonora Chihuahua	Vertebrates, Cretaceous fossils (pelecipods, molluscs, coral)	1864, 1869 1872
Richard Owen 1804-1892	Quaternary and Pleistocene deposits Mexico Valley.	Vertebrate fossils, remains of a great Lama ( <i>Palauchenia magna</i> , Ow.); Horses <i>Equus</i> <i>conversidens</i> , <i>E. Tau</i> and <i>E.</i> <i>Arcidens</i> ; Camelid <i>Palauchenia</i> <i>magna</i>	1869, 1870
Antonio del Castillo 1820-1895	Valley of Mexico Sierra del Catorce, San Luis Potosi	Quaternary fossil, extinct mammals	1869, 1879, 1880, 1884, 1894
Carlos Martins	Europe and America	Fossil plants	1871
Edward D. Cope 1840-1897	Tehuantepec, Oaxaca Valley of Mexico Hidalgo Veracruz	Evolution of reptiles, vertebrates, Mexican snake, mastodons	1871, 1872, 1884, 1886th, b, 1893
Mariano Barcena 1842-1899	Valle de Ameca, Jalisco	Invertebrates, Tertiary crustaceans	1874, 1875th, b
Juan N. Cuatáparo and Santiago Ramirez	State of Mexico	<i>Glyptodon edentulous</i> , Quaternary	1875

<sup>3</sup> In another study, the contributions made by foreigners and Mexicans to palaeontology in that temporality, and the criteria for communication and validation of a specialized knowledge that contributed to the institutionalization and professionalization of Palaeontology in Mexico is analyzed.

Santiago Ramirez 1836-1922	District of Zumpango, State of Mexico	Vertebrates, presence of a "Glyptodont" fossil man	1875, 1879
José Ramírez 1825-1904	Mexico	Studies of flora, heritage and adaptation of plants. Theory of evolution by molecular deformation (monstrosities: teratology. Origin of varieties, breeds and species	1879, 1898, 1900
Alfredo A. Dugès 1826-1910	Guanajuato	Vertebrate fossils, described Platygonus alemanii and remains of organisms of South American origin.	1882, 1891
August Grisebach 1814-1879		Fitogeography, systematics, fossil plants	1883
Alfonso Luis Herrera López 1868-1942	Valley of Mexico	Vertebrate biology	1890, 1891, 1896
José Guadalupe Aguilera 1857-1941	Puebla. Tehuacán to Zapotitlán and San Juan Raya, Sierra del Catorce, San Luis Potosi	Fossil fauna, molluscs and invertebrates	1895, 1906
José Guadalupe Aguilera and Ezequiel Ordóñez 1867-1950	Sonora	Fossil plants: Conifers and two forms of Ginkgoales	1897
Gustav Steinmann 1856-1929	Veracruz Basin	Dasicladaceas Cretaceous algae	1890s
Johannes Felix 1859-1941 Hans Lenk 1863-1938	Veracruz Basin Puebla Mexico	Mexican fossils from Jurassic and Cretaceous formations. Algae Rhodophyta from the Cretaceous	1891st, b, 1899
Alfred Gabriel Nathorst 1850-1921	Tlaxiaco, Oaxaca	Fossil plants. Conifers and two species of <i>Sequoia</i>	1899
George Robert Wieland 1865-1953	Mixteca Alta, Oaxaca	Fossil plants, liassic flora, Liassic age	1900, 1909, 1911, 1913, 1914
Manuel María Villada 1841-1924	Valley of Mexico; fossils Basin of San Juan Raya	Palaeobiology	1903a, b, 1905
Emil Böse 1868-1927	San Luis Potosí, Ciudad Juárez,	Molluscs, fossil Cretaceous, Upper Cretaceous fauna	1906, 1910, 1913



	Chihuahua, Coahuila, Tamaulipas		
Carl Burckhardt 1869-1935	Mexico	Mesozoic synthesis	1930

Source: Authors.

From the 16<sup>th</sup> century chronicles of "ancient organisms" and, until 1930, when palaeontology was already a scientific discipline in Mexico, just over 100 specialized works had been published which were dedicated to the investigation of fossils as a direct registration or as an indirect register of the conditions and the approximate time of their existence in the past, to their relationship with the age of the Earth and to their many possibilities to unravel the sequence of evolution of species of wildlife and the natural selection process that had facilitated their existence and continuity throughout geologic time. From the total of works nearly two thirds were written by Spanish-Mexican scientists, and one third by other scientists from various countries of Europe and America. As a primary goal of this paper, I wish to emphasize the chronological evolution concentrating on the work of three generations and the transition from the archaeological threshold to the epistemological, as suggested by Michel Foucault (Beltran 1951, 1982, 1990; Carreño and Montellano-Ballesteros, 2005).

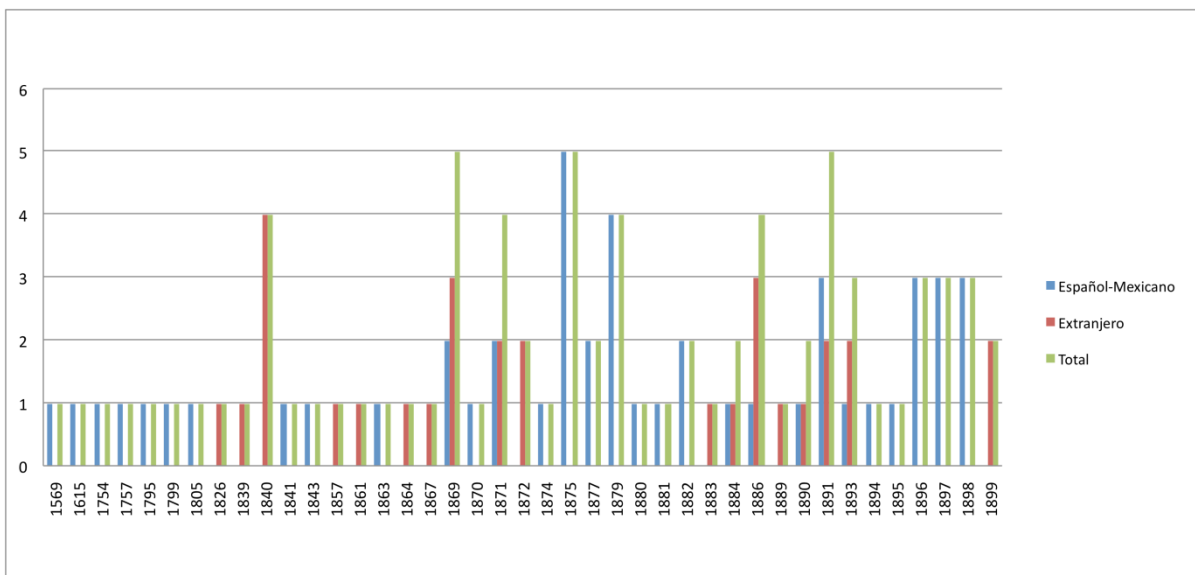


Fig. 2. A distribution of works arranged by date of publication, to indicate contributions made by national and foreign authors. Source: Authors

During the nineteenth century, national and foreign travellers and naturalists extended the study of geographical and geological niches to explore the presence of fossils in a modern concept which would consolidate the stratigraphy as a conceptual tool to answer questions of greater scientific importance.

There are cases where the work of Mexican naturalists was carried out more systematically. For example, in the research undertaken in the Valley of Mexico. In this central area of Mexican territory much evidence was found of a succession of strata and fossil occurrences of different nature and age. These data gave support to the argument postulated by Darwin on biological evolution. The Mexican naturalists, based on the literature produced by foreign scientists about the geological changes of the Earth's crust and the succession of flora and fauna, managed to locate

fossil remains found in the sequence of time, but apparently the discussion on the concept of evolution was not dealt with. The study of fossil remains of prehistoric man was also addressed, as was the study of vertebrates and invertebrates. At the end of the century they undertook palaeobotanical studies and concluded that the oldest plants found in the area belonged to the Upper Triassic period, others to the lower Neolithic, while most were from the Liassic (A. del Castillo and J.G. Aguilera 1895, pp. 56).

#### 4. CONCLUSION

For the Mexican naturalist, it was clear that the fossilized remains of fauna and flora in the rocks of the Earth were the most palpable evidence of organic activity and life in the remote past. Therefore, the activity they engaged in, in the second half of the 19<sup>th</sup> century, was focused on the collection and description of the anatomy of fossil remains, in an attempt to explain their way of life and the environment in which they lived, the relative age of the strata at particular locations, their geographic and stratigraphic distribution and, in some cases, the potential problems related to their extinction (R. Guevara Fefer 2002, pp 171; Uribe Salas and Cortés Zavala 2006, pp 491-518; L. Morelos Rodríguez 2012). In the late nineteenth century, they managed to date fossils back to the Jurassic; but they only approached the evolutionary theory ambiguously and insufficiently.

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## REGIONAL DISTRIBUTION AND REGIONAL TRANSFER: THE INSTITUTIONALIZATION OF CHINESE GEOLOGY (1916-1945)

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### ABSTRACT

Geology, a discipline of abundant achievement, was also the earliest modern discipline introduced from the western world into China. Following the establishment of the first Chinese National Geological Survey (CNGS), in 1916, ten geological institutes were founded nationwide during the subsequent 20 years, up to the outbreak of the Second Sino-Japanese War. Most of these institutes were distributed in the eastern part of China. However this regional distribution changed after the Second Sino-Japanese War broke out in 1937. Some local geological institutes ceased operation, while other institutes, especially national institutes, moved to the south-western part of China. The demand for mineral resources strengthened the government's commitment to geology during the war period. New geological institutes were established during the war and the number of institutes grew to fifteen.

### 1. INTRODUCTION



Modern geology was introduced into China at the turn of the 19th and 20th centuries and passed through a period of institutionalization during the 1910s. Prior to this time, hundreds of Westerners came to China and were engaged in geological survey activities over the previous century. They influenced Chinese modern geology. Among them, the western geologists who worked in Chinese institutes and universities had the most direct influence (Tables 1 and 2). Just as H. T. Chang (Figure 1), one of the pioneers of Chinese modern geology, said: “In the past 10 years, famous foreign geologists have worked with us, which is the opportunity for us to ‘have to’ develop”. (Chang 1922).

Figure 1. H.T. Chang

*Table 1, Western geologists in CNGS*

Name	Nationality	Period	Activities
Johann Gunnar Andersson	Sweden	1912-26	Involved in the founding of the Geological Museum
Davidson Black	Canada	1919-34	Involved in the founding of the Cenozoic Era Research Department
Birger Bohlin	Sweden	1927-29	Research on Beijing Ape Man
Amadeus William Grabau	USA	1920-46	Director of the Paleontology Department
T.G. Halle	Sweden	1916-17	Research and identification of botanical fossils and the training of scholars
F.R. Tegengren	Sweden	1915- ?	Survey in China with Andersson
Pierre Teilhard de Chardin	France	1923-46	Adviser to Cenozoic Era Research Department (1929-39)
Franz Weidenreich	Germany	1935-41	Honorary director of the Cenozoic Era Research Department
Otto Zdansky	Sweden	1925-30	Involved in unearthing the relics of Beijing Ape Man
Grafton Elliot Smith	Britain	1930- ?	Involved in unearthing the relics of Beijing Ape Man
R.L. Pendleton	USA	1930-34	Adviser to the Soil Department
James Thorp	USA	1934-36	Adviser to the Soil Department

*Table 2, Western geologists in Chinese Universities*

Name	Nationality	Period / Subject Area
F. Solgar	Germany	1909-15 ? / General geology, Mining Geology
G.B. Barboar	Britain	1920s/ Structural geology, stratigraphy

A.W. Grabau	USA	1920-46/ Paleontology, Historical Geology
G.I. Adams	USA	1917-18?(20)/General Geology, Mineralogy, Petrology, Economic geology
A. Parejas	Switzerland	1931-33/ Sedimentology, Structural Geology
H. Baker	Hungary	1935-39
O. Jackel	Germany	
A.Heim	Switzerland	1929-? / Structural Geology
W. Credner		Around 1920 /Geography department?

The war changed the situation. Most western geologists left China before the Second Sino-Japanese War broke out in 1937. Although several western geologists remained in China, they stayed in Beijing (Figure 2) instead of following the Chinese institutes and universities when they moved to southwest China. Therefore, the number of western scholars was reduced from dozens to one in the region where the Republican Chinese government had control.

Peter Misch (1909-1987) was the only western geologist who worked in this region. Misch was a Jew of German nationality. To avoid persecution, he came to China in 1936. He worked in the geological department of Sun Yat-sen University and the Kwangtung-Kwangsi Geological Survey. Later he worked at the Southwestern Associated University and the Geological Institute of Academia Sinica, from 1940. His main specialisations were Structural Geology and Regional Metamorphic Geology in China.



*Figure 2, Chinese and western geologists in Zhoukoudian, Beijing*

It was a poorly timed involvement, as the early period of geological institutionalization occurred during the Civil War before 1937, as well as during the Second Sino-Japanese War from 1937 to 1945. In statistical terms, on average, war broke out in seven provinces each year from 1912 to 1923 in China; and the rate doubled from 1924 to 1930. War produced conditions of poor individual security, resulting often in suspension of fieldwork and severe changes in work arrangements (Cui Hengxiu, 2011). The war caused fieldwork to be suspended and led to working schedules being changed. During this early stage, those geological institutes that were located in the large cities, and in the main fieldwork regions in the eastern part of China, were able to avoid the effects of adverse circumstances to some extent.

When Japanese Forces launched a full-scale invasion in China in 1937, modern geology had existed in the country for 20 years. During the war, which continued until 1945, Chinese geology underwent profound changes. Chinese geological institutions in east China either ceased operation or relocated to the south western part of China. This led to great changes in the regional distribution of Chinese geological institutions, and also in the environment of fieldwork and the substantive content of geological research. All these had a deep influence on Chinese geology. This paper studies the influence of both social circumstances and of the war on Chinese geology, through an analysis of the regional distribution and regional transfer of Chinese geological institutes.

## 2. THE ESTABLISHMENT AND REGIONAL DISTRIBUTION OF CHINESE GEOLOGICAL INSTITUTION IN THE EARLY STAGE (1916-1936)

Following the establishment of the CNGS in 1916, ten geological institutes were created nationwide during the subsequent 20 years, up to the outbreak of the Second Sino-Japanese War. Two of them were national institutes and eight of them were local agencies. The latter were part of the Construction Departments of provincial governments. Most of the institutes were situated in east China (Figure 3), while only two institutes were located in the southwest of China. The latter two were small in scale with fewer geologists. For example, there were only 9 staff members at the Geological Institute of the Western Academy of Sciences and no permanent geologist in the Guizhou Geological Survey before 1941.



Figure 3. The distribution of geological institutes before 1937

The regional distribution of geological institutes was closely related to the concentration of geologists in the large cities in the eastern parts of China. As the economic situation in the eastern

provinces was better than in the west, some provinces in the east founded Geological Surveys. For example, as the financial situation of the Zhejiang province improved in 1923, the local government established a geological office as part of its Industrial Department administration. The office organized fieldwork to survey for mineral resources. However it was closed a year later when civil war broke out and the financial situation became very difficult. The Yunnan local government also established its Geological Survey in 1925 when its financial condition was reasonably good, but this Survey ceased operation two years later because of the war (Chu, 2012).

When the Chinese capital moved from Beijing to Nanjing in 1935, two national geological institutes also moved to the new capital from Beijing and Shanghai respectively, thus resulting in an uneven geographical distribution. This problem drew the attention of Chinese geologists, who called for an adjustment to the unbalanced regional distribution of geological institutes. However the Second Sino-Japanese War changed the situation completely and led to an even more unbalanced regional distribution.

### ***3. THE MIGRATION OF GEOLOGICAL INSTITUTES DURING WAR TIME (1937-1945)***

Chinese geology had developed smoothly during the 20 years before the Second Sino-Japanese War broke out. H. T. Chang was satisfied with the achievements. He said hopefully, "I'm confident of Chinese geological institutes, no matter whether they are national or local ones, large- or small-scale survey teams. As the number of geologists grows year after year, there is no doubt that Chinese geology will develop smoothly, according to national or local needs, if we have ample funding." Chang also offered three suggestions. Firstly, to strengthen cooperation among the geological institutes; secondly, to establish geological institutes with a reasonable geographical distribution; and thirdly, to develop the geological institute as early as possible in the northern part of China where the Chinese cultural centre is located (Chang, 1937). However Chang's idea never eventuated because of the cruel war.

The regional distribution and organizational structure of geological institutes changed dramatically during the Second Sino-Japanese War. The changes were not planned by Chinese geologists, and the regional distribution of geological institutes became much more uneven. But the concentration of the institutes in southwest China had strengthened communication and cooperation among the geological institutes, which was the expectation of Chinese geologists.

Finally two Chinese national geological institutes moved to Chongqing in south-west China, where the provisional capital was located during war time. The provincial Geological Surveys, which were still operating, also moved to the western sector of their provinces. Ultimately, most geological institutes were located in Kunming, Chongqing, Lanzhou and Guiyang. All these cities are located in the western area of China. Taking the two national institutes as an example, we can illustrate the influence of the war on the modern Chinese geological institutionalization.

#### ***3.1 Chinese National Geological Survey (CNGS)***

In November 1937, the important sectors of Chinese government moved from Nanjing in central east China to Chongqing in the southwest of the country, while some other departments moved to Hankou and Changsha. As the CNGS was one of the government departments, it moved initially to Changsha.

Changsha is located in the south central part of China and a number of institutes and government departments moved there at the early stage of the war. Ten universities, one middle school, seven publishers and ten newspapers and magazines all moved to Changsha. And numerous famous scholars and celebrities also gathered there for a short period ( Wang Feifei, 2011).

There was another geological institute in Changsha at that time. In 1927, the Hunan Geological Survey (HGS) had been founded in Changsha by the local government. The HGS had

maintained close cooperation with the CNGS. Therefore, the CNGS built its new office building with the help of the HGS. But just as the building was finished, Changsha came under threat by the war. The CNGS had to move from Changsha to Chongqing where it was to spend seven years (see Figure 4).



*Figure 4, CNGS' office in Chongqing*

When CNGS arrived in Chongqing, the Sichuan Geological Survey had just been established by the local government there. There were also two geological departments in the universities in Chongqing. To avoid concentration of the geological institutes, the CNGS established two branch offices in Kunming and Guilin, both are large cities in southwest China. And dozens of scholars worked in the branch offices (Archives of Chinese Second Archives, 375).

As these two offices were established hastily during the war, there were no detailed working plans and no careful preparation for their functioning. Information exchange between the headquarters in Chongqing and the two offices was difficult during war. To make matters even worse, the offices lacked research funds and equipment. As a result personal conflicts and difficult working conditions soon appeared (Zhongjian Yang, 1983). Therefore, the office in Guilin existed for only one year while the office in Kunming operated for two years.

The Second World War, which broke out in 1939, made the situation in China worse. As the war around the world initially appeared to favour the Fascists, pessimism was widespread in China. In December 1941, Hong Kong was captured and Japanese forces expanded the battlefield to south-east Asia. As a consequence, Japanese planes bombing southeast China were able to operate from Vietnam. Therefore, the southwest part of China was no longer safe. In view of this situation, the Chinese government decided to relocate key agencies from southwest to northwest China. Lanzhou, the largest city in northwest China became the important centre during this period.

In the early 1940s, the CNGS commenced the surveying of mineral resources in the northwest region. CNGS established a survey team in collaboration with the Lanzhou local government in 1942 and opened its branch office in Lanzhou in 1943(see Figure 5). The branch office surveyed mineral resources, produced geological maps and undertook research from 1943 to 1949.





Figure 5, geologists in the branch of CNGS in Lanzhou

### 3.2 Geological Institute of Academia Sinica (GIAS)

The Geological Institute of Academia Sinica (GIAS) was one of the ten institutes of Academia Sinica established in 1928. When the war broke out, the Director, J.S. Lee, planned to move the GIAS to Lu Mountain as he had made surveys there many times and thought it was an ideal location for geological research. But less than a year later, the GIAS had to move again as Lu Mountain was no longer safe. At the end of 1937, it relocated to Guilin ( Shengyun Ma, 1999).

Guilin was another important city during the war: it is also a beautiful city famous for its karst landforms. Some other institutes of Academia Sinica, such as the Physical Institute, the Psychological Institute and the Social Science Institute, also moved to Guilin at this time. The GIAS used to direct much attention to theoretical research when it was established. In order to solve its financial problems during the war, it began to spend much time on mineral resource surveys in order to obtain financial support from the local government and commercial enterprises. Meanwhile, some geologists in the GIAS had to work in universities or other institutes temporarily in order to solve their financial problems (Figure 6).

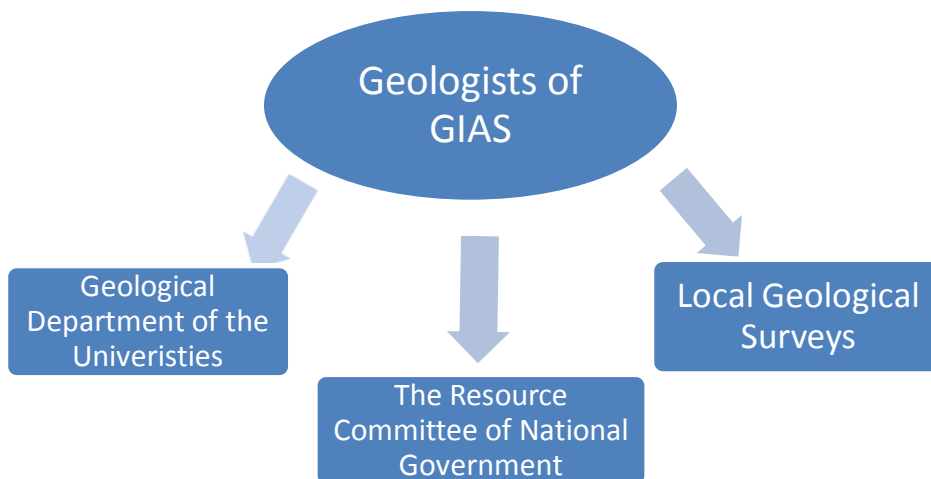


Figure 6. Transfer of geologists from the GIAS

But Guilin was also in danger in 1944. The GIAS had to leave Guilin and move to Guiyang in June 1944. There was a local Geological Survey in Guiyang and its leader was one of Lee's students. As Guiyang is a quiet and secluded place, Lee decided to remain there during the war

(Juyun Le, 2011). But Japanese troops soon advanced on Guiyang and the GIAS had to move from Guiyang to Chongqing at the end of the same year, where it remained during the war.

#### ***4. THE ADJUSTMENT AND THE COOPERATION OF GEOLOGICAL INSTITUTES DURING THE WAR***

The new institutional distribution not only influenced the choice of areas for fieldwork, but also created a shift in the contents of Chinese geological studies. Due to the urgent wartime demand, finding mineral resources became the main task of Chinese geologists. Realizing the significant role of geology in the war, both the government and relevant enterprises promoted the development of geological surveying. About six new geological institutes and five additional geological departments in colleges were established during war time. They actively advanced applied geology but delayed the development of theoretical geology, such as palaeontology and palaeoanthropology, which had progressed quickly in China before the war.

The Mineral Exploration Bureau (MEB) of the Resource Committee of National Government, was the third national geological institute established in 1940, in order to "meet the social needs during the war" (Hsieh, 1946a). Therefore, the research directions and the tradition of the MEB were very different from those of the other two national institutes. It was described as both an academic and productive institute by its leader C.Y. Hsieh (Hsieh, 1946b). There were ten survey teams for fieldwork each year and exploring mineral reserves was the main task of the MEB. Economic geology developed quickly through the work carried out by MEB.

The new regional and social changes led to adjustments in the institute. They also influenced the research contents and even research direction of Chinese geology.

Chinese geological institutes adjusted their research departments during the war time. For example, there were eight departments in the CNGS before 1937: the department of Geological Survey, Geology of Mineral Deposit and Rock, Exploration Engineering, Palaeontology, Cenozoic Era Research, Earthquake Research, Soil Research and Qinyuan Fuel Research. But during the war, the department of Exploration Engineering changed to Economic Geology. As the observing instruments could not be moved to southwest China from Beijing, the Earthquake Research Department was transformed into a Geophysical Research Department. The Qinyuan Fuel Research Department left the CNGS and became part of the Oil Refinery in the western part of China during the war period.

The regional concentration of the geological institutes strengthened their communication and cooperation. During the migration of the two national institutes, they obtained help from local geological institutes, especially assistance to establish their offices. Meanwhile, the national institutes helped the local institutes with professional direction, cooperative surveying and by sharing instruments and literature. With the help of the national institutes, the local geological institutes in southwest China developed quickly during the war.

There were increases in academic communication and personal exchange among the geological institutes during the war. Meanwhile, new geological institutes were founded in southwest China. Despite the serious war-related impediments to international geological exchange, some Chinese students studied overseas. And these scholars continued to disseminate western geological theories.

## 5. SUMMARY

The development of geology in modern China, by its Institutionalization, had completed the whole course of importing, assimilating, developing and indigenizing. The development of Chinese geology was also intimately related to Chinese politics and society. For this reason we can explore their relationship from case studies of changes undergone by Chinese geological institutes.

In the first half of the 20th century, China was experiencing an important period of transformation from an imperial system to the nationalist system. The whole society underwent a great change of regime, custom and mentality. Meanwhile, the war had impacts in every part of Chinese society, including, more broadly, in modern Chinese science, which was in the process of being established during this period.

Geology was one of the examples of the development of modern Chinese science. First, dozens of western geologists worked in Chinese universities and institutes before the war. The war reduced the influence of western geologists in correspondence with their decreasing number. Secondly, when the Second Sino-Japanese War broke out, a national crisis was imminent. Therefore, the orientation of geology turned to applied geology, which was supported by the Chinese government. Last but not the least, the regional distribution of Chinese geological institutes changed. This change concerned the direction, contents and even the manner of working of Chinese geologists.

The war was a very important period for the development of modern Chinese geology. It was during this time that most of the early Chinese geologists were educated and the younger generations of Chinese geologists were brought into play in the People's Republic of China, especially in the second half of 20th century. Meanwhile, the main Chinese geological issues emerged, and the long-influential Chinese tradition favouring fieldwork was strengthened.

## ACKNOWLEDGEMENTS

The author thanks Jens Hoyrup, who revised the English text and Kenneth L. Taylor and Barry Cooper for their valuable advice. The work was supported by the research program of *the Study on the Indigenization of Chinese Geology*, which was supported by the Chinese Academy of Sciences (KZZD-EW-TZ-01). This paper also remembers the support of David Oldroyd who provided many helpful suggestions during the past dozen years.

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## **WEST MEETS EAST: PERSONAL REFLECTIONS ON 25 YEARS OF TRYING TO UNIFY THE HISTORY OF GEOLOGY IN GERMANY**

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Railway station Berlin-Lichtenberg, Thursday 3rd of May, 1990. I am boarding a long-distance train to Rostock, about to meet Martin Guntau for the very first time.

Learning about Martin had taken me along a peculiar route. My initial university training being in physics and astronomy, I didn't come across any of Martin's work at that time. I gradually evolved into an historian of science although I didn't initially venture into the history of geology. The lack of virtually any work on the history of geology by the West German academic community prevented me from encountering Martin's publications in passing. In October 1988, when I was starting a one-year Master's degree in the History of Science, at the University of Kent at Canterbury, I wasn't aware of any professional work on the history of geology. My own interest developed when in Britain, and it was triggered by the then recent stratigraphical case studies of Martin Rudwick and James Secord. I am possibly the only native German speaker ever, whose introduction to the history of German geology came by reading Rachel Laudan. And it was a British recommendation, that – following my return to Germany – Martin Guntau was the one scholar with whom I should definitely try to get in contact. I didn't assume this to be an easy task, with Germany still being a divided country.

The latter proved to be a surprisingly moot point: by 1990, the Iron Curtain had crumbled to such a degree that you could organize such a meeting without having to deal with any Eastern state authority whatsoever. At that stage, I already had studied Martin's work in depth – and failed to arrive at a conclusion, as to what to make of it. While Martin's publications were clearly thorough and knowledgeable, his Marxist leanings amounted to considerably more than mere window dressing. And it was the sort of Marxist approach irritating to a Westerner: based on a firm belief that the Laws of History had been discovered by Marx and Engels. Therefore, no need to complicate a specific historical case study by trying to painstakingly contrast a Marxist perspective with a rival explanation (such different opinions were casually dismissed as naive bourgeois thinking). On the other hand, if you had managed to successfully disentangle Martin's historical reasoning from its strict methodological foundation, you arrived at an impressive and coherent account of the emergence of geology as a scientific discipline.

I might not have known what to expect, but in any case, I met a truly genial host. Most surprisingly, Martin was a considerably more soave and worldly-wise personality than I had assumed any travel-restricted East German to be (I didn't know about Martin's annual INHIGEO-related trips to Amsterdam, nor the extensive research period he had spent in the United States. Indeed, I wasn't even aware that Martin was the then-acting president of INHIGEO!). We talked a great deal about history of geology, and hardly at all about politics. Not that this really mattered: whatever his own political beliefs, Martin didn't show a strong desire to discuss them. Nor was he in any way annoyed if you didn't see things his way. As I later found out, such personal traits weren't restricted to the realm of politics: to these days, I seldom have met another scholar who showed such a complete absence of any personal misgivings whenever you disagreed with him (beyond being curious why exactly you did).

But in addition to getting to know Martin, that conversation introduced me to another world as well: the sheer range of studies on the history of geology by East German scholars was positively staggering. In particular if you contrasted this with the situation in West Germany. Here, everything revolved around the twin poles of using (and occasionally mutilating) history for the sake of arriving at epistemological conclusions and being obsessed with examining the geological thoughts of Goethe. But while West German historians of geology hardly bothered to venture beyond these little ponds, our Eastern counterparts had seen the oceans and tried to cross them. Whatever doubts could be raised about the quality of their ships (a rigid insistence on a truly unbridgeable conceptual distinction between internal and external factors in the history of science made those studies look extremely dated even then), there was no question that, for establishing a lively history of geology in soon-to-be-unified Germany, these studies were a most important asset. Martin knew all about these studies, and, furthermore, had added information how to connect their contents to debates elsewhere, most particularly to discussions taking place in Eastern Europe unknown to anyone not speaking Russian.

For history of geology in reunified Germany, the following decade turned out to be a truly halcyon period indeed, still fondly remembered by anyone involved at that time. The INHIGEO Annual Meeting in Dresden (1991), the initiation of the 'Cultural Heritage' series of conferences in 1993 (still-running, but now without as strong a focus on the history of geology), and, at the close of the decade, the Abraham Gottlob Werner Symposium (Freiberg, 1999) were all events which attracted dozens of international attendees. On a national level, the *Arbeitskreis Geschichte der Geowissenschaften* (founded in 1990) provided a new focal point. It was responsible for the publication of a sizeable Yearbook (from 1991 onwards) and the organization of an annual conference devoted to the history of the earth sciences. Not taking anything away from the Western input, those developments could not have been possible without the strong involvement of Eastern scholars, none more so than Peter Schmidt. The latter quickly slotted into the unofficial role of coordinating head for the vast majority of activities taking place in Germany during this decade, a task he fulfilled admirably until his most unexpected early death, in 1999.

As successful as the 1990s were, the first cracks had become visible. For West Germans, the marked reluctance of our Eastern colleagues to attend annual conferences taking place on this side of the former border was puzzling. Maybe, what had been achieved was merely the peaceful intermingling on a personal level? Although this was not a small achievement it couldn't exactly be described as a proper unification of two rather different cultures (even if they shared the same language). And you shouldn't dare to cross other borders, well-guarded by sensitivities. When a number of East German geologists started to write autobiographical accounts and biographically-tinted histories of recent events in which they had been involved, we were expected to take them on trust, not to question their credibility. Since those accounts often stood in direct contradiction to each other, this was quite an impossible task, even at the best of times. But I have to admit that most of my own irritations concerning these debates were reserved for my fellow Western scholars, who struck me as being too preoccupied trying to preserve a cosy atmosphere instead of acting as an historian should.

But whatever the motivations for such peacekeeping missions, come the new millennium it became clear that they hadn't delivered the expected goods. When the last – and, overall, very successful – INHIGEO Annual Meeting took place in Germany (Eichstätt, 2007), former East German scholars were conspicuous by their absence. Since then, the East-West German divide has, if anything increased: less because of more recent arguments, but because of the lack of sufficient glue. The *Arbeitskreis* has gradually been stumbling into a moribund state, and, these days, can hardly be declared alive. Its last meeting, attended by barely more people than its half-dozen speakers, took place in early 2013. Its Website still announces a forthcoming event in 2005. The *Arbeitskreis'* former Yearbook took a somewhat peculiar path at the beginning of this century (its reputation not exactly enhanced by giving a generous platform to fervent expanding-earth

supporters moaning bitterly about feeling ostracized by the geological community) and was eventually amalgamated with the *Geohistorische Blätter*.

This journal exists since 1998 and was initially set-up by a number of enthusiastic scholars resident in the Greater Berlin area. So far, 24 volumes have been published. It is now the only established German-speaking (with a very sizeable number of Austrian authors included) periodical exclusively devoted to historical topics in the earth sciences – and it marks the one focal point still remaining, after 25 years of trying to unify history of geology in Germany. The *Geohistorische Blätter* are a mixed blessing, though: each issue usually covers the complete quality range from very decent historical scholarship to contributions which can best be classified as raving ramblings, the latter not bereft of nasty personal attacks. And, more often than not, those specific arrows get thrown across the former inner German border. Not an outrageously good showing after a quarter of a century, maybe ... but, to see a silver lining even there, this might at least give an indication that there's some passion left in the field. While the marvellous new world clearly visible from Martin Guntau's Rostock office, way back in May 1990, might not have materialized to quite the same degree as both of us probably would have wished, I nevertheless remain hopeful for what is to come in the next 25 years!

## **RESEARCH PHASE INTO THE PRECAMBRIAN-CAMBRIAN GEOLOGICAL HISTORY OF MADAGASCAR**

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Academic studies of the geology of Madagascar have confirmed the existence of the major rock units defined by primary geological mapping. The following three main groups of basement rocks are identified (Bésairie, 1968-1971):

- Androyen System
- Graphite System
- Vohibory System

In addition, a number of major shear zones have been identified to include,

- Bongolava-Ranotsara Shear Zone (Collins 2000; Martelat *et al.* 1997; Martelat *et al.* 1995; Pili *et al.* 1997)
- Beraketa Shear Zone (Collins, 2000; Martelat *et al.* 1997; Martelat *et al.* 1995; Pili *et al.* 1997)
- Vohibory Shear Zone (Collins, 2000; Martelat *et al.* 1997; Martelat *et al.* 1995 Pili *et al.* 1997)
- Betsimisaraka Suture Zone (Collins *et al.* 2000; Kröner *et al.* 2000)
- Angavo-Ifanadiana Shear Zone (Martelat *et al.* 2000)

Research into the Precambrian-Cambrian geology of Madagascar can be broadly divided into two types. Research focused on specific and local problems that have mainly been undertaken at French universities and mostly with Malagasy colleagues. These include the detailed examination

of contact relationships between major crustal units. Secondly, there has been traverse-based research aimed at understanding the role of Madagascar in the break-up of Rodinia, and subsequent amalgamation of Gondwana along the East African Orogen.

Most interpretations of the Precambrian tectonic evolution of Madagascar remain unproven hypotheses, either due to insufficient data, notably regarding isotopic ages of magmatic, thermal and tectonic events), and a poor understanding of the tectonothermal evolution of individual domains. Collins (2006) is the latest of these model-driven accounts of the role of Madagascar's Precambrian rocks in the development of the East African Orogen, and his paper provides a good bibliography of previous interpretations of the Precambrian geology of Madagascar.

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## TIMING OF GEOLOGICAL EVENTS IN MADAGASCAR

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The timing of geological events in Madagascar can be summarized as follow:

~3.26-3.20 Ga: Rocks of this age occur in the Antongil Domain and at 3.26 Ga xenocrysts are present in Neoproterozoic granitoids in the “Tsaratana belts” (Figure. 1).

~2.75-2.49 Ga: Granitic magmatism in the Antongil Domain (at ~2530-2520 Ma) together with formation of TTG orthogneisses between 2550 and 2500 Ma in the Antananarivo Domain. A more prolonged UHT metamorphism is recorded in the “Tsaratana belts” between ~2.75 and 2.49 Ga with accompanying TTG magmatism.

Palaeoproterozoic: 2.4-2.2 Ga inherited zircon xenocrysts indicate continental crust of this age existed in the Antananarivo Domain.

Mesoproterozoic: A poorly dated phase of deformation occurred in central Madagascar between about 1700-1500 Ma and about 800 Ma that created recumbent nappes in the Itremo Group. Recent work has found 1000 Ma igneous rocks from near Miandrivazo in western Madagascar (Tucker *et al.* 2007)

Early Neoproterozoic: Rifting of Rodinia commenced at about 880Ma.

Early to mid-Neoproterozoic: Arc magmatism with granitoids and rhyolites including in NW India, Seychelles and the Bemarivo Domain, together with major granitic and basic magmatism in the Antananarivo Domain. The eastern and western margins of Azania are marked by Neoproterozoic shelf sedimentary sequences (in the eastern Ampasary Group and the western Molo Group in Madagascar). It is possible that Azania (comprising Archaean and Palaeoproterozoic crust of Madagascar, Somalia, Ethiopia and Arabia) split from the Congo/Tanzania/Bangweulu Domain after deposition of the Itremo Group sediments. In this scenario, the basin between the separating Azania and Congo/Tanzania/Bangweulu Domain would have initiated as a back-arc basin that developed within and behind the 800-750 Ma continental arc that developed on Azania. The polyphase deformation at about 800 Ma recorded in the Antananarivo Domain may be related to crustal extension associated with the separation of Azania from a larger continental mass.

~650-630 Ma: First Collisional event in the EAO between Azania and the east-central African cratons. Large volumes of alkaline granitic magma formed due to post-collision extension under a high heat flow regime (Paquette and Nédélec 1998). Polyphase deformation with accompanying metamorphism as well as granitic and basic magmatism recognized in the Antananarivo Domain and “Tsaratana belts”.

~550Ma: Second Collisional event in the EAO between an eastern plate that included the Antongil-Masora and Dharwar cratons with the cratonic plate created during the “First collisional event” (Collins *et al.* 2003). Polyphase deformation with accompanying metamorphism is recognized in the Antananarivo Domain and “Tsaratana belts” together with the emplacement of granitic intrusions. The effects of this collision on the Antongil-Masora Domain are less well understood.



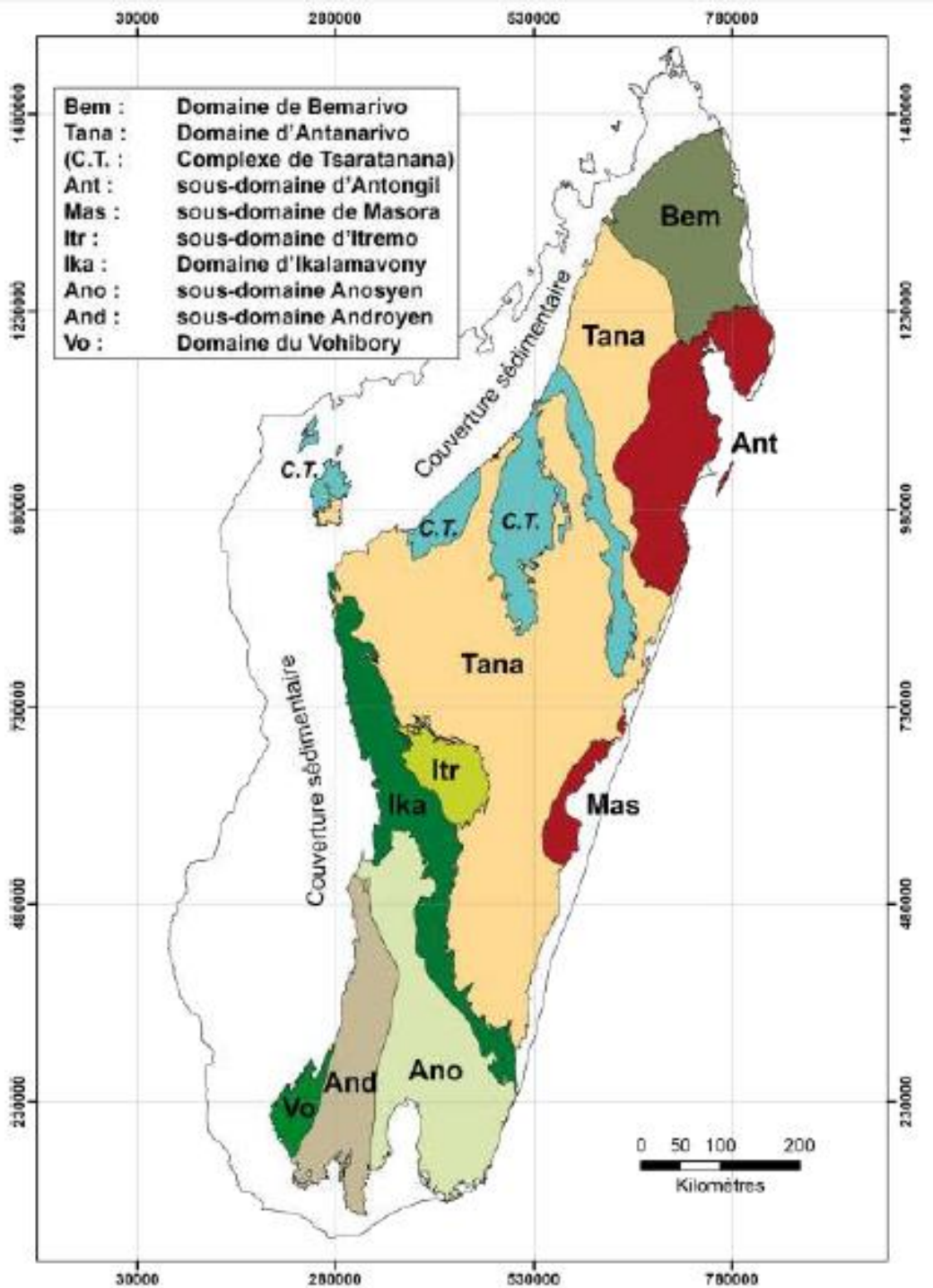


Fig. 0. Tectonic domains of Madagascar (PGRM, 2008).

~530 Ma: Tectonic emplacement of the Bemarivo Domain took place after collision between the Antananarivo and Antongil-Masora domains. Third collisional event in the EAO recognised in Madagascar. A high-grade metamorphic event that attained granulite facies accompanied the tectonic transport of the Bemarivo Domain over Antongil-Antananarivo-Tsaratanana rocks.

Contemporaneous events include emplacement of ~540-520 Ma granites in NE Mozambique and southern Ethiopia (Genzebu *et al.*, 1994), high-grade metamorphism in southern Somalia and NE Mozambique between about 600 and 530 Ma (Küster *et al.* 1990).

~490 Ma: The final Pan African tectonic episode was ductile shearing along major north-south shear zones. These include the Angavo-Ifanadiana Shear Zone of central-north Madagascar as well as a number of major shear zones south of the Ranotsara shear zone. Pili *et al.* (1997) note that the N-S shear zones in southern Madagascar are rooted in the mantle and caused by mantle uplift that led to crustal thinning. The major shears are part of a shear network that can be traced into what is now eastern Africa (Figure 2).

Mesozoic: The major Pan African shears were reactivated in post-Jurassic times to control brittle faulting. Importantly, the major fault-dyke system that now controls the eastern coastline of Madagascar follows a deep-seated major (Pan African) ductile shear zone. The break-up of Gondwana commenced at about 180 Ma (Eagles and König 2008) with later offset of Madagascar from India during the Cretaceous Period (Jelsma *et al.* 2004).

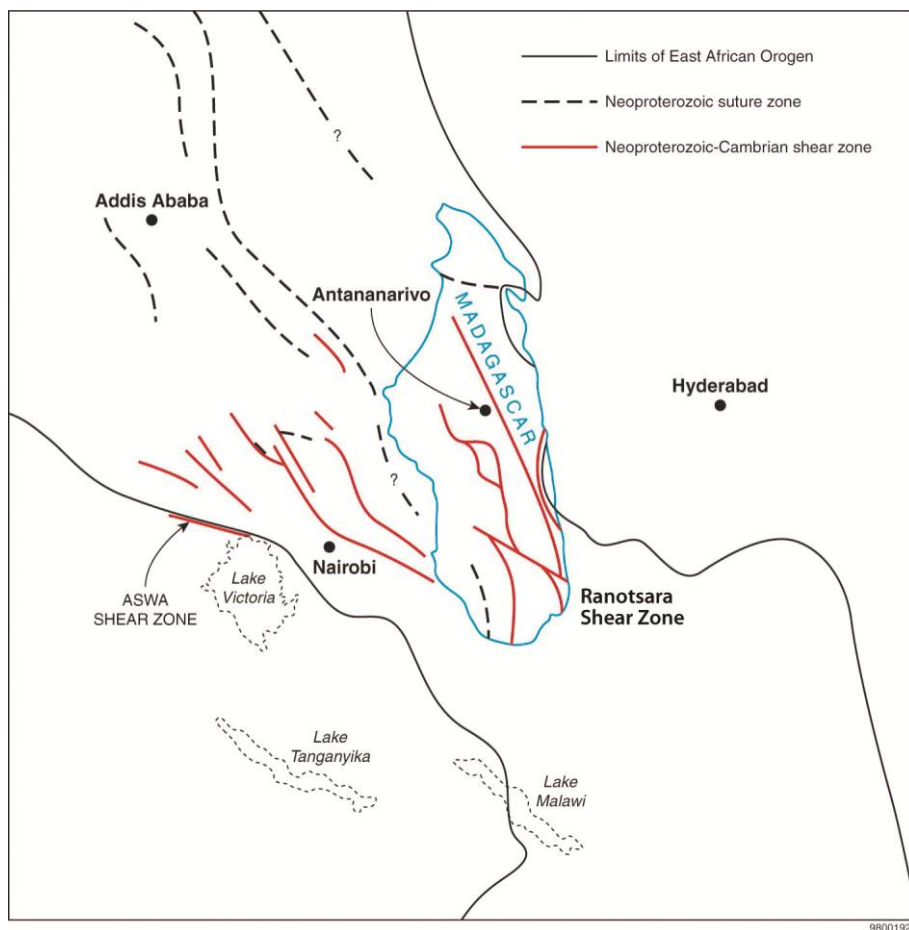


Figure 2. The major end 'Pan African' shear zones of Madagascar and eastern Africa juxtaposed within Gondwana prior to Mesozoic onwards fragmentation of the supercontinent.

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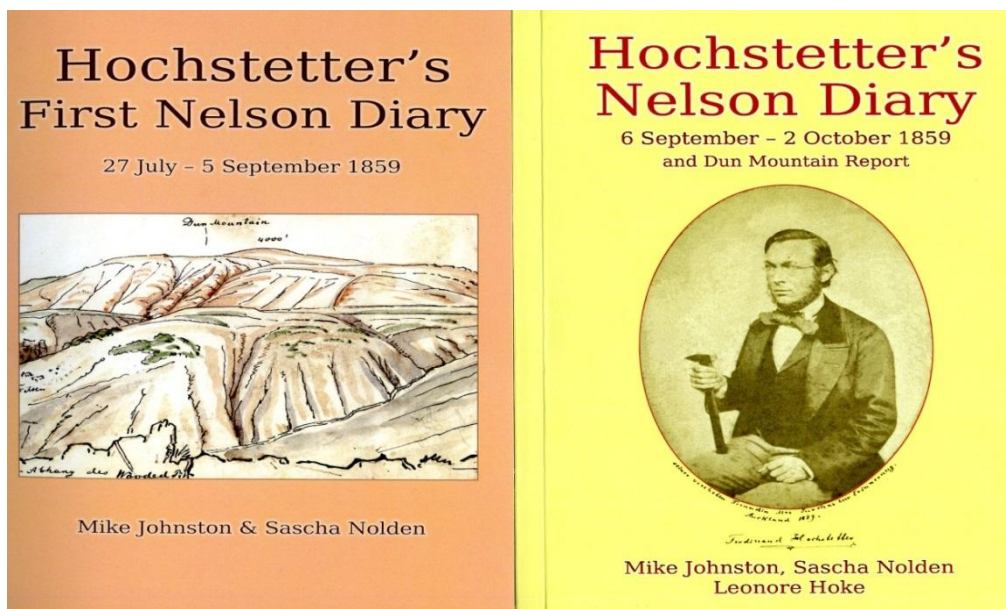
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## BOOK REVIEWS

Johnston, M. and Nolden, S. 2014. *Hochstetter's first Nelson diary, 27 July to 5 September 1859*. Geoscience Society of New Zealand ([www.gsnz.org.nz](http://www.gsnz.org.nz)), 121 pp.

Johnston, M., Nolden, S. and Hoke, L. 2012. *Hochstetter's Nelson diary, 6 September to 2 October 1859*. Geoscience Society of New Zealand ([www.gsnz.org.nz](http://www.gsnz.org.nz)), 68 pp.



Since it was first settled by Europeans, in 1841, the Nelson region has been known for the presence of minerals and coal. In early years development of the mineral resources was handicapped by the small population and lack of expertise. When the Austrian geologist, Ferdinand Hochstetter visited New Zealand, in 1859, the Nelson Provincial Government invited him to visit Nelson and prepare a scientific report on how the minerals might be developed. Hochstetter and his compatriot Julius Haast spent just over two months in the Nelson region, between late July and early October 1859, and provided the first account of the geology and mineral deposits made by a professional scientist.

Hochstetter is fondly remembered by geologists as the father of New Zealand geology. His perceptive observations during exploring trips in 1859, in both in the North and South Islands, laid the foundation for our knowledge of the distinctive geology of this county. In recent years researchers Mike Johnston and Sascha Nolden have added considerably to our knowledge of Hochstetter's work in New Zealand, especially using German sources which had not previously been translated. These two volumes provide an annotated and illustrated translation of the parts of Hochstetter's diaries which cover his exploration of the Nelson region. Unfortunately Hochstetter's papers were dispersed after his death, and the diaries have only recently been located by Sascha Nolden. The notebook covering the later part of Hochstetter's visit to Nelson is held by Dr Albert Schedl in Vienna, and the earlier notebook was identified in Basle after the first volume had been published – hence the publication of two separate volumes.

Hochstetter's diaries give a fascinating insight into the way he worked in the field. He was a painstaking observer who recorded not only the geology, but also the people he met and the weather and vegetation. The local settlers were keen to ensure that he visited all the known mineral and coal occurrences, so the diaries give a valuable record of what could be seen in 1859.

One of the main objects of Hochstetter's work was to examine the copper mineralisation on Dun Mountain, as there was controversy about whether enough ore was present to be worked economically. Hochstetter and Haast set off on a trip up Dun Mountain, accompanied by several leading citizens of Nelson. The unusual geology in this area has been much debated over the years, but discussions always come back to the observations that Hochstetter made on this trip. Having climbed to the summit of Dun Mountain, he recognised that it was made of a unique olivine-rich rock to which he gave the name Dunite, a name that has been retained in the international geological literature to the present day. He was unimpressed with the copper deposits, and blunt in his evaluation. "I consider the Dun Mountain Company to be a failure... The circumstances are not what they are made out to be in the Dun Mountain mining prospectus".

In the short time available Hochstetter covered much of the northern part of Nelson province, and many of the gaps were later filled in by Haast. We now know that this is an area of considerable geological complexity. It is amazing that Hochstetter managed to recognise many of the main rock units, collect fossils to determine their age, and produce a geological sketch map. He was already familiar with the geology of the Auckland region, and was able to recognise the similarity between rocks and fossils he had seen in both places.

Production of these two volumes is a work of considerable scholarship, involving the translation of the diaries from German into English as well as annotating the text with explanatory footnotes about what is now known of the geology, the people mentioned and the scientific background. Mike Johnston and Sascha Nolden have previously worked together on projects involving Hochstetter and Haast, most notably their 2012 book, "Hochstetter and Haast in New Zealand 1858-1860", and these two volumes are further result of this very productive collaboration. New Zealand historians hope that it will be followed by similar transcriptions of the diaries covering the entire nine months which Hochstetter spent in New Zealand.

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**Woodland, J. 2014. Money Pits: British mining companies in the Californian and Australian gold rushes of the 1850s. Ashgate Publishing, Surrey, pp. 282.**

The short title of this book is most apt, encapsulating in two words the exuberant promises and sorry reality of the vast majority of British gold bubble companies of the early Californian and Australian gold rushes. *Money Pits* is a meticulously researched and fascinating account of the 'gold bubble' event between 1849 and 1853 that saw a rush to set up nearly 120 public companies to exploit the newly discovered and booming goldfields. The proposed companies ranged from newspaper advertisements that went no further, to several that were outright frauds, to speculative hopefuls and a number that made serious, but mostly unsuccessful, attempts to profitably mine for gold. They were collectively capitalized at over £15 million, but only about £1.75 million was actually raised by 42 of them. Of the 42 companies eventually floated only one succeeded in gold mining.

In the book, Woodland takes the reader through a logical sequence of chapters starting with a brief introductory overview of the beginnings of the gold bubble companies. Chapter 2 examines the various company promoters, their backgrounds and *modus operandi* and includes a more detailed section on John Diston Powles, probably the most prolific promoter of British overseas mining ventures in the first half of the nineteenth century.

The company structures are described in Chapter 3, covering the three options available at the time in Britain: joint stock companies; cost book companies; and incorporation by Royal Charter, as well as the *Sociétés en Comandite*, based in Paris but with British offices, and options available in Australia and America. This chapter also summarises other aspects relevant to the

forming of the companies, including a useful insight into the amounts of money raised and invested and sections on mining methods and technology and some of the mining experts involved.

Chapter 4 entitled *Government Policies and Mining Law* gives an excellent summary of the mining laws and their evolution in both California and the Australian colonies up to and during the gold rushes. The difficulties for the company miners arising from the various government policies, evolving legal frameworks and societal factors, particularly the strident antipathy to company mining by the independent diggers on the rich alluvial goldfields of Victoria, are well highlighted.

Detailed accounts of the main gold bubble company operations and their outcomes in both California and Australia are presented in chapters 5 and 6 respectively. These include nine companies in California and ten in Australia that had raised sufficient capital to attempt mining operations, but were ultimately unsuccessful. The shortcomings and obstacles that plagued and ultimately defeated these operations, as well as the leading characters in their stories, are well described in this major section of the book. Many of the problems were related to money and distance, including undercapitalisation, lack of ongoing support from speculating investors, slow communications and a poor understanding of local conditions. Incompetent, corrupt or ill-chosen directors, poor management of operations in the field, inappropriate processing equipment and difficulties in obtaining secure title over suitable land were other common problems that also took a toll. Woodland notes that despite the problems several of the companies in California were finely balanced between failure and success and given a little luck may well have succeeded. Some, including the Carsons Creek Consolidated Mining Company, the Rocky Bar Mining Company and the Quartz Rock Mariposa Gold Mining Company, were on rich deposits that were eventually worked with great success by local companies.

British companies operating in Australia faced some unexpected drawbacks. It was assumed that as Australia was a British possession and subject to British Law it would be easier to obtain secure land title and that the Colonial Office could be relied on to assert some influence over the colonial governments. However, as Woodland points out, the colonies by this time had a degree of autonomy and the British Government declined to intervene in what it regarded as colonial matters. The success rate for company mining was little better than in California, although one company, the Peel River Land and Mineral Company, a failure at gold mining in the Nundle area of northern New South Wales, went on to become a very successful agricultural company.

As the gold bubble companies began to fail, particularly after 1853, a number of critics and activists took up the cause of the unhappy shareholders. In Chapter 7 Woodland briefly outlines the activities of several single issue campaigners, including Christopher Richardson, metallurgist David Mushet and mining engineer Evan Hopkins. He goes on to give a more detailed account of the 'gold mining shareholders' friend', Haim Guedella, who waged a sustained campaign against incompetent and corrupt company management, as well as advocating for a dedicated mining exchange in London with specialist brokers and greater transparency in share trading. Guedella acted as a catalyst to bring company directors to account by encouraging shareholders to band together and if necessary convene their own meetings and investigating committees. His efforts, including weekly letters to the *Mining Journal*, resulted in a flood of litigation to better codify and regulate joint stock companies.

Chapter 8 is devoted to the only successful gold bubble company, the Port Philip and Colonial Gold Mining Company. This company was established in early 1852 to mine gold in Victoria, but was thwarted in its attempts to establish large-scale company mining until it secured leases on freehold land at Clunes in January 1857. During this time the company was able to survive partly through its gold buying, assaying and smelting activities. Its subsequent success was largely due to the skill and efforts of resident director and manager Rivett Henry Bland. In 1855 Bland changed the company objective from alluvial mining to quartz reef mining, specifically to the crushing and processing of ore mined by other parties. Acquiring titled access to the rich quartz veins at Clunes through an agreement with the private landowners was the major step to success.

Bland astutely set up a separate co-operative company, the Clunes Quartz Mining Company, to involve the local diggers in the actual mining, while the Port Phillip Company took care of the crushing and gold extraction. This pragmatic move helped avoid some of the antipathy towards company mining that had dogged the company in its earlier efforts. At Clunes, the Port Phillip Company established itself as a world leader in the efficient treatment of auriferous quartz and was able to operate successfully for more than three decades, producing over half a million ounces of gold and paying £225,000 in dividends. Woodland has spent many years researching the Port Phillip Company and this chapter is a valuable distillation of his in-depth knowledge of its history.

In the early period of the Australian gold rushes, colonially based and funded joint stock companies were uncommon. As Woodland explains, this was largely due to the necessity of gaining a parliamentary Act of Incorporation to limit shareholders' liability. Legislative changes, particularly in Victoria after 1860, facilitated the formation of local mining companies, which combined with changed attitudes towards the issuing of mining leases to companies led to a boom in local gold mining companies. Woodland sees this as the start of the post 'gold bubble' period and describes the developments in a chapter entitled the *Last Hurrah*. This chapter provides details on the investment activities of the Port Phillip Company and its initiate the Victoria (London) Mining Company. The latter was specifically set up as a mining investment company with British capital and during the 1860s invested £45,000 across 36 Victorian gold mining companies. Despite the failure of many of its investments the Victoria Mining Company was a modest success, distributing over £25,000 in dividends.

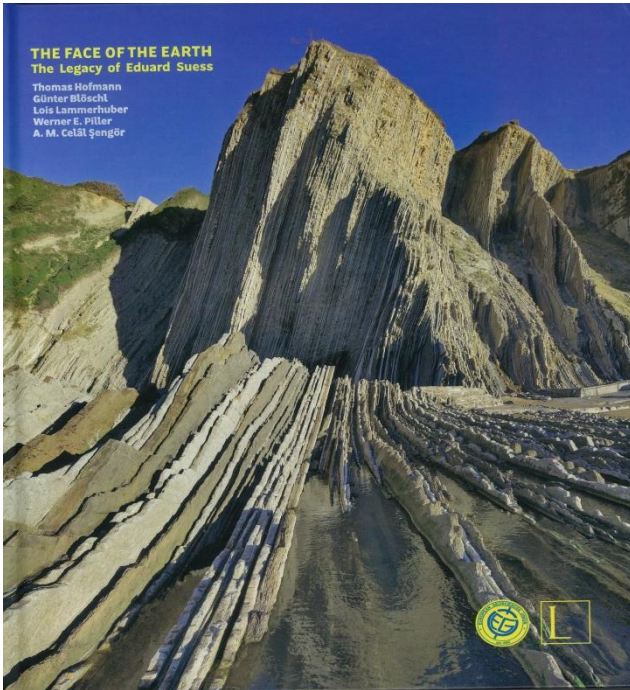
Woodland summarises the key factors that led to the failure of the British-funded gold bubble companies as a short conclusion to the book. He points to some commonality, such as: communication difficulties that commonly led to confused decisions and sight unseen agreements; insufficient capital raisings; inappropriate selection of directors; application of newly invented and unproven processing machinery; problems with management on the ground and difficulties which arose from government policy. He further concludes that a suite of contemporaneous issues in both California and Australia with similarities and differences, contributed to the ultimate failure of the bubble companies and caused hardship for many shareholders and ruin for others, but at the same time revealed the need for sweeping reforms to corporate governance and government regulation.

*Money Pits* is well written and generally easy to read. In the preface Woodland notes that the book developed from research for a doctoral thesis and this is reflected to some extent in the structure and style. There is some repetition across the chapters, but this is probably an unavoidable feature of the structure. The book is well illustrated with locality maps, images of key personalities and share certificates for some of the more interesting gold bubble companies, as well as copies of 15 satirical sketches from an anonymous pamphlet of the time, highlighting some of the experiences of the hapless shareholders in the gold bubble companies. The author has included useful appendices containing separate lists of the 120 companies proposed for California and Australia, the capital raised by the companies and a chronology of the gold bubble companies. There is also a detailed bibliography and comprehensive index.

Overall *Money Pits* is a scholarly account of British gold bubble companies and their activities during the Californian and Australian gold rushes of the 1850s. It makes a major contribution to understanding the 'gold bubble' event and the companies involved, and is particularly important given that historical accounts of these gold rushes have been dominated by the story of the independent diggers, with little attention to company mining. Historians with an interest in the gold rush era or mining corporation history, mining history buffs and geologists will find it an interesting and useful reference text.

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Hofmann, T., Blöschl, G., Lammerhuber, L. Piller, W.E. and Şengör, A.M.C. 2014. *The Face of the Earth: The Legacy of Eduard Suess*. L Edition Lammerhuber 104 pp., 60 images.



This lavishly illustrated book has been published to commemorate the centenary of the death of Eduard Suess, on 26 April 1914. As stated in the Preface “It attempts to provide a snapshot of his legacy, [and] what remains today of his vision that is relevant to the theme of the face of the earth in the 21<sup>st</sup> century”.

Eduard Suess (1831-1914) was a giant of late 19<sup>th</sup> and early 20<sup>th</sup> century geology who proposed terms such as Gondwana, Tethys and batholith, and created words such as hydro- litho- and biosphere. Suess also had the remarkable ability to use his vast knowledge to create an overview of earth history and its processes, and consequently is much admired. He understood continental breakup thus anticipating plate tectonics as well as so called “long distance correlation”. And he was truly

international having been born in London, lived in Prague whilst spending most of his life in Vienna, then the capital of the multinational Austro-Hungarian Empire. His most famous contribution entitled “The Face of the Earth” was published in German in three large volumes from 1882-1909, which were progressively translated into English, French, Spanish and Italian. It proved to be a popular textbook for many years. To many he is regarded as the “Father of Modern Geology”.

This volume is characterised by articles by eminent historians and INHIGEO members that focus on different aspects of Suess’s contribution. In order the following are presented:

- “Eduard Suess and the origin of modern geology” by A.M.Celâl Şengör, (Istanbul Technical University)
- “From palaeontology and stratigraphy to earth system science” by W.E. Piller (University of Graz)
- “Suess and the dynamics of the planet Earth” by A.M. Celâl Şengör
- “Two water problems of a big city” by Günter Blöschl (Vienna University of Technology)
- “Milestones of a life beyond the geosciences” (Thomas Hofman, Geological Survey of Austria)

It is here that an assessment on Suess’s contribution from a modern perspective is made. One learns that in 1862, Suess published in his “Soil of the City of Vienna” the first truly urban geological research. It is regarded as the beginning of urban geology and it led on to Suess using his geological knowledge and undoubted political acumen in the provision of a clean water supply for the blossoming city of Vienna, coupled with regulation of the adjacent Danube River.

In 1875, Suess’s “The Origin of the Alps” emphasised lateral forces within the Earth and defined the atmosphere, lithosphere, hydrosphere and biosphere. This concept was expanded in “The Face of the Earth”. The process of regional tectonics was attributed to contraction of the Earth. Large-scale sea level changes were also recognised. This enabled an appreciation that was a



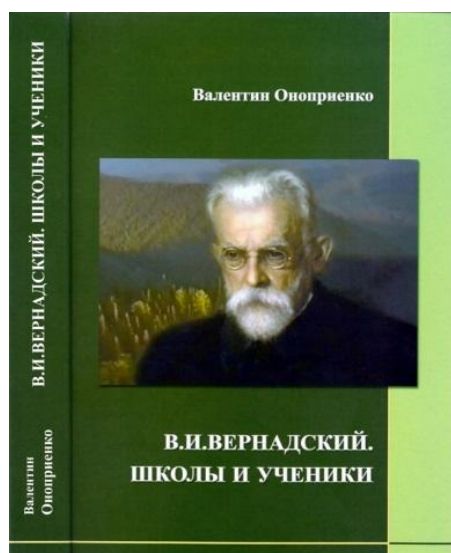
precursor of modern sequence stratigraphy. His initial studies as a palaeontologist coupled with his great overview also allowed Suess to develop an ecosystem perspective to the fossil record. The term “Gondwanaland” was invented to accommodate a new continent with its distinct *Glossopteris* flora, whilst the Mediterranean Sea was envisioned as a much wider waterway that was named the Tethys.

Much of this volume provides carefully selected quotations from Suess’s published works together with beautiful illustrations, three of which are excellent reproductions of original Suess sketches. Where the original quotation is in German, parallel translation into English is given. Many quotes are from the 1909 English translation of “The Face of the Earth”. Sixty superb images by Lois Lammerhuber illustrate this book. Lois is also a co-author.

This book is both a coffee table volume that deserves to be examined, as well as a collection of papers and quotes that deserve serious reflection. It is worth having in your library and is good value for its price.

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**Onoprienko, V.I. 2014. *V.I. Vernadsky: Schools and disciples*. Kiev, Inform.-analyt. Agency, 331 pp.**



The scientific heritage of the prominent Russian scientist Vladimir I. Vernadsky has been much investigated by modern philosophers, sociologists, historians of science, and geoscientists. The book written by Onoprienko is only one item in a long list of publications about Vernadsky.

Professor, Dr. Sci. Onoprienko heads the Department of Sociology and Methodology of Science at the G.M. Dobrov Center for Scientific and Technological Potential and Science History Studies. It is an institution affiliated with the National Academy of Sciences of the Ukraine (NASU). The history of this scientific society forms an interesting chapter in this book. NASU was founded in 1918 under the direction of Vernadsky, who was its first president. Onoprienko relates some interesting details about the Ukrainian period in the life of Vernadsky. It was a very dramatic stage in the history of

Russia and the Ukraine and their relationship, a topic that is again in the limelight today.

Onoprienko begins the book with a philosophical and sociological analysis of the term ‘scientific school’. He is warning against ‘brand’ concepts and the overstatement of their role in the development of science. A scientific school under Onoprienko is the obligatory combination of educational, research, and innovation (program) functions.

The author shows Vernadsky as a scientist of wide professional interests and good communication skills, which made his work so effective. Vernadsky was involved with many research programs in the geosciences, but with only one scientific school – the mineralogical school of Moscow University.

Onoprienko examines the various programs of Vernadsky in the geosciences. His ideas live on in the achievements of his disciples. They headed some fields of geoscience or institutions but all of them started with Vernadsky – Jacob V. Samojlov (1870-1925), Alexander E. Fersman (1882-1945), Nickolai M. Fedorovsky (1886-1956), Boris L. Lichkov (1888-1966), Kirill P.

Florensky (1915-1982). The book provides many new details of their scientific and personal relations with Vernadsky.

Onoprienko is the author of a number of monographs about scholars of Russia and Ukraine published in the ‘Scientific Biography Series’ of the Russian Academy of Sciences – ‘Feodosy Nickolaevich Tschernyschew’ (1985 – with Yu. Anisimov), ‘Nikolai Ivanovich Abfusssov’ (1990, 2014), ‘Gennady Danilovich Romanovsky’ (1995), ‘The Florenskies’ (2000), ‘Boris Borisovich Golytzin’ (2002) and ‘Vladimir Ivanovich Luchitsky’ (2004).

Books by Onoprienko are illustrated with original documents and photographs of rare finds and collections. Reviews of Onoprienko’s monographs will be continued. One of these, about a disciple, the godson and a friend of Vernadsky, Jacob V. Samojlov, will be the next to appear.

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### Onopriyenko V.I.

**V.I.Vernadsky. Schools and disciples** / Valentyn Onopriyenko. – Kiev, Infor.-analyt. agency, 2014. – 331 p.

In the monograph is discussed the historical and scientific and sociological problems of V.I.Vernadsky works which are connected with his relationship with his disciples and followers in science. Most questions of sociology of science are grouped around the problems of professional occupation by scientific work, organisation and self-organisation of science, freedom of scientific creative work. V.I.Vernadsky formed functioning scientific school of mineralogists at Moscow University and founded several research programs which joined many researchers for solving actual fundamental and applied problems of the science of the 20th century. The set of problems of sociology of science has not found yet an adequate disclosure and comprehension in spite of enormous literature on V.I.Vernadsky works. Such viewpoint of consideration of Vernadsky works can reveal features of his ideas in problem plan which is actual for the present.

Irena G. Malakhova, Vernadsky State Geological Museum, Moscow, Russia

**Alexandrowicz S. W. 2014. *Stanisław Zaręczny (1848-1909). Geolog - wybitny znawca Ziemi Krakowskiej*. English summary: *Stanisław Zaręczny (1848-1909). Geologist and eminent expert on the Region of Krakow*. Polska Akademia Umiejętności. Komisja Historii Nauki – Monografie - 21, 131 pp.**

Stefan Witold Alexandrowicz is Professor Emeritus of Geology at the University of Science and Technology in Krakow. Since 1965 he has published articles on the history of geology – biographical sketches and institutional records. So far, he has publicised a total of 62 works; some of which are associated with the studies of the Quaternary. His book, published in 2004 “*Starunia i badania czwartorzędu w tradycji i inicjatywach Polskiej Akademii Umiejętności*” (“*Starunia and Quaternary Research in the Tradition and Initiative of the Polish Academy of Arts and Sciences*”), which was published in Ukrainian in 2008, documents the study of Pleistocene mammals, including a fully preserved specimen of a rhinoceros on exhibition in one of the museums of Krakow.

Stanisław Zaręczny, described in Alexandrowicz's book, received his doctorate at the Jagiellonian University in 1874, for a discourse on mid-Cretaceous stratigraphy of the Austro-Hungarian land known as Galicia. Soon after this he was appointed as Associate of the Physiographic Commission of the Academy of Learning and curator of its museum. He conducted extensive geological studies, including in the Tatras and neighbouring areas. He was also an Associate of the National Institute of Geology in Vienna. Unfortunately, neither of these positions guaranteed him financial independence. Therefore, after an arduous procedure to obtain a teaching appointment, Zaręczny began work in secondary education, teaching science classes.

In 1881 the authorities of Galicia approved the Physiographic Commission's proposal of produce a geological map on a scale of 1:75 000, *The Geological Atlas of Galicia*. Employees of the university departments and school teachers carried out the fieldwork and were appointed to complete this project. Zaręczny was responsible for mapping the area traditionally named the Grand Duchy of Krakow. Well exposed Paleozoic, Mesozoic and Cenozoic formations crop out in this area. After obtaining leave from work at school, Zaręczny worked hard and soon presented complete maps. In 1891, the Krakow and the Krzeszowice-Chrzanów geological sheets (both, detailed and theoretical versions), were printed in four sheets (showing both outcrops and subcrops). In 1894, *The Geological Atlas of Galicia. The text to the third book*, of 290 pages, was published. Maps and explanatory texts formed a monograph of one of the most interesting geological areas, referred to as the *Land of Krakow*. Until the mid-twentieth century there was no better geological study of that area. Therefore, in 1953, a photo-offset edition of this work was published. It was widely used, especially by students during their geological excursions.

The eminent author and outstanding teacher, became terminally ill and committed suicide in Vienna. In short, this describes the contents of Alexandrowicz's book. As a historical study, it refers to documents available in archives in Poland, Austria and Ukraine. The author documented Zaręczny's evolution of views on the stratigraphy and regional tectonics. Alexandrowicz also took into account the achievements of Zaręczny's contemporaries, who prepared maps of areas lying to the east.

Here are a few thoughts after reading the book. In Galicia, in the late nineteenth and early twentieth century geology was taught at two universities (Krakow and Lviv) and at the technical university (Lviv). Under optimum conditions, staff did not exceed a total of 10 people. In Lviv the Dzieduszycki family run a privately-owned Museum of Natural History, where two geologists (one of them was Józef Siemiradzki) were employed. Thus, Earth science graduates had no alternative but to work in secondary education (this is what they actually did, including scholars of the class of Wilhelm Friedberg and Eugeniusz Romer). Geologists used their leave to conduct fieldwork and published dissertations in *Kosmos*, issued by The Polish Society of Naturalists, as well as in professional journals published in Austria and Germany. To sum up, the work of Galician geologists represented the standard of European output. Stanisław Zaręczny was one of them.

The book by Stefan Witold Alexandrowicz can be considered as a model for a general biography of a scholar. This has already been recognized by Ukrainians, who in the translation noted that the parts dedicated to the achievements of a researcher for mapping land which after World War II became part of their country.

Zbigniew Wójcik, Warsaw, and Andrzej J. Wójcik, Jaworzno, Poland

**Tarkowski, R. and Gołuchowska, K. 2013 (published 2014). *Konstantyn Jelski (1837-1896) naturalista e investigador de América Latina*. Edited by Sociedad Geografica de Lima, 51 pp. (in Spanish with an extensive bibliography in Polish).**

In 2012 Radosław Tarkowski announced the Polish book *Konstanty Jelski (1837-1896): A naturalist and explorer of South America*. The introduced study is related to the mentioned book. First, without losing the advantages of a scientific work, it informs history lovers in Peru of the achievements of a leading Latin American scholar - Antonio Raimondi (1824-1890). Furthermore, the extensive bibliography reveals Polish contributions to the exploration the natural environment of South America. Ignacy Domeyko (1802-1889) and Józef Siemiradzki (1857-1930) are among some famous geologists who have contributed to this work. The bibliography also refers to recent historical publications of geologists, including those by Tarkovsky, with Polish-French links.

The book was published by the Geographical Society of Lima, in whose premises a room was decorated with the portrait of Jelski, as part of the book's promotion. The promotion ceremony was attended by representatives of the Polish Embassy in Lima. At the same time, efforts were made to start a Peruvian-Polish research project, including the respective contribution of its scientists in exploring the nature of South America.

Konstanty Jelski is a typical representative of researchers on natural history in the second half of the 19<sup>th</sup> century. He graduated from the University of Kyiv (then in Russia) and had a thorough general education in science (he was a botanist, zoologist and geologist). In 1863 he undertook the study of mineral deposits in Turkey. After some time, he moved to France, where he worked occasionally on some geological research. Finally, he signed a contract with the Natural History Museum in Paris and some other European museums (including the Zoology Office at the University of Warsaw) for the collection of specimens of fauna and flora, rocks and fossils in French Guiana. This work was carried out between 1864 and 1869. For the next 11 years Jelski was occupied in collecting specimens in Peru. He sent a number of these to some of the great natural history museums in Europe. To a large extent, however, he delivered specimens to a private museum of the Branicki family in Warsaw and to the Physiographic Commission of the Academy of Science in Cracow, as well as to the local university museums of natural history. While working temporarily in Lima, Jelski was in constant contact with Raimondi, director of the local museum of natural history.

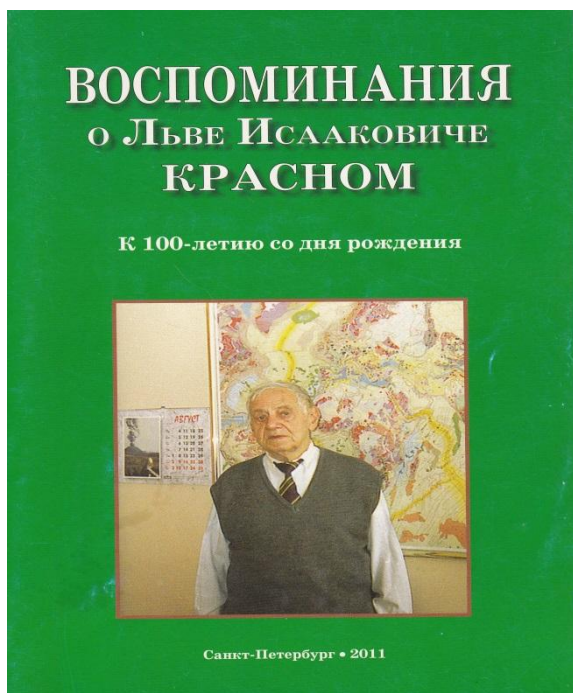
Jelski spent his last years in Cracow (1880-1896), where he was custodian in the Physiographic Commission Museum. He also led some geological studies in the surroundings of the city, as well as in the nearby Carpathian Mountains.

The scientific biography of Jelski presents a typical picture of a time when not all graduates were able to begin university careers or work in specialized research institutes or in education. Scientists like Jelski were commonly employed by museums to conduct field work or lead expeditions to poorly known areas. Polish scientists then were involved in collecting expeditions on all continents, including Antarctica. However, for various reasons the peculiar and abundant fauna in Latin America attracted them the most. General trends in the development of science (positivism) caused distinguished European museums to gather specimens that were representatives of the different regions of the globe. It was the reason why the collecting these became so attractive to many scholars at that time.

Tarkowski and Gołuchowska, briefly outline to Spanish-speaking readers significant information on the history of the natural sciences in the period prior to the specialization of physiography. The contents of the book expand our understanding of the world-renowned work of Antonio Raimondi.

Zbigniew Wójcik & Andrzej J. Wójcik, Warsaw, Poland

Petrov O., Lapo A., and Zhamoida A. (eds.) 2011. *The memoir of Lev Isaakovich Krasny: On the 100<sup>th</sup> Anniversary of his birth*. St Petersburg. A.P. Karpinsky Russian Geological Research Institute Publish House, 224 pp. (In Russian).



Corresponding Member of the Russian Academy of Sciences, Lev Krasny (1911-2011), lived a long life. He worked actively in the A.P. Karpinsky Russian Geological Research Institute (VSEGEI) for more than 60 years.

The present book contains 34 papers, written by thirty-eight authors. All articles and most of the sixty photographs are published for the first time. This is the memoir prepared by contemporaries (colleagues and friends), many of whom are (or were) geologists and geophysicists. Some information about the authors appears at the end of the book. About half of the contributors are employees of A.P. Karpinsky Russian Geological Research Institute two-thirds of them live (or lived) in St. Petersburg, and seven of the authors work in institutions in Moscow. Others are from Minsk, Irkutsk and Magadan.

The first chapter of this book contains the abstract of Krasny's report, given at the meeting of Scientific Council of the A.P. Karpinsky Russian Geological Research Institute, which was devoted to his 90<sup>th</sup> birthday, in 2001. In this, the scientist recalled his entry into geology and reminisced about his teachers, among them the famous Russian geologists Alexander Gerasimov, Dmitry Nalivkin and Sergey Smirnov. Krasny highlighted the key points of his work in different regions of our country. The compiler of the volume, Andrey Lapo, states that this abstract was found in Krasny's archive, after his death.

In 1936, Lev Krasny graduated from the Mining Institute in Leningrad and worked as geologist in the Far East for many years. The field of his research interests was regional geology and metallogeny of the Far East, theoretical tectonics and comprehensive studies the Pacific Ocean and its surroundings.

From 1975 to 1992, Krasny headed the Council on geological and geophysical studies of the Baikal-Amur mainline. He was the author and editor of several fundamental monographs: "Geology of the Baikal-Amur mainline zone", "Geology of Northeast Asia", "Geology of the Pacific movable belt and the Pacific", and of a series of different geological maps.

He is the author of the concept about the block divisibility of the lithosphere. In 2000, a unique "Geological mineralogenic map", based of his concept, was produced under his leadership.

The different periods of Lev Krasny's life are presented in this book. He is presented to us as a workaholic and an expert on the Geology of the Far East, as head of research teams, as a reader and consultant of the library of the Russian Academy of Sciences, as a welcoming hospitable host, as the soul amongst groups of friends and as an interesting storyteller with a good sense of humor. The authors of the memoirs emphasize his attractive human qualities, such as boyish interest in everything in the world, the love of poetry, constant goodwill, active lifestyle (hiking, skiing, and swimming) and an unquenchable desire to "change places". Moscow residents drew attention on his intelligence, good breeding and tactfulness.

This book also contains an appendix presenting the autobiography which Lev Krasny wrote in 1968.

During his long life, Lev Isaakovich visited all continents except Antarctica. He marked these high points of his life, the most memorable places he had visited, on a small-scale map of the world, printed on the postcard. A. Lapo and E. Pinsky decoded and described these 18 points in the article “I’m here”, which is also included in the appendix.

I talked to Lev Krasny on the phone a few times when I wrote his scientific biography for the book “Native corresponding members of the Russian Academy of Sciences in the 18<sup>th</sup> – to the beginning of the 21<sup>st</sup> century, which was published in *Geology and Mining*”, in 2007. I remember his energetic voice and his kindness when he answered my questions.

The compiler of this volume, Andrey Lapo, has managed to keep alive the real image of an outstanding scientist.

Zoya Bessudnova, Moscow, Russia

**Born I. von 2014. *Úti levelek ásványtani témákról*. Translated into Hungarian by Péter Fuchs from the original German text: *Briefe über mineralogische Gegenstände (Letters on mineralogical subjects)*. Milagrossa, Miskolc, 308 pp.**

Ignatz von Born, the famous mining expert of the 18<sup>th</sup> century Habsburg Empire, made this journey referred to in the book in the year 1770 and published an account of it in 1774, in Frankfurt and Leipzig. Since then, it has been translated to several languages. A complete Hungarian translation appears now the first time, together with a new critical edition of the original German text. The book was planned and edited by Tamás Weiszburg and Gábor Papp.

The so called letters were directed to his friend, Johann Jakob Ferber. The letters are written in a form ready for publication, so that their combined text makes up a scientific monograph which describes the geology and the mines of the regions visited during the journey, i.e. the mining districts around Schemnitz (Selmeč, Banská Štiavnica), Banat, Transylvanian Gold District, and the Upper Hungarian Gold district around Nagybánya (Baia Mare).

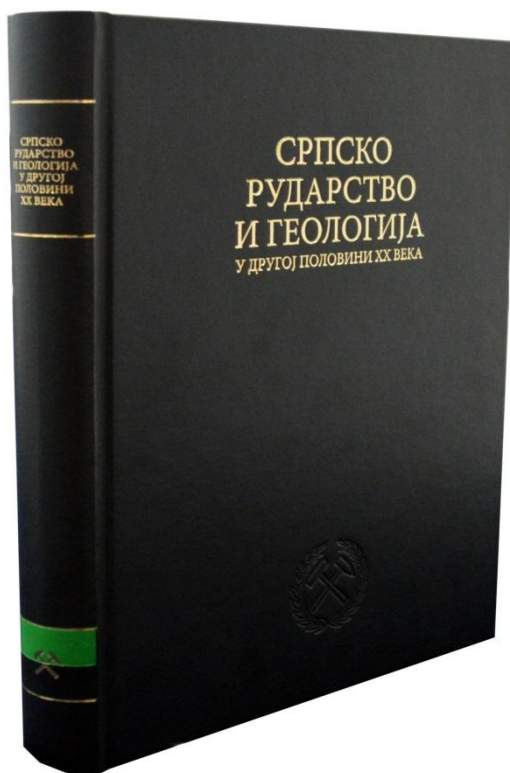
In addition to the original text of the author the book contains several valuable lists and comments. A glossary has been prepared by Gábor Papp, Attila Szemán and András Szőke. The glossary includes the names applied at the time to minerals and their current equivalents. There are entries for persons with short biographies for each, of geographical names, with the corresponding present-day names, and a list of the mine works.

The records were compiled by Gábor Papp. Similarly a biography of Born and a study of contemporary mining and metallurgy are given by Gábor Papp, the latter in cooperation with Erzsébet Bircher and Kinga Csibi.

Unfortunately, additional studies are accessible to Hungarian-speaking readers only. However, the easily readable German text of the original may be of interest also to German-speaking people. The book is an invaluable treasury of data on the natural and social conditions and mining technology prevailing in the 18<sup>th</sup> century in the Kingdom of Hungary.

Professor István Viczián, Budapest, Hungary

Vujic, S. (Editor-in-chief) 2014. *Serbian Mining and Geology in the second half of the XX century* (Srpsko rudarstvo i geologija u drugoj polovini XX veka, printed in Serbian Cyrillic.



After more than five years of research, gathering, analysing and processing source data, writing and preparation, the Academy of Engineering Science of Serbia, Matica Srpska and the Mining Institute of Belgrade, published a substantial work, their *Magnum Opus* on the subject of Serbian mining and geology, The monograph *Serbian Mining and Geology in the second half of the XX century* represents unique and extensive research and constitutes a major publishing endeavour. It is not only a testament to mining and geological science, teaching, engineering and industry in the second half of the XX century, but it is also a valuable factual source for broader studies of the development in these fields. The complexity and the efforts used in this publishing endeavour is unmatched in Serbian mining. It includes 2370 pages of source material, 592 pages of text, 617 graphical illustrations, 530 terms in the key word index, and 214 abbreviations. The editorial board was comprised of 15 members. Contributions came from 75 authors, 12 reviewers, 4 readers, ranging from 30 to 88 years in age. Thirteen institutions contributed financially to the printing of the book. Given the complexity and

diversity of information and data relating to Serbian mining and geology, it is understandable that it took five years to produce the monograph. Those involved in this task had to deal with a mass of diverse, often hidden and difficult to obtain data from numerous sources, which included monographs, books, engineering projects, technical and photo documentation, statistical reviews, archival materials, internet sources, personal documentations, all of which, when found, had to be checked, processed, and adequately and accurately represented. In this sense, the book is a work of research whose value and significance will grow over time.

In eight thousand years of mining and geology in our territory, the greatest development and rise of mining and geology happened over two periods – in the time of prosperity of the medieval Serbian state and in the second half of the XX century. Immediate comparisons between these periods are not possible, as there is no exact information about mining in medieval times. However it does point out the significance of the dilemma with regard to recognising possible similarities of motives that influenced activities in these specific periods. The answer lies in the understanding of mining and geology as a substructure of all civilizations, a substructure which has shared in mankind's fate and had its ups and downs.

The monograph is integrated through four logically connected chapters: Roots, Scientific, Educational and other institutions. Geology and Mining encompasses factual and analytical elements which precisely present the rise, development, accomplishments and the fall of Serbian mining and geology in the second half of the XX century.

Ljupko Rundic, Belgrade, Serbia

(This Book review is taken from the *Bulletin of Mines*, (CXI) 1-2, 82-83, Belgrade 2014)

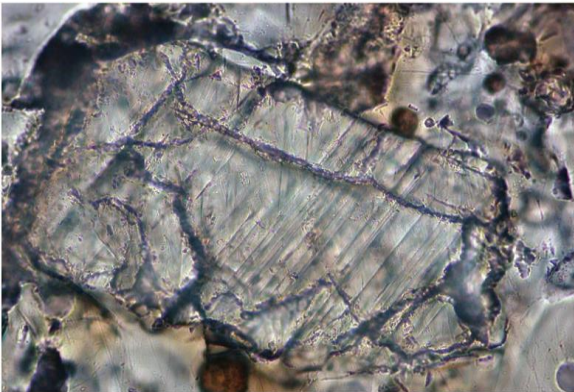
**Martina Kölbl-Ebert 2015. *From Local Patriotism to a Planetary Perspective: Impact Crater Research in Germany, 1930s-1970s*. Ashgate, 380 pp.**

SCIENCE, TECHNOLOGY AND CULTURE, 1700–1945



## From Local Patriotism to a Planetary Perspective

Impact Crater Research in Germany, 1930s–1970s



Martina Kölbl-Ebert

My first detailed encounter with controversies over impact v. volcanoes in the history of geology came in 1998, when I edited a special issue of *Earth Sciences History* (vol. 17, no. 2) on the topic. The articles on “rocks from space” ranged from 18<sup>th</sup> century French ideas on meteors to Alfred Wegener on lunar craters and Robert S. Dietz and others. The crater structures in Germany – the Ries and Steinheim Basins – were referenced in several articles. I wanted to know more about how the German scientists over the course of several decades, in the early to mid-20<sup>th</sup> century, approached these complex geological/geophysical features, and especially why some of them were such strong opponents of a role for impacts. Now, with Martina Kölbl-Ebert’s masterful and exhaustive study, the stories surrounding these big-picture stories in the history of geoscience are thoroughly researched and well told.

What strikes me first about this book is its wonderfully broad scope, from the very local patriotism of some of the scientists and their differences in disciplinary perspectives, to the “Planetary Perspective”, as the author calls it. The

latter is especially striking to me. The events in this volume are contemporaneous with the many well-known episodes related to continental drift and/or plate tectonics. Indeed, some of the players have critical roles in both stories: Wegener, Shoemaker, and Dietz. Other critical characters on both the impactist and volcanic sides of the story, however, are not as well known: Georg Wagner, Wolf von Engelhardt, and (on the American side) E.C.T. Chao. Kölbl-Ebert provides another instance in this book of deep changes taking place in the geosciences – indeed, in our vision of what it means for the Earth to be a planetary body – in the mid-20<sup>th</sup> century. As important as plate tectonics was to dramatically altering our understanding of the Earth, there were others in parallel and with occasional intersections.

A second theme prominent in this book is competition among specialties in the Earth sciences over the investigation of the classic German crater sites, Ries and Steinheim. This is not a simple story of geophysics versus geology, or of uniformitarian versus catastrophist, although there are constrained roles for these contrasting perspectives. More useful are the nuanced discussions that emerge from each particular interaction among people with different backgrounds. In the section “Rivalry between Geology and Mineralogy” (pp. 234-245), we find that Dietz and Chao were seen by Wagner as mineralogists who over-emphasized their kind of evidence to the neglect of the “whole Ries phenomenon.” (p. 235) As Kölbl-Ebert concludes in this instance, the geologists doubted the mineralogists because “their own expertise was insufficient for judging the mineralogists’ data.” (p. 234)

Kölbl-Ebert’s attention to source materials is exemplary. The bibliography provides an extensive list of the published literature on these questions, much of it in German journals, some of which would be hard to even discover outside of a major research center. More importantly, this work is based on archival material from across Germany and also at the Niels Bohr Library & Archives at my home institution, the American Institute of Physics. But perhaps most importantly,



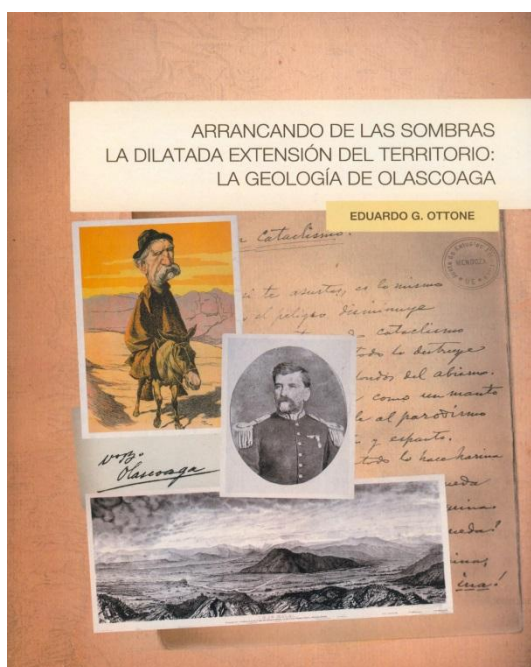
the author has conducted oral history interviews with nine of the scientists involved in this history. I found it especially useful that the author used extensive quotes from these interviews – in English in the text, the original German being in the footnotes. Frankly, I used these parallel displays to learn some new German technical vocabulary!

I strongly recommend this book on the basis of its topic and its larger themes, but also on the strength of its scholarship. Scholars working on other aspects of German participation in geoscience will discover a great deal of useful information in Martina Kölbl-Ebert's study of the impact/volcanic controversy as it unfolded around these specific locales in Germany.

Gregory A. Good, College Park MD, USA

## BOOK NOTICES

**Ottone, E.G. 2014. *Arrancando de las sombras la dilatada extensión del territorio: la geología de Olascoaga. (Emerging from the shadows the dilated extension of the territory: the geology of Olascoaga)*. Asociación Geológica Argentina, Serie "B" (Didáctica y Complementaria), 31, 102 pp., Buenos Aires.**



Olascoaga was a topographical engineer, military man, draftsman, writer, journalist and the first governor of Neuquén. He was also an enthusiastic promoter of geological knowledge and the exploitation of mineral and hydrocarbon resources, and a pioneer in the geological exploration of the Pampas, north of Río Negro, Mendoza and Neuquén, Argentina. *Estudio topográfico de La Pampa y Río Negro*, probably his better known work, included his observations together with notes by Day, Dupont, Gomensoro and Villegas. It was published as, *Memoria del Departamento de Ingenieros Militares, Notas descriptivas del Neuquén, Topografía andina, Aguas perdidas* and *Compendio geográfico de la provincia de Mendoza*, and includes geological information. In addition, the Archivo del Coronel Olascoaga houses many texts of his own as well as of others and, especially, the reports of Brackebusch, Courtois and Langlois. All these writings provide geological data from regions that were quite unknown in

the second half of the 19th century. The visualization and contextualization of all of these texts highlight their geological interest and historical value.

The book was published in May 2014. It is in Spanish and includes 74 black and white, and color figures, with photographs, maps and reproduction of original documents.

The book can be purchased at the *Asociación Geológica Argentina* (<http://www.geologica.org.ar/>).

Eduardo G. Ottone, Buenos Aires, Argentina

Grigelis, A. (ed.) 2014. *Academician Juozas Dalinkevičius*' (Vilnius University Press, Vilnius, 856 pp.

### English Summary



Doctor Habilitus, Academician Juozas Dalinkevičius (1893-1980) – geologist, astronomer, educationist – was educated at the Hrodna [Gardinas, Grodno] gymnasium and lived with the Gervėčiai manor family, Vaclovas Domeika [Domeyko]. He later studied geology and mine surveying at the Saint Petersburg Mining Institute [now Национальный минерально-сырьевой университет «Горный»].

Juozas Dalinkevičius was born in Pamūšis village, Ukmergė District, in Lithuania. From 1903-1911, he attended the Gardinas real gymnasium. In 1911 he went to Saint Petersburg University to study astronomy, but after a year, in 1912, he changed his mind and became a student at the Saint Petersburg Mining Institute. The young student (whose name was then Iosif Adamovič Dalinkevič) received an excellent education there being taught by distinguished professors of geology and mining, among them the mine surveyor Vladimir Bauman, the petrographer Jevgraf Fiodorov, the physical chemists Kurnakov and Stepanov, the mineralogist Nikitin,

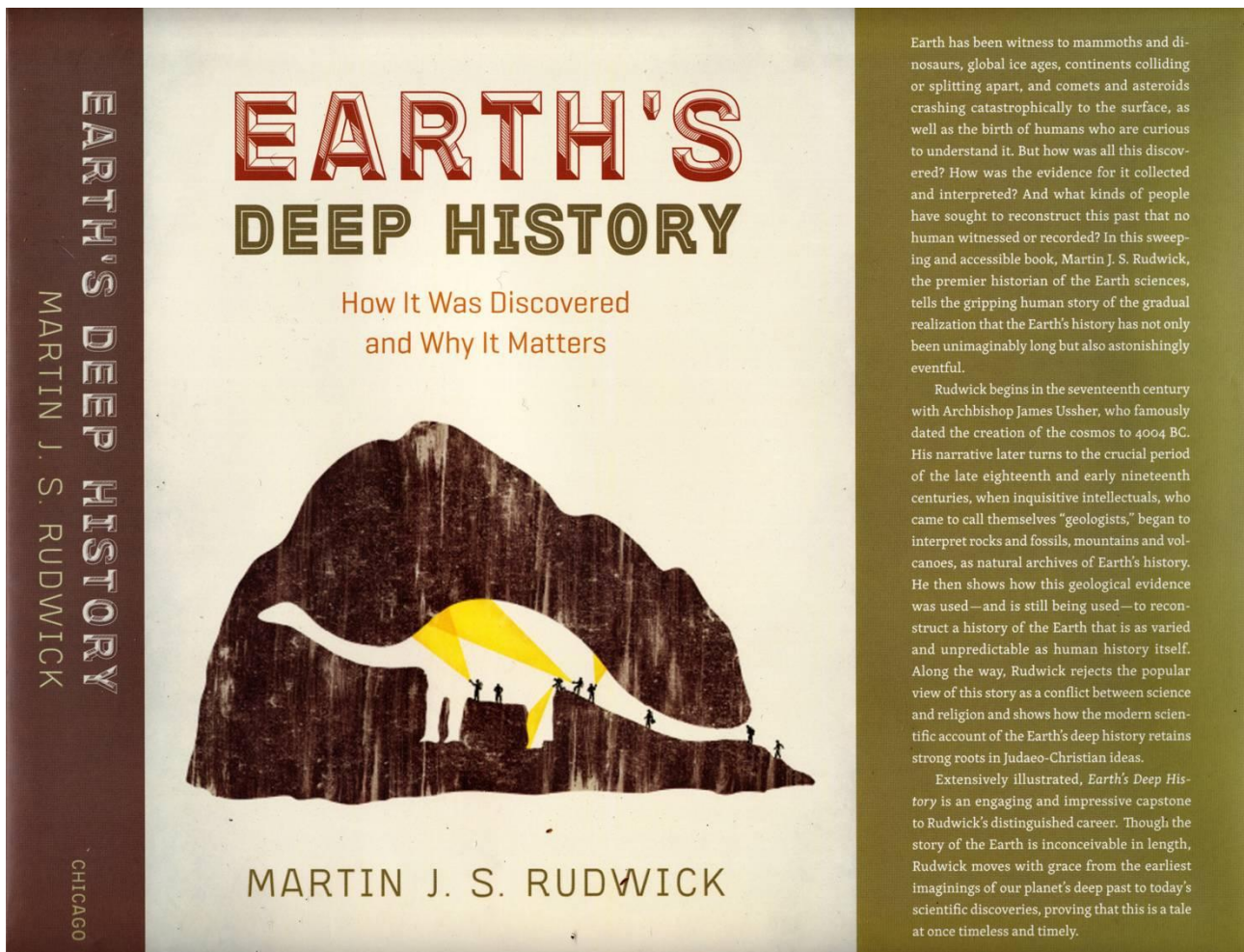
and the palaeontologist Borisiak. In 1916–1923 he took part in several expeditions organized by the Mining Institute in Temir (Kazachstan), Jamburg (Estonia), the Uchta and Timan districts, Karelia (Russia), Gorlovka (Donbass), Crimea (Batiliman). Dalinkevičius graduated from the Mining Institute in 1919 and despite of his high qualifications and professional experience was, in 1919, appointed as an assistant in Faculty of Geological Prospecting and Mining, where he taught mine surveying and astronomy. In 1920, he received support from the Nansen Foundation through KUBU [*Komitet po ubespecheniju byta uchenych*]. In 1922 he compiled his first handwritten course book *Gornaya geometriya*.

In 1924, Dalinkevičius left Saint Petersburg and returned to his homeland. In 1925, he became associated with the fast growing Lithuanian, later Vytautas Magnus University, in Kaunas, and from 1940 with the famous Vilnius University. In 1933, he was awarded a doctor's degree by Graz University (Austria). In 1940, he became Professor of Geology. In 1941, he was appointed Director of the Institute of Geology; and in the same year was elected a full member (academician) of the Lithuanian Academy of Sciences. The pedagogical and scientific achievements of Academician Professor Juozas Dalinkevičius were of great importance for development of Earth sciences in Lithuania. He had good relations with Russian Academicians and Professors D. V. Nalivkin, A. Lichatchev, D. V. Obrutchev, R. F. Hecker, K. Zvonarev, I. N. Uschakov, N. Erasi, etc. In 1937, he took part in the XVII International Geological Congress in Moscow and Leningrad.

J. Dalinkevičius died at his home in Kaunas in 1980, aged 87. His bibliography contains about 650 entries and his memoirs (still unpublished, held in the Manuscripts Store at Vilnius University Library), which include the 14-year St. Petersburg period, amount to about 800 typewritten pages.

Algimantas Grigelis, Vilnius, Lithuania

Rudwick, M. J. S. 2014. *Earth's Deep History*. University of Chicago Press, 360pp.



Earth has been witness to mammoths and dinosaurs, global ice ages, continents colliding or splitting apart, and comets and asteroids crashing catastrophically to the surface, as well as the birth of humans who are curious to understand it. But how was all this discovered? How was the evidence for it collected and interpreted? And what kinds of people have sought to reconstruct this past that no human witnessed or recorded? In this sweeping and accessible book, Martin J. S. Rudwick, the premier historian of the Earth sciences, tells the gripping human story of the gradual realization that the Earth's history has not only been unimaginably long but also astonishingly eventful.

Rudwick begins in the seventeenth century with Archbishop James Ussher, who famously dated the creation of the cosmos to 4004 BC. His narrative later turns to the crucial period of the late eighteenth and early nineteenth centuries, when inquisitive intellectuals, who came to call themselves "geologists," began to interpret rocks and fossils, mountains and volcanoes, as natural archives of Earth's history. He then shows how this geological evidence was used—and is still being used—to reconstruct a history of the Earth that is as varied and unpredictable as human history itself. Along the way, Rudwick rejects the popular view of this story as a conflict between science and religion and shows how the modern scientific account of the Earth's deep history retains strong roots in Judaeo-Christian ideas.

Extensively illustrated, *Earth's Deep History* is an engaging and impressive capstone to Rudwick's distinguished career. Though the story of the Earth is inconceivable in length, Rudwick moves with grace from the earliest imaginings of our planet's deep past to today's scientific discoveries, proving that this is a tale at once timeless and timely.

I've written it primarily for the much-coveted "intelligent general reader", but it gives my personal view of the *longue duree* of the discovery of the Earth's (and Life's) eventful history, all the way from Ussher's 4004BC (which I rehabilitate!) to the present day, with lots of illustrations from primary sources. So I'd like to think it may be of interest to INHIGEO people generally. The emphasis is on the reconstruction of the Earth's eventful history, rather than the enlargement of its timescale (on which there are several good books already). My monstrously heavy volumes *Bursting the Limits of Time* and *Worlds before Adam*, are condensed into just its middle chapters.

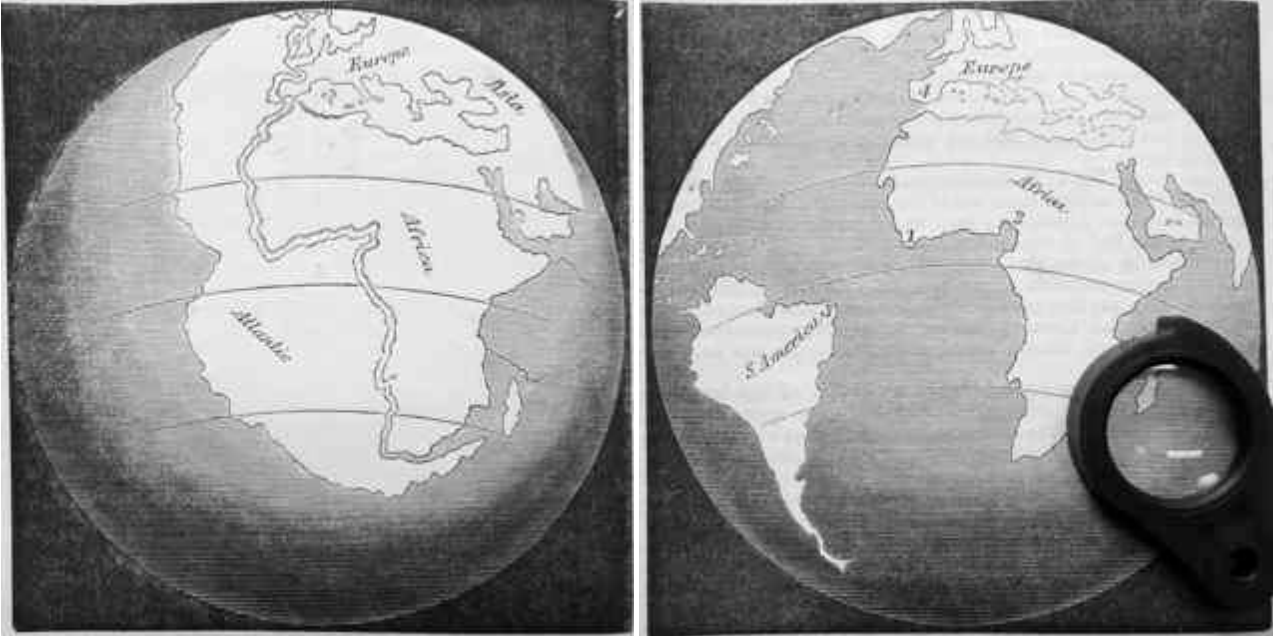
Martin Rudwick

(Please note: A review of this book was commissioned by the editor. Unfortunately, the reviewer was unable to complete this task. The editor intends to include such a review in next year's volume of the *Annual Record*. Having himself derived great pleasure, stimulation and enlightenment from reading this book, he believes that it will be as attractive to readers in future years as it very likely is at present).

## Not Getting the Drift

### A Hard Look at the Early History of Plate-Tectonic Ideas

Allan Krill, *Professor of Geology, NTNU, Norway*



Pepper's continental-drift hypothesis in 1861.  
No one got it. History forgot it.

A fully documented revisionist history that finally explains why Alfred Wegener's hypothesis of continental drift was rejected for so long.

This book is being given away for open access, without the approbation of a scientific publisher.

As Wegener put it: *"What anyone can see does not need the support of other opinions."*

(A pdf of this ebook with high-resolution figures is available at [krilldrift.com](http://krilldrift.com))

(The above is the cover page of another important book on a subject of considerable interest to many historians of geology. The editor would be pleased to hear from anyone willing to prepare a review of this book).

## COUNTRY REPORTS

### ALGERIA

*Publication:*

Godard, G., Chabou, C.M., Adjerid, A. & Bendaoud, A., 2014. First African diamonds discovered in Algeria by the ancient Arabo-Berbers: History and insight into the source rocks. *Comptes Rendus Geoscience*, 346(7-8): 179-189.

### ARGENTINA

La Plata, Argentina 2016, IV CAHGEO – Preliminary Announcement:

The 4TH Argentinean Congress on the History of Geology (iv cahgeo) will be held on 15-16 September 2016, at the La Plata Museum, La Plata University, located about 60km east of Buenos Aires city.

The meeting will be co-sponsored by the La Plata University Faculty of Natural Sciences and the Geological Society of Argentina. The Argentinean Commission on the History of Geology is a partner in planning the meeting.

The Conference Theme will be “*Geology in Argentina’s Bicentennial*”, to celebrate the 200<sup>th</sup> anniversary of the adoption, on 9 July 1816, of the Declaration of Independence by which Argentina became an independent republic.

Previous congresses were held in Tucuman (2007), Buenos Aires (2010) and Salta (2013). Papers presented there were published in *INSUGEO*, *Miscelanea*, 16 (2008), *Revista de la Asociación Geológica Argentina*, 68, 3 (2010) and in Alonso, R.N., ed. (2013).

The meeting will focus on historical facts related to institutions and scientists that contributed to the earth sciences in Argentina and South America, but any other work of worldwide significance to the development of geology will be welcome.

Since the meeting will be held in the La Plata Museum, a session will be organized featuring several relevant talks on that institution’s place in the development of geology in Argentina.

The organizers expect to issue a First Circular with more details over the next few months. Organizing Committee: Carlos A. Cingolani (carloscingolani@yahoo.com), Alberto C. Riccardi ([riccardi@fcnym.unlp.edu.ar](mailto:riccardi@fcnym.unlp.edu.ar)) and Sergio F. Vizcaíno (vizcaino@fcnym.unlp.edu.ar) (La Plata University).

### AUSTRALIA

**Carol Bacon** – Carol Bacon attended the 39th INHIGEO Symposium in July 2014 in California and continues her interest in the history of geology of Tasmania. Carol spent a month in Moscow during the year, where she was made very welcome by INHIGEO members Zoya Bessudnova, Irena Malakhova and Tatiana Ivanova, who showed her around many famous museums and geological collections.

**David Branagan** - A major INHIGEO member in 2014 was attending the meeting at Asilomar, California, with a one day excursion, organised by Professor Ken Taylor and others, July 6-10. There a paper was given on aspects of Alfred Selwyn’s work in Canada, and a controversy he had with US Geologists on matters concerning the Precambrian rocks of Canada. (Title: Alfred Selwyn and some North American (Canadian and United States) Geological controversies).

The Meeting included specific acknowledgements to the work of six earlier workers, two of which, Albert Carozzi and David Oldroyd, sadly died during the year.

Earlier in the year time was spent in Devon, checking historical resources concerning particularly Alfred Selwyn, visiting his birthplace in Somerset, examining the sea coast related to the early years of the Geological Survey of Great Britain, notably re De la Beche, also the Linton district where Sir Geo Newnes worked and is buried. Newnes was important in the assistance he gave to the Norwegian Antarctic explorer, Borchgrevink, funding the first expedition to over-winter in Antarctica.

I was flattered by an invitation to give a presentation on the geological work of the Reverend J.E. Tenison Woods, at a meeting of the Sisters of St. Joseph in Adelaide, South Australia, celebrating his geological work and commemorating his foundation of the Sisters of St. Joseph, and his influence on the recently canonised ST. Mary MacKillop.

#### *Publications:*

Carsten Egeberg Borchgrevink (1864-1934): The man who claimed to be the first to set foot on Antarctica. *Earth Sciences History*, vol. 33, No. 1, 2014, pp.67-121.

Signal to Noise Ratio in Renaissance Writing: an example concerning Georgius Agricola (1494-1555) *Journal & Proceedings of the Royal Society of New South Wales*, vol. 147, nos. 451 & 452, pp. 29-54. D.F. Branagan, D.W. Emerson & I. Kelly

The Geology of the Jenolan Caves and the Surrounding Region. D.F. Branagan, J Pickett and I. Percival. *Proceedings of the Linnean Society of New South Wales* (on line), vol. 136, May 2014, 57 pp.

Geotechnical Consequences of the Newcastle Coal Measures Rocks. G.H. McNally and D.F. Branagan, *Australian Journal of Earth Sciences*, vol. 61 (No. 3) 2014.

Several books were reviewed, and some papers were refereed.

**Barry Cooper** – continues as Secretary General of both INHIGEO and the Heritage Stone Task Group.

He attended the annual INHIGEO conference held at the Asilomar Conference Grounds in California and presented a paper entitled “Changing Reflections on the History of Geology: An Australian Perspective”. This paper has since been offered as a contribution to the planned INHIGEO History Volume.

Barry also has two historical papers in press with *Episodes*, both with David Branagan as co-author. One deals with the history of 25<sup>th</sup> International Geological Congress, held in Sydney in 1976. The second nominates “Sydney sandstone” as a Global Heritage Stone Resource.

A major effort during 2014 has been the joint editing of a volume dealing with heritage stone. It is scheduled to be published in 2015 with the title: “Global Heritage Stone: Towards International Recognition of Building and Ornamental Stones”, Geological; Society of London Special Publication 407. In this volume Barry has several papers including one that deals specifically with the history of the “Global Heritage Stone Resource” designation.

Historical research at year’s end has focussed on a geological and mining museum that existed in Adelaide from 1889-1963 as the “Technological Museum”. The research has been necessitated as Adelaide historians are preparing a book on the Jubilee Exhibition that celebrated South Australia’s 150<sup>th</sup> anniversary in 1886-7. One legacy of this Exhibition was the “Technological Museum”, so a small research paper is needed.

For the INHIGEO conference in 2015, Barry is planning to speak on the history of geologists and opal mining development in Australia. During the coming year, South Australians will also celebrate the 100<sup>th</sup> anniversary of the opal discovery at Coober Pedy, often considered as the “Opal capital of the world”.

A delightful interlude was the preparation of a review of Simon Knell's book dealing with the history of conodonts.

*Publications:*

"Sydney sandstone: Heritage Stone from Australia". *Geophysical Research Abstracts*. EGU General Assembly 2014 (with S. Kramar)

Book Reviews: *The Great Fossil Enigma: The Search for the Conodont Animal*, Simon J. Knell. Indiana University Press 413 pp. (2013). *Earth Sciences History* 33(1): 179-181.

"Changing Reflections on the History of Geology: An Australian Perspective". *Program, 39th INHIGEO Symposium*, Asilomar Conference Grounds, Pacific Grove,, California, USA, 6-10 July 2014, pp 38.

"Some examples of heritage stones from Australia". In: Lollino, G. et al. (eds.), *Engineering Geology for Society and Territory – Volume 5* (Papers published for the 12th international IAEG conference Torino, Italy. September 2014, p.213-218.

**Tom Darragh** – has been working with Bill Birch on a biographical account of the German/Australian geologist Georg Heinrich Friedrich Ulrich (1830-1900), better known as George Ulrich, who worked for the Geological Survey of Victoria from 1857 to 1868. Later he was lecturer and curator at the newly established Industrial and Technological Museum of Victoria from 1870-1878, following which he was inaugural director of the Otago School of Mines, a position he held until his death. Ulrich provided the first comprehensive accounts of Victorian minerals and described the first new mineral species, maldonite, from Australia. Bill Birch presented a summary of the work at the German scientists seminar held at the Royal Society of Victoria in October 2014. The paper has been accepted for publication in the *Proceedings of the Royal Society of Victoria*.

**Jim Jago** – I am currently the President of the Friends of Mawson at the South Australian Museum. One of the aims of this group is to honour the name and activities of Sir Douglas Mawson, Australia's best known Antarctic explorer and geologist from the "Heroic age" of Antarctic Exploration. Currently, along with Mark Pharaoh, curator of the Polar collection at the South Australian Museum, I am looking into aspects of some of Mawson's early geological activities. A paper on this subject should be completed by the middle of the year.

**E.B. (Bernie) Joyce** – I attended the AQUA conference in Mildura from the 28th June to 6th July 2014. This was the 30<sup>th</sup> anniversary of the original conference, also held in Mildura, and included several field trips including two days at the Willandra Lakes and Lake Mungo.

My field trip guide is titled: Bernie Joyce, 2014. Along the Burke and Wills Track. Melbourne to Mildura, ca. 600 km, Saturday 28<sup>th</sup> June 2014. *AQUA 30<sup>th</sup> Anniversary Pre-Conference Field Trip*. 10pp.

Immediately after Mildura I attended the Australian Earth Sciences Conference (AESC) held in Newcastle, New South Wales, from the 6th to 11th July 2014. Here I presented two papers, and also took part in the panel session on "Geotourism - The Potential for Employment Opportunities for Geoscientists".

In the session on "Geotourism - Enhancing Public Appreciation of Geoheritage and Earth Sciences History", I gave a paper by Lewis & Joyce, on "Kanawinka Geopark - Latest developments and building an Australian model for Geoparks".

In the session on "Earthquakes and volcanoes in the not-so-stable plate" I presented a paper with Gary Gibson, on "Using studies of the physical features of young monogenetic volcanic fields, including the Newer Volcanic Province of south eastern Australia, to help explore relationships between volcanism, earthquakes and tectonic setting".

I attended the Business Meeting of the Earth Sciences History Group of the GSA, finally standing down as the Victoria representative on the Committee, and also took part in the presentation of the Tom Valance Medal to Professor David Oldroyd (unfortunately in his absence), on behalf of the Earth Sciences History Group of the GSA.

Of great interest to me, both for its discussions on history and on volcanoes, and held in Melbourne, was the Humboldt conference: “Celebration of German Contributions to Australian Science and Victorian Scientific Institutions – Past and Present” and held at The Royal Society of Victoria, from 1<sup>st</sup> - 3<sup>rd</sup> October, 2014

**Ken McQueen** – continued geological heritage activities within the Australian Capital Territory, particularly through his membership of the Steering Committee for the National Rock Garden and the Heritage Committee of the ACT Branch of the Geological Society of Australia. He also contributed to “Connected Environments and Changing Landscapes of the ACT and Surrounding Region”, a series of explanatory walks sponsored by the ACT Government in collaboration with the Molonglo Catchment Group and the Baru and Thunderstone Ngunawal Aboriginal Corporations. In April, Ken gave an invited address to a Mining Heritage Workshop held in Wellington N.S.W., organised by local government councils. This presentation provided an overview of the mining history and heritage of the region, based on his work with the NSW Geological Survey related to the new Bathurst 1:250 000 scale metallogenic map. This map with accompanying notes was launched at the “Exploration in the House Seminar”, held at the New South Wales Parliament on the 20<sup>th</sup> May. In July Ken attended the Australian Earth Sciences Convention in Newcastle and organised and chaired a special session on Mineralogical Exploration in honour and memory of Keith Scott, CSIRO scientist, who passed away unexpectedly in 2013. In November he attended the launch of the Master Plan for the National Rock Garden at Questacon – The National Science and Technology Centre in Canberra.

*Publications:*

McQueen, K.G., 2014. Gold in the ‘mundic’: The saga of Dargue’s Reef, Majors Creek, New South Wales. *Journal of Australasian Mining History*, 12, pp. 148-171.

McQueen, K.G., 2014. The concept of mineralogical exploration and the contribution of Keith Scott. *Australian Earth Sciences Convention 2014*, 7-10 July, Newcastle, Geological Society of Australia Abstracts 110, pp. 35-36.

McQueen, K.G., 2014. Mining History (back of sheet notes) Bathurst 1:250 000 Scale Metallogenic Map (2<sup>nd</sup> Edition) Geological Survey of New South Wales, Maitland, NSW, Australia.

McQueen, K.G., 2014. Mining heritage of the Bathurst region, central New South Wales. *The Australian Geologist*, 172, pp. 19-24.

**Wolf Mayer** – Edited and distributed the INHIGEO Annual Record No. 46 to all members. As coordinator of the INHIGEO 50<sup>th</sup> Anniversary Project, he prepared a proposal for the publication of a commemorative volume by the Geological Society Publishing House.

He participated in the 39<sup>th</sup> INHIGEO Symposium at Asilomar, in California and presented a paper on early attempts to measure the temperature seawater at various depths. Wolf also attended the 12th International Association of Engineering Geologists conference at Torino, in Italy, where he presented a paper on the uses of natural stones used in building.

*Publication:*

Mayer, W. 2014. The uses of natural stone in the building of Canberra, Australia's National Capital City. In: Lollino, G., Manconi, A., Guzzetti, F., Culshaw, M., Bobrowsky, P. and Luino, F. (eds.) *Engineering Geology for Society and Territory*, 5. *Urban Geology, Sustainable*



*Planning and Landscape Exploitation*, pp. 283-289, Cham, Heidelberg, New York, Dordrecht, London: Springer International.

*Conference presentations:*

Mayer, W. 2014. Early attempts by François Péron and Louis Depuch to measure the temperature of seawater at various depths in the ocean. Abstract, p. 5, 39<sup>th</sup> *INHIGEO Symposium*, Asilomar, California.

Mayer, W. 2014. The uses of natural stone in the building of Canberra, Australia's National Capital City. 12<sup>th</sup> *International Association of Engineering Geology Conference*, Torino, Italy.

## AUSTRIA

### *Austrian Working Group "History of Earth Sciences" (AWGHES)*

On the 12<sup>th</sup> of December, 2014, the annual meeting of the AWGHES was held in the Universal Museum Joanneum, in Graz. This year's conference was dedicated to the 15<sup>th</sup> anniversary of the Working Group. The conference program allowed for the presentation of a cross-section of scientific achievements and research over the last 15 years, reviewing the extent and the results of our wide-spread research activities. In addition, some participants took the opportunity to choose unrelated subjects to present their latest research results. The meeting was rounded off with a guided tour of the exhibition and collection of the Joanneum, lead by Bernd Moser.

The next meeting of the AWGHES will be held in the coming autumn, in Vienna, with the theme "Geology and Medicine".

Some members of the AWGHES will participate in the 13<sup>th</sup> International ERBE-Symposium, which will take place from the 15<sup>th</sup> to the 20<sup>th</sup> of June 2015, in Banská Štiavnica (Slovakia).

It is fitting to mention here the numerous meritorious contributions of our members to the *Eduard Suess Commemorative Year*, especially the lectures given by Johannes Seidl, Thomas Hofmann, Marianne Klemun, Bernhard Hubmann, A. M. Celâl Şengör and Richard Lein. The festival events were held at the University of Vienna and the Austrian Academy of Science. A panel discussion at the City Hall of Vienna, broadcast on television, and an exhibition, completed the festivities.

### *Articles commemorating the work of Suess and linked to the above events:*

Angetter, D., Gasche, W.R. & Seidl, J. (eds.) 2014. Eduard Suess (1831–1914) Wiener Großbürger – Wissenschaftler – Politiker. Zum 100. Todestag. (Begleitheft zur gleichnamigen Ausstellung in der Volkshochschule Wien-Hietzing, 22. Oktober 2014 bis 19. November 2014). *Berichte Geologische Bundesanstalt*, 106, 41 S., Wien.

Häupl, M. 2014. Zum Geleit – *Berichte Geologische Bundesanstalt*, 106, p. 5, Wien.

Zerobin, W. 2014. Eduard Suess: Zum 100. Todestag des „Vaters der ersten Hochquellenleitung“. *Berichte Geologische Bundesanstalt*, 106, S 6., Wien.

Streibel, R. (2014): Warum Eduard Suess in der VHS gut aufgehoben ist. *Berichte Geologische Bundesanstalt*, 106, p. 7, Wien.

Angetter, D., Gasche, W.R. & Seidl, J. 2014. Vorwort der Herausgeber. *Berichte Geologische Bundesanstalt*, 106, p. 8, Wien.

Seidl, J. 2014. Eduard (Carl Adolph) Suess, geb. 20.08.1831 in London; gest. 26.04.1914 in Wien. *Berichte Geologische Bundesanstalt*, 106, 9-12, Wien.

Gasche, W.R. 2014. Eduard Suess und seine Familie. *Berichte Geologische Bundesanstalt*, 106, 13-20, Wien.

- Csendes, P. 2014. Der Politiker Eduard Suess. *Berichte Geologische Bundesanstalt*, 106, 21-23, Wien.
- Angetter, D. 2014. Eduard Suess und die Präsidentschaft der kaiserlichen Akademie der Wissenschaften. *Berichte Geologische Bundesanstalt*, 106, 24-30, Wien.
- Lein, R. 2014. Eduard Suess als akademischer Lehrer. *Berichte Geologische Bundesanstalt*, 106, 31-37, Wien.
- Cernajsek, T. 2014. Die Nachfolge auf Eduard Suess' Ordinariat am Geologischen Institut der Universität Wien. *Berichte Geologische Bundesanstalt*, 106, 38-41, Wien.
- Güllli, E. & Piller, W.E. (eds.) 2014. Pangeo Austria 2014: 100 Jahre nach Eduard Suess: Beitragskurzfassungen. *Berichte Institut f. Erdwissenschaften Karl-Franzens-Universität Graz*, 20/1, 230 S., Graz.
- Hubmann, B. 2014. Eduard Suess (1831-1914): Ein Forscherleben zwischen Biedermeier und Sezession. *Berichte Institut f. Erdwissenschaften Karl-Franzens-Universität Graz*, 20/1, p. 3, Graz.
- Meindl, R. 2014. Auf den Spuren von Eduard Suess: Projektarbeit der Wahlpflichtgruppe Biologie am GRG 16 Wien. *Berichte Institut f. Erdwissenschaften Karl-Franzens-Universität Graz*, 20/1, p. 136, Graz.
- Hofmann, T., Blöschl, G., Lammerhuber, L., Piller, W.E. & Sengör, A.M. C. 2014. *The Face of the Earth: The Legacy of Eduard Suess*, 104 pp., Edition Lammerhuber, Baden.
- Hofmann, T.; Blöschl, G.; Lammerhuber, L.; Piller, W.E. & Sengör, A.M.C. 2014. Preface. In: Hofmann, T. et al.: *The Face of the Earth: The Legacy of Eduard Suess*, p.11, Edition Lammerhuber, Baden.
- Sengör, A.M.C. 2014. Eduard Suess and the origin of modern geology. In: Hofmann, T. et al.: *The Face of the Earth: The Legacy of Eduard Suess*, 14-17, Edition Lammerhuber, Baden.
- Piller, W.E. 2014. From palaeontology and stratigraphy to Earth System Science. In: Hofmann et al.: *The Face of the Earth: The Legacy of Eduard Suess*, 21-23, Edition Lammerhuber, Baden.
- Sengör, A.M.C. 2014. Suess and the dynamics of the planet earth. In: Hofmann, T. et al.: *The Face of the Earth: The Legacy of Eduard Suess*, 27-31, Edition Lammerhuber, Baden.
- Blöschl, G. 2014. Two water problems of a big city. In: Hofmann, T. et al.: *The Face of the Earth: The Legacy of Eduard Suess*, 35-39, Edition Lammerhuber, Baden.
- Hofmann, T. 2014. Milestones of a life beyond the geosciences. In: Hofmann, T. et al.: *The Face of the Earth: The Legacy of Eduard Suess*, 42-45, Edition Lammerhuber, Baden.
- Wagreich, M. & Neubauer, F. (eds.) 2014. The Face of the Earth Revisited. *Austrian Journal of Earth Sciences*, 107, 1, 232 pp., Wien.
- Wagreich, M. & Neubauer, F. 2014. The Geological Thinking of Eduard Suess (1831-1914) between Basic Research and Application: An Introduction. *Austrian Journal of Earth Sciences*, 107, 1, 4-5, Wien.
- Şengör, A.M.C. 2014. Eduard Suess and Global Tectonics: An Illustrated "Short Guide". *Austrian Journal of Earth Sciences*, 107, 1, 6-82, Wien.
- Neubauer, F. 2014. The structure of the Eastern Alps: from Eduard Suess to present-day knowledge. *Austrian Journal of Earth Sciences*, 107, 1, 83-93, Wien.
- Brückl, E. & Hammerl, C. 2014. Eduard Suess' conception of the Alpine orogeny related to geophysical data and models. *Austrian Journal of Earth Sciences*, 107, 1, 94-114, Wien.
- Wagreich, M., Lein, R. & Sames, B. 2014. Eustasy, its controlling factors, and the limno-eustatic hypothesis – concepts inspired by Eduard Suess. *Austrian Journal of Earth Sciences*, 107, 1, 115-131, Wien.
- Ring, U. 2014. The East African Rift System. *Austrian Journal of Earth Sciences*, 107, 1, 132-146, Wien.
- Neubauer, F. 2014. Gondwana-Land goes Europe. *Austrian Journal of Earth Sciences*, 107, 1, 147-

155, Wien.

- Kröner, A. & Rojas-Agramonte, Y. 2014. The Altaiids as seen by Eduard Suess, and present thinking on the Late Mesoproterozoic to Palaeozoic evolution of Central Asia. *Austrian Journal of Earth Sciences*, 107, 1, 156-168, Wien.
- Şengör, A.M.C., Natal'in, B., Sunal, G. & Van der Voo, R. 2014. A new look at the Altaiids: A superorogenic complex in Northern and Central Asia as a factory of continental crust. Part I: Geological data compilation (exclusive of palaeomagnetic observations). *Austrian Journal of Earth Sciences*, 107, 1, 169-232, Wien.

*Other scientific journal articles on the legacy of Suess:*

- Cazenave, A. 2014. The face of the Earth and the changing sea surface. *Geophysical Research Abstracts*, 16, EGU2014-17035.
- Cernajsek, T. 2014. Eduard Suess (1831-1914) und seine geologische Erforschung des Bodens der Stadt Wien. *Berichte Geologische Bundesanstalt*, 107, 5-7, Wien.
- Hubmann, B., Angetter, D. & Seidl, J. 2014. Eduard (Carl Adolph) Suess - between science and politics. *INHIGEO Annual Record*, 46, 79-82.
- Seidl, J. 2014. Eduard Sueß (1831-1914): Ein Leben zwischen Geologie und Politik: Eine Hommage an den am 26. April 1914 verstorbenen großen österreichischen Erdwissenschaftler. *Geohistorische Blätter*, 24, 137-148, Berlin.
- Seidl, J. 2014. Eduard Sueß - zwischen Naturwissenschaft und Politik. *Österreichisches Biographisches Lexikon: Biographie des Monats*, 2014. 8, Wien.  
[http://www.oeaw.ac.at/oebl/Bio\\_d\\_M/bio\\_2014\\_04.htm](http://www.oeaw.ac.at/oebl/Bio_d_M/bio_2014_04.htm)
- Seidl, J. 2015. Eduard (Carl Adolph) Suess Geologe, Techniker, Kommunal-Regional- und Staatspolitiker. In: Ash, M. (ed.): *Die Universität Wien als Ort der Politik* (in press).
- Şengör, C. 2014. The Face of the Earth and those of her sisters: why are they so different? *Geophysical Research Abstracts*, 16, EGU2014-17033.
- Viles, H. 2014. Linking life and landscape: (Bio)geomorphological contributions to shaping the face of the Earth. *Geophysical Research Abstracts*, 16, EGU2014-17034.

*Articles in (daily) newspapers*

- Békési, S. 2014. Elixier der Wiener. *Die Presse, Spectrum*, 13. 9. 2014.
- Egghardt, H. 2014. Das Antlitz der Erde: Eduard Suess' Vermächtnis. *GEO Magazin Österreich*, 2014, 4, 1-4, Wien.
- Hofmann, T. (2014): Ein herrliches Hochgebirge, ...! Eduard Suess - Geologe mit Weit- und Überblick. *Bergauf*, 2014, 4, 72-75, Innsbruck.
- Hofmann, T. 2014. Eduard Suess: Der Erdforscher: Lokale Forschungen, globaler Impact: 100. Todestag des Geologen Eduard Suess. *Schaufenster Kultur.Region*, 2014.7/8, p. 43, Atzenbrugg.
- Hofmann, T. 2014. Geologie zum Wohle aller. *Wiener Zeitung Extra*, 2014-04-19/20, p. 42, Wien.
- Jorda, T. 2014. Wie die Welt einst war. *Niederösterreichische Nachrichten*, 19, p. 19, St. Pölten.
- Kremsner, A. 2014. Das Antlitz der Erde. *Oberösterreichische Nachrichten*, 2014-04-26, p. 12, Linz.
- Mauthner-Weber, S. 2014. Wer war Eduard Suess? 100. Todestag: Der Wissenschaftler, der Wien sauberes Wasser schenkte und die Atmosphäre „erfand“. *Kurier*, 2014-04-23, p. 22, Wien.
- N.N. 2014. Das Gesicht der Erde. *Salzburger Nachrichten*, 2014-05-08, Salzburg.
- Stadler, J. 2014. Der Wassermann: Er erfand die Hochquellwasserleitung, regulierte die Donau,

ergründete die Mechanismen der Gebirgsentstehung und prägte Begriffe wie Atmosphäre und Biosphäre: Vor 100 Jahren starb der große Wiener Geologe Eduard Suess. *Profilwissen*, 2014.2, 62-66, Wien.

Summesberger, H. 2014. Eduard Suess - Zum 100. Todestag des bedeutendsten Geologen von Österreich. *Universum*, 2014.3, p. 110, Wien.

Taschwer, K. 2014. Ein Wissenschaftler als Wohltäter Wiens. *Der Standard, Forschung Spezial*, 2014-04-23, p. 11, Wien.

*Articles not linked to the Eduard Suess commemorations:*

Angetter, D., Hubmann, B., Seidl, J. 2014. 15 Jahre Österreichische Arbeitsgruppe „Geschichte der Erdwissenschaften. 13. *Wissenschaftshistorische Tagung der Österreichischen Arbeitsgruppe „Geschichte der Erdwissenschaften“* (= Berichte der Geologischen Bundesanstalt 107), 75 pp. Wien. 15<sup>th</sup> anniversary of the Austrian Working Group "History of Earth Sciences". *13<sup>th</sup> meeting of the Austrian Working Group "History of the Earth Sciences*.

Angetter, D., Hubmann, B. 2014. Sigmund Aichhorn. In: *ÖBL Online-Edition*, 3<sup>rd</sup> edition (15.11.2014).

Angetter, D., Hubmann, B. 2014. Konrad Clar. In: *ÖBL Online-Edition*, 3<sup>rd</sup> edition (15.11.2014).

Angetter, D., Hubmann, B. 2014. Robert Fleischhacker. In: *ÖBL Online-Edition*, 3<sup>rd</sup> edition (15.11.2014).

Hammerl, C. 2014. Meteorologie und militärischer Feldwetterdienst im Ersten Weltkrieg. In: H. Matis, J. Mikoletzky, W. Reiter (eds.) *Wirtschaft, Technik und das Militär 1914-1918. Forschung und Wissenschaft – Geschichte* 11, 325-347, Berlin, Münster, Wien, Zürich, London, LIT Verlag Reihe Austria.

Hammerl, C., Steffelbauer, I. (eds.) 2014. *Naturkatastrophen. Dramatische Naturereignisse aus kulturwissenschaftlicher Perspektive*, 152 pp., Wien, Mandelbaum Verlag.

Hubmann, B. & Seidl, J. 2014. Carl Diener (1862–1928) und die Expedition in den zentralen Himalaya im Jahr 1892. In: Kästner, I., Kiefer, J., Kiehn, M. & Seidl, J. (eds.) *Erkunden, Sammeln, Notieren und Vermitteln – Wissenschaft im Gepäck von Handelsleuten, Diplomaten und Missionaren. Europäische Wissenschaftsbeziehungen*, 7, 407-430, 3, Erfurt.

Hubmann, B. 2014. Alexander Tornquist, „ein Geologe ohne Schatten“? *Geohistorische Hefte*, 24, 85-96, Berlin.

Moschik, M. & Svojtka, M. 2014. *Naturselbstdrucke. Dem Originale identisch gleich*. ed. by S. Weber-Unger. 205 pp., Wien, Album Verlag.

Seidl, J., Pertlik F., Ende, A. 2014. Emil Dittler (1882 - 1945) Ordentlicher Professor an der philosophischen Fakultät der Universität Wien. Eine Biographie und Würdigung seines wissenschaftlichen Erbes. *Geohistorische Blätter*, 24, 1-41, Berlin.

Svojtka, M. 2014. Auinger, Mathias d. J. *ÖBL Online-Edition*, 3<sup>rd</sup> edition (15.11.2014)

**Marianne Klemun** – conceptualized and organized a Symposium dedicated to the anniversary of the death of Eduard Suess: “Eduard Suess (1831-1914). Politik – Wissenschaft – Verantwortung [Politics – Science – Responsibility]“.

This was held on April 25, 2014 at the University of Vienna. Among the Speakers were Heinz Engl (Rector of the University), Christian Köberl (General Director of the Natural History Museum), Karl Vocelka (University of Vienna), Andrea Westermann (University of Zürich) and Marianne Klemun (University of Vienna).

In April 2014, together with Marita Hübner; she conceptualized and organized the Session “Antiquarism – crossing regions, oceans, and field of knowledge”, at “Scientiae” (in cooperation

with Oxford) 2014, “Disciplines of Knowing in the Early Modern World”, “23<sup>rd</sup> April - 25<sup>th</sup> April 2014, Juridicum, Vienna.

In September 2014 Marianne conceptualized and organized the Symposium “Addressing the Dynamics of Museums”, at “Science and Technology in the European Periphery”, the 9<sup>th</sup> STEP Meeting, held at the Centro interuniversitário de História das Ciências e da Tecnologia, Lisbon 1-3. September 2014), (with 4 papers: Schmutzer, Török, Mattes, Klemun)

In April 2013 she was invited to give the Keynote address: “Historismus, interdisziplinär betrachtet: Praktiken – Episteme – Analogien” [Historicism, an Interdisciplinary View: Practices – Episteme – Analogies], at: Wissenschaftspraxis in Österreich im 19. Jahrhundert: Interdisziplinäre Annäherungen [Practices in Academic Disciplines in Austria in the 19th Century: An Interdisciplinary Approach] at the Archive of the University of Vienna.

Marianne Klemun was invited to give a Key-note address: „Zeiträume: Vom Blick in die Tiefe zum Archiv der Erde“ [Spaces of Time: Looking into the Depths to the Archives of Earth], at: International Workshop “Deep Time”; org. by Anke Kramer and Eva Horn (Department of German Literature, University of Vienna, May 2014)

She was invited to participate in the presentation of the book *The Nationalization of Scientific Knowledge in the Habsburg Empire, 1848–1918*, edited by Mitchell Ash and Jan Surman and published by Palgrave in 2012. The presentation took place at the Department of History (University of Vienna) on 22.1. 2013.

Marianne Klemun participated in the 24th International Congress of History of Science, Technology and Medicine: “Knowledge at work”, ICHSTM in Manchester, UK, 26 July 2013, at the Symposium on “Geologists in the field”. Klemun’s lecture was entitled: “Administering science: the paper form of scientific practice and of geological fieldwork”.

She was asked to give a lecture on: „Erkenntnisinstrument Reisen: Reflexionen zu einem komplexen Phänomen“ [Travel as a Cognitive Tool] at: „Erkunden, Sammeln, Notieren und Vermitteln – Wissenschaft im Gepäck von Handelsleuten, Diplomaten und Missionaren [Inquiring, Collecting, Taking Notes and Communicating – Science in the luggage of merchants, diplomats and missionaries]. Europäische Wissenschaftsbeziehungen 7 [European science-connections], org. by the „Akademie Gemeinnütziger Wiss. zu Erfurt, Österr. Ges. für Wissenschaftsgeschichte und Fakultätszentrum Biodiversität, botanischer Garten und Archiv der Universität Wien“ 2.-4. Mai 2013, Archiv der Universität Wien.

She gave lectures on: Johann Christian Polykarp Erxleben’s Lehrbuch [textbook] „Anfangsgründe der Naturlehre“ – „wahres Compendium“ und kein „Register über die bekannten natürlichen Körper“? at: 12. Tagung der Österreichischen Arbeitsgruppe „Geschichte der Erdwissenschaften“ [12th Meeting of the Austrian Working Group on the History of Earth Sciences]: Geologie und Bildungswesen [Geology and Education], 29 November 2013, Festsaal des Archivs der Universität Wien.

She gave a lecture on the topic: „Erste naturgeschichtliche Sammlungen an der Wiener Universität im 18. Jahrhundert und die ‚Schulung der Einbildungskraft durch Naturkunde‘“ [The First Natural History Collections of the University of Vienna: Training the Imagination], at: 12. Internationales Symposium, „Das kulturelle Erbe in den Geowissenschaften, im Bergbau und der Metallurgie. Bibliotheken – Archive – Sammlungen. 3. Oktober 2013, Bozen, Naturmuseum Südtirol/Museo Scienze Naturali Alto Adige Museum Natara Südtirol.

She also was invited to speak on the topic of “Instruments scientifiques et cognition: le cas du marteau du géologue (Scientific Instruments and cognition: The case of the geologist’s hammer)” at „Biologie et société”. Séminaire 2013-2014. Sciences cognitives, neurosciences et sciences sociales, Maison des Sciences de L’Homme/École des hautes études en sciences sociales, 9 décembre 2013, Paris.

In May 2014 she gave a lecture during the Conference of the German Society for the History of Science at the University of Heidelberg on the subject: “history of terms”. Her lecture was

entitled „Geognosie versus /und Geologie: unterschiedliche Denkstile, kulturelle Praktiken und differente Wahrnehmungskonzepte im Widerstreit? [Geognosy versus /and Geology: conflicts between different styles of thinking, cultural practices, differing perceptions].

In summer of 2014 Marianne Klemun attended the 39<sup>th</sup> INHIGEO Symposium (International Commission on the History of Geological Sciences, 6<sup>th</sup> July – 10<sup>th</sup> July 2014, at the Asilomar Conference Grounds, Pacific Grove, California, USA, and gave a lecture on “Contextualizing ‘Context’ – Plastic-Word or Methodological Concept in the History of Earth Sciences?”.

During the same Symposium she gave a lecture together with Karl Kadletz on the topic “Editing: Method and Potential”.

In addition Marianne Klemun has published six articles in the field of earth sciences:

Erkenntnisinstrument Reisen: Reflexionen zu komplexen wissens- und wissenshistorischen Phänomen der Frühen Neuzeit. In: Ingrid Kästner, et al. (Hrsg.): *Erkunden, Sammeln, Notieren und Vermitteln – Wissenschaft im Gepäck von Handelsleuten, Diplomaten und Missionaren* (Europäische Wissenschaftsbeziehungen, hg. von Dietrich von Engelhardt et al, Bd. 7, Aachen 2014) 21–36.

Hammerkult und Geologie. In: *Visualisierungen von Kult.*, hg. von Marion Meyer und Deborah Klimburg-Salter (Wien/Köln/Weimar 2014) 16–39.

Natur/Geschichte und das Kärntner Landesmuseum Rudolfinum. In: *Spuren-suche: 130 Jahre Rudolfinum* (Klagenfurt 2014) 73–82.

‘Wissen im Gepäck’: Reisendes Bergpersonal zwischen den Bergbauorten in den habsburgischen Ländern (1765-1814), In: *Staat, Bergbau und Bergakademie. Montanexperten im 18. und frühen 19. Jahrhundert*, hg. von Hartmut Schleiff und Peter Konečný (= *Vierteljahrsschrift für Sozial- und Wirtschaftsgeschichte – Beihefte*, Stuttgart 2013, Bd. 223) 75–91.

‘Living fossil’- ‘fossilized life’? Reflections on biography in the history of science. In: *Earth Sciences History. Journal of the History of the Earth Sciences Society*, Vol. 32, Nr. 1 (2013)121–131.

Erforschungsgeschichte: Ein Bergsturz im Wandel – gesehen aus unterschiedlichen Perspektiven und in diversen Kontexten. In: *Natur & Mensch in der Schütt. Die Bergsturzlandschaft im Naturpark zwischen Dobratsch und Gail*, hg. vom Naturwissenschaftlichen Verein für Kärnten, Klagenfurt 2013, 23–27.

**Johannes Mattes** – As a Co-Editor of the peer reviewed Journal “Die Höhle. Zeitschrift für Karst- und Höhlenkunde” [Journal on Karst Studies and Speleology], Johannes has supported the publication of three articles on the history of geology.

In addition, Johannes has initiated a review of unsorted archive materials of the former Speleological Institute (1922-1938; 1945-1974) and of the Chair of Speleology at the University of Vienna (1929-1937). Today, the source material is held in the Natural History Museum in Vienna. Johannes has published two articles and prepared several papers for publication, which will be printed in spring 2015:

#### *Publications:*

Mattes, J. 2014. Entwicklung der Speläologie [The development of karst and cave studies]. *Speläologische Merkblätter*, C71, Vienna, 1-7.

Mattes, J. 2014. Arbeitsgebiete der Historischen Speläologie [Research fields and sources for the history of karst and cave studies]. *Speläologische Merkblätter*, C72, Vienna, 1-7.

Mattes, J. 2015. *Reisen ins Unterirdische. Eine Geschichte der Höhlenforschung in Österreich bis*

*in die Zwischenkriegszeit*. [Travelling in the underground. A cultural history of speleology in Austria up to the interwar period]. Vienna, Cologne, Weimar, 450 p.

- Mattes, J. 2015. Geschichte der Höhlenforschung [History of cave exploration]. In: Spötl, C., Plan, L. and Christian E. (eds.), *Karst und Höhlen in Österreich* [Karst and caves in Austria]. Linz, Oberösterreichische Landesmuseen.
- Mattes, J. 2015. Höhlennutzung seit der Antike [Human usage of caves since antique times]. In: Spötl, C., Plan, L. and Christian, E. (eds.) 2015. *Karst und Höhlen in Österreich* [Karst and caves in Austria]. Linz, Oberösterreichische Landesmuseen.
- Mattes, J. 2015. Höhlenkundliche Organisation [Speleological organizations]. In: Spötl, C., Plan, L. and Christian, E. (eds.) *Karst und Höhlen in Österreich* [Karst and caves in Austria]. Linz, Oberösterreichische Landesmuseen.

#### *Conferences presentations:*

- Mattes, J. 2014. Reisen ins Unterirdische. Konzeptionelle und methodische Zugänge zu einer Kulturgeschichte der Speläologie [Conceptional and methodical approaches to a cultural history of speleology]. International workshop, *Umgang mit Wissen / Handling knowledge*, organized by the University of Vienna, Vienna (AU).
- Mattes, J. 2014. Below the Skin of Earth. *Debates on Cave Minerals and Fossils in the 17th and 18th century*. International conference, organized by the research group *Scientiae – Disciplines of Knowing in the early Modern Age*, Vienna (AU).
- Mattes, J. 2014. Reisen ins Unterirdische Eine Kulturgeschichte der Höhlenforschung in Österreich im internationalen Kontext [A cultural history of speleology in Austria in an international context]. *Speläologische Vortragsreihe, Natural History Museum, Vienna (AU)*.
- Mattes, J. 2014. Disciplinary Identities and Crossing Boundaries. The function of history for the academization of speleology in the first half of the 20th century. *Conference of the International Commission on the History of Geological Sciences*, Monterey, USA.
- Mattes, J. 2014. The Speleological Museum in Linz (1912-1917) – National Rivalries and Disciplinary Identities. *Congress of the European Society for the History of Science*, Lisboa, Portugal.
- Mattes, J. 2014. Touristen vom Fach und Männer der Wissenschaft – Franz Kraus als Mittler zwischen Alpinismus und akademischer Forschung [Professional tourists and men of science – The speleologist Franz Kraus as a mediator between alpinism and academic research] (Keynote). *Annual conference of the Austrian Speleological Association*, Gams near Hieflau (AU).

**Claudia Schweizer** – 2014. Amie Boués Reise in die Europäische Türkei in den Jahren 1836, 1837 und 1838. *Mensch, Wissenschaft, Magie*, 30, 95-110.

**Matthias Svojtka** – In 2014 Matthias coauthored a book on nature-self-prints – a historical technique which involved amongst others printing of meteorite sections and surfaces of fossils – and published seven biographies of botanists, palaeontologists and teachers of natural history in the Austrian Biographical Dictionary.

#### *Publications:*

- Moschik, M. & Svojtka, M. 2014. *Naturselbstdrucke. Dem Originale identisch gleich*. Ed. by S. Weber-Unger. 205 pp., Album Verlag, Wien (ISBN 978-3-85164-190-5).
- Svojtka, M. 2014. Maximilian Johann Nepomuk Fellner (1751-1780) and his "Prodromus ad historiam fungorum agri Vindobonensis (1775)". *Österreichische Zeitschrift für Pilzkunde*, 23, 149-151.

- Svojtka, M. 2014. Thaisz Lajos (Ludwig). *Österreichisches Biographisches Lexikon 1815-1950*, 65. Lfg., 276-277 (ISBN 978-3-7001-7660-2).
- Svojtka, M. 2014. Thonner Franz. *Österreichisches Biographisches Lexikon 1815-1950*, 65. Lfg., 3 09 (ISBN 978-3-7001-7660-2).
- Svojtka, M. 2014. Thümen Felix Frh. von. *Österreichisches Biographisches Lexikon 1815-1950*, 65. Lfg., 314-315 (ISBN 978-3-7001-7660-2).
- Svojtka, M. 2014. Tkany Wilhelm. *Österreichisches Biographisches Lexikon 1815-1950*, 65. Lfg., 360 (ISBN 978-3-7001-7660-2).
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## BRAZIL

Last year Silvia Fernanda de Medonça Figueirôa moved to the Faculty of Education, University of Campinas (FE-UNICAMP), São Paulo, Brazil, giving continuity to her research on Geosciences textbooks: *Livros-texto de Geologia no Brasil (1846 - 1943): interfaces entre a História das Ciências e do Ensino*, with the support of the National Research Council – CNPq, Brasil.

Maria Margaret Lopes who is teaching at the Faculty of Information Science, University of Brasília (FCI-UnB), Brazil, has continued her international cooperation with the University of Évora, Portugal, lecturing as a visiting scholar at the Master Erasmus Mundus Techniques, Patrimoine, Territoires de l'Industrie (November, 2014). She continues her research on the International Geological Congresses: *As Ciências Geológicas em Congressos: dinâmicas nacionais, latino-americanas e internacionais*, also with the National Research Council- CNPq, Brazil support.

Pedro Wagner Gonçalves, at the Geoscience Institute, IG-UNICAMP, Brazil, developed over the year his project on teacher training on nature studies: *Formação de professores por meio de pesquisa colaborativa: processo curricular a partir de estudos da natureza*. Among the many scientific meetings that the Brazilian INHIGEO members participated in and the symposiums they organized throughout the year in Brazil and abroad, the following are worth mentioning:

At the 39th INHIGEO Symposium, Silvia Figueirôa read a paper: "What on earth can be interesting in textbooks?": *reflections on a neglected subject*; at the 14° Seminário Nacional de História da Ciência e Tecnologia – SBHC, Maria Margaret Lopes presented the paper: *O que ver em Paris no 1o Congresso Internacional de Geologia: o 'Guide du géologue à l'Exposition universelle de 1878'*; at the 8° Simposio sobre Enseñanza de la Geología, Spain, Pedro Gonçalves, made a presentation entitled *Concepción de naturaleza en artículos de enseñanza de ciencias que tratam del ciclo del agua y sus interconexiones com la enseñanza de las Ciencias de la Tierra*.

### Publications:

- Aragão, T. Z. B. and Figueirôa, S. F. de Mendonça 2014. Considerações sobre as concepções de ciência presentes em 4 instituições não formais de ensino de ciência brasileiras. In: *2d International Congress of Science Education, 2014, Foz do Iguaçu. Proceedings of the 2d International Congress of Science Education & 15 years of the Journal of Science Education*, v. 15. p. 105-105.
- Candeiro, C. R. A., Peyerl, D., Figueirôa, S. F. de Mendonça and Castanho, R. B. 2014. History and



- Paleontology of the Pontal do Triângulo Mineiro: The first fossil discoveries of the Upper Cretaceous of Minas Gerais. *Geographia Opportuno Tempore*, v. 1, p. 2-10.
- Figueirôa, S. F. de Mendonça 2014. Ciência e Tecnologia no Brasil: um tema sempre atual (in Korean). In: André Botelho e Lilia Moritz Schwarcz (Org.). *Agenda Brasileira: temas de uma sociedade em mudança*. 1ed.Seul: Sechang Publishing Company, v. único, p. 145-157.
- Figueirôa, S. F. de Mendonça 2014. Em defesa do novo Império: a formação de engenheiros brasileiros nas grandes escolas francesas nas décadas de 1820-1830. In: Heloisa Meireles Gesteira; Luis Miguel Carolino; Pedro Marinho (Org.). *Formas do império: Ciência, tecnologia e política em Portugal e no Brasil (séculos XVII ao XIX)*. 1ed.Rio de Janeiro: Paz e Terra, v. único, p. 417-439
- Figueirôa, S. F. de Mendonça 2014. Mining in Brazil. In: Helene Sellin (Org.). *Encyclopedia of the History of Science, Technology, and Medicine in Non-Western Cultures*. 2ed.Dordrecht: Spinger Science+Business Media, v. único, p. 1-6.
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- Gonçalves, P. W. and Sicca, N. A. L. 2014. Desafios para construir integração curricular na trajetória de formação continuada de professores. In: XI Colóquio sobre Questões Curriculares, VII Colóquio Luso-Brasileiro & I Colóquio Luso-Afro-Brasileiro de Questões Curriculares Currículo na contemporaneidade: Internacionalização e contextos locais, 2014, Braga, Portugal. *Currículo na contemporaneidade: internacionalização e contextos locais: Atas*. Braga: Universidade do Minho. Instituto de Educação. Centro de Investigação em Educação (CIEEd), v. 1. p. 2500-2505.
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- Lopes, M. M. et al. Arrows and Sciences: Odd Displays for Another Brazil, 1840-1882. In: Kohl, Philip I et al. (Org.) 2014. *Nature and Antiquities: The Making of Archaeology in the Americas*. Tucson: University of Arizona Press, p. 169-185.
- Peyerl, D.; Bosetti, E. P. and Figueirôa, S. F. de Mendonça. 2014. O impulso da Micropaleontologia no Brasil pela Petrobras na década de 1950. In: II Simpósio Brasileiro de Paleoinvertebrados., 2014, Ponta Grossa. *Paleontologia em destaque - Boletim Informativo da Sociedade Brasileira de Paleontologia*. v. Especial. p. 130.
- Peyerl, D.; Candeiro, C. R. A. and Figueirôa, S. F. de Mendonça 2014. Trajectory and contribution of geoscientists to dinosaur research in the Bauru Group (Cretaceous) in the Triângulo Mineiro region of Brazil. *Journal of South American Earth Sciences*.
- Santos, M. J., Zanini, S. M. C., Sicca, N. A. L. and Gonçalves, P. W. 2014. Concepción de naturaleza en artículos de enseñanza de ciencias que tratam del ciclo del agua y sus interconexiones com la enseñanza de las Ciencias de la Tierra. In: *8º Simposio sobre Enseñanza de la Geología. Libro de Comunicaciones*, Bilbao, Espanha, p. 261-269.
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Maria Margaret Lopes, Brasilia, Silvia Fernanda de Mendonça Figueirôa, Campinas

## BULGARIA



The geological life in Bulgaria during 2014 was dedicated to celebrating the 160th anniversary of the birth of Professor Dr. Georgui Zlatarski (19.02.1854-9.08.1909), the first Bulgarian geologist. He studied at the University of Zagreb and returned to Bulgaria in 1880. In 1882 he published the first geological paper ever written by a Bulgarian geologist: “The mineral ore of Bulgaria”. In that year he accompanied the Austrian geologist Franz Toula on his field trip in western Bulgaria. At the end of the year G. Zlatarski went to in Vienna, where he worked in museums and prepared the material for new publications. In 1890 he was

*Prof. Dr. G. Zlatarski*

appointed as the first professor of geology and paleontology in the High School later University of Sofia), where he founded the Geological Institute of the University. The more important works of G. Zlatarski are the Geological Map of Bulgaria and his book titled *The Geology of Bulgaria*, which was published 18 years after his death by Professor P. Bakalov, using the authors’ manuscript.

The first event dedicated to the year of G. Zlatarski was an exhibition of his publications and manuscripts, housed in the Central Library of Sofia University, “St. Climent Ohridsky”. The inauguration of the G. Zlatarski year took place in February at this Library, with the speech given by Prof. Dr. Marin Ivanov, Dean of the Geology and Geography Faculty at the University. He stressed the scientific oeuvre of Zlatarski, who produced the first geological map of Bulgaria and wrote many papers on regional geology. At this conference the great-grand daughter of Professor G. Zlatarski, Svetla Zlatarska, thanked the Director of the Library and the Dean of the Faculty for their efforts to preserve and to make known to the students and the professorial staff the big oeuvre of the first Bulgarian geologist and one of the first rectors (presidents) of the University.

The published and non-published papers of Professor G. Zlatarski were exhibited and to the public in the hall of the “Big Crystals” of the museum “The Earth and the People”. The opening took place in June, in the presence of many geologists and connoisseurs of Bulgarian culture. The opening of the exhibition was attended by the paleontologist Dr. Sc. Vassil Zlatarski, the grand-son of G. Zlatarski who came from the USA. At this event a lecture about the life of G. Zlatarski was given by Dr. Philip Machev, from the University of Sofia, followed by a reply and a vote of thanks by V. Zlatarski.

The third event, connected with the year of Professor G. Zlatarski was the Annual National Conference, with international participation, of the Bulgarian Geological Society, with the theme “Geosciences 2014”. This conference was dedicated to the 160th anniversary of the birth of Professor G. Zlatarski, but also to the 110th anniversary of the birth of Doc. Eng. Geologist Andrey Janichevsky. The anniversary lecture for G. Zlatarski was also given Doc. Dr. P. Machev. That, celebrating the anniversary of Janichevsky, was delivered by Professor Dr. Sc. P. Tchoumatchenco.

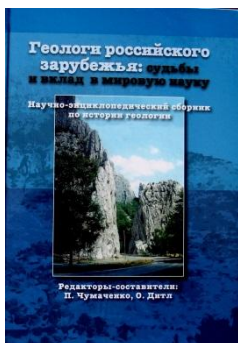


Eng. Geologist Andrey Janichevsky was a Bulgarian geologist of Russian origin. He was born the 20.02.1904 in Odessa, Russian Imperia. Andrey emigrated together with his family at the end of the 1920s from Crimea through Constantinople (now Istanbul) to Bulgaria. Here Andrey finished middle school and in 1925 enter the University of Sofia, specialising in the Natural Sciences, completing his studies there in 1930. After that, he continued his studies at the University of Nancy (France), until 1934. Janichevsky returned to Sofia, obtained a Bulgarian passport, and became a geologist in the Department of Mines. He studied ore

#### *A. Janichevsky (1904-1949)*

minerals and their deposits and regional stratigraphy and tectonic. He worked in Western Stara Planina Mountains, in the Central Rhodope Mountain and in Strandzha (SE Bulgaria). Elsewhere he reinterpreted regional geology, which did not gain him acceptance among the older generation of Bulgarian geologists. But in time, his new geologic ideas prevailed. However, at the time, his views were the reason why he was not awarded a doctorate for his thesis. In 1947 he became docent in the new State Polytechnic, where he taught a course on the geology ore minerals. A. Janichevsky died in an accident in a lift in February 1949.

## Other events



The Russian Academia Union in Bulgaria published, in Russian, the book *Russian geologists abroad: fates and scientific contributions* (478 p.), edited by P. Tchoumatchenco (Bulgaria) and O. Dietl (Germany). It was dedicated to the memory of the French geologists Professor M. Durand Delga, corresponding member of the French Academy of Sciences, who helped the editors of the book and provided them with much information. More than 15 geologists from all over the world took part in the collection of the data. The book is a publication on the history of the earth sciences and it includes the names of more than 600 specialists in the earth sciences. Brief biographical data is provided for more than 400 of them.



Prof. Dr. Sc. Ivan Nachev (1927-2014). The great Bulgarian geologist and lithologist I. Nachev died on 9.06.2014 in Sofia. He was the author of more than 330 scientific papers and books, on lithology and stratigraphy, especially of the Jurassic and the Upper Cretaceous sediments of Bulgaria and of others countries. He was also one of the first Bulgarian geologists in his country who adopted and developed the new ideas on plate tectonics, together with others Bulgarian geologists.

*Ivan Nachev (1927- 2014)*

Platon Tchoumatchenco, Sofia

## CANADA

**Keynyn Brysse** – Reported that she is currently out of academia, but hopes to write up her studies sometime in the future.

**Ernst Hamm** – This past year was a very active one on several fronts. I had the pleasure of presenting papers at several different venues. At the annual meeting of the Canadian Society for the History and Philosophy of Science I gave a paper called “What is the History of Geology the History of?” in which I considered the varied career of A. P. Coleman, his work in exploration, mountaineering, prospecting and mapping, among other things, in the late nineteenth and early twentieth centuries. I further developed my work on Coleman in a keynote address, “Doing the History of the Earth Sciences, What and Why?” for the annual INHIGEO meeting, which took place at Asilomar, California. The rich history of Asilomar, especially with respect to geology, ran through this meeting, and carried over into the marvellous INHIGEO field trips associated with this meeting. Finally, this past fall I gave a paper called “Geology, Its History and A. P. Coleman” at the Institute for the History and Philosophy of Science at Victoria College (University) in the University of Toronto. It was a great pleasure giving this paper at this location, as the Victoria University Library holds the A. P. Coleman archive (Victoria University Library, Toronto, A P Coleman Collection) and thanks to the work of librarian Alison Girling, who was present in the audience, has developed an outstanding online exhibit on Coleman (<http://library.vicu.utoronto.ca/apcoleman/>).

In 2014 my home institution, York University, Toronto, formally created a Department of Science and Technology Studies and I was made its first chair. Helping to build an institution is an exciting opportunity, even if new administrative responsibilities mean less time for research in the history of geology. Late in 2014 I was chosen as president-elect for 2015-16 of The History of Earth Sciences Society.

**Randall Miller** – Conferences highlighted geoh heritage themes in 2014 in Atlantic Canada this past year. In May 2014 the Geological Association of Canada / Mineralogical Association of Canada held its annual meeting at the University of New Brunswick, Fredericton. The conference included a Special Session on Geoh heritage titled: “The Earth’s Past, Our Future”, which was convened by John Calder, Steven Hinds, and Matt Stimson. The session description read “Far from a ‘feel good’ exercise, the emerging concept of Geoh heritage is our best hope for connecting society with geoscience and with the lessons of Earth history as we face growing local and worldwide challenges of resource use and global change. The formal recognition of Geoh heritage is gaining momentum globally; this session will look at the breadth of geoh heritage recognition across Canada from geological highway maps and community-managed sites to UNESCO World Heritage, at the methodology of formally defining geoh heritage sites, and will help to move us toward a Canadian and North American Geoh heritage network”. A full day of presentations included the following talks:

Calder, J.H. “A call for cross-Canada recognition of geoh heritage”.

Fensome, R., Williams, G., Achab, A., Clague, J., Monger, J., Nowlan, G., Bates, J. and Clark, T. “Four billion years, four thousand hours, four hundred people”.

Baldwin, D.K. and Humphries, W.J. “Recognizing and preserving our geological and mining heritage in the Northwest Territories, Canada”.

Young, G.A. and Dobrzanski, E.P. “The Manitoba Museum and its role in the preservation of provincial geoh heritage”.

Miller, R.F. “Developing a geoh heritage site list for New Brunswick, Canada”.

Hild, M.H. and Barr, S.M. “Lost, locked out and left wondering: Geotourism challenges”.

Kerr, A., Thompson, S., Dean, P. and Cobb, Z. “Geoscience outreach, education and related adventure tourism in a five-star all-inclusive context: The evolving ‘Geology at the Edge’ program on Fogo Island, Newfoundland”.

Marvinney, R.G., Anderson, W.A., Barron, H.F. and Hernandez, R. “The International Appalachian Trail: The ancient Appalachians as ambassador of the geosciences to modern societies”.

In September the 6<sup>th</sup> International UNESCO Conference on Global Geoparks was held at Stonehammer Geopark, (September 19-22, 2014), at the Trade and Convention Centre in Saint John, New Brunswick, Canada. The Global Geopark Network (GGN), assisted by UNESCO comprised 100 geoparks at the start of the meeting, located in Europe, Asia, North and South America. As the only member of the GGN in North America, Stonehammer Geopark was pleased to host the first international meeting of the network outside of Europe and Asia. Previous meetings had been in China (2004), the United Kingdom of Great Britain and Northern Ireland (2006), Germany (2008); Malaysia (2010) and Japan (2012). On the last day of the meeting Tumbler Ridge Geopark in British Columbia was admitted to the Global Network, along with ten other new geoparks, bringing the global total to 111 geoparks, and now including Africa. Tumbler Ridge Geopark is the second Canadian member and second North American Global Geopark.

The meeting, which celebrated the 10<sup>th</sup> anniversary of the GGN, was attended by 480 delegates from more than 30 countries. Global Geoparks are about more than just rocks. While a Global Geopark must have exceptional geological heritage it includes sites with interesting archaeology, wildlife and habitats, history, folklore and culture, all of which are intricately linked with the underlying geology. Papers from 190 abstracts of oral and poster presentations were divided into seven themes: (1) Geoparks and sustainable use of natural resources; (2) Engaging Communities; (3) Education and Interpretation in Geoparks; (4) Aspiring Geoparks; (5) Mature Geoparks; (6) UNESCO Collaboration; (7) Intangible Cultural Heritage. Abstracts were published in Atlantic Geology, available at <http://journals.hil.unb.ca/index.php/AG>.

In addition to the traditional conference format the delegates were invited to attend networking breakfast session and all attendees were able to attend a full day of field trips to visit Stonehammer Geopark geosites and interact with the geoparks 'Experience Providers', tour operators who derive benefit from offering geo-themed tours. Delegates went rock climbing, kayaking, hiking, and cruising the Saint John harbour.

It is important to point out that unlike most geology conferences, this event was co-ordinated largely by the community and Stonehammer Geopark, a non-profit organization comprised of community volunteers. Only two geologists were directly involved in the conference organization at the local level. I think this underscores the value of the global geoparks network, that it truly engages non-geologists to think about Earth science and how it affects their lives. I also want to acknowledge the outstanding support from more than 60 community volunteers who, among other things, staffed the registration desk, welcomed delegates at the airport, and provided language assistance. Experience Providers and the local hospitality industry went well beyond what might be expected to welcome the world to Stonehammer Geopark.

*Publications on geoheritage themes:*

- Miller, R.F. and Buhay, D.N. 2014. Turning a Forgotten Geological Heritage into a Geological Park: Developing Stonehammer Geopark. *Geoheritage*, 6: 29-39.
- Miller, R.F. and Buhay, D.N. 2014. The historic limestone quarry on Green Head Island in Saint John, New Brunswick, Canada. *Atlantic Geology*, 50: 18-27.
- Miller, R.F. 2014. A Guide to Stonehammer Geopark. A Billion Years of Stories / Guide de Géoparc Stonehammer. Un Milliard d'Années et Autant d'Histoires. New Brunswick Museum/ Musée du Nouveau-Brunswick, 192 pp.
- Edwards, D., Dickson, L., Fensome, R., Ledoux, R. and Miller, R.F. 2014. Chapter 14: Building Canada In: Fensome, R., Williams, G., Achab, A., Clague, J., Corrigan, D., Monger, J., and Nowlan, G. (eds.). *Four Billion Years and Counting. Canada's Geological Heritage*. Canadian Federation of Earth Sciences & Nimbus Pub. 402 pp.
- Miller, R.F. 2014. Developing a geoheritage site list for New Brunswick, Canada. Program and Abstracts, Joint Annual Meeting of the Geological Association of Canada and the Mineralogical Association of Canada. May 21-23, Fredericton.

**David A. E. Spalding** – Sarjeant's Literary Legacy: Since the death of Professor William A.S. Sarjeant, of the Universities of Nottingham (UK) and Saskatchewan (Canada) in 2002, I have served as his literary executor. Numerous obituaries and tributes were published (some of which I wrote or contributed to), reflecting the variety of his work in the Earth sciences (notably as a historian of Earth sciences and worker on microfossils, trace fossils (including vertebrate tracks), Derbyshire minerals, mining history, and Earth sciences in fiction). He was also acknowledged as a book collector, folk singer, heritage specialist, naturalist, Sherlockian (and expert in other mystery fiction), and writer of fantasy fiction.

Sarjeant wrote numerous books and hundreds of papers and articles in all his areas of interest. His contributions to the Earth sciences include books on dinoflagellates and trace fossils, and a landmark 10-volume bibliography of the history of the Earth Sciences (Sarjeant 1980-1996). Outside his professional career his remarkably diverse published work includes volumes on the heritage of the Saskatoon area, and a (co-authored) contribution to Sherlockian studies. Under the pen name of Antony Swithin he also published four volumes of a 10-volume epic fantasy series of novels, set in an alternative Earth in which the isolated mid-Atlantic rock (Rockall) of our own world is instead a large mid-Atlantic continent. The novels are not without interest to Earth scientists, as the fictional Rockall is inhabited by numerous animals which have become extinct in our own version of Earth, and some of Sarjeant's place names have now been used to name submarine features of our own Earth.

My own writings (expanding on some of our mutual interests) include contributions to two works partly dedicated to Sarjeant. One was a posthumous collaboration updating chapter one (“Dinosaurs: The Earliest Discoveries”) of the second edition of “The Complete Dinosaur” (Brett-Surman et al. 2012). The other, recognizing Sarjeant’s interest in fictional treatment of extinct animals, was a contribution to the 100th anniversary edition of Conan Doyle’s “The Lost World.” (Lavas et al. 2012), and comprised a brief biography of Sarjeant, and chapter 4 of the commentary (“Before the Lost World”) dealing with fictional treatments of extinct life before Doyle’s celebrated work appeared.

After dealing as far as practicable with most of the earth science aspects of Sarjeant’s work (as well as issues in some other areas), I passed on responsibility for his work during 2014. The new literary executor is Sarjeant’s second daughter, Rachel Sarjeant-Jenkins, Assistant Dean (Client Services) of the University of Saskatchewan, Saskatoon. Her concerns are initially focused on revision and republication of the first four fantasy novels, which we hope to see followed by the as yet unpublished volumes. She may be contacted on any matters related to Sarjeant’s writings at "Sarjeant-Jenkins, Rachel" <rachel.sarjeant-jenkins@usask.ca>

The Iron Creek Meteorite Revisited: I continue to serve on the editorial board of Earth Sciences History, as an associate editor with involvement in vertebrate paleontology, geological education, conservation and Canada. Unfortunately, these topics (and our northern country) do not seem to have aroused much recent interest among Earth Sciences History contributors. Ironically, I was not asked to comment on the one paper published during the year whose subject matter was entirely Canadian, dealt with a complex conservation issue, and had important educational implications. Since it presents also a story in which I had played a critical part, and I am also quoted in the text, it was somewhat surprising to hear of it for the first time on receiving my published copy of the journal. The paper is by Howard Plotkin, who teaches in the Philosophy Department at the University of Western Ontario.

Since the paper appeared, I have been begun reviewing my files so that I can offer further information. Briefly, Plotkin’s paper tells the fascinating story of the Iron Creek Meteorite, (also known as the Manitou Stone), a 145 kg iron meteorite which was formerly situated on a hillside somewhere on the prairies SE of Edmonton, Alberta, in the vicinity of Iron Creek. It has been regarded as an object of sacred significance by First Nations of the region for an unknown period, but was collected by Methodist missionaries in 1866. After a period at Victoria (Pakan) in what is now Alberta, it was taken to Victoria College in Toronto, and it was later exhibited in the Royal Ontario Museum. My role (as a then “new Canadian”) and Head Curator of Natural History at the Provincial Museum of Alberta (now the Royal Alberta Museum) was to see the meteorite on a visit to Toronto, and recognize its importance to Albertans. I subsequently approached the Royal Ontario Museum where it was on exhibition (and through them Victoria College, which was its de facto “owner”), and was able to arrange for it to be returned to the province in which it had been found. It was placed on display in the Provincial Museum geology gallery, where I felt it had become reasonably available to all Albertans. Sometime after I left the institution in 1983, it became part of the Human History exhibits, and has subsequently become embroiled in a complex controversy involving the museum, various First Nations, and residents of the area in which it was found. The issues involve ownership and the possibility of an alternative exhibition site closer to its previous hillside location. In the absence of exact knowledge of the original site, and lack of agreement between the groups having a legitimate interest, no new resolution has yet come to the controversy. Earth Science Museum History and Development in Alberta: My renewed interest in the Iron Creek Meteorite was widened when I was approached to contribute information to a projected fifty-year history of the Provincial Museum of Alberta/Royal Alberta Museum (RAM), planned to be available in time for the opening of a new facility in downtown Edmonton.

The original museum was a Canadian Centennial Project, and I joined the museum staff shortly before it was opened in 1967. I was responsible for curatorial departments and associated

exhibits and programs in Life and Earth Sciences. Earth Science programs included study and interpretation of the geology and paleontology of the province. The geology program, led by curators Don Taylor and Ron Mussieux, built up significant collections of rocks and minerals (including acquisition of the North America-wide Delp collection built up by a Saskatchewan amateur). The province is also rich in invertebrate and vertebrate fossils, the latter include rich deposits of international importance. Curators Don Taylor, John Storer and Philip J. Currie paid particular attention to vertebrates as we developed extensive collections of Tertiary mammals and Late Cretaceous dinosaurs and other associated vertebrates. Notable research included innovative collaborative programs with other institutions, the initiation of serious study of dinosaur bone beds, and a four- year rescue operation of dinosaur tracks in the Peace River Canyon of neighbouring British Columbia. Particularly important was the growing knowledge of Dinosaur Provincial Park, largely neglected since the dinosaur rush of the World War I years.

The Provincial museum's successful paleontology programs coincidentally paralleled with the growing international scientific and public interest in dinosaurs following the hot-blooded and extinction controversies. These factors, and the province's recognition of the tourist potential of spectacular fossil remains and the need to develop tourism attractions outside the main centres, led to the planning of what is now the Royal Tyrrell Museum in Drumheller. The last year of my 15-year career with the museum was spent on secondment to interpretive planning for this new fossil museum, which was opened in 1985. Some years later I was able to publish a book on Canada's dinosaurs, in which some of this story is discussed in more detail (Spalding 1999).

Thirty years later, construction has already started on the new provincial museum building in Edmonton; with 36,000 sq m of gallery space it will be the largest museum in western Canada. Like the original, it's scope will be the natural and human history of the province, but it is too soon to know how much space will be devoted to Earth Sciences. However, it is possible to make a rough estimate of the growing importance of Earth Science exhibition in the province.

Earth science occupied about 10% of the original exhibit space of the Provincial Museum in 1967, estimated at around 1,400 sq metres. With the Royal Tyrrell museum's exhibit over 4,000 sq metres, and a significant share of the new RAM's exhibit, exhibition space in Alberta provincial institutions devoted to Earth Sciences will have increased approximately 6-fold by 2017.

Meanwhile, the number of smaller facilities featuring Earth Sciences continues to increase. When the Provincial Museum was built in 1967, only the University of Alberta and a small museum in Drumheller featured Earth Sciences. Now, smaller earth history exhibits are also to be seen in or near Brooks (Brooks Museum, Dinosaur Provincial Park Field Station); Canmore (Museum and Geoscience Centre); Cold Lake (Oil and Gas Museum); Drumheller, Edmonton (University of Alberta); Fort McMurray (Oil Sands Discovery Centre); and Jasper National Park (Columbia Icefields Discovery Centre). A further boost will come from the Philip J. Currie Dinosaur Museum which is due to open near Grande Prairie in the fall of 2015.

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**Darren H. Tanke** – My Earth science history activities this past year are as follows:

Assisting a consultant to track down several lost mammoth teeth from the defunct Calgary Public Museum which closed its doors in the mid 1930's. This is an ongoing project. I am assisting her by providing historical information that provides leads and then analyzing her leads towards a hopefully successful conclusion. Part of this work also includes trying to decipher unusual catalogue numbers attached to several mammoth teeth curated at the Calgary Zoo, but the numbers and cataloguing formats do not match anything else at the zoo!

Hope Johnson (1916-2010) biography. This started as an enlarged paper within my "Remember Me" series of biographies published by the Alberta Palaeontological Society in Calgary on lesser known people involved in Albertan vertebrate paleontology in the recent and distant past. Hope was an amateur collector and excellent illustrator of mostly vertebrate fossils, but her latter talents were rarely utilized by the academic community. The paper became so big it now will be published as a book in coil-bound format also by the Alberta Palaeontological Society in Calgary, March, 2016, roughly on the 100<sup>th</sup> anniversary of her birth. I gave two one-hour talks on Hope Johnson, the first a keynote address on March 21 for the Alberta Palaeontological Society 19<sup>th</sup> annual symposium at Mount Royal University in Calgary (Tanke, 2015) and a repeat performance at the Royal Tyrrell Museum of Palaeontology on April 9th as part of their Thursday morning "Speaker Series" presentations. Another presentation on Hope Johnson may be given in Medicine Hat later this year too. The Tyrrell Museum talk was recorded and can be found at the Royal Tyrrell Museum's Facebook page (<https://www.facebook.com/tyrrellmuseum>).

The historical tour of old dinosaur quarries to Dinosaur Provincial Park as part of Society of Vertebrate Paleontology meetings in Calgary in 2017, will no longer be my hoped for stand-alone fieldtrip, and has now been folded into what will be a larger, more comprehensive field trips.

A mystery quarry (unidentified fossil quarry from long ago) in Dinosaur Provincial Park was discovered in the summer of 2014 and solved by me. Nearly all prior solved mystery quarries were worked pre-WWII by Barnum Brown, and the Sternberg family of collectors. This one, it turned out, was comparatively recent. It was an improperly documented ankylosaur site, opened, sampled, and then abandoned due to lack of more skeletal material, but more material is there now. Sleuthing disclosed it was a Provincial Museum of Alberta (Edmonton) site from 1982.

My paper on the relocation of the lost 1918 Royal Ontario Museum quarry in Dinosaur Provincial Park that yielded the type specimen of the hadrosaur (duck-billed dinosaur) *Gryposaurus incurvimanus* was published (Tanke and Evans, 2014). A pdf copy of the paper is available on request (dtanke@hotmail.com).

With the retirement of my supervisor and declining oil prices, his position will not be immediately refilled and his job duties have been split up among myself and other lab staff. I have taken on the role of technical support/advisor to new exhibits, one of which will open in 2017 and feature the role of heavy industry and vertebrate paleontology in the province. This exhibit will include some aspect of history so I have been contributing to that component of exhibit planning.

I assisted a University of Alberta vertebrate paleontology student with some historical information related to the excavation of a hadrosaur bonebed upriver from Drumheller in the early 1960's.

In the summer 2013, I was filmed for a four-part television series called "Dino Hunt Canada". In the second episode I 'helped' the University of Alberta paleontology field crew try and relocate a 1914 dinosaur quarry (the holotype specimen of the armored dinosaur *Scolosaurus*) in today's Dinosaur Provincial Park worked by freelance collector William E. Cutler. Years earlier I had found at the base of a cliff, a cave excavated into the hard rock-rock similar to that rock attached to the *Scolosaurus* on display today in the Natural History Museum in London, England.

Digging around in the eroded rubble at the site revealed wood, plaster, burlap scraps and dynamite fuse cord. We had only a poor photocopy of an old and very rare magazine article showing the site, so a match to the cave site and the 1914 photograph was inconclusive. In early 2013, a colleague found an original copy of the magazine, scanned the photograph and forwarded it to me. From this we were able to deduce the cave is not in fact the quarry we were after, but something else, collected by persons unknown and long ago came from there. Moving 100 meters away we were able to match unique bedding plane structures in a cliff face to the 1914 photograph (which was below the actual quarry spot) and roughly place where the site was, although active erosion had collapsed and destroyed whatever of the site was left.

In the “Dino Hunt Canada” episode “Cutler’s Cave and Flying Dino”, which first aired on February 6, 2015, the documentary team filmed all that is described above (plus matching a scene of Cutler sitting in his camp in 1914 to the magazine photograph), but someone decided not to include the success story and instead imply the search failed to find the site! Oh Hollywood! Resolving this site had been full of false leads prior to filming and has a complex sleuthing history—perhaps too complex for the film crew and/or producers to understand. Maybe if the series is successful and they do another set of programs, we can return and finally ‘find’ the site.

Our museum turns 30 years old this September 25<sup>th</sup>. One of our curators is writing a history of the fieldwork and research at the museum and as I am the longest serving employee here, he is now picking my brain for facts and trivia for inclusion into his manuscript. I have also been used to identify some decades old Tyrrell Museum photographs for inclusion into the volume. The end product will be a special fall, 2015 issue of the Canadian Journal of Earth Sciences featuring the Royal Tyrrell Museum.

I have begun penning some articles on lesser known Albertan women in vertebrate paleontology, namely Jane Colwell-Danis (already submitted), Irene Vanderloh, and Hope Johnson. I may do some others. These will be abbreviated versions of papers previously published but a few will be new. This is for the TrowelBlazers website (<http://trowelblazers.com/community/>) who post short stories online about women past and present on women in archaeology, geology, and paleontology. Many of these illustrated stories are on women long passed, and from around the world so are of interest to historians of the Earth sciences. INHIGEO members should definitely check the website out.

Plans are afoot to reattempt the trip down the Red Deer River in a 1:1 scale replica of a flat-bottomed scow of the type used by early dinosaur collectors on the same river from 1910-1915. This would happen June, 2016.

In 1916 the Canadian Pacific transport ship *SS Mount Temple* was attacked and sunk by in the North Atlantic by the German surface raider *SMS Moewe*. On board the Canadian ship were dinosaur skeletons and other fossils from today’s Dinosaur Provincial Park in southern Alberta, Canada, destined for the British Museum in London. I have done much research on this and published a number of articles, but interest in the event is renewed and it looks like a colleague and fellow author has a magazine interested in running the story again. This will no doubt not happen in time for the submission deadline for this year’s annual report, so I will provide more details in next year’s report.

I am pleased to report I have noticed a small but growing interest in both amateurs and professionals alike regarding including more paleontology history in their talks, papers, and casual enquiries over the past several years and hopefully this interest continues to grow.

A reminder that most of my digitized papers (including a good many on various aspects of Albertan Earth Science history) are available at the Academia.edu website (<https://tyrrellmuseum.academia.edu/DarrenTanke>).

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Tanke, D.H. and Evans, D.E. 2014. Relocating the lost *Gryposaurus incurvimanus* holotype quarry, Dinosaur Provincial Park, Alberta, Canada.. In: D.A. Eberth and D.C. Evans (eds.) *Hadrosaurs*, pp. 385-395. Indiana University Press: Bloomington. 619 pp.

**Clinton Tippett** – I am a petroleum exploration geologist who formerly worked for Shell Canada Energy. I retired from that position in mid-2014.

My focus on historical matters over the past year has been primarily through the Calgary-based Petroleum History Society (PHS) of which I am both President and Editor of our newsletter *Archives* (back issues of which are accessible through our website at [www.petroleumhistory.ca](http://www.petroleumhistory.ca)). Production of this newsletter involves the creation of articles summarizing presentations that have been given, news items from the media, photographs (current and historical) and excerpts from the publications of related organizations including the Leduc-Devon Historical Society, the Society for Industrial Archeology, the PetroPhilatelic Society, the Petroleum History Institute, the Canadian Rig Museum, and various industry journals.

The PHS sponsors 6-7 luncheons each year at which speakers address historical petroleum-related topics, many of which have a significant geological component. We have an annual awards program honouring the preservation and communication of the history of the Canadian Petroleum Industry and have in the past organized topical field trips and walking tours. We sometimes participate as exhibitors in trade shows in order to promote our mandate and increase membership, as we did in June 2014 at the Global Petroleum Show in Calgary.

A major initiative over the last number of years has been a revival of our Petroleum Industry Oral History Project in the form of the Oil Sands Oral History Project for which the interviews were completed late in 2013 with the preservation of its records at the Glenbow Archives and Museum in Calgary being finalized in 2014. A number of the interviewees were geologists who brought their own unique perspectives to the records of this vibrant industry sector.

During 2014, the PHS co-operated with the Government of Alberta and other stakeholders in the planning and execution of the celebrations for the 100<sup>th</sup> anniversary of the discovery of the Turner Valley Oil and Gas Field near Calgary. The commemoration took place on the actual discovery date of May 14 and attracted almost 1000 people including large contingent of school children who were bussed to the partially restored gas processing facility in the town of Turner Valley. The PHS co-sponsored, along with the Canadian Society of Petroleum Geologists (CSPG), a geological and historical field trip to Turner Valley on May 11. The Society also partially funded an expanded press run of a special commemorative magazine about the history of the Turner Valley Field and associated social aspects produced by the Alberta Historical Society. I gave a lecture about Turner Valley, along with a local author, to a CSPG luncheon gathering of approximately 600 people.

During 2014, I was elected as the Canada Region representative on the Advisory Council for the American Association of Petroleum Geologists (AAPG). One of the responsibilities of this body is the selection of winners for a range of major awards. Making appropriate recommendations for some of these honours requires knowledge of their historical context and of the candidates.

I am the History and Archives Chair of the CSPG. As well, I am the Chair of the CSPG Stanley Slipper Gold Medal Committee that selects the recipient for this award that honours an individual who has made outstanding contributions to petroleum exploration in Canada, be that through their own accomplishments, by leading exploration teams or through mentorship.

I am a member of the History of Petroleum Geology Division of the AAPG whose meeting I attended in Houston in April 2014 at which, amongst other things, plans for the 100<sup>th</sup> Anniversary of the AAPG in 2017 were discussed.

I am also a member of the History and Philosophy of Geology Division of the Geological Society of America.

In my spare time I have given presentations to several groups concerning the evolution of Shell in Canada. Further research on this topic is pending.

Finally, during 2014 I was involved in providing program advice to the Technical Liaison Committees for Geoscience British Columbia and for the Yukon Geological Survey. Both of these roles require knowledge of the history of regional geological exploration in these Canadian jurisdictions.

Darren H. Tanke, Canadian editor for INHIGEO

## CHILE

Symposia on the History of Geology in Chile:

The Geological Society of Chile organized the Vth Symposium on the History of Geology in Chile, on September 26 2014. The venue was the Ignacio Domeyko room at the Geology Department, Universidad de Chile. The 60 attendants learned about the development of the geological institutions in Chile, as well as the lives and work of pioneers in the Earth Sciences in Chile, including, for example, the Japanese expeditions to Patagonia in the early 1960's. The Abstracts of the presentations can be obtained at [www.sociedadgeologica.cl](http://www.sociedadgeologica.cl). This website also provides information about the VI Symposium, which will be held at La Serena, in October 2015, as part of the Chilean Geological Congress.

Francisco Hervé and Reynaldo Charrier, Santiago, Chile

## COSTA RICA

Gerardo J. Soto participated (August 22) in the launch of the book *Cartografía geológica de la Península de Nicoya, Costa Rica* [Geological cartography of Nicoya Peninsula, Costa Rica], by geologists Percy Denyer, Teresita Aguilar and Walter Montero. He delivered a speech, which in part dealt with the history of research in that part of Costa Rica, mainly related to ophiolitic research. Guillermo Alvarado was also gave a talk at the launch.

Giovanni Peraldo published a book (*Crónicas telúricas de América Central*) [Telluric chronicles of Central America], written in a colloquial style for the general public, in which he relates a series of stories about tectonic and volcanic events that occurred during the colonial history of Central America.

Asdrúbal Vargas published a paper about the many different contributions of the German naturalist Alexander von Frantzius on geomorphology, geology and volcanology during his stay in Costa Rica in the mid-19<sup>th</sup> century.

At the end of the year, INHIGEO member Guillermo E. Alvarado was elected as a new member of the Academy of Sciences of Costa Rica.

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Gerardo J. Soto, San José, Costa Rica

### CZECH REPUBLIC

The main activity of Czech INHIGEO members (A. Čejchanová, J. Kozák and K. Pošmourný) included the publication of geological maps, from 1741 to 1840, of Central Europe. In this project the Czech members cooperated with Dr. Zdeněk Kukal (Czech Geological Survey) and with Kennard Bork, Piotr Krzyweic, Stanislaw Wolkowicz (Polish members of INHIGEO) and T. Cernajsek (INHIGEO Austria), who offered assistance with professional advice. The aim of this project is to prepare an atlas of the earliest geological maps of Central Europe. The manuscript title, Early Geological Maps of Europe: Central Europe 1750 to 1840 is now being completed to be submitted to Springer Publishing by March 31, 2015.

Jan Kozak contributed to other books in the Springer Publishing House during 2014, the first, as editor and co-author with B. Guterch (Inst. of Geophysics, Warszawa, Poland). Together they prepared the monograph Historical Seismicity of Southern Poland. The manuscript has passed the final stages of proof reading and will be published during 2015.

Jan Kozák also participated as the co-author for a book entitled History of Collapses (Academia, Prague 2015), which was edited by J. Barta, and M. Kovář (both Philosophy Faculty of Charles University, Prague). The chapter by J. Kozák in this book deals with the impact of natural disasters of the past on the advancement and wane of present Euro-Atlantic civilisations. The book is expected to be published by Springer in the summer of 2015. Karel Pošmourný collaborated on the project "Regional Sustainable Energy Policy" (RESTEP), Geothermal energy. Revision of the geothermal data on the territory of the Czech Republic for the allocation of suitable geothermal areas at depth of around 5 km. The project was completed in 2014. <http://www.restep.cz/en/home-en>

The goal of the project RESTEP is to make, introduce in practice, test, evaluate and distribute, within the framework of the public administration and the business sector, a new comprehensive method for urban management and regional planning in the field of proposing and assessing energy projects. The main aim is the efficient utilisation of natural resources and real environmental protection, so that the number of wrongly assessed projects of renewable energy sources is reduced by 50%.

Karel Pošmourný also prepared an article on the history of the research of the Příbram ore area for the regional serial Almanach Podbrdsko. He contributed to a book on building material used in the construction of churches and monasteries in Bohemia and Moravia. In collaboration with the Academy of Sciences of the Czech Republic he took part in composition of the chapter on the age of ore deposits in relation to the tectonic structures of the Bohemian Massif.

The study of geological features of the protected area "Broumovsko", in northeastern Bohemia, was another of K. Pošmourný's activities. This project will be realized in the edition

series Protected Landscape Area Czech Republic, in the publishing department of the Czech Geological Survey.

A. Čejchanová took part mainly in projects within the Czech Geological Survey. She participated in a project devoted to the significant Czech scientist, geologist, explorer, mountaineer and speleologist Doc. Dr. Josef Sekyra, PhD (24.2.1928 – 10.11.2008). Sekyra was the first Czech citizen who participated in the American Deep Freeze expedition to the South Pole, in 1969. The important task of this project is to process, preserve and access rare archival documentation (reports, manuscripts, maps) and documentary samples of foreign journeys of this important Czech scientist geological work and make it available to the public.

An interesting bilateral cooperation with the Library and Archives of GBA (Geologische Bundesanstalt) focused on a unique set of manuscript geological maps. These maps are drawn on the topographic base of cadastral maps, at a scale of 1:28 000. The 2nd Military Survey in the Austria Monarchy took place in the period 1836 -1852, and the results were later drawn on these map bases. The project's aim is to carry out research into the circumstances that led to the creation of this unique set of geological maps. It is also focused on a reconstruction of digitized maps, and the creation of a digital geological layer in a unified coordinate system, which will be available online with a specialized application on the websites of both institutes.

## FRANCE

As in every year, three meetings were organized in 2014 by the French Committee on the History of Geology, at which seven talks were delivered:

Dreyer, F. La controverse sur la limite Crétacé-Tertiaire au Danemark (1825-1835).

Masclé, J. 1975-1995, vingt ans de recherches sur les marges continentales « transformantes ».

Nijland, T. & Touret, J. Un naturaliste aux multiples facettes : Jean Lavalle (1820-1880) et la notion de pression de cristallisation.

Poisson, A. Les voyages d'Ernest Chaput en Turquie centrale : de Kayseri à Sivas, Malatya et vers la frontière syrienne.

Valet, J.-P. L'essor et l'apport du paléomagnétisme dans les Géosciences.

Mergoïl, J. & J. Regards croisés sur le Puy de Dôme au milieu du XVIII<sup>e</sup> siècle: Garmages, Guettard et les autres...

Gaudant, J. Ami Boué (1794-1881), fondateur de la Société géologique de France ?

Additionally, an interesting historical paper was published in 2014 by Godard, G., Chabou, C.M., Adjerid, A. & Bendaoud, A. First African diamonds discovered in Algeria by the ancient Arabo-Berbers: History and insight into the source rocks. *Comptes Rendus Geoscience*, 346, 7-8, 179-189.

## GERMANY

### *Meetings and events:*

The Museum of Mineralogy and Geology of the Senckenberg Natural History Collections Dresden has supported an exhibition in Merseburg, Saxony-Anhalt with historic mineral specimens. INHIGEO-member Klaus Thalheim has published two items in the exhibition catalogue.

From 16 to 18 October, 2014, the 3<sup>rd</sup> International Hanns Bruno Geinitz Symposium took place in Dresden on the occasion of the 200<sup>th</sup> birthday of Geinitz. A volume with articles, abstracts and the field trip guide was published.

From October 15 2014 to April 15 2015 an exhibition “Talking with the Earth”, a collaboration of the Saxon State and University Library Dresden (SLUB), the Museum of Mineralogy and Geology (MMG) of the Senckenberg Natural History Collections Dresden (SNSD) and the Geological Collections of the Technical University (TU) Dresden is shown at the SLUB Book Museum. The exhibition deals with museum catalogues, palaeobotany, paleozoology, geological mapping, mineralogy, crystallography, petrography and mining history. Hanns Bruno Geinitz (1814-1900) with his merits in geology is also addressed. Books with illustrations and corresponding fossils, minerals and rocks as well as geological maps are shown. The website of the SLUB has an online catalogue available: <http://www.slub-dresden.de/ueber-uns/buchmuseum/ausstellungen-fuehrungen/archiv-der-ausstellungen/ausstellungen-2014/gespraeche-mit-der-erde-geowissenschaften-in-sachsen/>

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*Lectures:*

Cornelia Lüdecke presented two lectures in the history of earth sciences at the University of Hamburg on “Climate, weather and prediction - milestones in the history of meteorology” (winter semester 2013/14) and “Icy Research - the Struggle for Knowledge in the Polar Regions” (summer semester 2014). She also gave talks at various conferences in Munich, at the *Deutsches Historisches Institut* in Moscow, the Sorbonne in Paris, in Auckland (New Zealand) as well as more popular oriented presentations in Berlin, Hamburg, Göttingen and Munich.

Sponsored by the EU adult education programme *Grundtvig*, Martina Kölbl-Ebert presented two lecture series on the history of palaeontology within the Geovillages-project’s winter academy at the Bishop’s Seminary in Eichstätt. The lectures in winter 2013/14 were about “Fossils and World View throughout the Ages” and the lectures in winter 2014/15 about “Ladies with Hammers: Women in the History of Geology”.

A new issue (no 24) of the journal *Geohistorische Blätter* has been edited by Ulrich Wutzke (Berlin).

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

Martina Kölbl-Ebert, Eichstätt Germany

**Peter Schimkat** – prepared a poster on *Looking at Rocks like Abraham Gottlob Werner*, for the History of Science Society Annual Meeting in Chicago (November 2014). Here, he argued that the successful diffusion of Werner's all-encompassing system of Mineralogy was solely based on its instant applicability, and owed just about nothing (either positive or negative) to the contents of its theoretical underpinnings.

## HUNGARY

Presentations to the History of Science Section of the Hungarian Geological Society:

*Commemorations of outstanding scholars and publications:*

Vitális, Gy. – The first volume of the work *Description of the natural conditions of the Empire of Hungary* by János Hunfalvi (1820-1888) appeared 150 years ago.

Papp, P. – On a special edition of the map *Hungaria* by W.J. Blaeu (1571-1638).

Viczián, I. – Sámuel Nagy (1773-1810), Hungarian secretary of the Jena Mineralogical Society.

Magyar, G. – Geological exploration of Ferenc Nopcsa (1877-1933) in Albania – based on personal experience on the site.

Life and work of György Bárdossy (1925-2013), expert of bauxite exploration, mineralogy and geochemistry, one of the most internationally renowned Hungarian geologists in the 20<sup>th</sup> century – one-day memorial session on the first anniversary of his death.

*Historical account of important geological events and exploration results:*



Zsadányi, É. – 250<sup>th</sup> anniversary of the great earthquake at Komárom in June 28, 1763.  
 Papp, G. – 200<sup>th</sup> anniversary of the fall of the Lénártó (Lenartov, N-Slovakia) meteorite.

A memorial session was held in the Hungarian Geological and Geophysical Institute on the 100<sup>th</sup> anniversary of the opening of *Well Egbell* (Gbely, W-Slovakia) in 1914, the first oil-producing well of the Carpathian Basin. Contributions were given by Papp, P., Csath, B. and Varga, P.

Breznysnyánszky, K. – History of the geological mapping of the Royal Hungarian Geological Institute in the Balkans in 1916-1918, during the I. World War.

Vitális, Gy. – compiled a catalogue of Hungarian geologists active in military service during World War I, including a description of their activity.

#### *Philosophical background of history of geology*

Békés, V., Both, M. and Rózsa, P. discussed the philosophical background of the neptunism-plutonism controversy in the 18<sup>th</sup> century and its effect on the exploration of geology of Carpathian Basin.

#### *Publications:*

Dobos, I. 2014. Miháltz Istvánra emlékezünk halála 50. évfordulóján. The memory of professor István Miháltz, on the 50<sup>th</sup> anniversary of his death. *Hidrológiai Tájékoztató (Hydrological Newsletter)*, 5-6. (in Hungarian)

Dobos, I. 2014. A sóshartyáni JODAQUA gyógyvíz kutatástörténete. History of exploration of the medicinal water JODAQUA at Sóshartyán (N-Hungary). *Orvostörténeti Közlemények (History of Medicine Bulletin)*, Budapest, 226-229. (1-4), 201-213 (in Hungarian).

Viczián, I. 2014. Sámuel Nagy, an 18<sup>th</sup> century mineralogist from Debrecen (abstract). *Hungarian Technical Scientific Society of Transylvania (EMT), 7<sup>th</sup> Conference on the History of Science and Technology, Szilágysomlyó (Șimleu Silvaniei, Romania)*, 182-183 (in Hungarian).

Viczián, I. 2014. „Mineral theologia” – ásványkutató teológusok és hívő mineralógusok a 18. században. „Mineral theologia” – mineralogist theologians and believer mineralogists in the 18<sup>th</sup> century. – *Sola Scriptura*, 2. (51.) 16-28 (in Hungarian).

Viczián, I. 2014. Sámuel Nagy, an 18<sup>th</sup> century mineralogist from Debrecen. HUNGEO Conference, Debrecen, 205-209 (in Hungarian).

Theresa Póka and István Viczián, Budapest, Hungary

## ITALY

The activities of the Italian members included publications, participation at international symposia and national meetings, involvement in research projects, organization of exhibitions, as well as teaching in the field of the history of the Earth sciences.

**Libera P. Arena** (University of Insubria, Varese) – worked with a research fellowship (6 months) at the Center for the History of the Mountains, Material Culture and Earth Sciences of the University of Insubria (Varese), on the survey of several sources for historical geotourism in the Italian Alps. Together with Ezio Vaccari, she also presented a poster at the 39<sup>th</sup> INHIGEO Symposium (Asilomar Conference Grounds, Pacific Grove, California, USA, 6-10 July 2014):

*When History of Geology meets Tourism: a project on the historical routes of the geoscience in the Alps.*

**Andrea Candela** (University of Insubria, Varese) – has been awarded the Moran Award for the History of Science Research of the Australian Academy of Science. The award will be used to carry out a post-doctoral research about the history of uranium in the 20th century at the Basser Library in Canberra. Andrea Candela has also received the Grant-in-Aid of the American Institute of Physics (Center for History of Physics). He will spend two months (June–August 2015) at the Niels Bohr Library & Archives, where he will carry out a research on “nuclear energy, mining and technological transfer between Italy and the United States in the Atomic Age”. In 2014 Andrea Candela was elected member of the Scientific Committee of *Scienze e Ricerche* (an Italian review of Science Communication edited by Associazione Italiana del Libro with the support of the National Research Council – CNR). He also was a member of the Committee of referees (section of history of Earth Sciences, risk communication, and environmental education) of the *Bulletin of Earthquake Engineering*. In September 2014, he was speaker at the workshop *The Future of the Italian Geosciences: Geosciences in the school education* organized by *Italian Geological Society*. Moreover in 2014 his book entitled *Dal sogno degli alchimisti agli incubi di Frankenstein. La scienza e il suo immaginario nei mass media* [*From the dream of the alchemists to the nightmares of Frankenstein: Science and its imagery in the media*, second edition] got a nomination as the best Italian popular science book of the year for the *National Prize of Popular Science* (sponsored by CNR), and it was selected among the finalist books.

**Luca Ciancio** (University of Verona) – continued his research on the 18th century history of geology in the Venetian region and on the relationship between natural sciences and antiquarian studies. He also collected a series of papers on this topic in a new book.

**Pietro Corsi** (University of Oxford) – continued his research on 19th century Italian geology, with particular attention to the history of geological institutions, geological archives and correspondences, as well as national projects, such as the Italian Geological Survey and the geological map of Italy.

**Francesco Gerali** – in 2014 continued his research at the Geography Institute of the National Autonomous University of Mexico (supervisor, Luz Fernanda Azuela) with a postdoctoral fellowship granted by the Mexican Secretariat of Foreign Affairs. He investigated the development and the application of petroleum geology in the Mexican oil regions. Between 1900 and the late 1910s Mexico was the scenario of important geological achievements: the siting of exploratory wells was increasingly less entrusted to the observation of oil seepages in favour of the interpretation of surface and low deep subsurface geology. The advancement of the knowledge on oil geology around the world was concretizing the idea that every oil producer country bears its peculiar oil geology; at the same time, comparative analyses on the growing literature on petroleum supported the belief about a set of geological structures (e.g. folds, anticlines and salt domes) and systems (e.g. Palaeozoic and Mesozoic) common to almost all the oilfields known. Such geological studies in Mexico were developed mainly by the US and Mexican geologists hired by foreign companies. Among this emerging category of ‘corporate scientists’ the most prominent were Everette Lee DeGolyer and Ezequiel Ordóñez Aguilar, which recognized the significance of volcanic rocks and subsoil temperatures in the localization of oil reservoirs.

Francesco was invited by the Pemex Historical Archive to contribute to the Project *Evolución de la industria petrolera en México*. He wrote short essays on the history of oil in Mexico for the column *Pemex Hoy* published in the web intranet of *Petroleros Mexicanos* (the former Mexico’ state exclusive contractor).

Between February and August Francesco offered oral presentations on the history of oil in the following venues:

- 4th Historiadores de la Ciencias y la Humanidades Meeting, Morelia, Mexico, March 5 - 7. *La exploración petrolera en la faja de oro: el trabajo geológico de Everette Lee DeGolyer*. With Paolo Riguzzi.
- May 20th, Colegio de México, México City. *Los veneros del emperador. Maximiliano y la primera política del petróleo en México, 1864 – 1866*, at the colloquium *¿Monarquía o República? Tiempo de definiciones. Maximiliano en México* organized by the School of Business History of the Colegio de México. With Paolo Riguzzi, invited.
- 39th INHIGEO Meeting, Pacific Grove, USA, July 6 - 10. *The art of prospecting for oil: Everette Lee DeGolyer in Mexico, 1909 – 1919*. During the Business Meeting he reported about the progress of the ‘INHIGEO Virtual Bibliography’ project; the slow, but encouraging, stream of contributes submitted by the members who have joined the initiative; the methodology in use to implement the project.
- 41st ICOHTEC Meeting, Brasov, Romania, July 29 - August 2. *From the Western Front to Texas: early development of seismic exploration for oil (1914 – 1926)*. In the same venue he was chair and commentator for the session *S1D Technology of research: digitalization, dissemination, and popularization of technical knowledge*.

In October Francesco received a travel grant from the Chemical Heritage Foundation of Philadelphia to develop the project ‘Succinum resolutum, hertzerde, and petroline: shaping the idea of petroleum between 1600 and 1800’, at the Neville rare book collection of the Othmer Library for the history of chemistry. In early November Francesco was admitted to the 2015 Commonwealth Endeavour Fellowship Program sponsored by the Australian Department of Education. He presented the research proposal ‘A preliminary study on the inception of the modern Australian oil industry’ through the University of Western Australia, Perth. In December Francesco concluded his professional relation with the National Autonomous University in Mexico after three years and half of service. He has no plans to come back in Mexico, but he will carry on his research and writing on the history of the Mexican Oil industry.

Note: the institutional email address [f.gerali@igg.unam.mx](mailto:f.gerali@igg.unam.mx) has been unexpectedly shut down without notice in early 2015. Francesco offers his apologizes to the colleagues that tried to reach him on that address.

**Francesco Luzzini** – continued his teaching and mentoring activity at the University of Milan, where his appointment as Adjunct Professor of History of Biology was renewed. He also continued collaborating with the National Edition of Antonio Vallisneri’s Works ([www.vallisneri.it](http://www.vallisneri.it)) as scientific manager of the electronic inventory of Vallisneri’s correspondence, and wrote several articles as column editor for «Acque Sotterranee», Italian Journal of Groundwater. In the Spring of 2014, he was awarded a second Resident Fellowship at the Linda Hall Library in Kansas City (MO - USA), where he resided from May 1 to July 25.

His new research project, *Through dark and mysterious paths. Early modern science and the search for the origin of springs from the 16<sup>th</sup> to the 18<sup>th</sup> century*, examined the lively and fruitful debate which emerged from the studies on the origin of freshwater from the mid-sixteenth century to the first decades of the eighteenth. By focusing on the several interpretations advanced by early modern authors in their efforts to deal with this baffling problem, Francesco performed an analysis of the many different experimental, philosophical, social, and religious values that influenced the path of scientific inquiry towards the comprehension of the hydrologic cycle.

In July 2014, the results of this research were presented at the 39th INHIGEO Symposium in Asilomar (CA - USA), and in a lecture at the Linda Hall Library (<https://vimeo.com/102054014>).

An essay on this topic is being published in the forthcoming special issue of the journal *Earth Sciences History*, which will be released by the autumn of 2015.

In November, Francesco was awarded a two-year position as Edition Open Sources Postdoctoral Fellow at the University of Oklahoma Libraries, where he resides since January 2015. He is currently working towards a critical edition in the Edition Open Sources platform (<http://www.edition-open-sources.org/>) of Antonio Vallisneri's *Primi itineris per montes Specimen physico-medicum*: a 60 folios, unpublished Latin manuscript containing a wide array of geological, biological, technical, and anthropological data. Vallisneri (1661-1730) wrote this document in 1705, after a naturalistic journey he made in the Northern Apennines in the Summer of 1704. By accomplishing and publishing a critical edition of the *Primi itineris Specimen* in the Edition Open Sources series, Francesco's project aims to explore and define new insights and methodologies related to the digital humanities, with particular respect to the critical edition of scientific texts.

#### Meetings and Conferences:

Presentation of the book *Il miracolo inutile. Antonio Vallisneri e le scienze della Terra in Europa tra XVII e XVIII secolo*, Florence, Olschki, 2013 (Conference, Public Library, Bollate, Italy, February 10);

39th INHIGEO Symposium (Asilomar Conference Grounds, Pacific Grove, CA, USA, July 6 to 10)  
Paper: *Through dark and mysterious paths. Early modern science and the search for the origin of springs from the 16<sup>th</sup> to the 18<sup>th</sup> century*;

*Through dark and mysterious paths. Early modern science and the search for the origin of springs from the 16th to the 18th century* (Conference, Linda Hall Library, Kansas City, MO, USA, July 22);

Presentation of the book *Il miracolo inutile. Antonio Vallisneri e le scienze della Terra in Europa tra XVII e XVIII secolo*, Florence, Olschki, 2013 (Conference, Musei Civici di Reggio Emilia, Reggio Emilia, Italy, November 23)

**Stefano Marabini** (Faenza) – continued to study the history of seismic activities in the Romagna region (central Italy), the history of the "vena del gesso" in the northern Apennines and to collaborate with the Museum Capellini in Bologna.

**Claudia Principe** (Istituto di Geoscienze e Georisorse – CNR, National Research Council Pisa) continued her researches in the history of volcanology and geo-archaeology.

**Ezio Vaccari** (University of Insubria, Varese) – continued his research on the history of the geological sciences in 18th-19th century. In March he took part to a conference on "The Value of Water between Tradition and Communication" at the University Cadi Ayyad of Marrakech (Morocco) with a paper on *The role of water in the making of mountains: historical sources in the Mediterranean region*. In May he was invited to the symposium on Gianbattista Brocchi and his book *Conchiologia Fossile Subappennina* (1814) in Bassano del Grappa (Vicenza, Italy) and presented a paper on *History of geology and the structure of mountains in G.B. Brocchi*. In July Vaccari attended the 39th INHIGEO Symposium at Asilomar Conference Grounds (Pacific Grove, California, USA) where he presented (with Libera P. Arena) a poster and a research project: *When History of Geology meets Tourism: a project on the historical routes of the geoscience in the Alps*. He also continued to teach history of geological sciences within some of his courses of history of sciences at the University of Insubria in Varese and Como.

**Gian Battista Vai** (University of Bologna) – continued his research activity in the history of geology and paleontology, as director of the geological museum "Giovanni Capellini" in Bologna, organizing exhibitions and popular conferences, also on history of geology. He published a paper on

the Vajont landslide and flood, an historical reappraisal, after half a century, of one of the largest and disastrous landslides ever occurred on Earth.

*Publications:*

- Candela, A., and Pasquaré Mariotto, F., *Italian news coverage of radiation in the early decades of the twentieth century: A qualitative and quantitative analysis*, "Public Understanding of Science", Sep. 3, 2014: 1-16
- Candela A., *Biblical Deluge and Creationism in eighteenth-century Italy: an overview of the geological theory of Ermenegildo Pini (1739-1825)*, "INHIGEO Annual Record", 46, May 2014: 67-72.
- Candela, A., *Parona, Carlo Fabrizio (1855-1939)*. In: *Dizionario biografico degli Italiani*, Istituto della Enciclopedia Italiana, vol. 81, Roma, Treccani, 2014 [http://www.treccani.it/enciclopedia/carlo-fabrizio-parona\\_\(Dizionario-Biografico\)/](http://www.treccani.it/enciclopedia/carlo-fabrizio-parona_(Dizionario-Biografico)/)
- Candela, A., *Pantanelli, Dante (1844-1913)*. In: *Dizionario biografico degli Italiani*, Istituto della Enciclopedia Italiana, vol. 81, Roma, Treccani, 2014, [http://www.treccani.it/enciclopedia/dante-pantanelli\\_\(Dizionario-Biografico\)/](http://www.treccani.it/enciclopedia/dante-pantanelli_(Dizionario-Biografico)/)
- Ciancio, L., *Esploratori del tempo profondo. Scienza, storia e società nella cultura veneta dell'età moderna*, Verona, QuiEdit, 2014: 281 p.
- Gerali, F., Review of Leslie Tomory, *Progressive Enlightenment. The Origin of the Gaslight Industry, 1870 – 1820*. Cambridge: The MIT Press, 2012. 348 p., "ICON, The Journal of the International Committee on the History of Technology", 20, n°1, 2014: 153-155;
- Gerali, F., *Science and life of a geologist through his papers. The personal archive of Giovanni Capellini in La Spezia*. "Earth Science History", 33, 2014: 122 - 149;
- Gerali, F., *INHIGEO Virtual Bibliography*. "INHIGEO Annual Record", 46, 2014: 16-17. URL: <http://www.inhigeo.org/newsletters>;
- Gerali, F., *ICOHTEC's New Book Corner*. "ICOHTEC Newsletter", 112/113, 2014: 12-13. URL: <http://www.icohtec.org/publications/newsletter/2014-09-icohtec-newsletter.pdf>;
- Gerali, F., Riguzzi, P. [sent on 03/2014, accepted] *Entender la naturaleza para crear una industria. El petróleo en la exploración de John McLeod Murphy en el istmo de Tehuantepec en 1865*. Asclepio, Spain;
- Riguzzi, P., Gerali, F. [sent on 10/2014, accepted] *Los veneros del emperador. Impulso petrolero global, intereses y política del petróleo en México durante el Segundo Imperio, 1863-1867*. Historia Mexicana, Mexico;
- Luzzini, F., *L'orrido abisso. O della natura (s)gradevole*, "Bootleg", n. 9, 2014: 19-24.
- Luzzini, F., *Un dibattito lungo secoli. La galleria Adige-Garda*, "Acque Sotterranee", Italian Journal of Groundwater, n. 1, March 2014: 65-66.
- Luzzini, F., *L'autarchia delle acque. Mario Bettini e il moto perpetuo*, «Acque Sotterranee», Italian Journal of Groundwater, n. 2, June 2014: 67-68.
- Luzzini, F., *I mirabili discorsi di Monsieur Palissy*, «Acque Sotterranee», Italian Journal of Groundwater, n. 3, September 2014: 83-84.
- Luzzini, F., *An uncomfortable, yet wonderful journey. Antonio Vallisneri and his exploration of the Northern Apennines*, in *Nel nome di Lazzaro. Saggi di storia della scienza e delle istituzioni scientifiche tra il XVII e il XVIII secolo*, edited by Centro Studi Lazzaro Spallanzani, Bologna, Edizioni Pendragon, 2014: 207-220.
- Luzzini, F., *I fanghi prodigiosi. Gli studi naturalistici sulle salse emiliane*, «Acque Sotterranee», Italian Journal of Groundwater, n. 4, December 2014: 69-70.
- Vaccari, E., *La Geologia*. In: U. Eco, ed., *Il Settecento. Il secolo delle rivoluzioni*. vol. 1, *Storia, Filosofia, Scienze e Tecniche*, Milano, EncycloMedia Publishers, 2014: 645-652.
- Vai, G.B., *Vajont, 1963 cinquanta anni dopo: cronaca, etica e scienza*. In: E. Guidoboni & G. Valensise (eds.), *L'Italia dei disastri*, Bologna, Bononia University Press - Centro Eedis, 2013: 43–72. [distributed in 2014]

## JAPAN

As usual, JAHIGEO (the Japanese Association for the History of Geological Sciences), held three meetings in 2014. The first took place at the Hokutopia, Tokyo, on 28 June; the second at Kagoshima University, Kagoshima, on 14 September, and the third, serving as the annual meeting, at Hokutopia on 23 December.

The following talks were presented at the first meeting: “Sakuhei Fujiwhara extended his theory of vortex: Typhoons are generated with a decrease in entropy, like biological systems” by Nobumitsu Aihara and “The Geological Background of Miyazawa Kenji’s world--Physical Geography” by Hirokazu Kato. The second meeting formed part of the annual meeting of the Geological Society of Japan (GSJ) and two lectures were given: “Historical materials on the 1914 Sakurajima eruption” by Akira Iwamatsu and “Ferdinand Freiherr von Richthofen (1833–1905): Travels in Kagoshima in early Meiji Era” by Naomi Kamimura. At the third meeting, Kae Takarabe gave a talk titled: “The Smithsonian project of meteorological observations and its relationship to natural historical study” and Shigeru Onoda presented: “Koichi Hirota’s (1896–1972) life and work: From railway construction to power engineering”.

The GSJ held an international symposium in collaboration with the Geological Society of London on tsunami hazards and risks, using the geological record. While GSJ’s normal session on the history of geology on 14 September provided two oral presentations. They were Alan Lord’s “The Geological Society of London – past, present and future” and Michiko Yajima’s “Edmund Naumann (1854–1927) and Mount Fuji”.

Four meetings of the history of geosciences (*Chigaku-shi Kenkyu-kai*), conducted by members of the association, were held at the Waseda Service Garden, Tokyo, on 25 January, 29 March, 13 July, and 11 October. At the January meeting, Nobumichi Ariga gave a lecture on “The beginnings of numerical meteorology: Trends in historical studies and themes for further research”, with commentaries by Takashi Nitta, ex-president of the Japan Meteorological Agency (JMA), and Ken-ichi Kuma, Counsellor of the JMA. It was a stimulating meeting. Toshiaki Osada gave a lecture on “The status of the Pacific coast of the Tohoku district in the early Meiji Era: What T. W. Blakiston looked at”, in March; Koichi Moriya on “Geologists in the history of archaeology in Japan”, in July, and Satoru Sugaya, “Lord Kelvin standing before Darwin”, in October. The last one was the third part of Sugaya’s lectures on the history of human consciousness of time.

At the 61st annual meeting of the History of Science Society of Japan (HSSJ), held at Rakuno Gakuen University, Ebetsu, Hokkido, 24–25 May, nine papers were read on the history of earth and planetary sciences:

Kae Takarabe, “The Smithsonian Meteorological System introduced in Japan in the Early Meiji Era (2)”,

Michiko Yajima, “History of researching geohistory in Japan”,

Boumsoung Kim, “A Note on Memories of Disasters and Sciences”,

Fumihiko Tochinai, “The importance of ‘Seitaro Tsuboi Material’ for the History of Geology in Japan”,

Tomoko Fukukawa, “The geography books to which K. Kume referred for editing *Bei-o kairan jikki* [A General Survey of the Geography and Climate of Europe] (Part VII)”,

Shigeyuki Aoki, “Shinjo Sinzo seen from the earth and planetary science”,

Toshihiro Yamada, “When scientists meet ‘history’: The cases of Shinjo Shinzo and Nakamura Shintaro”,

Lü Peng, “A Study on Bhaskara I’s Armillary Sphere”,

Kazuyuki Ito, “Galileo’s Figures of Moon in Sidereus Nucus”.

On 25 May, the Society (organizer: Professor Hirotaka Yamada) organized a mini-symposium entitled “Heritages of mines and their future”. Hirotaka Yoshioka gave a lecture on “Historical review for the activities of the NPO Sorachi Mine Memorial Project”.

In the meantime, on 29 April, at the Pacifico Yokohama, the Japan Geoscience Union (JpGU) provided sessions for geoscience studies: historical, philosophical and STS studies, in which twelve papers were read and two posters presented. The first five papers on the history of geoscience were:

Michiko Yajima, “Edmund Naumann (1854–1927) and Mount Fuji”;

Fumihiko Tochinai, “The Research on Seitaro Tsuboi Materials: Interpreting his Correspondence”;

Jun’ichi Chiba, “The Examples of the “puzzle-solving” in the Plate Tectonics Theory”;

Fuki Ueno, “A history of mining, mineralogy and geology in the German literature”;

Yoichi Shibata, “Wang Mo's role in the history of Japanese and Chinese geography”.

Four papers focused philosophical aspects of geoscience:

Shigeyuki Aoki, “Theory Change in Science– Case Study on the Solar System Formation”;

Kooiti Masuda, “A rudimentary consideration on anthropogenic climate change and countermeasures to it, “geoengineering” in particular”;

Sho Morishita, “Partial Commensurability: Translations between Multiple Observational Systems in Solid-Earth Physics”;

Ken T. Murata, “A Web-application of Dynamic Time-Scale Previewer and its Application for Historical Geoscience Studies”

The last three on STS topics:

Toshihiro Yamada, “Science against Natural Hazard 1960–1993: Has the Natural Disaster Science Overcome the Disasters?”;

Mamoru Hayashi, “The reasons why we couldn't avoid the Okawa Elementary School disaster”;

Mutsuko Inui, “Characteristics of the modern stone industry and the regional context in each granite producing area in Japan”.

Two posters were displayed:

Mutsuko Inui, “History of marble mining in Mine, Yamaguchi Prefecture, Japan, and its use in historic buildings”;

Mineo Kumazawa and Fuki Ueno, “Review of self-experiments on the cooperative study between EPS and philosophy of science since 2009”.

Since 2008 we have managed the sessions and cultivated the domain of geoscience studies in the JpGU. Some of the recent contributions presented at these sessions were published in the *Nagoya Journal of Philosophy*, No. 11 (2014), in a special issue on the history and philosophy of earth and planetary science edited by K. Todayama (chief) and S. Yoshida (guest).

In 2014, the JAHIGEO issued its Bulletin, Numbers 42 and 43 (in Japanese), and the JAHIGEO Newsletter, Number 16 (in English). The JAHIGEO Newsletter published an article by Tomomi Nakagawa, “Lafcadio Hearn and Ichizo Hattori–Unacknowledged relationship found in the search of Lafcadio Hearn Library”.

Books the following books were published by members in 2014:

Hirokazu Kato edited a book on ethnical stone nomenclature in Japan, *Ishi no zokusyō jiten* [Dictionary of commonly used names of stones], 2nd and enlarged ed. (Aichi Shuppan, Tokyo), 416 pp.

Toshihiro Yamada translated and published in Japanese D. Livingstone's, *Putting science in its place* (Hosei University Press, Tokyo) and *L. Principe's Scientific Revolution* (Maruzen, Tokyo) with co-translators Masanori Kaji and Satoru Sugaya respectively.

Sadly, we add here condolences for Professor David Oldroyd (1936–2014). The news of the death of David last November shocked us very much. A great star has fallen. JAHIGEO has been much obliged to David for editing our English Newsletter and for various other kinds of support to members. We would like to express our sincere mourning for his passing away.

Two of us (Yajima and Yamada) met David for the first time at the Lyell-Hutton bicentennial anniversary symposium held in London and Edinburgh in 1997. On the excursion, David sat next to me (Yajima) on the bus. He told me that he had a grandmother in Japan. All of JAHIGEO member believed at first that David had relatives in Japan. The truth was that as David had a pen pal in Japan he visited Japan many times, and the pen pal's grandmother was a great person. David had good impression of Japan.

On the excursion bus, Yajima told David that there were some historians of geosciences even in Japan and that they had issued small newsletters in Japanese. David took much interest in the activity of JAHIGEO and offered to help introducing Japanese historians' works into international society. Thus the publication of the JAHIGEO Newsletter in English was started. David has also kindly supported us through his knowledge of the history of Western science and by correcting and polishing our English expressions. With his help Yamada could accomplish his PhD dissertation on the history of 17th century theories of the earth, at the University of Tokyo in 2004. In the summer of 2011, the INHIGEO Symposium was held in Toyohashi, Japan. Four months before the meeting, the great earthquake off the Pacific coast of Tōhoku hit us, and the tsunami caused a nuclear accident and ultimately a level 7 meltdown at three reactors in the Fukushima Daiichi Nuclear Power Plant complex. JAHIGEO was very anxious about holding the meeting. At that very time David actively supported holding it. Thus the Japan Symposium was held with success.

Hirokazu Kato and Michiko Yajima, Tokyo; Toshihiro Yamada, Chiba

## LITHUANIA

A major academic monograph, *Academician Juozas Dalinkevičius* (Vilnius University Press, 856 pp., in Lithuanian), was compiled and edited by Academician Algimantas Grigelis and published in 2014. The book is devoted to the life and work of the eminent geologist, stratigrapher, historian of geosciences and technology engineer, Professor Juozas Dalinkevičius (1893-1980). [See p.107, for an English summary of the book] The book was launched at the Lithuanian Academy of Sciences, an event that attracted a large audience and stimulated much interest in the history of science.

At the beginning of the 2014, Professor Grigelis and Dr Leonora Živilė Gelumbauskaitė (Grigelis) took part in *The VII International and Interdisciplinary Conference in Homage to Alexander von Humboldt, Claudio Gay and Ignacio Domeyko*, held at Santiago University in Chile. Ignacy Domeyko (1802-1889), graduated from Vilnius University (1822) and the École des Mines in Paris (1837). He is a well-known Chilean mineralogist and educationist, and for a period of 18 years, from 1865, he was Rector of Santiago University. Both participants gave an extended presentation titled, *The last Journey to the Motherland of the Great Explorer of Andean Geology (Ultimo Viaje a la Patria del Gran Explorador de la Geologia Andina)*.



Ignacy Domeyko was born in the village of Velikaja Medzviadka, now part of the Novohrudak District, in Belarus. Over the centuries the Domeyko family owned dozens of manor houses in the area of the former Grand Duchy of Lithuania. Later relatives lived in some of these homes (now part of Poland) until end of the World War II (1944). As it was of great interest to locate the remains of these properties, A. Grigelis organised a tour to Belarus in September 2014, to discover aspects of the past of Ignacy Domeyko. Led by the historian of geology Dr Aleh Haidukevich (Minsk), a small group inspected many of the settlements associated with Ignacy Domeyko over a three-day period (Haradzieja-Polonecka-Medzviadka-Mir-Dalmatauszczyzna-Karcevo-Zaosje-Bortnyki-Kroshin-Sachyvki-Ozierany-Mouchady-Dziatlava-Zhybartauszczyzna-Novohrudak). Unfortunately, the family home, except for the ruins of Domeyko's daughter's house, in Zhybartauszczyzna, has not been preserved but disappeared during the latest time of violence.

The annual Conference *SCIENTIA ET HISTORIA-2014* held at Vilnius in March attracted about 35 papers on different issues relating to the history of philosophy, education, and the social, physical and natural sciences. A. Grigelis gave a presentation titled, *Academician Juozas Dalinkevičius – portrait of a personality*.

In 2014, A. Grigelis continued to edit *Baltica*, an International Journal on Earth Sciences (biannual; Web on Science rank, ISI Thomson Reuters). He published several papers in *The News of the Lithuanian Academy of Sciences* and in *The Journal of the Geological Society of Lithuania 'Horizons of Geology'*, in Vilnius.

Academician Algimantas Grigelis' election, in 2014, as an Honorary Senior Member of the INHIGEO, was reported in *The News of the Lithuanian Academy of Sciences* (2014, Nr. 3 (69), 22).

In 2014, Professor A. Grigelis took part in meetings of the Expert Group on Marine Sustainability of the Council of the Association of European Academies of Sciences (EASAC), held at Ispra, Milan and in Prague. He presented talks at the 9<sup>th</sup> Baltic Stratigraphic Conference held in Vilnius, at the International Conference *Baltic Amber across Time and Borders*, held in Riga, at the 3rd Congress of Lithuanian Geographers, held in Vilnius, and at the Colloquium *Sedimentation Processes in the Seas and Oceans*, held in Kaliningrad, Russia.

In November 2014 we heard the sad news of the death of Professor David Oldroyd, who had served as Secretary-General and as Vice-President of INHIGEO. A. Grigelis has highlighted David's memory in a long article published in *The Journal of the Geological Society of Lithuania* (March 2015). An English summary appears on p 39. My last meetings with this great man in the history of geology and in the history of science took place in Helsinki (2008), Budapest (2009), Cracow (2009) and Prague (2009). At that time he was compiling his famous work on the world's oldest geological pictures and maps, published in 2012 and 2013.

#### *Publications:*

*Baltica*: An International Journal on Geosciences / Nature Research Centre. Institute of Geology and Geography; scientific editor A. Grigelis. – Vilnius, 2014, Vol. 27, No. 1, 1–74 pp.; Vol. 27, No. 2, 75–160 pp. (*ISI Web on Science, IF 0.347*).

Grigelis, A. (Compiler and Editor) 2014. *Akademikas Juozas Dalinkevičius* (Academician Juozas Dalinkevičius) / Vilnius : Vilniaus universitetas : Vilniaus universiteto leidykla (Vilnius University Press), 2014. – 856 pp.: ill., maps. ISBN 978-609-459-329-1.

Gelumauskaitė, L. Ž., Grigelis, A. 2014. Tolimojoje Ignoto Domeikos Čilėje (The far-distant Chile of Ignacy Domeyko). *Geologijos akiračiai* (*Horizons of Geology*), , Nr. 2, 24–32.

Gelumauskaitė, L. Ž., Grigelis, A. 2014. Aleksandro fon Humbolto, Klaudijaus Gei ir Ignoto Domeikos mokslo kongresas Čilėje (Alexander von Humboldt, Claudio Gay and Ignacio Domeyko Scientific Congress in Chile). Lietuvos mokslų akademijos žinios (*The News of the Lithuanian Academy of Sciences*), Nr. 2 (68), 12–13.

Grigelis, A. Kelios mintys apie knygą “Akademikas Juozas Dalinkevičius” (Some thoughts on the

book 'Academician Juozas Dalinkevičius'). – *Geologijos akiračiai (Horizons of Geology)*, Nr. 2, 61–62.

- Grigelis, A. and Gelumbauskaitė, L. Z. 2014. (Academy of Sciences and *Ignotas Domeika* Society, Vilnius, Lithuania). Last Journey to the Motherland of the Great Explorer of Andean Geology [*Ultimo Viaje a la Patria del Gran Explorador de la Geologia Andina*; Esp., transl. by Eliana Domeyko]. Abstracts, *VII International and Interdisciplinary Conference in Homage to Alexander von Humboldt, Claudio Gay and Ignacio Domeyko*, Santiago, Chile, January 5-10, 2014.
- Grigelis, A. 2014. Ignacy Domeyko – a first explorer of Jurassic fossils in Central Andean Cordilleras, Chile. *Geologija*, Vol. 56, No. 1, p. 14-15. [The 9th Baltic Stratigraphic Conference, Vilnius, Lithuania, 8–9 September, 2014].
- Grigelis, A. 2014. Geological History and Origin of the Baltic Amber. Abstracts, International Conference *Baltic Amber across Time and Borders*. Riga, 19–20 September.
- Grigelis, A. 2014. Įžymiųjų geografų ir geologų sąsajos 1940–1980 m. (Relations of eminent geologists and geographers in 1940-1980). Abstracts, III *Lietuvos geografų kongresas*, Vilnius, 2014 m. rugsėjo 26–27 d. [Third Congress of Lithuanian geographers].

Algimantas Grigelis, Vilnius. Lithuania

## MEXICO

Our local INHIGEO group continued working together on a range of personal investigations on the history of geological sciences in Mexico.

We have continued our periodical meetings, in which Italian INHIGEO member, Francesco Gerali, actively participated until his departure from Mexico last December. Among our main activities, we held our December meeting in the Engineering School at the National Autonomous University, where Dante Morán gave an outstanding lecture on "Fifty Years of Isotopic Chemistry Studies in Mexico: Analytical Efforts and their Influence in Geological Evolution Research".

Several papers related to the History of Geological Sciences were read at Scientific Conferences:

- Azuela, L. F. "The Mexican Imperial Accademy of Sciences and Literature", II Coloquio "La geografía y las ciencias naturales en algunas ciudades y regiones mexicanas, 1787-1940", Facultad de Filosofía y Letras, UNAM, May 2014.
- Morelos, L. and Sabás, A. L. "The Bustamante Family: A Mexican Scientific Lineage in the 19<sup>th</sup> century", IV Congreso de Historiadores de las Ciencias y las Humanidades, Morelia, Michoacán, March 5-7, 2014.
- Morelos, L., "Mexican Geological Cartography (1888-1917): Diffusion and Practical Applications", V Conferencia Iberoamericana de Historia de la Cartografía, Universidad de los Andes, Bogotá, September 2014.
- Morelos, L., "Design, construction and foundations of the Geological Institute of Mexico at the turn of the 20th century", *First Conference on the History of Construction: Materials, Techniques and Labors*, Mexico City, October 2014.
- Morelos, L. The School of Mines of Guanajuato (1864-1866). XII Meeting of Research of Latin American Mining, Mexico City, November 2014.
- Morelos, Lucero. "The documentary collection and the Mining Education in Guanajuato during the Second Empire", Historical Archive of the University of Guanajuato, September 2014.
- Morelos, L. "The iron meteorites at Palace of Mines. History and Characteristics", Superior School of Jalisco, Guadalajara, November 2014.

- Torres-Montúfar, Ó. "Ten Years in the History of Geological Sciences in the United States", *39<sup>th</sup> INHIGEO Symposium*, INHIGEO-Geological Society of America, Asilomar, California, July 2014.
- Uribe-Salas, A. "Scientific and Technologic Transferences and Exchanges in Andres del Rio's Works", IV Congreso de Historiadores de las Ciencias y las Humanidades, Morelia, Michoacan, March 2014.
- Uribe-Salas, A. "Geological Studies and Innovation Proposals for Tlalpujahua and Angangueo Mineral Resource Exploitation during the XIXth Century", IV Congreso de Historiadores de las Ciencias y las Humanidades, Morelia, Michoacan, March 2014.
- Uribe-Salas, A. "Geology and Technologic Change in Mexican Mining Industry. Tlalpujahua y Angangueo Mines during the XIXth Century", II Coloquio *La geografía y las ciencias naturales en algunas ciudades y regiones de México, 1787-1940*, Institute of Geography, UNAM, May 2014.
- Uribe-Salas, A. "Being Burden with Science is No Dishonor". *Seminar Dedicated to Andrés Manuel del Río: 250 years from his birthday*, Institute of History, Centro de Ciencias Humanas y Sociales del Consejo Superior de Investigaciones Científicas (CCHS/CSIC), Madrid, Spain, June 2014.
- Uribe-Salas, A. "State, Power and Violence in Mexican Mines", Congreso *Poder y violencia*, CCHS/CSIC, Madrid, Spain, June 2014.
- Uribe-Salas, A. "The Geologic Object in Andrés del Río Works", Coloquio *La ciencia en la conformación del espacio público en España y México*, UNAM/CSIC, Madrid, Spain, June 2014.
- Uribe-Salas, A. "Proposal of a Geopark in Tlalpujahua and El Oro", *Taller Geoparque Tlalpujahua-El Oro*, Museum of Technology "Las Dos Estrellas", Tlalpujahua, Michoacan, September 2014.
- Uribe-Salas, A. "Joseph Burkart and Teodoro Flores' Geologic and Mining Studies on Tlalpujahua and El Oro", *Programa de conferencias Historia y Cultura de El Oro*, El Oro, Estado de Mexico, August-October 2014.
- Uribe-Salas, A. and Zaragoza Cruz, J. "Siver and Gold Mining Technological Change during the Porfiriato. A comparative study Pachuca/Real del Monte, Guanajuato and El Oro/Tlalpujahua", *XII Encuentro Latinoamericano de Historiadores de la Minería*, Palacio de Minería, Universidad Nacional Autónoma de México, November 2014.
- Uribe-Salas, A. "Las aportaciones tecnológicas de Andrés Manuel del Río en la era de la Revolución Industrial", XIV Congreso de la Sociedad Latinoamericana de Estudios sobre América Latina y el Caribe (SOLAR) Facultad de Letras y Ciencias Humanas Universidad Mayor de San Marcos, Lima, Perú, November 2014.
- Uribe-Salas, A. "Mexican Paleontology Settings at the End of the Nineteenth Century", Seminario de Enseñanza e Investigación, CA-Historia de América, Facultad de Historia, Universidad Michoacana de San Nicolás de Hidalgo, December 2014.

*Publications:*

- Azuela, L. F. and Rodrigo V. (coordinadores), 2014. *Espacios y prácticas de la geografía y la historia natural en México [Geography and Natural History's Spaces and Practices in Mexico]*, Instituto de Geografía-Dirección General de Asuntos del Personal Académico.
- Azuela, L. F. 2014. "El Museo del Imperio Mexicano (1864-1867)" [Mexican Empire's Museum (1864-1867)], en Luisa Rico Mansard (coord.), *Nuevas aportaciones a la museología mexicana*, Dirección General de Divulgación de la Ciencia, UNAM, p. 65-97.
- Azuela, L. F. 2014. "Conocimiento situado: La geografía y las ciencias naturales en la Ciudad de México del siglo diecinueve" [Situated Knowledge: Geography and Natural Sciences in Mexico City during the Nineteenth Century], en AZUELA, L. F. y Rodrigo V.

- (coordinadores), *Espacios y prácticas de la geografía y la historia natural en México*, Instituto de Geografía-Dirección General de Asuntos del Personal Académico, p. 15-35.
- Azuela, L. F., Gómez Rey, P. and Rodrigo V. y Ortega, 2014. "El conocimiento geográfico en la obra de José María Pérez Hernández (1820-1879)" [Geographic Knowledge in María Pérez Hernández' Works (1820-1879)], en Celina Lértora (coord.), *Territorio, recursos naturales y medio ambiente: Hacia una historia comparada. Estudios desde Argentina, México, Costa Rica, Haití, Paraguay, Uruguay y Venezuela*, Ediciones FEPAL, p. 395-414.
- Morelos, L. and Rodrigo V. (coord.). 2014. *Estudios históricos de la cultura Mexicana, siglos 19 y 20 [Historical Studies on Mexican Culture (19th and 20th Centuries)]*, México, Historiadores de las Ciencias y las Humanidades, A.C.
- Vega, Rodrigo and Morelos, L, (coord.). 2014. *Estudios históricos de las ciencias y las humanidades, siglos XVIII-XIX [Historical Studies on Sciences and Humanities, 18th and 19th Centuries]*, México, Historiadores de las Ciencias y las Humanidades, A.C.
- Morelos L. 2014. "Eulogies of Distinguished Men of Science in Santiago Ramírez' Works", in Morelos, L. y Vega, R (coord.), *Historical Studies about Mexican Culture (centuries 19th and 20th)*, México, Historiadores de las Ciencias y las Humanidades, 2014, pp. 45-70.
- Morelos, L. "Design, construction and foundations of the Geological Institute of Mexico at the turn of the 20th century", *Proceedings of the First Conference on the History of Construction: Materials, Techniques and Labors*, Instituto Nacional de Antropología e Historia, México.
- Uribe-Salas, A. and Cortés Zavala M. T., "Tres hombres de ciencia en la constitución del objeto geológico en México" [Three Scientists in the Constitution of the Geologic Object], *Cuadernos Prolam/USP. Brazilian Journal of Latin American Studies*, Universidad de Sao Paulo, Brasil 2014.
- Uribe-Salas, A. "Espacio minero y Patrimonio Industrial en México: el mineral de Tlalpujahua, Michoacán" [Mining Space and Industrial Heritage in Mexico: The Case of Tlalpujahua], *Journal Labor & Engenho*, vol. 8, núm. 4, Brasil, 2014, pp. 100-111
- Uribe-Salas, A. "Exploración y estudios geológicos del territorio michoacano en el siglo XIX" [Exploration and Geologic Studies in Michoacan Territory during the XIXth Century], en Azuela L. F. and Vega, R. (Coords.), *La Geografía y las Ciencias Naturales en algunas ciudades y regiones mexicanas, 1787-1940*, Mexico, UNAM, 2014, pp.
- Uribe-Salas, A. "La plata en el mineral de Tlalpujahua, 1869-1920" [Silver in Tlalpujahua Mines, 1869-1920], Goncalo de Vasconcelos e Sousa, Jesús Paniagua Pérez, Nuria Salazar Simarro (Coordinadores), *Aurea quersoneso: estudios sobre la plata iberoamericana: siglos XVI-XIX*, Portugal, Centro de Investigacao em Ciência e Tecnologia das Artes da Universidade Católica Portuguesa 2014, pp. 73-88
- Uribe-Salas, A. "La Paleontología mexicana en la época de Darwin" [Mexican Paleontology in Darwin's Age], Miguel Ángel Puig-Samper, Francisco Orrego, Rosaura Ruiz and José Alfredo Uribe Salas (Editores), *Yammerschuner. Darwin y la darwinización en Europa y América Latina*, Madrid, Doce Calles eds, 2014, pp. 113-140.

As a final note, we would like to add that members of our group continue teaching three different courses in the National Autonomous University (UNAM) and Saint Nicholas University in Michoacan (UMSNH), including topics on the History of Geological Sciences. This way we contribute to raise the interest of young students in our subject matter.

Luz F. Azuela, Mexico City

## NEW ZEALAND

This year three issues of the *Journal of the Historical Studies Group* of the Geoscience Society of New Zealand were published, in March, June and September (issues 46, 47 & 48). The September issue was dedicated to the late Alan Mason (1923-2014), who was an Honorary Senior Member of INHIGEO. It includes an article *Remembering Alan Mason* co-authored by INHIGEO member Simon Nathan and which includes a list of Alan's impressive record of publications on the history of geology. Alan was for many years convenor of the Historical Studies Group as well as its editor. Other articles by INHIGEO members published in the journal last year are:

“Some observations on the geology of New Zealand by James Crawford” by Rodney Grapes (March 2014).

“A letter from Collingwood, December 1866”, by Mike Johnston & Simon Nathan (March 2014).

“Historical snippet: Lyell to Darwin 1856 – geology and botany”, by Rodney Grapes (June 2014).

“Charles Cotton, Director of the Coromandel School of Mines”, by Rodney Grapes (June 2014).

“Hutton to Geikie: the Tarawera eruption of June 10, 1886”, by Rodney Grapes (September 2014).

“Paul Vella and the Waiohine Surface, southern Wairarapa Valley”, by Rodney Grapes (September 2014).

In addition to the above there are a number of other interesting articles dealing with such things as the discovery of the first Cambrian fossils in New Zealand by Malcolm Simpson, in 1948, and by Graeme Stevens, on the Earth Science Divisions of the now defunct New Zealand Department of Scientific and Industrial Research.

During the year the Geoscience Society of New Zealand published *Hochstetter's First Nelson Diary 27 July – 5 September 1859*, which was translated and annotated by Mike Johnston and Sascha Nolden. This is a companion to *Hochstetter's Nelson Diary*, published in 2012, and completes Hochstetter's account of his time in the Nelson Province while on leave from the Austrian Novara Expedition.

2015 will mark the 150<sup>th</sup> anniversary of the founding of the New Zealand Geological Survey under Sir James Hector. In preparation for this Simon Nathan is completing a biography of Hector. In addition, the Geoscience Society, in conjunction with GNS Science (the successor to the Geological Survey), is bringing out a revised edition of *Continent on the Move*, which was published in 2008. This profusely illustrated book describes all aspects of Earth science in New Zealand, and includes relevant material on the history of geology in this country.

Mike Johnston, Nelson

## PAPUA NEW GUINEA

**Hugh L. Davies** – was interviewed by Fiona Rothschilds, as part of the National Library's *History of Australian Geoscience Oral History Project*. The record occupies 268 minutes and is available online. It includes aspects of work done in Papua New Guinea. Davies joined the Bureau of Mineral Resources in 1956. He was involved in PNG as a member of the Resident Geological staff in 1957-61, then as a Canberra-based geologist working in PNG and Australia. He was appointed as Chief Government Geologist overseeing the transition from Resident Geological Staff to the Geological Survey of Papua New Guinea in 1973-77. He served as Professor of Geology at the University of Papua New Guinea from 1989 to 2012 during which time he was seconded to the Geological Survey as Executive Manager (2007-2009). In 2012 he was appointed to a sponsored chair as PNG Chamber of Mines Professor of Applied Geology, and stood down from full-time teaching in 2014, to focus on student research and completion of outstanding projects.

National Library of Australia Trove Profile Prof Hugh Davies 2014 OH. docx

Online <http://nla.gov.au/nla.oh-vn6455731>

## POLAND

In recent years we observed a steady increase in the number of Polish geologists working in the field of the history of geosciences. This refers first of all to those employed in the State Geological Institute in Warsaw, e.g. Marek Graniczny, Maciej Podemski, Jerzy B. Miecznik, Piotr Krzywiec, Halina Urban, Krystyna and Stanisław Wołkowicz. They are interested mainly in biographies of specialists attached to the State Geological Survey (e.g. Karol Bohdanowicz, Ludwik Horowitz, Henryk Makowski, Zdzisław Pazdro, Zbigniew Sułkowski, Zbigniew Werner, Janusz Uberna and Józef Zwierzycki, Professor of Wrocław University), particularly those working in the mineral deposits branch. The majority of their papers are published in *Przegląd Geologiczny* and *Geological Quarterly*. In the latter periodical a section devoted to the history of geosciences was recently introduced, which included a number of articles dealing with geology and mining, and an extensive list on “Geological cartography in Poland in the 19<sup>th</sup> century”, by Stanisław and Krystyna Wołkowicz, illustrated with valuable, mostly archival color photographs.

Piotr Krzywiec, representing the Institute of Geological Sciences of the Polish Academy of Sciences, in cooperation with the above mentioned geologists of the State Geological Institute in Warsaw, has published important papers on the life and scientific achievements of the geologist and pioneer of geological cartography, Ludwik Zejszner (1805 – 1871), eminent researcher of the Tatra Mountains, Carpathian Mountains, Holy Cross Mountains and the Silesian region. Moreover, Krzywiec contributed significantly to the restoration of Zejszner’s tomb in Cracow.

Of great importance are the scientific archives which gather documents on the activity of research workers and on geological institutions. Particularly active in this field is the Archive of Science of the Polish Academy of Sciences and the Polish Academy of Arts and Sciences in Cracow, which collect archival materials of geoscientists (e.g. on Wojciech Narębski). This Archive has an excellent inventory, is organizing exhibitions and publishes valuable guide-books.

The Archive of the Polish Academy of Sciences in Warsaw has recently acquired some of the documents of the Institute of Geological Sciences of this Academy (including scientific material of geologists researching Alpidic Maria Bac and Jerzy Lefeld). Moreover, the Museum of the Earth in Warsaw is examining documents collected earlier, left by deceased geoscientists. Similar procedures are in operation in the Museum of the Faculty of Geology of Warsaw University, where such items are displayed in exhibitions (e.g. in an exhibition devoted to the hydrogeologist Zdzisław Pazdro).

The Department of Geology of the Academy of Mining and Metallurgy (official name AGH University of Science and Technology), in Cracow, is the only faculty active in the organisation of scientific conferences. Together with the Society “Geosfera” it has organized a meeting to commemorate the 150<sup>th</sup> anniversary of the birth of Karol Bohdanowicz (1864 – 1947). The main organizer was Maciej J. Kotarba. In addition to his lecture, others were delivered by Wojciech Górecki, Marek Nieć, Tadeusz Peryt, Adam Pieszczyński, Stanisław Wołkowicz and Zbigniew Wójcik. They dealt with various aspects of the scientific activities of this outstanding geologist, in Russia, Poland and in other countries.

Thanks to international contacts, particularly interesting – as in previous years – was the activity of Radosław Tarkowski, Professor of the Pedagogic University in Cracow. His publications are usually co-authored with Piotr Daszkiewicz from the Museum of Natural History in Paris. They have revealed the latest biographic documents of Baltazar Haquet (1759 – 1815), researcher of European mountains and Professor at the Universities of Lvov and Cracow. In one of the sessions of the Institute of the History of Sciences of the Polish Academy of Sciences, Tarkowski presented an analysis of the output of Jean-Etienne Gillibert, Professor of Vilna University, in 18th century. But before that he published in Lima, together with Katarzyna Goluchowska, an interesting study:

“Konstansty Jelski 1837 – 1896) naturalista e investigador de America Latina” (see book review, p. 100).

The very active Commission of the History of Sciences of the Polish Academy of Arts and Sciences in Cracow provides a convenient summary of recent results of studies. These are often published in monographs. Stefan Witold Alexandrowicz published a biography of the eminent geologist Stanisław Zaręczny (1848-1909), well-known for his studies in the Cracow region (see book review, p. 98). S.W. Alexandrowicz is continuously working on biographies of scientists, mostly those with a relationship with the Academy of Arts and Sciences in Cracow.

Studies combining the disciplines of geology and mining are carried out in several specialist museums, for example in that associated with the famous historic Wieliczka salt mine and “Dąbrowska Szttygarka”, in Dąbrowa Górnicza. Their work provides stimulation for numerous professionals and amateurs. Particularly active among them is Andrzej J. Wójcik, author of numerous important publications on this subject. He wrote a large number of biographies of naturalists (mainly geologists) and miners. He has prepared a multivolume monograph (in print) entitled “Polish contributions to natural history and the technical sciences”. In addition, he has made significant contributions to the Biographic Dictionary of Polish explorers and pioneers of the mathematical-natural and technical sciences. Many biographical entries in this volume were prepared by Zbigniew Wójcik and some by Radosław Tarkowski.

The Stanisław Staszic Museum in Piła is continuing studies on the rich scientific output of this “father of Polish geology”. Number 10 of the periodical “Zeszyty Staszicowskie” (Staszic’s Brochures) contains papers by Janusz Skoczylas and Zbigniew Wójcik.

The majority of periodicals published by different institutions and societies include posthumous tributes to deceased naturalists and geologists. For example, in the periodical of the Polish Academy of Sciences “Nauka” (Science) there appeared the paper of Jerzy Dzik (in Polish with English summary) titled, “Adam Urbanek 1920-2014 and his search for the meaning of evolution”. The author is commenting on Urbanek’s publications on evolutionism and his efforts in Soviet Russia to liberate this theory from Marxist ideology.

In 2014, successive numbers (17-18) of “Polar Bulletin” contained sections “On the history of polar researches” contained papers by Piotr Köhler, Adam Krawczyk and Zbigniew Wójcik on Polish expeditions to Greenland, the Arctic and Antarctic. In the periodical “Wierchy” (Summits), devoted to problems of mountain areas, Zbigniew Wójcik published a paper “Manganese ores of the Czywczyn Mountains.”, in which he presented interesting data on the discussion, in the first half of 20<sup>th</sup> century, on the occurrence of mineral deposits in the former Polish East Carpathians. The same author has prepared (in press) an extensive biographic monograph on Walery Goetel (1889-1972), Professor of geology of the AGH University of Science and Technology in Cracow, and the founder of the new discipline sozology (protection of nature and mineral resources). Thanks to his activity, in cooperation with Karel Domin and Radim Kettner, Professors of the Charles University in Prague, three Carpathian National Parks were declared in Pieniny, the Tatra Mountains and on Babia Gora Mountain, in the border area of Poland and the former Czechoslovakia.

In closing this report it should be mentioned that 2014 saw the founding of a Section on the History of Geological Sciences within the Geological Society of Poland. It is likely, therefore, that this will be the last report prepared by the two oldest Polish INHIGEO members, Zbigniew Wójcik (INHIGEO member since 1971) and Wojciech Narębski (INHIGEO member since 1981). The next reports should be prepared by our colleagues, INHIGEO members of the younger generation, who are part of this Section.

Zbigniew Wójcik, Warsaw and Wojciech Narębski, Cracow

## PORTUGAL

**Teresa Salomé Mota** – is serving as a member of the Nominating Committee of the History of Earth Sciences Society (HESS), for the period 2013-2015, and as a member of the local organizing committee of the 6th International Conference of the European Society for the History of Science. She is co-organizer of the session 'Life at the centre: is scientific biography the next STEP?' for the 9th Science and Technology in the European Periphery (STEP) Meeting, and is a member of its local organizing committee. Teresa is also a member of the scientific committee of the 9th National Geological Congress and the 2nd Geological Congress of Portuguese-speaking Countries.

She is an invited reviewer of the international journal *Engineering Studies*.

She took part in an analysis and discussion of the paper Le Goff, J. "Writing Historical Biography Today", *Current Sociology*, 43 (1995), 11-17, in a session of the Journal Club organized by the Inter-university Center of History of Science and Technology.

*Publications - Book:*

Carneiro, A., Mota, T.S. and Leitão, V. 2014. *O Chão que Pisamos. A Geologia ao Serviço do Estado (1848-1974) [The Ground Beneath our Feet. Geology in the Service of the State (1848-1974)]* Lisbon, Edições Colibri / Coleção CIUHCT.

*Journal article:*

Mota, T. S. (2014) Spending some time in the field. Fieldwork in the Portuguese Geological Survey during the twentieth century. *Earth Sciences History*, 33, 201-213.

*Oral presentations by invitation:*

Mota, T. S. 2014. A cartografia de um país: a história dos Serviços Geológicos de Portugal (1857-1974). *University Formation for Seniors – Lectures on the History of Sciences and Technology (17th-20th centuries)*, Lisbon, Portugal.

Mota, T. S. 2014. A transformação das espécies e a teoria da selecção natural de Darwin. *Seminars of the Department of Biology of the University of Minho*, Braga, Portugal.

Mota, T. S. 2014. A dama e os seus cavaleiros: o estabelecimento e a afirmação de uma comunidade geológica em Portugal. *HoST Conferences, CIUHCT*, Lisbon, Portugal.

*Conference presentations:*

Mota, T. S. 2014. Those knights in shining armors. Rhetoric and politics in Portuguese geology during the Estado Novo. *6th International Conference of European Society for the History of Science*, Lisbon, Portugal.

Mota, T. S. 2014. Living in a 'no man's land': the scientific life of Francisco Luís Pereira de Sousa (1870—1931). *9th Science and Technology in the European Periphery (STEP) Meeting*, Lisbon, Portugal.

Mota, T. S. 2014. A prática de campo geológica em Portugal: o caso dos Serviços Geológicos de Portugal durante o século XX (1910-1974). *IV National Meeting in History of Science and Technology*, Aveiro, Portugal,

## RUSSIA

**Alexander S. Alekseev** – is a new INHIGEO member. He is a paleontologist and Professor of the Moscow State University (Faculty of Geology, Chair of Paleontology), Paleontological Institute of the Russian Academy of Sciences. He is editor-in-chief of the *Bulletin of the Moscow Society of Naturalists, Geological Series*. He has compiled a chapter on the history of paleontology, before the foundation of the Russian Paleontological Society (1916), to be published in a monograph on the 100<sup>th</sup> anniversary of the Society, in 2016.



**Andrey V. Lapo** – has started to work on researching the papers of the Russian paleobotanist African N. Kryshstofovich (1885-1953).

**Elena L. Minina** – has launched her book “The mineralogical collection of Lidiya P. Prokhorova (the 19<sup>th</sup> to the beginning of the 20<sup>th</sup> century) (2013), at a joint press conference of the Museum and RosEnergobank. The author was interviewed on Russian Television.

**Yuri L. Voytekhovskiy** – is a new INHIGEO member. He is Director of the Geological Institute of the Kola Science Centre of RAS. He heads the History Commission of the Russian Mineralogical Society and was elected a member of Russian Philosophical Society. He is editor-in-chief of the educational magazine *Tietta* (<http://geoksc.apatity.ru/publications/tietta/tietta2014>) and a member of Editorial Scientific Board of the international journal *Tourism and Cultural Heritage* (<http://www.journals.tmkarpinski.com/>).

**Irena G. Malakhova, George P. Khomizuri and Ivan P. Vtorov** (a new INHIGEO Associate member)

Activities in the Department for the History of Geology (Vernadsky State Geological Museum, Russian Academy of Sciences):

Digital Library *Scientific Heritage of Russia* <http://scirus.benran.ru/higeo>

New publications and biographical articles (Malakhova, Vtorov) about 1,000 books and articles on geosciences are available now.

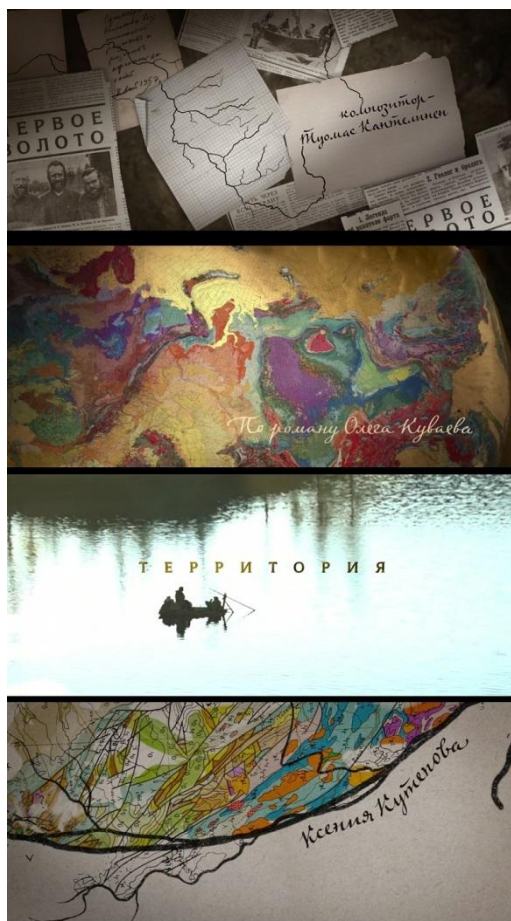
The Prokhorov’s historical collection (<http://e-heritage.ru/unicollections/list.html?id=47733268>), minerals named after scientists <http://e-heritage.ru/unicollections/list.html?id=47732957>, and minerals described by Paul Eremeev (1830-1899) <http://e-heritage.ru/unicollections/list.html?id=47733143> (described by Minina, digitalized and published by Vtorov)

Information System *History of Geology and Mining* (<http://scirus.benran.ru/higeo> – login ‘guest’, no password). English interface with advanced search available (Malakhova)

New arrivals – biographical articles, bibliographies, documents, photographs (Malakhova, Vtorov, Khomizuri, Kolbantsev) – list of geoscientists (persons ≈ 570, documents ≈ 280, photographs ≈ 660).

Visitors – Lora N. Lordkipanidze (INHIGEO members, Uzbekistan); British geoscientists (leader – Jim Spencer) (Malakhova, Vtorov).

The new Russian movie ‘The Territory’ (based on a novel about Kolyma gold exploration) – several original ancient maps, photos and documents of the Department were used (Vtorov) (see image below).



*Book:*

Marin, Yu.B., Voytekhovskiy Yu.L., and Morozov M.V. (eds.) 2014. *The Russian Mineralogical Society as seen through the eyes of contemporaries*. St. Petersburg, Lema.

*Book Chapters:*

Voytekhovskiy Yu.L. 2014. An unknown letter of acad. A.N. Zavaratitsky – an example of civic courage. In: *The Russian Mineralogical Society seen through the eyes of contemporaries*. St. Petersburg, Lema, 117-119.

Voytekhovskiy Yu.L. 2014. The history of the Soviet-Bulgarian discovery, ‘Crystal-morphological evolution of minerals. *Ibid*, 166-171.

Voytekhovskiy Yu.L. 2014. The Conference of the Russian Mineralogical Society in 1956. *Ibid*, 120-123.

Voytekhovskiy Yu.L. 2014. Unknown letters of acad. A.E. Fersman, Prof. P.N. Chirvinsky and Prof. D.D. Morduhai-Boltovskiy, from the personal archive of Prof. D.P. Grigoriev. *Ibid*, 160-165.

*Journal articles:*

Issakova, T.N., Zavalova S.M. and Alekseev, A.S. 2014. White stone of the Novo-Jerusalem monastery and environs; it’s possible sites. *Bulletin of the Moscow Society of Naturalists, Geol. Ser.* 89 (1), 35-44. (in Russian)

Alekseev A.S. et al. 2014. Vladimir Nikolaevich Pazukhin (20<sup>th</sup> June 1951 – 30<sup>th</sup> June 2013), *Newsletter on Carboniferous Stratigraphy* 31, 5–8. (in Russian)

Bessudnova, Z. and Starodubtseva, I. 2014. Carl Frantsevich Roullier: Pages of biography. *Bulletin of the Moscow Society of Naturalists, Geology* 89 (5), 5-15. (in Russian)

- Kolbantsev, L.R. 2014. Map of the Nerchinsk plant environs – the first Russian geological map. *Regional Geology and Metallogeny*, 60, 21-31. (in Russian).
- Lapo, A.V. 2014. A knight of the Geological Committee: to the 120<sup>th</sup> anniversary of Vasily Petrovich Nekhoroshev. *Regional Geology and Metallogeny* 57, 112-115. (in Russian).
- Voytekhovskiy, Yu.L. 2014. Letters of academician N.P. Yushkin in the archive of Prof. D.P. Grigoriev. *Herald of the Institute of Geology, Komi Scientific Center, the Ural Branch, RAS*, 7, 24-27. (in Russian).

*Articles in popular magazines:*

- Kolbantsev, L.R. 2014. The history of International Geological Congress, Stockholm, 1910. *Tietta*, 1 (27), 74-78. (in Russian).
- Vtorov, I.P. 2014. Ancient Hawaiian astronomy. *The Earth and the Universe*, 1, 63-74. (in Russian).

*Book review:*

- Vtorov, I.P. 2014. Review of *Lomonosov, M.V. On the strata of the Earth: a translation by Stephen M. Rowland and Slava Korolev. History of Earth Sciences Society*, 33 (2), 366-367.

*Conference presentations:*

- Bessudnova, Z. Why it is necessary to do the History of the Earth Sciences scrupulously, without drawing hasty conclusions? 39<sup>th</sup> *INHIGEO Symposium*, Asilomar, CA, USA, July 6-10, 2014.
- Bessudnova, Z. The history of one museum exhibit from the Vernadsky State Geological Museum of the Russian Academy of Sciences. *All-Russian scientific conference in memory of Professor Vitaly G. Ochev*, Saratov, Russia, 2014.
- Bessudnova, Z., Romanova, V. and Samsonova, N. History of the Feodor I. Foelkner's (1802-1877) collection in the Vernadsky State Geological Museum, RAS. *Annual conference of the Institute of Science and Technology, RAS, Russia, Moscow, February 2014.*
- Starodubtseva, I. and Bessudnova, Z. Alexey Petrovich and Maria Vasil'evna Pawlovs: The 160<sup>th</sup> anniversary. 60<sup>th</sup> *Session of the Russian Paleontological Society*, Russia, St. Petersburg, 2014).
- Ivanova, T.K. and Poludetkina, E.N. Nikolai Porfirievich Ermakov: distinguished scientist and founding director of the Museum of Earth Sciences at Lomonosov Moscow State University. 39<sup>th</sup> *INHIGEO Symposium*, Asilomar, CA, USA, July 6-10, 2014.
- Malakhova, I.G. The history of geology in Russia: Vernadsky – Obručev. 39<sup>th</sup> *INHIGEO Symposium*, Asilomar, CA, USA, July 6-10, 2014.
- Malakhova, I.G. Vladimir Afanasievich Obručev and the history of geosciences. *Lomonosov's Reading*, Russia, Moscow State University, April, 2014.
- Malakhova, I.G. Information systems in the history of geosciences: the first Russian experience. 16<sup>th</sup> *Geological Meeting in the Komi Republic*, Russia, Syktyvkar, April, 2014.
- Kalenov, N.E. and Malakhova, I.G. Museum information in the Digital Library of *Scientific Heritage of Russia. New trends in the development of museums and in museology*, Russia, September 29-October 3, 2014.
- Minina, E.L. Mineralogical collection of Lidia P. Prokhorova. 27<sup>th</sup> *Ginzburg meeting*, Russia, Moscow, March 3, 2014.
- Voytekhovskiy, Yu.L. On the history of modal microscope analysis: Cavalieri, Delesse, Rosiwal, Glagolev, Zhuravskiy et al. *Annual conference of the Institute of Science and Technology, RAS, Russia, Moscow, February 2014.*
- Voytekhovskiy, Yu.L. Unpublished manuscripts on the history of mineralogy by Prof. P.N.

- Chirvinsky, from the D.P. Grigoriev's archive. *Annual conference of the Institute of Science and Technology, RAS, Russia, Moscow, February 2014.*
- Voytekhovskiy, Yu.L. and Neradovskiy, Yu.N. Economic geology of the kyanite province Big Cave, Kola Peninsula: history and present. *7<sup>th</sup> International scientific and practical conference The North and the in the new world development paradigm. Luzin readings\_2014.* Russia, Apatity, April 2014.
- Voytekhovskiy, Yu.L. An unknown letter of acad. A.G. Betekhtin from the personal archive of Prof. D.P. Grigoriev. *16<sup>th</sup> Geological Meeting in the Komi Republic, Russia, Syktyvkar, April, 2014.*
- Voytekhovskiy, Yu.L. The history of geological exploration of the Kola Peninsula in evidences and memorials. *Annual conference of the Institute of Science and Technology, RAS, Russia, Moscow, February 2014.*
- Vtorov I.P. The role of geology in the development of soil science: from Lomonosov to Dokuchaev. *39<sup>th</sup> INHIGEO Symposium, Asilomar, CA, USA, July 6-10, 2014.*

Irena G. Malakhova, Moscow

## SERBIA

The Serbian National Commission of INHIGEO (hereinafter: INHIGEO SRB) officially operates as the History of Geology Division (<http://sigsgd.blogspot.com>) of the Serbian Geological Society ([www.sgd.rs](http://www.sgd.rs)).

During the year 2014 the following activities were performed:

The Board of the History of Geology Division was re-elected for the next two years (2014-2016) (Lj. Rundić - President; T. Gaudenyi - Secretary).

Further progress has been made in preparing the monograph commemorating the 125th Anniversary of the Serbian Geological Society (to be published in the first half of 2016). During 2014, two meetings of Editorial Board were held. All INHIGEO members are involved in this activity, both as authors and contributors of individual chapters.

Completing the scanning all publications of the Serbian Geological Society for the period 1897-2007 (*Comptes rendus des séances de la Société Serbe de géologie, Proceedings of the past Yugoslav and Serbian Geological congress, etc.*). All of these documents will be accessible on the SGD website.

During the public geological exhibition, *The Geological Treasures of Serbia* (organized by the Faculty of Mining and Geology, May-June 2014, Belgrade), A. Grubić gave an invited lecture on the history of Serbian geology.

The Division took an active role in the organization of XVI National Geological Congress (22-25 May, 2014), with about 200 attendants from Serbia, Romania, Bulgaria, Hungary, Russia and Germany. A. Grubić was an honorary member and gave a plenary lecture on the geological settings of the Danube Gorge and its geological research history. Lj. Rundić was vice-president of the Organizing Committee and the co-chair of the session on Geoeducation, Geoheritage and Geoecology. Both of them were leaders of two separate post-congress field trips. T. Gaudenyi was a Technical Secretary of the Congress. More details: <http://www.sgd.rs/eng/index.php/xvi-serbian-geological-congress>

Serbian INHIGEO members participated in Round Table discussions organized by SGS (October 24, 2014) on the draft version of the "Law of Mining and Geological Explorations" as well as on the professional licensing in these fields.

At the end of 2014, a significant book titled, *Serbian mining and geology in the second half of the XX century*, was published (see review, p. 103). Work on the book involved more than five years of research, including the gathering, analysing and processing of source data (more than 2370 pages of source material), writing and preparing it for publication. (Editor-in-chief: Slobodan Vujčić, 15 members of the editorial boards, 75 authors, 12 reviewers, 4 lecturers; the oldest author was 88 years of age, the youngest was 30; the book has 592 printed pages, 617 graphical illustrations, 530 terms in the key word index and 214 abbreviations). This monograph represents a unique and extensive research and publishing endeavor. It is not only a testament to mining and to geological science, to schools, engineering and to industry in the second half of the XX century, but is also a valuable factual source to aid in the broader studies of our development. A. Grubić and Lj. Rundić were part of the team of 75 authors who prepared the most significant facts concerning one of the most intensive periods in the history of the Serbian geology and mining, over more than eight thousand years.

INHIGEO Virtual Bibliography Project – we made the first reference list for Serbia (at the end of 2014, 176 references of INHIGEO members from Serbia had been collected)

We prepared a proposal for the election of Prof. Aleksandar Grubić as an INHIGEO Honorary Senior Member.

We actively collaborate with INHIGEO in sending in all required contributions.

Ljupko Rundić, Tivadar Gaudenyi, Belgrade

## SLOVENIA

At present I'm the only INHIGEO member from Slovenia. My activities in the field of the history of geology relate to Slovenia, where I have presented my historical research in public lectures and in papers published in popular science and cultural journals (all publications are in the Slovenian language). During a half-hour broadcast Radio Slovenija – ARS programme 3 on December 12<sup>th</sup> 2014 – I was interviewed about my hydrogeological work, but also on my historical research in the field of hydrogeology, with emphasis on Oscar Smreker, the designer of water works, and who was one of most important European hydrogeologist at the end of 19<sup>th</sup> century. In the summer semester I am giving regular lectures as part of a History of Geology course (3 ECTS), in the Department of Geology, University of Ljubljana. I have continued my research on enlightenment geology, on Slovenian geology before the World War II and on the history of karst research and hydrogeology.

### *Publications:*

BRENČIČ, Mihael. Nastanek Ferberjeve knjige o idrijskem rudniku: ob 240. obletnici objave knjige Johanna Jacoba Ferberja: Opis živosrebrnega rudnika v Idriji na srednjem Kranjskem. (Genesis of Ferber's book on Idrija mine: published at 240<sup>th</sup> anniversary of Johann Jacob Ferber's book – Description of the Idrija mercury mine in the middle Crain). *Idrijski razgledi*, 59/2, 102-111.

BRENČIČ, Mihael. Karel Hinterlechner - utemeljitelj slovenske geološke šole. (Karel Hinterlechner - founder of the Slovenian geological school). *Proteus* 77/ 2, 56-63.

BRENČIČ, Mihael. Ali je bil Lažnivi Kljukec geolog? (Was Baron Munchausen a geologist?) *Proteus* 76/9-10, 419-425.

### *Public lectures:*

BRENČIČ, Mihael. Vohuni, prostozidarji pa še Lažnivi Kljukec (Spys, freemasons as well as liar Baron Munchausen). Presented at Museum's nights in City museum of Idrija on January 21<sup>st</sup> 2014.

BRENČIČ, Mihael. Vohuni, prostozidarji, pa še lažnivi kljukec - poglavje iz zgodovine geologije na Slovenskem (Spys, freemasons as well as liars, Baron Munchausen – chapters from the history of geology in Slovenia). Presented at Slovenska Matica, Ljubljana on April 8<sup>th</sup> 2014.

Mihael Brenčič, Ljubljana

## SPAIN

Many diversified activities can be reported from the Spanish INHIGEO group.

The International Year of Crystallography was celebrated on St. Albertus Magnus Day (January 28) at the National University of Distance Education at (Madrid). The scientist Santiago García Granda, President of the European Association of Crystallography, was commissioned to present a lecture titled, *Crystals and diffraction: 100 years of scientific milestones*. An exhibition of minerals was held at the Madrid Mining School (November 24-29).

The Commission of the History of Geology of Spain, a section of the Spanish Geological Society, has fifty members. They receive regular information about Spanish activities on the history of geology. The person in charge of this section is Mss. Isabel Rábano Gutiérrez Del Arroyo, Director of the Geo-Mining Museum/Museo Geominero (Isabel is an INHIGEO member).

On May 7, 2014, Isabel Rábano and Octavio Puche attended the Roundtable discussion on: *Casiano de Prado's collaboration (1849-1859) with the Commission for the Geological Map of Spain*, the predecessor institution of the Spanish Geological Survey, on the occasion of the exhibition: *Casiano de Prado y la Comisión del Mapa Geológico de España. El descubrimiento científico del Guadarrama*.

Isabel Rábano is the president of the Commission on the History of Geology of the Spanish Geological Society and editor of *Spanish Review of Micropaleontology (Revista Española de Micropaleontología)* and the *De Re Metallica Review*. Another INHIGEO member, Luis Felipe Mazadiego, is the director of this magazine.

On 14 May 2014, Carlos Martín Escorza (INHIGEO member) participated in the 15<sup>th</sup> *Scientific Day of ADEBIR: the paleontological site of Villaroya, La Rioja* (Spain), where he gave a lecture titled, *History and overview of the site of Villaroya*.

The *XIV International Congress on Geological and Mining Heritage* was held in Logrosán (Cáceres), from 25-28 September. For further information contact, Josep María Mata Perelló, [rocpetrus@gmail.com](mailto:rocpetrus@gmail.com)

On November 21, 2014, Carmina Virgili (INHIGEO member) died in Barcelona. She was born in 1927. She received her doctorate in geology from the University of Barcelona in 1956. In 1963, she was appointed to the Chair of Stratigraphy at the University of Oviedo, the first female university professor at that university and third in Spain. Carmina Virgili was president of the Mesozoic Spanish Group from 1976 to 1980, and of the socialist "Foundation Pablo Iglesias", during 1977-1987. She was also a member of the "Spanish Commission for Cooperation with UNESCO", from 1982 to 1996, and Secretary of "State of Universities and Investigation" from 1982 to 1985. She was a Senator for Barcelona from 1996 to 2000. In 2008 she was awarded a doctorate "honoris causa" by the University of Girona, and others. (See obituary, p. 50)

### *Publications:*

- Bernárdez, E.; Colmenar, J.; Gutiérrez-Marco, J.C.; Rábano, I. and Zamora, S. 2014. New peri-Gondwana records of the Hirnantia fauna in the late Ordovician in Spain. *Gondwana* 15, 15.
- García Cruz, C.M. 2014. Aproximación a las sensibilidades históricas y teorías de la tierra: de la fe a la razón. *Llull*, V. 37 (Nº 80), 87-111 (2º semestre 2014).
- Julivert, M. 2014. *Una historia de la Geología en España*. Ed. Universitat de Barcelona. Barcelona.

- Leonardo, F.J 2014. Las colecciones petrológicas de Isidro Parga Pondal en la Universidad de Santiago de Compostela. *Macla*, 14, 29-31.
- López-Acevedo Cornejo, M.V. 2014. Historia de los modelos cristalográficos. *Macla*, 14, 4-11.
- Martín Escorza, C. 2014. La cartografía del río Cidacos en el siglo XVII: primeros avances en su trazado. *Kalakorikos. Revista para el estudio, defensa, protección y divulgación del patrimonio histórico, artístico y cultural de Calahorra y su entorno*, 19, 259-268.
- Perejón, A., Menéndez, S., Rábano, I. and Moreno-Eiris, E. 2014. Nuevos datos documentales sobre la colección de arqueociatos del Cerro de las Ermitas de Córdoba del Museo Geominero (Instituto Geológico y Minero de España). *Boletín Geológico y Minero*, 125 (1), 53-63.
- Pedrinaci, E. 2014. La Geología en la Educación Secundaria: Situación Actual y Perspectivas. *Macla*, 14, 32-37.
- Rábano, I., Gutiérrez Marco, J.C. and Sá A.A. 2014. Yacimientos excepcionales de trilobites del Ordovícico ibérico. *Memorias de la Real Sociedad Española de Historia Natural*, 12 (2ª época), 47-58.
- Sequeiros, L. 2014. Teilhard de Chardin y los nuevos paradigmas geológicos. *En el centenario de Eduard Suess*. Bubok Ediciones, 145 pp. <http://www.bubok.es/libros/231061/Teilhard-de-Chardin-y-los-nuevos-paradigmas-geologicos-En-el-centenario-de-Eduard-Suess>.
- Sequeiros, L. and García Cruz, C.M. 2014. Eduard Suess (1831-1914): el hombre que quiso cambiar la faz de la Tierra. *Llull, Zaragoza*, V. 37, Nº 79, 147-154.
- Sequeiros, L. 2014. Darwin y las raíces de la humanidad. Perspectivas de un paleontólogo desde la frontera. In: DIEGO BERMEJO (Editor). *Pensar después de Darwin. Ciencia, filosofía y teología en diálogo*. Ed. Sal Terrae-Universidad de Comillas, Cantabria. 129-168.
- Sequeiros, L. 2014. Intrusos en las obras completas de Teilhard de Chardin: el caso de La Faz de la Tierra. In: Alicia Villar and Antonio Sánchez Orantos (eds). *Una ciencia humana. Homenaje a Camino Cañón*.

*Conference presentations :*

- Acosta, C. 2014. 100 años del Servicio Geológico Colombiano. La aportación de la ciencia española, José Royo Gómez. *XII Congreso de la SEICYT (Ciencia y Técnica entre la Paz y la Guerra)*. Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Alsina, J. 2014. La Teoría de la Tierra de James Hutton y la filosofía natural newtoniana. *XII Congreso de la SEICYT (Ciencia y Técnica entre la Paz y la Guerra)*. Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Barrera, J.L. 2014. Lucas Fernández Navarro, el iniciador de la vulcanología en España. *XII Congreso de la SEICYT (Ciencia y Técnica entre la Paz y la Guerra)*. Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Boixereu Vila, E., Puche Riart, O. and López Olmedo, F. 2014. Un mapa geológico inédito de la Sierra de Albarracín (C. Ibérica) de Santiago Rodríguez (1824-1876). *XII Congreso de la SEICYT (Ciencia y Técnica entre la Paz y la Guerra)*. Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Boixereu Vila, E., Villaseca, C. 2014. Observaciones geológicas de Gonzalo Fernández de Oviedo (1475-1557) en el volcán Masaya (Nicaragua). *XII Congreso de la SEICYT (Ciencia y Técnica entre la Paz y la Guerra)*. Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Celis, A., Santiesteban, J.I. and Mediavilla, R. 2014. El cuerpo de ingenieros militares en las Tablas de Daimiel: consecuencias de un proyecto ilustrado. *XII Congreso de la SEICYT (Ciencia y Técnica entre la Paz y la Guerra)*. Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Coello, J. 2014. El geólogo Telesforo Bravo en Irán (1957-1959). *XII Congreso de la SEICYT*

- (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Coello, J. and Coello, J. 2014. El geólogo Telesforo Bravo y el descubrimiento de los megadeslizamientos gravitacionales en Tenerife (Islas Canarias). *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Gutiérrez Marco, J.C., Sá A.A. and Vilas, E. 2014. Del “Siluriano inferior” al Sistema Ordovícico: sus particularidades históricas en la geología ibérica. *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Jiménez, O.H. 2014. El contenido geológico en revistas científicas mexicanas del siglo XX: una revisión autoral y temática. *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Ordaz, J. 2014. Member of the Scientific Committee and Moderator of the Roundtable of the *III Congreso Internacional Ciencia y Filosofía: Con la razón y la experiencia: Feijoo 250 años después*, organizado por el Instituto Feijoo de Estudios del Siglo XVIII, Universidad e Oviedo. Oviedo. November 27-28, 2014.
- Ordoñez, S. and García Del Cura, M.A. 2014. El impacto científico del seminario de P. Fallot (1889-1960), sobre “les Cordillères Bétiques”, en el Instituto Lucas Mallada (CSIC-Barcelona, 1945). *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Perales, P. 2014. Del cristal al átomo: un siglo de difracción de rayos X. *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Puche Riart, O. 2014. Member of the Scientific Committee of the *VIII Simposio sobre Minería y Metalurgia en el SW europeo*. Granada. June 11-15, 2014.
- Puche Riart, O. 2014. Algunos datos para la historia de la minería en la provincia de Soria. *VIII Simposio sobre Minería y Metalurgia en el SW europeo*. Granada. June 11-15, 2014.
- Puche Riart, O. 2014. Member of the *Scientific Committee of the congress Memórias do Carvão*. Batalha (Portugal). September 11-13, 2014.
- Puche Riart, O. 2014. Algunos datos sobre los primeros usos del carbón en España. *Congreso Memórias do Carvão*. Batalha (Portugal). September 11-13, 2014.
- Puche Riart, O. 2014. Member of the Scientific Committee of the *XV Congreso Internacional de Patrimonio Geológico y Minero*, Logrosán (Cáceres). September 25-28, 2014.
- Rábano, I. and Barrera, J.L. 2014. Coordination of the Session XII: Episodios singulares en la Historia de la Geología, of the *XII Congreso de la Sociedad Española de Historia de las Ciencias y de las Técnicas*, Madrid. September, 10-12, 2014.
- Rábano, I. 2014. Nuevos datos sobre la historia de la Comisión del Mapa Geológico de España: periodo 1849-1867. *XII Congreso de la Sociedad Española de Historia de las Ciencias y de las Técnicas*, Madrid. September, 10-12, 2014.
- Saíz, J.A. and Barrera, J.L. 2014. Quiénes fueron los promotores de la Compañía Española de las Minas del Rif? *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.
- Santos, V.F., Alho, J.M., Razzolini, N.L., Castanera, D.; REIS, J., Ribeiro, B., Malafaia, E. and Rodrigues, N.P.C. 2014. Twenty years chasing dinosaurs at Galinha tracksite (Portugal). *XV Congreso Internacional de Patrimonio Geológico y Minero*, Logrosán (Cáceres). September 25-28, 2014.
- Silván, E. and Morcillo, J.G. 2014. La Kurze Klassifikation de Abraham G. Werner. Una traducción



inédita. *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.

Soutullo, B. and López-Acevedo, M.V. 2014. La histórica relación entre Geología y Medicina. *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.

Udías Vallina, A. 2014. El origen de los terremotos en la Ilustración española. *XII Congreso de la SEICYT* (Ciencia y Técnica entre la Paz y la Guerra). Section: Episodios singulares de la Historia de la Geología. Madrid. September 10-12, 2014.

Octavio Puche Riart, Madrid

## SWEDEN

**Björn Sundquist** – My geological research covers the approximate period between 1650 and 1850. It is concentrated on work carried out in Sweden, and is set in the context of developments in neighbouring countries and in Europe in general.

My main interests lie in the study of the work of Sigfrid Aronus Forsius and Urban Hiärne in the 17th century, and with that of scholars in the 18th century, including Urban Hiärne, Emanuel Swedenborg, Magnus von Bromell, Carl von Linné (Linnaeus), Daniel Tilas, Anders Celsius, Johan Gotschalk Wallerius, Axel Fredric Cronstedt, Johan Browallius, Bengt Ferrner, Torbern Bergman, Samuel Gustaf Hermelin, Gustav von Engeström, Anders Jahan Retzius. I also have an interest in Wilhelm Hisinger, Göran Wahlenberg, Jacob Berzelius, and Jacob Henrik af Forsselles

The early work of Hiärne deals mainly with the investigation of the natural resources of Sweden, and with reviews of the country's general geology, as well as that of other countries. Contributions to geology during the 18th century deal with mineralogy, mineral chemistry, falling sea levels, stratigraphy, paleontology, mapping, and with general geology. During the first part of the 19th century, stratigraphical and paleontological studies expanded, and geological maps of the major parts of the country were published.

## UNITED KINGDOM

**Trevor Ford** – finds that his historical output is growing less as he approaches his 90<sup>th</sup> birthday. However, he has produced the following:

Ford, T. D. 2014. The geological setting of the lead mines around Ashover and Crich, Derbyshire. *Mining History*, 19, 1, 1-26.

Ford, T. D. 2014. The Derbyshire Mineral Laws. *Mercian Geologist*, 18, 188.

Ford, T. D. and Ambrose, K. 2014. Brick pits of Leicestershire. *Mercian Geologist*, 18, 180-182.

**Richard Howarth** – has not much to report for this last year, except that I have been researching what proved to be the fascinating life of the donor of one of the Geologists' Association awards. The resulting manuscript: *Geology Behind Barbed Wire: James Alfred Richardson (1914-2007) and the Richardson Award of the Geologists' Association* has been accepted for publication in the *Proceedings of the GA*.

**John Mather** – Presentations were given on two historic British mineral springs. The history and hydrogeology of a spa at Burnham on Sea in Somerset was described at the *Ussher Society Annual Symposium* in January. Separate saline and sulphur wells some 20m apart were exploited by the local curate in about 1830 and operated as a spa complex into the early 1870s. Modern site investigation boreholes show that the saline waters were derived from Jurassic clays and the sulphur

waters from overlying Quaternary estuarine deposits. The origin of the spa owed more to the enterprise of the curate than to the hydrochemistry of its waters. A second paper, given to a *UK History of Geology Group meeting on Geology and Medicine* in November, was based on a 1673 broadsheet giving an account of a purging spring on Shooter's Hill, near Eltham, then in Kent, now part of Metropolitan London. One copy remains in the British Library and a chance find suggests that it was written by Nathaniel Hodges (1629-1688), an important figure in the Stuart medical community, who remained in London when plague struck in 1665. At the end of the 17<sup>th</sup> century the waters were involved in a celebrated dispute between physicians and apothecaries concerning the making and sale of Epsom salts. The waters never achieved the prominence of most of their rivals, probably because of their isolated rural location. Papers on both these springs should appear in 2015.

Following the short article published last year on the travels of William George Maton and colleagues around South-West England a much fuller account is now available (see below). Maton's was the first description of the area by scientifically aware travellers. His party explored valleys, descended mines, visited smelters collected minerals and must be regarded as amongst the earliest geotourists. The coming year sees 200 years since the publication of William Smith's geological map, an anniversary which will be celebrated at the Geological Society of London in April. The impact of his work provided a stratigraphical framework for groundwater exploration and this will be the subject of my talk at the meeting. Other work in progress includes the history of manganese mining in south-west England, continuing work on spas and mineral springs and on the early history of hydrogeology.

Mather, J. D. 2014. Geology and landscape in SW England in the late eighteenth century, as recorded in the travel journals of William George Maton (1774–1840). In: Hose, T. (ed.) *Appreciating Physical Landscapes: Three Hundred Years of Geotourism*. Geological Society, London, Special Publications, 417, Online First <http://dx.doi.org/10.1144/SP417.8>

**Ralph O'Connor** – together with **Michael A. Taylor**, I continued to work on our forthcoming annotated edition of Hugh Miller's *The Old Red Sandstone*.

In June I delivered a paper at an interdisciplinary conference on 'Fall Narratives' at the University of Aberdeen, entitled 'Of Demons and Dinosaurs: Some Theologies of Deep Time in Nineteenth-Century Britain'.

In October I delivered an invited seminar paper at the Centre for Advanced Welsh and Celtic Studies, University of Aberystwyth, entitled 'Traditional Narrative and the Recovery of the Geological Past: Hugh Miller's Rambles in Prehistoric Scotland and the Romantic Topographical Tradition'.

**Martin Rudwick** – My book on Earth's Deep History was published last month. I've written it primarily for the much-coveted "intelligent general reader", but it gives my personal view of the *longue durée* of the discovery of the Earth's (and life's) eventful history, all the way from Ussher's 4004BC (which I rehabilitate!) to the present day, with lots of illustrations from primary sources. So I'd like to think it may be of interest to INHIGEO people generally. The emphasis is on the reconstruction of the Earth's eventful history, rather than the enlargement of its timescale (on which there are several good books already). My monstrously heavy volumes *Bursting the Limits of Time* and *Worlds Before Adam* are condensed into just its middle chapters.

Its details are: *Earth's Deep History: How it was Discovered and Why it Matters*, University of Chicago Press, October 2014, 360pp: cloth, US \$30, ISBN 978-0-226-20393-5; e-book, US \$18 [I think], 978-0-226-20409-3

**Jim Secord** – has had a busy year as head of the Department of History and Philosophy of Science at the University of Cambridge, but managed to see a new book, *Visions of Science: Books and Readers at the Dawn of the Victorian Age* (Oxford University Press, 2014; University of Chicago Press, 2014) into print. The book deals with seven books published during the 'age of reform' in Britain, among them Charles Lyell's *Principles of Geology*.

**Michael Taylor** – has coauthored, with **Hugh Torrens**, a set of papers arising from the identification of the authors of two important but annoyingly anonymous articles on Mary Anning (1799-1847), the fossil collector of Lyme Regis. The two papers form interesting case studies of identifying anonymous authors, using the new opportunities offered by online genealogical, newspaper and book databases. Rather pleasingly, one article is ascribable to the local historian George Roberts (c.1804-1860), and his friends the naturalist Frank Buckland (1826-1880) and – almost certainly – Frank's father William Buckland (1784-1856). It has to be taken very seriously. In complete contrast, the other article, sometimes ascribed to Charles Dickens, turns out to be by a literary hack who misquoted his sources and muddled Anning with other geologists – but unfortunately it is increasingly used by popular writers on Anning. Our work has also enabled us to get to the root of certain frequent misconceptions on Anning. Another writer on Anning, one Henry R. Brown, turns out to have family connections to Anning.

Mike has in press papers on the rediscovery of an Anning ichthyosaur owned by the notable London surgeon Astley Cooper (1768-1841), and on Charles Davies Sherborn's (1861-1942) little book of 1940, *Where is the – Collection?*. He continues to work with Ralph O'Connor on a reprint of the first edition (1841) of Hugh Miller's *The Old Red Sandstone*, and with Lyall Anderson on Charles W. Peach (1800-1886) and the poet Alfred, Lord Tennyson and his geological interests.

#### *Publications:*

- Taylor, M.A. 2014. [Commemorative plaques and Hugh Miller.] *Edinburgh Geologist*, 55, 6. [http://www.edinburghgeolsoc.org/edingeologist/z\\_55.html](http://www.edinburghgeolsoc.org/edingeologist/z_55.html)
- Taylor, M.A. and Torrens, H.S. 2014. History & Mystery. Sequels and solutions 4. S4.1 History and Mystery: were Nonconformist divines the source for the maxim? *Society for the History of Natural History Newsletter*, 106, 6-9. <http://repository.nms.ac.uk/1187/>
- Taylor, M.A. and Torrens, H.S. 2014. An anonymous account of Mary Anning (1799-1847), fossil collector of Lyme Regis, England, published in Chambers's Journal in 1857, and its attribution to Frank Buckland (1826-1880), George Roberts (c.1804-1860), and William Buckland (1784-1856). *Archives of Natural History*, 41, 309-325.
- Taylor, M.A. and Torrens, H.S. 2014. An account of Mary Anning (1799-1847), fossil collector of Lyme Regis, Dorset, England, published by Henry Rowland Brown (1837-1921) in the second edition (1859) of *Beauties of Lyme Regis*. *Proceedings of the Dorset Natural History and Archaeological Society*, 135, 62-70. <http://repository.nms.ac.uk/1259/>
- Taylor, M.A. and Torrens, H.S. 2014. An anonymous account of Mary Anning (1799-1847), fossil collector of Lyme Regis, Dorset, England, published in *All the year round* in 1865, and its attribution to Henry Stuart Fagan (1827-1890), schoolmaster, parson and author. *Proceedings of the Dorset Natural History and Archaeological Society*, 135, 71-85. <http://repository.nms.ac.uk/1258/>
- Taylor, M.A. 2014. *The Reverend Henry Stuart Fagan (1827-1890), Church of England parson, Headmaster of Bath Grammar School, literary man, and Irish Home Ruler*. Unpublished report, with supplementary notes, available on <http://repository.nms.ac.uk/1185/>

## UNITED STATES

**Kenneth R. Aalto** – Professor Emeritus at Humboldt State University, Arcata, CA, participated in the 2014 INHIGEO Conference in Monterey, California, presenting two papers:

Aalto, K. R. 2014. Franciscan Complex, California-Mélanges, terranes and their plate tectonic interpretation, *Proceedings of the INHIGEO 2014 Conference*, p. 26.

Aalto, K. R. 2014, Pioneering geologic studies in Yosemite and the Mono Basin/Long Valley Caldera regions of the Sierra Nevada, California, *Proceedings of the INHIGEO 2014 Conference*, p. 14.

In addition he served as a co-leader for the post-conference five-day trip to Yosemite National Park and the Mono Basin region, for which he contributed to the field guide on geologic pioneers of these areas. He published on the history of his and others' investigations of the Franciscan Complex of northernmost California:

Aalto, K. R. 2014. Examples of Franciscan Complex mélanges in the northernmost California Coast Ranges, a retrospective, *International Geology Review*, v. 56, p. 555-570, DOI: [10.1080/00206814.2013.879841](https://doi.org/10.1080/00206814.2013.879841)

**Michele L. Aldrich and Alan E. Leviton** – Michele Aldrich and Alan Leviton in concert with **Renee Clary**, organized and chaired a full-day session on Great Ideas in Geology at the meeting of the Geological Society of America, Vancouver, BC, Canada. Additionally, Aldrich and Leviton presented three papers, two at the 2014 INHIGEO meeting held in Asilomar, California, USA and a third at the GSA meeting in Vancouver, as follows: (1) James Blake and the practice of geology in 19<sup>th</sup> century California; (2) The Geological Survey of India, 1851-1879, *The Manual of Geology of India*, 1879-1887, and the origin of the notion of a vast Palaeozoic southern continent, Gondwanaland; (3) Isthmian Links: An idea that drifted in a different direction, 1932-1967.

Also, at the GSA meeting, Michele Aldrich was recognized for her scholarly research and tireless service to the history of geology and received a plaque to commemorate the event. And, lastly, she and Alan Leviton were the citationists for the Division's Mary C. Rabbitt Lifetime Award to Henry Frankel in recognition of his scholarly achievements in the history of the Earth sciences.

**Victor R. Baker** – I was named a Councilor for the History of Earth Sciences Society (HESS), and I served as Co-Chair, Program Committee for the International Union of Geological Sciences, International Commission on the History of Geological Sciences (INHIGEO) 2014 Symposium 39 on “Doing the History of the Earth Sciences: What, Why and How?” held at Pacific Grove California, July 6-10, 2014.

At the 2014 Geological Society of America annual meeting in Vancouver, Canada, I presented the invited paper “Geological Hypotheses: Multiple, Working and Outrageous” at the “Great Ideas in Geology” session organized by History and Philosophy of Geology Division of the society.

At the 45<sup>th</sup> Annual Binghamton Geomorphology Symposium, University of Tennessee, Knoxville, September, 2014. I presented the invited keynote talk “Planetary Geomorphology: Some Historical and Analytical Perspectives.”

My paper “On the Logic of Doing History of Science: The Insider’s Viewpoint” was presented at the International Union of Geological Sciences, International Commission on the History of Geological Sciences (INHIGEO) 2014 Symposium 39 on “Doing the History of the Earth Sciences: What, Why and How?” Pacific Grove California, July 8, 2014.

I presented two papers, “Charles S. Peirce and the Slaty Cleavage Controversy” and “Charles S. Peirce and the Philosophy of Geology” at the C. S. Peirce International Congress: Invigorating Philosophy for the 21<sup>st</sup> Century, Lowell, Massachusetts, July 15-19.

My publications for the year included the following that relate to history of geology:

Baker, V.R., 2014, Planetary geomorphology: Some historical/analytical perspectives.

*Geomorphology*, <http://dx.doi.org/10.1016/j.geomorph.2014.07.016>

Baker, V.R., 2014, Uniformitarianism, earth system science, and geology. *The Anthropocene*, v. 5, p. 76-79.

**Kennard B. Bork** – continued as a member of the USA Organizing Committee for the 39th INHIGEO Symposium, held in July 2014 at the Asilomar Conference Grounds in Pacific Grove, California. It was a delight to attend the technical programs and participate in the excellent post-meeting field trip to Yosemite and the Sierra Nevada. Continued service on the INHIGEO Board allowed for productive and enjoyable e-conversations. Late in 2014, Ken generated, in concert with Ken Taylor, an e-tribute for Albert V. Carozzi (1925–2014). He also began editing a major project being conducted by Czech colleagues who are producing a visually striking and informative atlas of early geologic maps.

**William R. Brice** – His main activities during 2014 related to research on the history of the oil and gas industry.

#### *Articles/Books:*

Brice, W. R. 2014. David Leonard McKain (1934-2014): A Remembrance, *Oil-Industry History*, v. 15, no. 1, In Press.

Brice, W. R. 2014. David R. Oldroyd (1936-2014): A Remembrance, *Newsletter*, History and Philosophy of Geology, Geological Society of America, December, p. 9-10.

Brice, W. R. and Spencer, Jeff A. (eds.) 2014. *Program and Abstracts*, Petroleum History Institute Annual Oil History Symposium & Field Trip, Bradford, Pennsylvania, June 19-21, 51 p.

#### *Conference presentations:*

Brice, W. R., 2014. The Early Years of the West Virginia Oil and Gas Industry, West Virginia University, Department of Geology & Geography, November 6 (Invited Speaker).

Brice, W. R. 2014d. Nobel’s Invention in Early U. S. Oil fields – The Original *Frackers*, Cornell University, Earth & Atmospheric Sciences, Ithaca, NY (Invited Speaker), October 1.

Brice, W.R. 2014. Cornell Geology – The Early Years, Symposium Celebrating 125 years of Geological Society of America, Cornell University, Ithaca, NY (Invited Speaker), June 14.

Brice, W.R. 2014. Triumph over Adversity; Edwin Drake and Others. Dublin School, Dublin, NH; (Invited Earth Day Speaker) April 22.

Brice, W.R. 2014. “Fracking” - A Historical Perspective (Invited Banquet Speaker). Northeastern Section/Geological Society of America Annual Meeting, *2014 Abstracts with Programs*, v. 46, no. 2, p. 6.

Brice, W. R. and Brown, L. D. 2014. COCORP – a great idea and those behind it: (Invited Paper), Geophysical Class, University of Pittsburgh at Johnstown, November 5.

Brice, W. R. and Brown, L. D. 2014. COCORP – a great idea and those behind it: (Invited Paper) Annual Meeting, Vancouver, BC, Canada, 20 October, Geological Society of America *Abstracts with Programs*, v. 46, no. 6, p. 405.

#### *Book Reviews:*

- Brice, W. R. 2014. *Oilfield Revolutionary: The Career of Everette Lee DeGolyer* By Houston Foust Mount, II (2014), In: *Oil-Industry History*, v. 15, no. 1, In Press.
- Brice, W. R. 2014. *Oil and Gas in Pennsylvania (3<sup>rd</sup> Edition)* By K. J. Flaherty and Thomas Flaherty, III (2014), In: *Oil-Industry History*, v. 15, no. 1, In Press.
- Brice, W. R. 2014. *Do MJ Trumble & His Contemporaries Compare with Characters from Ayn Rand's 'Atlas Shrugged'?* By Ann Mauer (2014), In: *Oil-Industry History*, v. 15, no. 1, In Press.
- Brice, W. R. 2014. *Long Night of the Tankers: Hitler's War Against Caribbean Oil* by David J. Bercuson and Holger H. Herwig (2014), In: *Oil-Industry History*, v. 15, no. 1, In Press.

**Paul D. Brinkman** – served the final year of a two-year term as councilor of the History of the Earth Sciences Society in 2014. He developed and taught a new course on the cultural and scientific history of dinosaurs in the History Department at North Carolina State University. He also published an article on Clemente Onelli's 1888-1889 fossil-hunting expedition on the Rio Santa Cruz, in Argentina, as well as several encyclopedia articles. He continued work on multiple projects, including several papers on paleontologist Edward Drinker Cope and a book on the history of the Captain Marshall Field Paleontological Expedition to Argentina and Bolivia, 1922-1927.

*Publications:*

- Brinkman, P. D. 2014. Edward Drinker Cope. In: *The Oxford Encyclopedia of the History of American Science, Medicine, and Technology*. Oxford: Oxford University Press, vol. 1, pp. 217-218.
- Brinkman, P.D 2014. Dinosaurs. In: *The Oxford Encyclopedia of the History of American Science, Medicine, and Technology*. Oxford: Oxford University Press, vol. 1, pp. 249-250.
- Brinkman, P. D. 2014. Othniel Charles Marsh. In: *The Oxford Encyclopedia of the History of American Science, Medicine, and Technology*. Oxford: Oxford University Press, vol. 2, pp. 24-25.
- Brinkman, P. D. 2014. Paleontology. In: *The Oxford Encyclopedia of the History of American Science, Medicine, and Technology*. Oxford: Oxford University Press, vol. 2, pp. 215-218.
- Brinkman, P. D. and Vizcaíno, S. F. 2014. Clemente Onelli's sketch map and his first-hand, retrospective account of an early fossil-hunting expedition along the Río Santa Cruz, southern Patagonia, 1888-1889. *Archives of Natural History* 41(2): 326-337.

**Renee M. Clary** – In 2014, I served as the Chair of the History and Philosophy of Geology Division of the Geological Society of America, and I will continue in this role through October 2015. Within GSA's annual meeting, I proposed, with my co-conveners Michele Aldrich and Alan Leviton, a topical session, "Great Ideas of Geology." The session was expanded to include both morning and afternoon sessions (Great Ideas Part II), due to the large number of quality submissions. As the GSA HIST Division Chair, I was also responsible for organizing the History and Philosophy of Geology Division Luncheon and Business Meeting, and the Evening/Student Reception.

For the INHIGEO Asilomar conference, I served on the Organizing Committee and volunteered as the technical assistant at the conference, helping to transition presentations and speakers. I served as chair for the session that honoured Robert Dott, Jr.

I currently serve on the William Smith Steering Committee for GSA, and have worked with George Davis to propose a Pardee Session on William Smith's lasting contributions. I also assisted with topical session ("Great Images in Geology") and field excursion proposals honouring Smith that will hopefully become part of the Smith celebration.

In October 2014, I was named the recipient of the Dean's Eminent Scholar Award, which is awarded annually to the outstanding researcher in the College of Arts & Sciences (physical sciences) at Mississippi State University.

Three of my 2014 publications have relevance to the History of Geology: The *Earth Sciences History* article presents my research on Henry De la Beche, which was delivered at the 2013 Manchester ICHSTM conference. The other two articles, published in the National Science Teachers Association journal, *Science Scope*, incorporate the history of science within secondary classroom settings.

Three of my conference presentations were also directly relevant to the history of geology. The Henry De la Beche presentation, which discussed De la Beche's pioneering reconstructions of ancient life, was part of the "Great Ideas of Geology" GSA topical session. I also presented a talk within the "How and Why" of doing the history of geology to the INHIGEO meeting at Asilomar. Finally, the Mississippi Academy of Sciences provided the venue for using historical scientific controversies in science classrooms to engage students and facilitate an understanding of the nature of science.

#### *Publications:*

- Clary, R.M., and Wandersee, J.H. 2014. The journey from elite society to government geologist: Henry De la Beche's (1796-1855) powerful impact on the importance of observation within an emerging professional science. *Earth Sciences History*, 33 (2), 259-278.
- Clary, R.M., and Wandersee, J.H. 2014. History of Science and Climate Change: Is the Past the Key to our Future? *Science Scope*, 37 (6), 63-71.
- Clary, R.M., and Wandersee, J.H. 2014. The Leonardo Strategy: Scientific discourse and argumentation in an online environment. *Science Scope*. 37 (5), 18-22.

#### *Conference presentations:*

- Clary, R.M. 2014. Envisioning Deep Time: Henry De la Beche's contributions to scientific visualization. *Geological Society of America 2014 Abstracts with Programs*, 46 (6), p. 258.
- Clary, R.M., & Wandersee, J.H. 2014. The history of science in the science classroom: The past is the key to the future in science education. 39<sup>th</sup> INHIGEO Symposium Program with Abstracts, 34.
- Clary, R.M., and Wandersee, J.H. 2014. Arguing science: Using legitimate scientific controversies to engage students in discourse and the nature of science. *Journal of the Mississippi Academy of Sciences*, 59 (1), 121.

**John Diemer** – began a three-year term as editor of *Earth Sciences History* in 2014. Please visit the History of Earth Sciences website: [www.historyearthscience.org](http://www.historyearthscience.org) for information on submitting papers for possible publication in *Earth Sciences History*.

Volunteered papers continue to arrive at the editor's office at a steady pace and are always welcome. In addition, he organized several theme issues of the journal. The first (Volume 33 Number 2) was published in the autumn of 2014 and it contained six papers presented at the 2013 ICHSTM/INHIGEO meeting in Manchester, England. The second theme issue (Volume 34 Number 2) will be published later this year and contains papers presented at the 2014 INHIGEO meeting held at the Asilomar conference center. The third theme issue (Volume 35 Number 1) will appear in 2016 and contain papers presented at the William Smith meeting held at the Geological Society of London in April of 2015, and sponsored by the History of Geology Group.

During 2014 he presented a paper at the Asilomar INHIGEO meeting entitled "The utility of cross-sections in early 19<sup>th</sup> century geologic investigations, and as records of evolving stratigraphic nomenclature". He also presented a paper at the annual GSA meeting in Vancouver entitled "Observations that contributed to the recognition of the Permian System".

**Bob Dott** – In March, my article about "Laurence L. Sloss and the Sequence Stratigraphy Revolution" appeared in *GSA Today* in the *Rock Stars* series (*GSA Today*, v. 24, p. 24-25).

In our University of Wisconsin Geoscience Department's annual newsletter, *The Outcrop*, I wrote an article about six Chinese geologists who studied in our Department between 1981 and 1984. These five men and one woman were in their forties and had suffered a professional stalemate during the Cultural Revolution. Responding to a proposal by our University's Chancellor Irving W. Shain, the new Chinese government sent our six Chinese Scholars for two years each to get some remedial study. Our Scholars' specialties included marine seismology, crystallography, stratigraphy, micropaleontology, and structural geology. Following their two years of study, each of six faculty members was invited to China for a lecture and sight-seeing tour. Besides their formal educational program, the Scholars interacted socially with our faculty and fellow students. In turn, we faculty members became more familiar with China, its geology and culture in a most rewarding manner. This exchange program worked very well and was a fine tribute to Chancellor Shain's creativity. I felt that this historic program should be remembered as a part of our Departmental history.

In October I was honored by the Geological Society of America's Division of History and Philosophy of Geology as recipient of the Friedman Distinguished Service Award. Having been one of the founders of the Division and the negotiator for the commercial publication of *Earth Sciences History*, this award was very satisfying.

**Gregory A. Good** – continued as treasurer of the History of Earth Sciences Society and as INHIGEO Vice-President for North America. In March, Greg hosted a meeting of 50 young historians of science at the American Institute of Physics for a conference on Global Science, Global Technology, Global Impacts. He orally presented two professional papers: "Geophysics on the Eve of the Great War, 1914" (at Carnegie Institution of Washington's centennial of the DTM Building) and "John Herschel's Cosmic View of Earth: Another Approach to the History of Earth Science" (INHIGEO conference, Asilomar, CA). He was also named Doctor of Humane Letters (Honorary), St. Vincent College.

**Sandra Herbert** – The highlight of this year was attending the INHIGEO meeting in California and traveling on the post-conference fieldtrip. At the conference I presented a paper on the geological background to the reception of evolutionary theory in the United States during the 1860s. Those of us on the INHIGEO field trip saw firsthand the severity of the current conditions of drought affecting the region, but even witnessing signs of the drought could not dispel our delight in being taken around Yosemite National Park by Greg Stock, the resident park geologist, and being shown key sites in California geology by INHIGEO members Ken Aalto and Tony Orme.

In 2014 I completed a term as president of the History of Earth Sciences Society. INHIGEO and HESS are both international societies and both are devoted to furthering work in the history of the earth sciences. If I may give one last plug: to join HESS and receive its journal *EARTH SCIENCES HISTORY*, go to the website: [www.historyearthscience.org](http://www.historyearthscience.org) The president of HESS for 2015-2016 is INHIGEO member Ana Carneiro.

**Kerry Magruder** – My activities in the history of geology were limited last year due to the requirements of administering a 10,000 sq. ft. renovation to the OU History of Science Collections and of establishing a new academic publication series of peer-reviewed editions of primary sources in the history of science called Edition Open Sources, undertaken by OU Libraries in conjunction with the OU History of Science Department and the Max Planck Institute for the History of Science in Berlin. Titles in this series will be released as pdfs, epub, and printed volumes, as well as integrated into an online platform with other online primary sources.



After presenting about EOS at the Asilomar meeting, I am pleased to say that a historian of geology, Francesco Luzzini, was selected as the first recipient of a 2-year EOS fellowship whose project will help guide development of the platform via ongoing interaction with OU developers. Francesco will publish a manuscript by Antonio Vallisnieri at the conclusion of his fellowship. For more information on EOS see <http://edition-open-sources.org>.

In addition to participating in the Asilomar symposium, I have also worked to create a forthcoming major exhibition at OU entitled "Galileo's World" which will include a number of geological works by Stelluti, Gesner, Steno, Cuvier and others. All 300 works designated for display are being digitized and made available in a new repository to be launched by the library this summer, which will replace our old effort with a modern and sustainable digital library. For more information on the new repository and the geological works it will contain, watch for announcements at [galileo.ou.edu](http://galileo.ou.edu) and [ouhos.org](http://ouhos.org).

**Clifford M. Nelson** – continued writing his analysis of the origin and early years (1877-1881) of the USGS. *Minerals, Lands, and Geology for the Common Defence and General Welfare: Volume 4, 1939–1961*, by Mary C. Rabbitt and Cliff, completed internal review for policy and the e-book (ix + 704 pp., and more than 200 illustrations) will be added to the Publications Warehouse at [www.usgs.gov](http://www.usgs.gov) during April 2015. Cliff will retire shortly thereafter and continue his scholarly work under other auspices. No plans exist within the USGS at present to fill his position.

*The book (e-only) was announced as:*

Rabbitt, M.C., and Nelson, C.M., 2015. *Minerals, lands, and geology for the common defence and general welfare*, v. 4, 1939–1961, Reston, Va., U.S. Geological Survey, 704 p.

**Sally Newcomb** – 2014 was distinguished by an excellent meeting in Asilomar, California, directed by Ken Taylor. Sally Newcomb attended, and gave an oral paper about P.-L.-A. Cordier's work in determining the mineralization of basalts, which placed that work in the context of his predecessors and contemporaries. Unlike some accounts in the history of geology, Cordier did not singlehandedly solve the "basalt controversy." A longer paper is currently out for review with *Earth Sciences History*.

Sally also had the pure pleasure of reviewing a 700 page manuscript for GSA by Davis Young. It consists of J.P. Iddings' *Recollections of a Petrologist* with Dave's lucid commentary, and it will be published by GSA in July 2015, as Special Paper 512. The *Recollections* have never been published and are significant in showing field areas that are still of interest from the view of an igneous petrologist more than a hundred years ago. Gary Rosenberg, Sally and Hugh Torrens are also working on a field trip to Philadelphia for the GSA meeting in Baltimore this next Fall, to see the William Smith map at the Academy of Sciences, as well as archives at The American Philosophical Society and The Library Company.

**John A. Norris** – received a Mellon Travel Grant to the University of Oklahoma's History of Science Collections for June and July. There he researched the differing opinions on the generation and composition of pyrites of authors such as Albertus Magnus (1193-1280), Vannoccio Biringuccio (1480-1539), Paracelsus (1493-1541) and Georgius Agricola (1494-1555). Some of the results of this research were presented at the 39<sup>th</sup> INHIGEO conference, in Pacific Grove, California, in July. More of the research from the trip to the OU Special Collections was presented at a conference on alchemical works of Czech provenance, hosted by the Department of Renaissance Studies of Palacký University in Olomouc, Czech Republic, in October. This presentation focused on Agricola's book, *Bermannus* (1530), a dialogue on mining and minerals that takes place in the mines of Joachimsthal (now Jáchymov in NW Czech Republic). Additionally, his article, *Auß Quecksilber und Schwefel Rein: Johann Mathesius (1504–1565) and Sulfur-*

*Mercurius in the Silver Mines of Joachimstal*, appeared in the 2014 issue of the history of science journal, *Osiris*.

**Antony Orme** – presented a paper at the 2014 INHIGEO Conference in California on "The Williamson Railroad Survey of 1853: William Phipps Blake sets the Geoscience Stage in California". This is part of his continuing evaluation of the geology of the Pacific Railroad Surveys of the American West in the 1850s. Then, in conjunction with Kenneth Aalto, Amalie Jo Orme and Gregory Stock, he led and produced a guidebook for the 6-day post-conference field trip for 35 persons to the Sierra Nevada. The excursion took the party from sea level to 3,600 m near the Sierra crest and back, specifically from Monterey Bay to Yosemite Valley and the Sierra Nevada from Mammoth Lakes to Lake Tahoe and the California Gold Rush (1848-1885) country between Tahoe and the Sacramento Valley.

**Steve Rowland** – attended the INHIGEO meeting in Monterey and co-led the mid-meeting field trip to Pt. Lobos. He continues as an associate editor of *Earth Sciences History*.

**Dorothy Sack** – In 2014 I presented three oral papers relevant to the history of geomorphology. At the GSA meeting in Vancouver, I spoke in the session in honor of Blair Jones on the role that geomorphic studies have played in paleoenvironmental reconstruction of desert basin paleolakes. For the Association of American Geographers (AAG) meeting I co-organized a paper session on under-represented groups in the history of geography in which I spoke on women in geomorphology. I presented a paper on the history of women in Earth science at a conference on women and gender studies. I continue to serve as chair of the AAG History of Geography Specialty Group and as a member of the AAG Archives and Association History Committee. In 2014 I was elected second vice-chair of History and Philosophy of the Geology Division of the GSA.

**David Spanagel** – The three highlights of the past year for David Spanagel in the history of geology were the following: In March 2014, his book *DeWitt Clinton and Amos Eaton: Geology and Power in Early New York* (Johns Hopkins University Press) was published. In June 2014, David was elected into membership as a representative of the United States on the International Commission on the History of Geological Sciences (INHIGEO). In December 2014, David was elected to serve as the History of Earth Sciences Society (HESS) Treasurer-Elect (his term as HESS Treasurer will begin January 2016).

*Conference presentations:*

Spanagel, D. 2014. Abstract Geometry Versus Physical Geography: Inscribing Invisible Political Boundaries Upon North America. *IGSD brown bag presentation at Worcester Polytechnic Institute*.

Spanagel, D. 2014. Great Lakes Geology and Hydrography: 1820s Keys to Knowledge, Peace, and Stability. *North American Society of Oceanic History (NASOH)*

Spanagel, D. 2014. Connected By Water: Inland Waterways & Maritime Endeavors. Conference paper given in Erie, Penn.

Spanagel, D. 2014. The Ideological and Practical Consequences of Including Geography and Cartography with Historical Studies of the Earth Sciences. *39<sup>th</sup> Symposium of the International Commission on the History of Geological Sciences (INHIGEO)*, held at Asilomar (Pacific Grove), California.

*Book reviews:*

Spanagel, D. 2014. Charles Boewe. *The Life of C.S. Rafinesque, A Man of Uncommon Zeal*. *Isis*

Vol. 105, 1, 227-228.

Spanagel, D. 2014. Rosalind Williams. *The Triumph of Human Empire: Verne, Morris, and Stevenson at the End of the World*. *Isis* Vol. 105, 3, 664-665.

Spanagel, D. 2014. Conevery Bolton Valencius. *The Lost History of the New Madrid Earthquakes*. *Earth Sciences History* 33, 361-363.

**Kenneth Taylor** – Much of the first half of 2014 was, for Ken, consumed in various preparations for the Asilomar conference and post-meeting field trip. During the Asilomar conference, Ken presented a talk related to the primary symposium theme (“What did they think that they didn’t know they thought? One aspect of inquiring into geoscience’s historical development”). He also presented a poster in connection with the second theme (“Names on the range: Scientists and science in the naming of Sierra Nevada features”). The poster can be accessed at Ken’s webpage on his departmental website (<http://cas.ou.edu/kenneth-1-taylor>).

Ken’s short article “Un savant au bois méconnu: Nicolas Desmarest (1725–1815)” appeared in the exhibition booklet *1805, autour de la visite de Napoléon I<sup>er</sup> à Troyes*, for the exposition mounted by the Maison du Patrimoine du Grand Troyes, in Champagne, from February through May. The article (pp. 10–12) was put into French through the kindness of Jean Gaudant (who delivered a lecture on Desmarest as part of the exposition program).

**Roger D. K. Thomas** – appreciates the honor of having been elected to INHIGEO in 2014. At the annual conference, in Pacific Grove, California, he gave a paper entitled “James Hutton’s Concept of Time is that of Leibniz, not that of Newton: the Nature of the Evidence”. The influence of Leibniz on Hutton has been largely neglected, apart from the most interesting work of Francois Ellenberger. No one appears to have recognized that Hutton’s view of time itself is derived from those of Leibniz and Locke, as opposed to that of Newton. Work on a manuscript developing this argument and assessing the approaches to scholarship that have caused this aspect of Hutton's thinking to be overlooked is underway.

**Davis Young** – has edited a previously unpublished autobiography by Joseph P. Iddings (1857-1920) entitled "Recollections of a Petrologist." The autobiography will be Special Paper 512 of Geological Society of America and is scheduled for release during the summer of 2015. Iddings was arguably the leading igneous petrologist of his era and ranked in stature with his contemporaries Waldemar Brøgger and Alfred Harker. While discussing his own groundbreaking contributions to the field, Iddings provides us with a clear picture of the revolutionary changes that were taking place in igneous petrology in the late 19th and early 20th centuries, thanks to the introduction of the petrographic microscope. He also gives us insights into the personalities and geological views of a wide range of his petrological contemporaries. The final part of the autobiography is a geological travelogue in which Iddings recounts his adventures in Japan, Korea, Manchuria, China, the Philippines, Borneo, Celebes (Sulawesi), Java, and Sumatra. Iddings' text is full of colorful description, poetic and literary allusions, and scientific interest. As editor, I have incorporated a wealth of notes, the majority of which present brief biographical sketches of most of the individuals mentioned by Iddings. Iddings mentioned many of his own books and articles as well as those of other leading geologists but failed to include bibliographic data, so I have also supplied an abundance of citations with list of references. It is a fascinating read.

## UZBEKISTAN

The most significant event of 2014 was the International conference *Historical heritage of scientists and thinkers of the Medieval East, its role and significance for modern civilization*, held in Samarkand, 15-17 May. Among the geologists who participated was Dr. Bakhtiar Nurtaev who

presented a paper titled, “Abu Rayhan Biruni and the formation of geodynamic ideas in geology” (see article, p. 59). The Secretary-General of INHIGEO Professor Barry Cooper attended the conference, representing the Commission.

The conference was opened by the President of the Republic of Uzbekistan I. A. Karimov. It was attended by delegates from many countries. Abstracts were published in three languages: Uzbek, Russian and English. The Secretary-General of INHIGEO Professor Barry Cooper visited the Institute of Geology and Geophysics of Academy of Sciences of Uzbekistan, which holds published materials on the history of Geology, and the Geological and Memorial Museum of Kh.M. Abdullaev (see photo below).



*INHIGEO Secretary-General, Barry Cooper, with Dr Bakhtiar Nurtaev, Director, Institute of Geology and Geophysics, Uzbekistan Academy of Sciences and INHIGEO member Dr Lora Lordkipanidze, also of the above Institute.*

On April 5, in State Committee of Geology and Mineral Resources, a meeting was held on the work of the previous year. A group of young researchers on the History of Geology organized a photo exhibition of geologists who had graduated from the geological faculty in the 1930s, many of whom became outstanding geologists of Uzbekistan, e.g. P. A. Shechtman, O. D. Rusanov, etc.

L. N. Lordkipanidze visited the Russian branch on the History of Geology in the Department of the history of Geology and the Geological Museum, V. I. Vernadsky, in Moscow. There she met, among others, I. Malakhov, Y. Y. Solovyov, V. S. Burtman, A. E. Schlesinger, V. I. Troitsky and V. S. Shein, to exchange information and publications.

Three major geological conferences were held in 2014:

The International scientific-technical conference, *Integration of science and practice as a mechanism for the effective development of geology in the Republic of Uzbekistan*. It was attended by members of all geological organizations of the Republic of Uzbekistan and by participants from Russia and neighboring republics. The abstracts published take up 561 pages. Many papers contain information on the history of geology, e.g. the history of the development of geological and structural studies of ore fields and deposits (Kh. A. Akbarov); the history of research on the validity of sampling (1957-2014) (V. Ya. Zimalina and others); the history of the study of individual

deposits; the history of geophysical research (I.G. Kremnev), seismic surveys (B. S. Nurtaev) and faults (P. P. Nagievich).

The International scientific-practical conference, *Innovation – 2014*. The collection of scientific articles comes to 348 pages. (A. D. Gonchar, and others “History of the debate about the age of rocks of the new object - reef mass areas)

The Republican scientific-practical conference, *Present-day issues of oil and gas, geological science, engineering and technology for deep drilling and well testing* (20-21 November). The published abstracts cover 208 pages. Papers relating to the history of geology include: Results of work carried out in 1962 and 1973 in Ustyurt and Ferghana (G. S. Abdullaev and others); the South-Western Gissar (A. Kh. Nugmanov and others); the history of the study of the Carboniferous sedimentary rocks of Karachatyr (S. T. Khusanov and others).

The monograph "Evolution of knowledge on the subject of gold in Uzbekistan", by N. A. Akhmedov, A.G. Luzanovsky and Yu. I. Paramonov, was published this year in 2 volumes. In the first volume, much attention is paid to the history of the discovery of gold deposits of the Republic of Uzbekistan, including the giant mine at Muruntau.

A major event was the publication of the monograph "Petrogenesis of potentially ore-bearing intrusives of Uzbekistan", by R. Akhunjanov and others, 352 p. They dedicated this volume to the memory of academician Ibrahim Khamrabaev. The first chapter deals with the status of the study of communication problems, plutonic magmatism and metallogeny and the composition and structure of the lithosphere of Western tan Shan. Also published were issues 1-6 of the Uzbekistan journal "Geology and Mineral Resources", containing articles on the history of Geology (No. 5, L. N. Lordkipanidze: Magmatism and mineralization of transform faults zones,); on the 100th anniversary of the birth of Boris Sergeevich Sokolov, a distinguished geologist and paleontologist, (No. 2); on the 75th anniversary birthday of the outstanding lithologist Alexander Alexandrovich Koldaev, (No. 6); the 70th birthday of Rustam Ismailovich Koneev, Chairman of the Mineralogical society of Uzbekistan, (No. 4); and the 70th birthday of Alexander Danilovich Gonchar, a sedimentologist.

The death of the distinguished mineralogist and geochemist Professor Stepan Badalov was a great loss to science. He was the creator of the table of elements on the isotopic level, honored worker of science of Uzbekistan, winner of the state prize of the USSR, Honorary member of the mineralogical society of the USSR, author of over 300 publications, including four monographs.

L.N. Lordkipanidze, B.S. Nurtaev, Tashkent

## APPENDIX A

## INHIGEO VIRTUAL BIBLIOGRAPHY

*The first instalment: Australia*

This is the first chapter of the INHIGEO Virtual Bibliography (IVB). The contribution is composed by the bibliographies provided by the Australian members who joined this editorial initiative. This *preview* of the IVB is published in the Annual Record to present the first results of this project and acquaint readers with its format.

For this bibliography, it has been decided to adopt the *Chicago Manual of Style, 16th Edition*, to achieve uniformity in referencing, and to follow one of the most common trends in the field of the history of science, as previously recommended by the Commission for Bibliography and Documentation of the International Union of the History and Philosophy of Science.

The rationale of this editorial initiative is to make of the IVB the comprehensive bibliography of the historical publications of INHIGEO members. This source of bibliographical information will be initially published on-line through the INHIGEO website, and will then be integrated into an international web project, designed to reach a wide audience of historians of science. In 2014 interest was expressed by the publishers of a journal regarding the possibility of publishing the IVB, subdivided in several issues. This may be regarded as the best outcome. However, in order to update the on-line version from time to time, contributions must be sent to the editor in the specified format (see below). Consequently, any the hardcopy publication has to be put on hold until each country has provided a list of publication lists from 80%-100% of its members. Up to this time contributions have been received from Australia, Bulgaria, Germany, Hungary, Ireland, Italy, Portugal, Russia, Spain, the United Kingdom and the United States. This is a only a small portion of the countries INHIGEO member countries. The number of bibliographies so far received, does not adequately reflect the research interests and publication histories of the majority of INHIGEO members.

All INHIGEO members are kindly invited to send their bibliographies to Francesco Gerali, the curator of the project. Your publication list is welcome in style you are currently using. You are not asked to edit your bibliography in the *Chicago Style*. The editing of the IVB final product is task of the curator. You are required to prepare your file in Word deactivating all possible document protections, special settings, automatic text formats (e.g. bullet points or numbered lists), which can slow the processing of your file. In your bibliography you can report any type of publication you like that is pertinent to the history of the geosciences. You are invited to provide all the bibliographical information in your possession for your entries (e.g., the full names of coauthors and editors; names and dates of the conference for conference proceedings, etc.). Although it is possible to retrieve some information online, the work of the curator will be easier and faster when complete records are provided.

The editor's email address, [francesco.gerali@gmail.com](mailto:francesco.gerali@gmail.com), is the only contact for forwarding your publication digest and for asking further questions. I ask all the prospective participants not to write to my current institutional address, to better fascillitate organization and storage. I offer my deep apologizes to those members who have recently written me about the IVB, to my past institutional address [f.gerali@igg.unam.mx](mailto:f.gerali@igg.unam.mx): it has been unexpectedly shut down without notice by my previous department and that, sadly, prevented me from responding to your communications. Please, delete from your contact list the address [f.gerali@igg.unam.mx](mailto:f.gerali@igg.unam.mx).

INHIGEO is already an accredited and recognized learned association; this project will provide it with more visibility, attract new scholars and, subsequently, amplify the possibility to receive the deserved attention from those funding institutions that can provide finance to foster new activities.

In order to allow for effective planning and to develop a steady and concrete dialogue with the editors interested in the publication of IVB, as hard copy, the curator of the project would like to set December 31, 2015, as the deadline for the submission of your contributions.

My most heartfelt thanks to current and future contributors to the INHIGEO Virtual Bibliography.

Cordially

Francesco Gerali, curator of the project

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**Barry Cooper, University of South Australia, Adelaide.**

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**APPENDIX B****INHIGEO Honorary SeniorMembers****May 2015**

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

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Professor Robert H. Dott, Jr., USA  
Professor Endre Dudich, Hungary  
Dr Gabriel Gohau, France  
Professor Algimantas Grigelis, Lithuania  
Professor Martin Guntau, Germany  
Professor Gordon Herries Davies, Ireland  
Professor Wolfhart Langer, Germany  
Dr Ursula B. Marvin, USA  
Professor Martin J.S. Rudwick, United Kingdom  
Professor Cecil Schneer, USA  
Professor Philippe Taquet, France  
Professor Hugh S. Torrens, United Kingdom  
Professor Kanemori Suwa, Japan

**APPENDIX C**

**INHIGEO MEMBERSHIP**

(Current as of May 2015)

Country of domicile is shown on one line

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