

Kenneth L. Taylor

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INHIGEO

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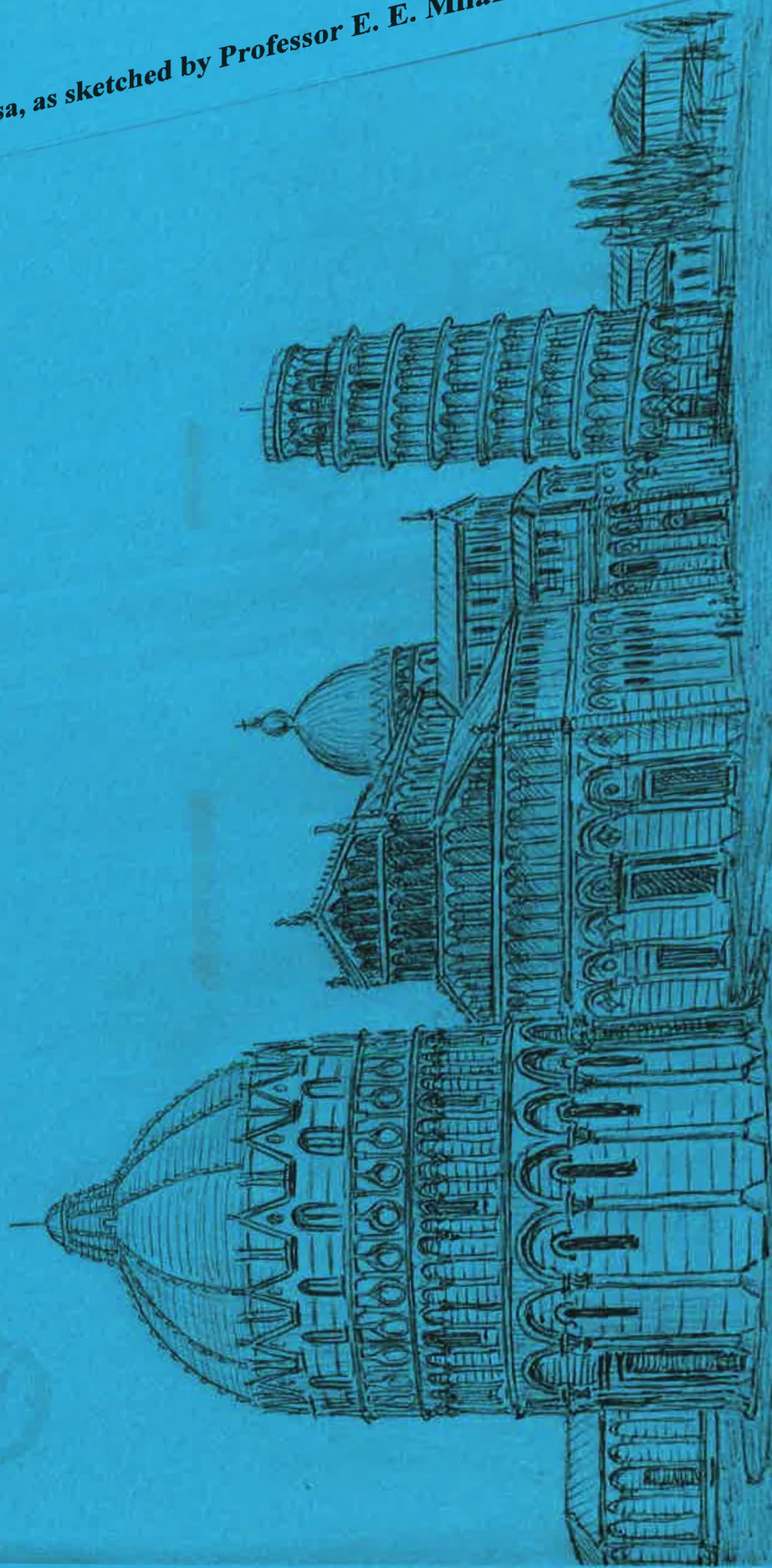
A Commission of the International Union of Geological Sciences

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

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

**Edited in Granville, Ohio, USA
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Вид с Пьяццы Мираколи

эпид. Pisa, Italy: Piazza dei Miracoli. Тунг, Храмы, Музеи, Кафедральный собор и Башня Пизанская (Leaning Tower of Pisa) (1173-1350)
Флорентинский собор - Баптистерий - Кампо Санто - Пизанская башня (1063-1180)
Duomo - Campanile (1173-1350)

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REPORTS

President's Message

Dear Members of INHIGEO,

A small group of friends and conspirators suggested my name last year and proposed me as candidate for the presidency of INHIGEO. The 32nd International Geological Congress, which took place in Florence and was magnificently organized by our Italian colleagues, has ratified this choice proposed by the Members of our Commission.

It is thus for me a great honor and a great pleasure to succeed my colleagues and friends, Manuel Pinto and Hugh Torrens. It is with delight that I shall rely on the efficient help of our new Secretary-General, Ken Bork, who himself succeeded David Oldroyd's shining example. The INHIGEO is a light, adaptable, and efficient organization, composed of members with a love for the history of the Earth sciences. I personally greatly appreciate the spirit and the activity of this Commission of the International Union of the Geological Sciences.

The structure of our planet and its geological formations, obviously do not coincide with the historical and political boundaries of the different countries, so that geologists, and with them the historians of geology, have always had a natural tendency to ignore such boundaries. Let us think of Lyell, whose researches and work were undertaken in France, Italy, Spain, and the United States, as well as Great Britain. We could say as much for d'Orbigny, Humboldt, Darwin, Barrande, and others. It is thus logical to follow in the steps of these great naturalists everywhere they have carried out their investigations.

At a time when the world is being reorganized, or cut up into different blocs, and at a time when countries are still arguing about their frontiers, historians of geology can consider with some 'serenity' all the debates between the Earth's nations. For them, the limits of the plates, the sedimentary areas, and the mountain ranges transcend the boundaries created by human beings. For geologists, to find the Bathonian in Morocco, a dolomitic limestone in Asia, or a Hercynian cycle in North America, testifies to the fact that geological formations and structures blithely cross political frontiers. The historians of our planet—geologists—and historians of geology thus have an approach that gives intrinsic interest to INHIGEO's work.

Our next meetings, after those in Portugal, France, Ireland, and Italy, promise to be very exciting. We shall meet again in the Czech Republic (2005), in Lithuania (2006), in Germany (2007), and then in Norway (2008) to exchange ideas. As Georges Cuvier wrote many years ago when he was preparing his studies for the volumes of the *Ossements fossiles* and was asking for the cooperation of his colleagues from all countries: *Le commerce réciproque de lumières est peut-être le commerce le plus noble et le plus intéressant que peuvent faire les hommes*, which can be translated as "the reciprocal exchange of the enlightened is perhaps the most noble and interesting kind of commerce that men can have with one another."

Philippe Taquet, Paris

Secretary-General's Report

It is a pleasure to greet you as I more fully assume the duties as your new Secretary-General of INHIGEO, following David Oldroyd's fine stewardship of eight years. Upon my formal election in August 2004, I was pleased to interact with a number of Commission members as we enjoyed and profited from the excellent excursion through Northern Italy, following the 32nd International Geological Congress in Florence, Italy. And, of course, most of you will have received e-mails or formal letters from me concerning INHIGEO activities. Nonetheless, this first *Newsletter* of my tenure is the appropriate place to extend cordial greetings to all of you, and to invite any input you may have concerning the Commission's operation. President Philippe Taquet, Board members, and I welcome your thoughts concerning the continued good health and evolution of INHIGEO.

In my Annual Report, sent on 1 December 2004 to the headquarters of IUGS (International Union of Geological Sciences), in Trondheim, Norway, I outlined a number of issues that might be of interest to Commissions members, particularly those who are new to our group. We now have almost 200 members from approximately forty countries worldwide. Seventeen of that number are Honorary Senior Members. Those individuals have distinguished themselves professionally as historians of geology and they deserve our applause and recognition. Their names are listed as a group just before the full compilation of INHIGEO members, at the end of this *Newsletter*. Individual Honorary Senior Members and their addresses are also included this year within the membership list. Twenty-four new members were added in the 2004 elections. You may wish to reflect about nominees to put forward when a new crop of members are sought in 2006. Our current geographic sweep is large, with concentrations in Europe, the Americas, Asia, Australasia, and independent states of the former Soviet Union. Membership remains sparse in the Middle East, India, and Africa. (Antarctica remains an untapped resource.)

As the paragraph above indicates, we exist under the umbrella of the IUGS. In February 2005, the IUGS Executive Council requested that its constituent organizations generate updated "Terms of Reference"—summaries of objectives and strategies. I circulated a memo within the INHIGEO Board and then submitted our final version to the IUGS Executive Council. The document is reproduced here so you will have a current understanding of how our Board currently envisages our mission.

OBJECTIVES

The primary objective of the Commission on the History of Geological Sciences (INHIGEO) involves promoting studies in the history of geological disciplines. In so doing, the Commission endeavors to stimulate and coordinate the activities of regional, national, and international organizations having shared purposes. The Commission also works to foster the publication of individual and collective works that illuminate the history of the geological sciences.

STRATEGIES

- *Meet with regularity, usually once each year, including years of the International Geological Congress (IGC), to conduct a major symposium on the history of geology. This typically includes a multi-day field component, with the production by the Commission of printed guidebooks.*
- *Produce an annual Newsletter that incorporates information from the officers, national reports, book reviews, conference reports, and a variety of news items and illustrations that promote sharing of professional insights.*
- *Correspond with INHIGEO Board members (President, Secretary-General, 5 regional Vice-Presidents, and Past-President), and occasionally with the entire membership, concerning issues of relevance to the study of the history of the geosciences.*
- *Make efforts to encourage historical perspectives and interpretations regarding the activities of international geological institutions (such as IGC and IUGS).*
- *Work with various publishing houses and journals, including EPISODES, to promote publication of symposia proceedings and a variety of contributions to the discipline.*

We receive most of our funding from IUGS, with some appreciated input from the International Union for the History and Philosophy of Science, History of Science Division (IUHPS/DHS). Unfortunately, resources are limited this year. That is partly a function of major cutbacks to UNESCO (for example, the Earth Science Division was terminated in 2004 and related funding was cut), partly because all IUGS budgets have been tied to the U.S. dollar and that currency is being allowed to fall to historically low values, and partly due to the simple fact that costs of virtually all materials and services are increasing. Neither of our supporting agencies has been able to meet our full requests this year. Thus, it will not be possible to undertake major initiatives that would drain our coffers. One example that may have a personal effect on some of you is that we cannot help individual members with *substantial* travel grants to INHIGEO meetings. Nor can we subsume costs for major publishing efforts, either on our own or in the context of supporting costs associated with publication in journals or publishing houses.

Given those realities, we have sought ways to cut and contain costs of our ongoing operations. As you may have noticed on the cover of this *Newsletter*, while the bulk of compiling and editing was done by me, the actual production and mailing processes were done in Sydney, Australia, where David Oldroyd continues to have access to mailing services without charge. It's enough to make one believe in the merits of cooperation in a global world context! David Oldroyd and I decided that because the University of New South Wales could still provide mailing for our *Newsletter*, the savings could be truly substantial. We have therefore resorted to the 21st-century option of sending edited copy electronically from the USA to Australia, and getting the material printed and distributed there, thereby saving INHIGEO a great deal of money.

A few words about the *Newsletter* itself are in order. Country reports are strong this year, and we have a considerable amount of valuable "news" to share about past and future meetings. We do, of course, depend upon the membership to provide those reports, as well as book reviews, obituary notices, and reports of major awards that have been garnered by members. Major thanks are extended to all contributors. It requires a great deal of work by a large number of people to create a strong *Newsletter*, and your time and efforts are greatly appreciated—by the Board, and one hopes, by the entire readership.

A real attempt has been made to foster continuity with recent issues of the *Newsletter*. Hence, you will find the same font and same general layout of features as have appeared over the last several years. For those so attuned, one real difference is the move to what might be called the "American style" in such matters as placement of commas and quotation marks. This is not a coup or rebellion against British usage. It is simply an attempt to follow the now widely used *Chicago Manual of Style*, while helping an American editor not confuse readers or himself with a plethora of irregular usages. In concert with that shift, you will find most spellings in the American mode—but with occasional exceptions where authors of national reports prefer to use British spellings in a consistent manner. (There are limits to rebellion.) A synopsis of editorial suggestions will be included in the next invitation for contributions to *Newsletter* No. 38 (reporting on 2005). Both David Oldroyd and I have profited from the hard work of many contributions to our *Newsletters*, but have had occasion to wonder if most people bother to read the printed suggestions to authors. It is the content that is critical, however, so editors should be willing to do a bit of proofreading and text manipulating.

Speaking of depending on our membership leads directly to a call to update information about changes of addresses, both postal and e-mail. Our overall success in contacting people has been quite high, but organizations such as ours are at the mercy of their members to keep the records up to date. In this day and age, most people use e-mail, but some of our members do not, and it is important that we stay in communication with everyone in order to provide optimal service. In fact, one of the concerns we have with the painful "dismissal" process is that sometimes a failure to vote in two successive elections is related to not receiving communications from INHIGEO officers. But the onus is on people who do not receive INHIGEO material to keep us informed about their contact details.

Our communication quotient has been greatly aided by having a website that resides under the umbrella of the IUGS, but can also be found by typing INHIGEO into most search engines. Dr John Aaron manages the IUGS website and he has been generous in supporting and updating the INHIGEO site. John's work ethic and helpfulness to so many within IUGS were recognized at the 32nd IGC in Florence (2004), where he was presented with the James M. Harrison Award. Details can be found on the IUGS website. In March 2004, Dr Aaron helped me substantially update the INHIGEO site, after I sought suggestions from the Board. In response to a Board member's cogent suggestion, for example, we incorporated a brief valuable history of INHIGEO that David Oldroyd had written for *Episodes*. New links and internal connections were also added.

A number of you will be quite aware of the success of INHIGEO activities in 2004. The primary event, of course, was the IGC in Florence, featuring two sessions devoted to the history of geology. Topical Symposium 20.01 focused on 'Origin of Modern Geology in Italy,' and was chaired by W.G.E. Caldwell (Canada) and G.B. Vai (Italy). Topical Symposium 20.02, chaired by N. Morello (Italy) and D.R. Oldroyd (Australia) considered 'Institutions, Museums and Scientific Societies.' After the Congress was over, some of us were treated to a superb field excursion through northern Italy, organized by Nicoletta Morello and Ezio Vaccari, with valuable input from Gian Battista Vai, Claudia Principe, and Kathleen Histon. (Please see Mike Johnston's excellent summary in this *Newsletter*.)

Future meetings of INHIGEO are in strong states of planning. Jan Kozák, of the Geophysical Institute in

Prague, has done much hard work in setting up a July 2005 meeting in the Czech Republic. The focus of the technical sessions will be the history of geophysics. Field trips will introduce participants to a variety of significant geological and historic sites in Bohemia, Moravia, and the region around Prague. In August 2006, we will be hosted by Algimantas Grigelis and his colleagues at the University of Vilnius, in Lithuania. The histories of geomorphology and Quaternary geology will be the primary themes. Again, a strong program of field excursions throughout the Baltic States (Lithuania, Latvia, and Estonia) will be provided. Martina Kölbl-Ebert, of the Jura-Museum, Eichstätt (Germany) has offered to welcome us to Bavaria in September 2007. While in the company of one of the great skeletons of *Archaeopteryx*, we will reflect upon the themes of the historical relationships between religion and geology. The 2008 meeting is set for Oslo, Norway, which will be the host city of the 33rd IGC. We all need to do some thinking about the specifics of that meeting, as far as theme and field-trip particulars, partly so as not to overburden our rather limited number of Scandinavian members.

Lastly, a few thanks are in order. Ursula Marvin, a previous Secretary-General of INHIGEO (1989–1996), has been a valuable source of counsel about many things over many years and has been a major help as I took on the S-G position last year. Many of you also deserve my thanks, as you have worked hard to further the goals of INHIGEO, and have thereby made my job easier and more productive. David Oldroyd merits a special note of gratitude for his exceptional and constant support and good advice. With the magic of modern e-mail and the ability and generosity repeatedly displayed by David, my entry into the world of INHIGEO has been greatly eased. Thanks to one and all.

Kennard B. Bork, Granville, Ohio

Minutes of the INHIGEO Business Meeting 2004

Ulysses Room, Palazzo Poggi, Bologna Academy of Sciences, Bologna, Italy, 31 August 2004

President Manuel Pinto (Portugal) in the Chair

Present: Victor Baker (USA); Zoya Bessudnova (Russia); Ken Bork (USA); David Branagan (Australia); Algimantas Grigelis (Lithuania); Jens Hansen (Denmark); Tatiana Ivanova (Russia); Michael Johnston (New Zealand); Simon Knell (UK); Martina Kölbl-Ebert (Germany); Toshio Kutsukake (Japan); Léo Laporte (USA); Stefano Marabini (Italy); Eugenij Milanovsky (Russia); Nicoletta Morello (Italy); Sally Newcomb (USA); Hakuyu Okada (Japan); David Oldroyd (Australia); Manuel Pinto (Portugal); Martin Rudwick (UK); Philippe Taquet (France); Hugh Torrens (UK); Ezio Vaccari (Italy); Gian Battista Vai (Italy); Michiko Yajima (Japan); Toshihiro Yamada (Japan)

Attending: Katherine Bork (USA); Barbara Christy (USA); Martin Ebert (Germany); Ilio Galligani (Italy); Carla Sarti (Italy); Shirley Torrens (UK)

At the outset of the meeting we received an informative introduction to the Ulysses Room from Professor Gian Battista Vai, of the Department of Earth and Geological-Environmental Sciences at the University of Bologna. The meeting was conducted by Manuel Pinto, the outgoing President, and David Oldroyd, the outgoing Secretary-General. Professor Pinto thanked our Italian hosts for their generosity and hospitality. Professor Oldroyd noted that the meeting would follow the outlined agenda published in the *INHIGEO Newsletter #36* (2004, for 2003).

- 1) *Apologies* were received from members not able to attend: Ana Carneiro (Portugal); Barry Cooper (Australia); Silvia Figueiróa (Brazil); Martin Guntau (Germany); Ursula Marvin (USA); Gerardo Soto (Costa Rica).
- 2) *Arrangement of Agenda*: There were no major shifts requested in the agenda. It was agreed that some potential avenues of publication would be discussed during a subsequent part of the trip.
- 3) *Minutes of previous meeting*: The minutes of the previous meeting (Dublin, Ireland; July 2003) were accepted without alteration.
- 4) *Matters arising*: No topics of discussion were raised.
- 5) *President's Report*: President Pinto called attention to the fact that his Report for the previous year was published in *Newsletter No. 36*, pp. 3–4. President Pinto also reported that work on the volume concerning the history of geology in Africa was proceeding. It was in a preliminary stage, but relevant persons had been contacted. The project might be of value to various members outside of Africa and might succeed in generating more interest among scholars within Africa. The potential exists to have the final product published by the Geological Society of London as a Special Publication (see Item 7 below).
- 6) *Matters arising*: No topics of discussion were raised.
- 7) *Secretary-General's Report* (published in *Newsletter #36*, pp. 4–6).
 - INHIGEO elections have been concluded and will be reported upon later in this session.
 - The S-G reported on the status of publications in *EPISODES* (the journal of the International Union of Geological Sciences; IUGS).
 - Histories of individual International Geological Congresses are being produced and publication in the journal has begun, with contributions from Professors Vai and Milanovsky.
 - Persons having presented papers at the Friday, 27 August 2004 session of the IGC were requested to send them directly to David Oldroyd, for possible inclusion in future numbers of *Episodes*.

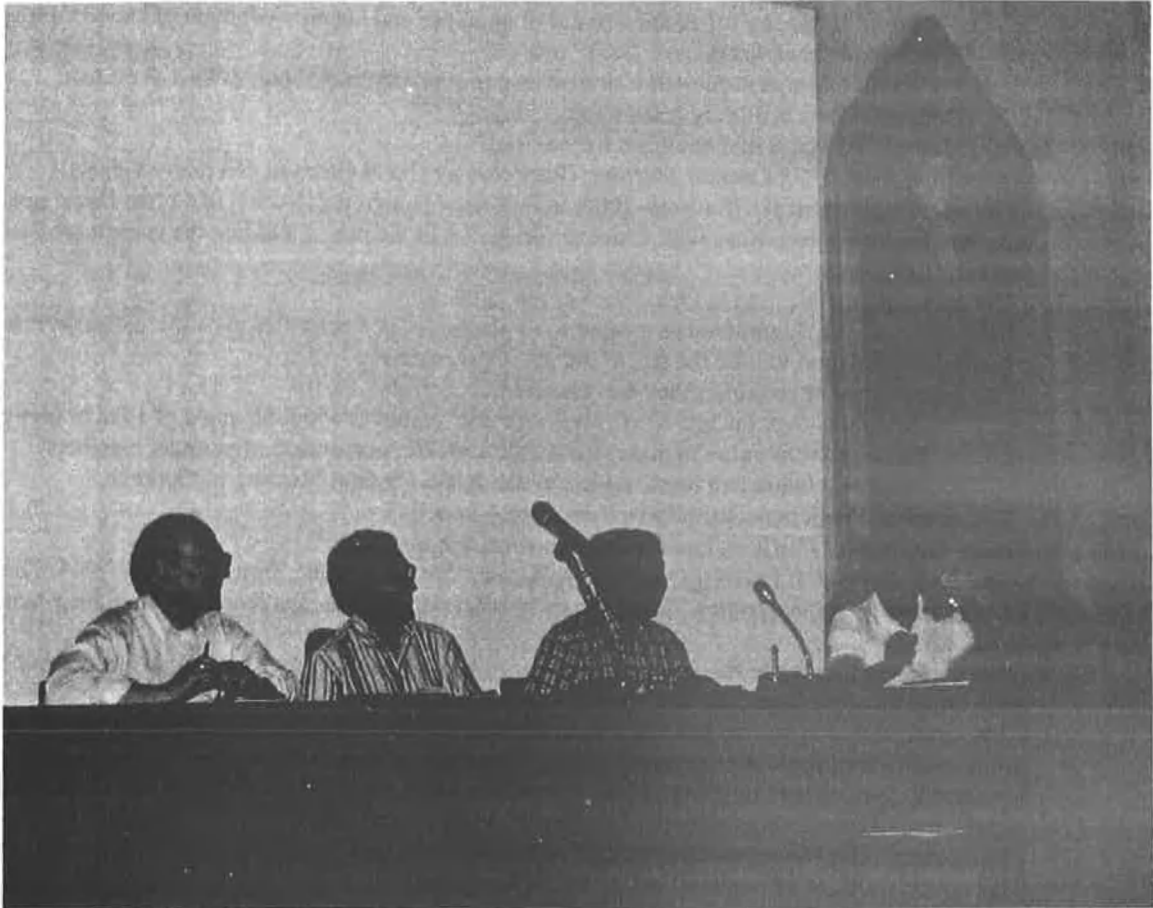
- A new position (VP for Australasia and Oceania) within the Board has been proposed and accepted. A precedent for having five Vice Presidents does exist. (NOTE: An old document has been located in Moscow, dating from the time of Professor V. Tikhomirov's presidency, which states that INHIGEO may have up to five vice presidents. This regulation had been lost sight of over time.) Henceforth, there will be a Vice President for Australasia and Oceania. The first holder of this position will be David Oldroyd, thereby providing continuity with the former Board.
 - The Geological Society of London signed an agreement with IUGS, stating that they will be willing to pursue Special Publications which can include volumes on the history of geology.
 - Publication of works of historical consequence is of significance for firming up ties between INHIGEO and our parent organization, IUGS
 - David Oldroyd informed the meeting that his eight years at the Secretary-General's helm of INHIGEO have been both pleasurable and rewarding.
 - Questions were solicited.
 - David Branagan called for a round of applause and acknowledgment of David Oldroyd's excellent stewardship.
 - David Oldroyd requested a similar response for Manuel Pinto, as Past-President.
 - Both calls were willingly acted upon.
- 8) *Matters arising:* No topics of discussion were raised.
- 9) *Information from IUGS Council Meeting:* (Reported by David Oldroyd, Secretary-General)
- The new President of IUGS (2004–2008) is Professor Hongren ZHANG, of China. David noted that we have had positive interactions with Chinese colleagues in the past, including the current production of the journal *EPISODES*.
 - The next IGC will be held in Oslo, Norway, in 2008.
 - INHIGEO has few Scandinavian members, so plans for 2008 activities are a bit unclear at this moment.
 - Australia (Brisbane) will be the site of the 2012 IGC meeting.
 - The matter of the "age regulation" was clarified.
 - Members over the age of 70 years will not "count" toward the quota of 11 members per nation. This may be of value in making possible a greater percentage of younger members.
 - This regulation had been ratified by the IUGS Council Meeting in Florence.
 - IGC and IUGS will henceforth have a common Council.
- 10) *Future meetings of INHIGEO and relations with IUGS and IUHPS.*
- The 2005 meeting of INHIGEO will be in Prague, Czech Republic, from 2–12 July 2005. The focus will be 'The History of Geophysics.' The primary contact person is Dr Jan Kozak of the Czech Academy of Science.
 - The comment was made that long IGC meetings, combined with long field trips, can present financial difficulties for some members.
 - Also commented upon was the value of having more than 15 minutes for presentation of historical papers. Some members of the audience reported that they LIKED the 15-minute limit, as a large number of noteworthy topics could be illuminated. The point was also made that 15 minutes worked well for overview papers, but 30 minutes served better for reports of detailed research.
 - The potential for Congress "Workshops" was noted, in which various lengths of time could be utilized. This option needs to be explored before the Oslo meeting.
 - INHIGEO is faced with an unusual situation this year, in that we have TWO "unfilled" years (2006; 2007) for meetings, but THREE offers have been received (Baltic States; Germany; USA). Some decision must be made.
 - Members present heard three excellent outlines of proposed meetings: Algimantas Grigelis (Lithuania); Martina Kölbl-Ebert (Germany); and Victor Baker (USA)
 - It was agreed that a confidential paper ballot would be held on the bus in the near future.
 - On Wed., 1 September 2004, the ballot resulted in the decision to hold the 2006 meeting in the Baltic States and to meet in Eichstätt, Germany in 2007. The option of holding a later meeting in the USA remains open.
- 11) *Business without notice:* No new business was introduced.
- 12) *Nominations of Honorary Senior Members.*
- David Oldroyd reported that the following persons were recommended for recognition as Honorary Senior Members.
 - Hong-Zhen Wang (China); Michel Durand-Delga (France); Endre Dudich (Hungary); Dan Yaalon (Israel); Kenzo Yagi (Japan); Alan Mason (New Zealand); Albert Carozzi (USA); Robert Dott (USA); Cecil Schneer (USA).
 - These recommendations were endorsed by the meeting with acclamation.
- 13) *Completion of 2004 Ballot for new INHIGEO Board and Members.*

- David Oldroyd reported that all nominated members were elected and that the recommended shifts in the Board were affirmed.
- The new President, Philippe Taquet (France), thanked Manuel Pinto for his work and eloquently presented his vision for the coming years.
- Ken Bork (USA), the incoming Secretary-General, applauded the long and invaluable service of David Oldroyd, welcomed input from the membership, and seconded Philippe Taquet's overview.

14) *Vote of thanks to our Italian hosts.*

- Simon Knell formally expressed thanks, on behalf of all in attendance, to our Italian hosts and guides for the superb INHIGEO field excursion from Pisa to Venice. The notion was seconded with a resounding round of applause.

Kennard B. Bork, Granville, Ohio



INHIGEO Board members at the Business Meeting in Bologna, Italy, 31 August 2004. Left to right; Kennard B. Bork, incoming Secretary-General; Manuel Serrano Pinto, Past-President; David R. Oldroyd, Past-Secretary-General; Philippe Taquet, incoming President.

Photo courtesy of Algimantas Grigelis.

Historical Profile of INHIGEO: The International Commission on the History of Geological Sciences

The following historical overview was generated by in order to give readers, including members of INHIGEO, a feeling for the organization, its heritage, and its operation. The account, by David Oldroyd, initially appeared in Episodes, is now available, with updates by Ken Bork, on our website and is reproduced here for the benefit of all who are interested in the evolution and working of the Commission. (Editor, April 2005)

INHIGEO is a long-standing Commission of the International Union of Geological Sciences (IUGS) and an Affiliate of the International Union for the History and Philosophy of Science (Division of History of Science) (IUHPS (DHS)). Of late, its activities are funded by these two bodies in a ratio of about 4:1.

The idea of establishing INHIGEO was first proposed by the senior Soviet geologist I.I. Gorsky in 1964, at the 22nd International Geological Congress (IGC) meeting in Delhi in 1964. It was formally inaugurated at a meeting of the IUGS in Yerevan, Armenia, in 1967, and initially had 31 Members, 19 of whom had the status of Corresponding Members. The founding President was Professor V.V. Tikhomirov (USSR); the Vice-President was

Professor R. Hooykaas (The Netherlands); and the Secretary-General was Professor K. Maslankiewicz (Poland). The countries represented were: Australia, Belgium, Czechoslovakia, Denmark, East Germany (DDR), France, India, Japan, New Zealand, Poland, Spain, Sweden, The Netherlands, UK, USA, and USSR. Photographs of the original Members may be found at: <http://unhinfo.unh.edu/esci/schneerinfo.html>. So far as we are aware, all Members except Professors Tikhomirov and Hooykaas were professional geologists with a strong interest in the history of geology, rather than professional historians of science. Some of them were among the most distinguished scholars in the post-War emergence of interest in study of the history of geology. Others are now largely forgotten, so far as work in the history of geology is concerned.

The main office-bearers of the Commission have been:

President	Secretary-General	Dates
V.V. Tikhomirov (USSR)	K. Maslankiewicz (Poland)	1967–1976
R. Hooykaas (The Netherlands)	M. Guntau (DDR)	1976–1984
G.Y. Craig (UK)	E. Dudich (Hungary)	1984–1989
M. Guntau (DDR)	U.B. Marvin (USA)	1989–1992
D.F. Branagan (Australia)	U.B. Marvin (USA)	1992–1996
H.S. Torrens (UK)	D.R. Oldroyd (Australia)	1996–2000
M.S. Pinto (Portugal)	D.R. Oldroyd (Australia)	2000–2004
P.R. Taquet (France)	K.B. Bork (USA)	2004–2008

There may also be up to five Vice-Presidents, representing different parts of the world.

The chief goal of the Commission has been, and is, the promotion of international co-operation in the study of the history of the geosciences. To this end, it established a small *Newsletter*, published initially in both Russian and English, giving information about work done in the history of geosciences. It also organized significant symposia in various parts of the world, and valuable field excursions, which have made it possible for participants to study localities or sites of major importance in the history of geology. In most cases, the *Proceedings* of these meetings have been published in various forms, and some substantial books have resulted.

Like academies, INHIGEO is a self-perpetuating body. It conducts its elections to fill positions, both for the executive Board (every four years) and the general membership (every two years). Until the time of a meeting in Dresden in 1991, each participating country was represented by one Full Member and up to ten Corresponding Members, but at that meeting it was decided to take steps to abolish the distinction between Full and Corresponding Members, so that at present each country may have up to eleven Members, all of equal status. Membership of the Commission is 'for life,' provided that certain minimal obligations are met. This has produced some 'crowding' in countries such as the US or the re-unified Germany, whereas the Commission currently has very few Members in Africa, the Middle East, and India. From 2004, it has been decided that persons over seventy will not be counted towards a country's quota of eleven Members, though such persons are entitled to remain as participating Members.

The principal *function* of INHIGEO is, as indicated above, to co-ordinate studies, undertaken worldwide, in the history of the geosciences. To this end, the Secretary-General continues to produce and distribute to Members, other interested persons, and some major libraries, the Commission's annual *Newsletter*, which gives reports of activities in geohistorical work in Members' countries and lists their publications. It provides information about relevant forthcoming conferences, and reports on ones that occurred during the previous year, including the Commission's own meetings. It also offers short articles, obituaries, transcripts of interviews with distinguished geohistorians, various 'notes and queries,' a substantial number of book reviews, as well as the Minutes of the Commission's Business Meetings, reports by the President and Secretary-General, and a membership list with contact details. The general growth of the Commission's activities is apparent from the following data for the last eight years:

Newsletter No.	Date	No. of pages	No. of Members
29	1997 for 1996	65	145
30	1998 for 1997	73	142
31	1999 for 1998	79	153
32	2000 for 1999	84	149
33	2001 for 2000	91	159
34	2002 for 2000	96	179
35	2003 for 2002	98	169
36	2004 for 2003	101	166

Full symposia, followed by week-long field excursions, have been held over the same period as follows, either independently or as part of IGC meetings or Congresses of the IUHPS (DHS):

- Symposium No./Year** 21 1996
Location Beijing (part of IGC)
Principal Organizer Wang Hongzhen
Theme General history of geoscience
Principal publication Wang Hongzhen *et al.* (eds), *Congress Proceedings*, Vol. 26
- Symposium No./Year** 22 1997
Location Liège (part of IUHPS (DHS) Congress)
Principal Organizers H.S. Torrens, K.L. Taylor
Theme Mining history; non-written sources in study of history of geology
Principal publication Selected papers published in *Annals of Science*
- Symposium No./Year** 23 1998
Location Neuchâtel
Organizers R. Truempy, J.-P. Schaer, H. Masson
Theme Histories of tectonics and glacial theory
Principal publication Selected papers published in *Eclogiae Geologiae Helveticae*
- Symposium No./Year** 24 1999
Location Freiberg
Principal Organizers P. Schmidt, H. Albrecht, R. Ladwig
Theme Abraham Gottlob Werner
Principal publication H. Albrecht and R. Ladwig (eds), *Abraham Werner and the Foundation of Geological Sciences*, Bergakademie Freiberg
- Symposium No./Year** 25 2000
Location Rio de Janeiro (part of IGC)
Principal Organizers S. Figueirôa, D.R. Oldroyd
Theme History of geology in the twentieth century
Principal publication D.R. Oldroyd (ed.), *The Earth Inside and Out: Some Major Contributions to Geology in the Twentieth Century*, Geological Society Special Publication No. 192
- Symposium No./Year** 26 2001
Location Lisbon and Aveiro
Principal Organizer M.S. Pinto
Theme Building stones, mining history, megafauna
Principal publication M.S. Pinto (ed.), *Geological Resources and History*, University of Aveiro
- Symposium No./Year** 27 2002
Location Paris
Principal Organizers P. Taquet and the French Committee for the History of Geology
Theme D'Orbigny and stratigraphy
Principal publication Selected papers in *Palevol*
- Symposium No./Year** 28 2003
Location Dublin
Principal Organizer P. Wyse-Jackson
Theme Geological travellers
Principal publication P. Wyse-Jackson, *Geological Travelers*, Pober Press, New York (forthcoming)
- Symposium No./Year** 29 2004
Location Florence
Principal Organizers N. Morello and D. R. Oldroyd
Theme Institutions, museums and scientific societies in the history of the geosciences
Principal publication In process, as submissions to *Episodes*

In addition to the foregoing, INHIGEO has itself published occasional items of a bibliographical nature. It is now regularly offering items to *Episodes* in the 'Classic Papers' series and has recently initiated a series of papers describing the events and activities involved in the individual meetings of the IGC, since their inception in the nineteenth century. It also assists *Episodes* in the matter of book reviews, and provides occasional refereeing services.

As outlined above, INHIGEO serves as a forum for the co-ordination of geohistorical work, the dissemination of information, and the facilitation of personal contacts. What it can not do, however, is arbitrate about historiographical issues (whereas other IUGS Commissions or Sub-commissions can (for example) designate stratotypes (until a sufficient number of people complain!)). The task of the geohistorian is to keep an historical eye on an endlessly changing and moving historical frontier (and a hinterland that seems to change as historical knowledge and understanding develop). INHIGEO also can, and does, use its influence to encourage the preservation of archives and sites of special geohistorical interest and importance. But it is too diffuse a body to attempt to write a general history of the geosciences (which, as said, keeps changing). Nevertheless, it has assisted in some encyclopaedia work, and a number of its Members have made substantial contributions to the large Elsevier *Encyclopaedia of Geology*, which was published at the end of 2004. And, of course, individual Members are all, to a greater or lesser extent, active in publishing scholarly papers, books, and reviews in the history of geology.

INHIGEO's symposia scheduled for the near future will be on 'History of Geophysics' (Czech Republic, 2005); 'History of Geomorphology' (Lithuania, 2006); and 'Geology and Religion' (Germany, 2007). Persons interested in the Commission's activities are invited to contact the Secretary-General.

Compiled, 2004, by David Oldroyd
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The commentary above originally appeared in *Episodes*, 2004, 27, 229–230.

INHIGEO BUSINESS MEETING, PRAGUE, CZECH REPUBLIC, JULY 2005 PROVISIONAL AGENDA

1. Apologies/Regrets from those not able to attend
2. Arrangement of Agenda (requests for modification)
3. Minutes of Previous Meeting, Bologna, 2004 (see this *Newsletter*, above)
4. Matters arising (discussion)
5. President's Report
6. Matters arising (discussion)
7. Secretary-General's Report
8. Matters arising (discussion)
9. IUGS Matters
10. Future Meetings of the Commission and of IUGS or IUHPS/DHS
11. Business without notice (new business)
12. Vote of thanks for our hosts in Prague, 2005

CONFERENCE REPORTS

INHIGEO Fieldtrip and Meeting: "Italian Institutions and Geological Sites in the History of Geosciences," 29 August–3 September 2004

The International Commission on the History of Geological Sciences (INHIGEO) initiated and conducted a Post-IGC (2004) Fieldtrip that also served as its annual fieldtrip. Emphasizing this latter point was the holding of the Commission's annual Business Meeting during the trip, which attracted 36 participants from 12 countries. Although the Congress was held in Florence, from 20–28 August 2004, the INHIGEO Fieldtrip commenced in Pisa and finished in Venice. The fieldtrip was very capably organized by Dr Nicoletta Morello of the University of Genoa, Professor Ezio Vaccari of the University of Insubria, Varese, and his wife Dr Kathleen Histon who also, when necessary, provided excellent translations into English. In the southern part of the fieldtrip, commentaries and explanations of the geology, history and culture were skillfully supplemented by Professor Gian Battista Vai of the University of Bologna and Dr Claudia Principe of the Institute of Geosciences and Earth Resources at Pisa.

Participants assembled in Pisa on 28 August in preparation for an early start the next day. It also enabled many of the participants to explore that fascinating city. Perhaps of greatest interest to the geologists was the Leaning Tower and the geotechnical investigation and mitigation works that were implemented to prevent its

collapse. That the inadequacy of the foundation-bearing materials was not initially recognized is graphically shown in the nearby cathedral, where subsidence occurred prior to the construction of the upper part of the building.

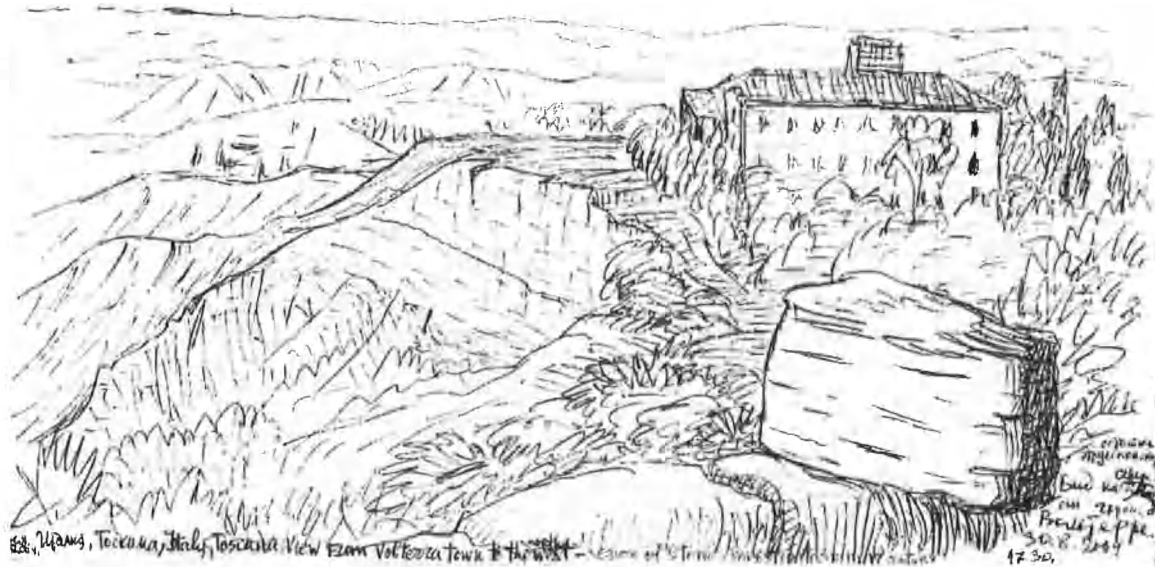
On Day One of the fieldtrip, participants were conveyed by bus south to the lead/silver/copper/zinc-mining complex at San Silvestro in the Campiglia Marittima area. Here it was fascinating to observe, in the underground workings in a nappe of Jurassic limestone, the methods used by Etruscan, Medieval and 19th and 20th century miners to remove the ore (mining ceased in 1978). The mineralization is considered to be derived from a Late Tertiary granitic pluton at shallow depth. In the afternoon, near Popolonia, overlooking the Tyrrhenian Sea, Etruscan quarries and 4th to 2nd century BC tombs in elevated weakly cemented sand dunes were examined. The age of the sand dunes, part of the Panchina Formation, provoked much discussion amongst the geologists. The return to San Silvestro was delayed while participants were treated to an animated dialogue between the bus driver and the owner of a car, who refused to remove his vehicle from the exit to the parking area. The night was spent at the Palazzo Gowett, a hostel perched high above San Silvestro, in a building that formerly housed the offices of 19th and 20th century mining companies.



INHIGEO excursion co-leader, Professor Ezio Vacarri, University of Insubria, commenting on noteworthy aspects of the Academy of Fisiocritici, Siena. 30 August 2004. Photo by K. B. Bork

The following morning participants were transported northeast, crossing a geologically ancient metamorphic core complex that is surrounded by Tertiary continental margin deposits. In Siena the first stop was at the Academy of Fisiocritici, founded in 1691. The Academy, with its marvelous museum, was the fieldtrip's first introduction to many such scientific institutions in Italy. In a cool courtyard, Ezio expounded on the roles of the academies in the elucidation of natural history from medieval times and particularly in the 18th and 19th centuries.

After a tour of the museum, followed by a copious and relaxing lunch in a basement restaurant, participants headed north and examined the Pliocene sands, clays and lignites of Volterra from the impressive sandstone escarpment of Balze. This was the area that provided the empirical basis for the famous series of six sections of Nicolaus Steno, depicting the geological history of this part of Tuscany. With the Pliocene rocks of the River Arno being soft and unstable, there has been extensive landsliding during historical times and this may have suggested that relatively short time was required to bring about geological changes.



Sketch by Professor Eugenij E. Milanovskij, Moscow State University, of the scenic overview at Le Balze, near Volterra, Italy, a region of Tuscany made famous by the work of Steno in the 17th century. 30 August 2004.

Later the route passed through late Cenozoic grabens, with volcanics on their margins, on the road to Vinci. The day was capped by seeing in the Museo Leonardino, housed in the Castle of Conti Guidi in Vinci, models constructed using the original plans of that genius Leonardo da Vinci. The view from the castle tower of the sun setting over the slopes of Montalbano and the Tuscany landscape will be remembered for a long time. A pleasant outdoor buffet meal in a vineyard just outside of Vinci was much appreciated after the heat of the day.

Day Three, 31 August 2004, involved traveling a winding road north from Vinci to Bologna. Along the way various thrust slices in the Apennines were examined. The undoubted highlight, for this contributor, was the allochthonous ophiolitic sequence of Steinmann Trinity fame at Pietramala and the nearby *mélange* with its argille scagliose. Exposed in a large quarry face on the flanks of Monti Beni is what is now interpreted as an inverted ocean floor sequence of serpentinite, gabbro dike complex, basalt and basaltic breccia, chert and finally, at the toe of the face, the capping pelagic Calpionella Limestone and other sedimentary rocks. The quarrying has also initiated large-scale slope instability that has necessitated extensive mitigation works to protect nearby villages. Also visited nearby was a methane plant that utilizes escaping natural gas that was first scientifically investigated by the physicist Alessandro Volta in 1780. Of more recent historical interest, was the crossing of the 'Gothic Line' that was well-known to soldiers from Australia and New Zealand during the Second World War. Gian Battista Vai recounted as a hungry young boy being given chocolate by the advancing Australian soldiers. On occasions low clouds obscured the higher parts of the road, but this was the only time during the trip that we were not traveling under sunny skies.



Professor Gian Battista Vai, University of Bologna, explaining the interesting outcrop displaying an overturned ophiolite complex in the West Romagna Apennines. 31 August 2004.

Photo by K. B. Bork.

On arrival at Bologna, delegates attended a reception and lunch at the Academy of Science of Bologna. In the afternoon there were visits to the geological museum "G. Capellini," the meeting rooms of the 1881 International Geological Congress and the museums of the Palazzo Poggi (University of Bologna). A pleasant interlude was a delightful piano recital by two 17-year-old women music students in the concert hall (now Liceo Rossini) used by the 1881 Congress. This congress was, in many respects, more important than the first, held in Paris in 1878, for it was during the Bologna meeting that the basic rules and procedures for the internationalization of geological sciences were established, including such matters as chronostratigraphical nomenclature and classification and naming of fossils.

While at the academy, the 29th Business Meeting of INHIGEO was held in the shadow of a bust of Ferdinard Marsili, founder of the academy in 1711. The meeting elected Professors Phillippe Taquet (France) and Ken Bork (USA), President and Secretary-General respectively. The outgoing Secretary-General Professor David Oldroyd (Australia) became Vice-President for Australasia and Oceania, while Gerardo Soto, Kenneth Taylor and Hakuyu Okada were confirmed as vice-presidents representing Latin America, North America and Asia respectively. Nicoletta Morello continues as representative for Europe. Further details of the meeting appear elsewhere in this Newsletter.

On 1 September, participants were bussed across the flat Po valley and took the opportunity to decide on the venues of forthcoming INHIGEO meetings. On reaching the magnificent walled city of Verona, we were welcomed by President Castagna and Chancellor Professor Curi of the Academy of Agriculture, Science and Letters

of Verona, which was founded in 1768 and of which Ezio Vaccari is a Fellow. The remainder of the day, and much of the next, was devoted to the magnificent fish and associated fossils, such as annelids, jellyfish and insects, found in the Eocene rocks around Bolca. This involved firstly a stop at the Museum of Natural History in Verona with its collection of over 2500 vertebrate fossils along with its well-presented displays that take visitors through geological time.

The next morning the bus took participants into the hills north of Verona to see the Bolca Museo dei Fossili. Achille Cerato and his father Massimiliano explained in detail the techniques involved in finding, extracting and preserving these magnificent fossils. Suitably informed, participants then walked down to the quarries and observed in one of them skilled artisans working the pale fine-grained rock, although in our presence only a few fish scales and a leaf were unearthed. On the valley floor participants wandered through passages hewn by fossil collectors during two centuries, which are now preserved as a scientific and historical site. The depositional environment during the Eocene had been previously interpreted as a lagoon with periodic influxes of volcanic detritus. However, a swamp, in which water levels, and perhaps temperature, fluctuated is now considered more likely. After a massive lunch at a nearby hilltop café, participants were taken to the paleontological museum Dal Lago, in the Agno Valley, where they were introduced to its collections by Curator Dario Savi and Dr Bernadetta Pallozzi. The museum highlights the valley's fame in the history of geoscience as it is where Giovanni Arduino (1759) proposed his major subdivisions of the stratigraphic column into Primary, Secondary, Tertiary, and Quaternary rocks. With daylight fading there was just time to quickly examine an outcrop of "primitive" schist at the head of valley, near Recoara, before traveling to Tessera near Venice.



An obviously happy INHIGEO group at the Bolca area (Cerato family quarry, Pesciara site). 2 September 2004. Photo on K. B. Bork's camera, courtesy of an unidentified Italian visitor.

The last full day of the fieldtrip was in Venice, commencing with a stop at the Venetian Institute of Sciences, Letters and Arts, the second most important institution of its type in Italy and now housed in a Gothic palace. After being introduced by Secretary Gian Antonio Danielli to the Academy and its work, one of the participants, Professor Hugh Torrens, gave an enlightening talk on John Williams (1732–1795). Williams was a British mining engineer who, after a career in Britain, spent the last few years of his life working in northern Italy, dying in Venice. Apart from learning how minerals, that were assessed by men like Williams, fuelled the Industrial Revolution, the most important message in Hugh's talk was that historians must locate and use all relevant archives. For his research on Williams, this included recourse to valuable archival material held by the Venetian Institute. While this message is undoubtedly obvious, many researchers fail to heed it, particularly when those archives are in another country. From the Institute, participants moved to the Natural History Museum of Venice, housed in an imposing palace built in the 13th century on the Grand Canal, and were introduced by INHIGEO President Philippe Taquet to its president, Giancarlo Ligabue. Phillippe had been on a Ligabue Expedition to the Niger Sahara thirty years earlier when well-preserved reptilian remains had been collected. Pride amongst the collections in the museum are a 7-metre long iguanodon *Ouranosaurus nigeriensis* and a giant crocodile *Sarosuchus imperator*. A short film of the 1973 expedition was enjoyed by all. In the evening, we were hosted at Giancarlo's restaurant in St Mark's Square and during the evening thanks were expressed to the tour leaders. The meal was followed by musical chairs

beside the Grand Canal before the correct ferry to the mainland was identified and boarded. The participants dispersed the following day, regretful that such a profitable and enjoyable trip had come to its conclusion.



*Beneviz, Most Božojak. 4.09.04.
Venezia, Ponte del Sospiro, Italia.*

Sketch of Venice and the Bridge of Sighs, done on 4 September 2004 by Professor Eugenij E. Milanovsky, Moscow State University.

This well organized and extremely well-run excursion gave an excellent transect through the varied geology of northern Italy, coupled with the opportunity to examine a wide range of rocks, minerals and fossils, both in the field and in a number of learned scientific institutions. At all the institutions visited, and at stops for meals and morning and afternoon teas, participants were warmly and generously welcomed. They were also convincingly made aware of the notable contributions to science made by Italians, and in particular those involved in earth sciences.

Participants were also better informed as to how the geology of Italy influenced scientists from other countries who examined localities such as Pietramala and Bolca.

The grateful thanks of participants are extended here to Ezio Vaccari, Nicoletta Morello, Kathleen Histon, Gian Battista Vai and Claudia Principe for an instructive and highly enjoyable fieldtrip.

Mike Johnston, Nelson, New Zealand

**Meeting of the International Commission on History of Meteorology (ICHM),
5–9 July, 2004, Monastery of Polling, Upper Bavaria (Germany)**

The International Commission on History of Meteorology (ICHM) convened a major international meeting in Germany in 2004 on the theme, 'From Beaufort to Bjerknes and Beyond: Critical perspectives on observing, analyzing and predicting weather and climate.' The program was arranged by Cornelia Lüdecke (University of Hamburg and ICHM Vice President) and James R. Fleming (Colby College and ICHM President), with assistance from Vladimir Jankovic (University of Manchester). A superb local organization committee was chaired by Cornelia Lüdecke, Hans Volkert (Institute of Physics of the Atmosphere, DLR-Oberpfaffenhofen), and Stefan Emeis (Institute of Meteorology and Climate Research, Garmisch-Partenkirchen), all members of the History of Meteorology Specialist Group of the German Meteorological Society. The baroque library hall of the monastery in the little village of Polling in Upper Bavaria, some 60 km southwest of Munich, offered a wonderful venue for the conference. This was an ideal location because it is situated in the geographic center of the historical network of the Societas Meteorologica Palatina at Mannheim and the Bavarian Academy of Science at Munich, which were active from 1781 to 1792.

We had seventy-five participants, among them eleven students and eight accompanying persons. The presenters came from 21 nations: Australia (1), Austria (2), Belgium (1), Brazil (3), Canada (1), China (1), Czech Republic (2), Denmark (1), Estonia (1), France (1), Germany (13), Great Britain (3), India (1), Japan (1), Latvia (1), Norway (1), Republic of Korea (1), Russia (1), Spain (2), Switzerland (1), and USA (14). One participant came from Libya.

In the course of four days, forty-nine plenary lectures were presented using modern audio-visual equipment partly provided by the DLR (Deutsches Zentrum für Luft- und Raumfahrt), while during coffee breaks in the lobby the following four posters were on display: Doria B. Grimes, Treasures of the NOAA Central Library; Miloslav Müller, Reconstruction of Historical Severe Convective Storms from 25-26 May 1872; Marjory Roy, The Ben Nevis Meteorological Observatory, 1883-1904; and Brant Vogel, The ICHM Current Bibliography Project.

On Monday, Heinrich Nöth, President of the Bavarian Academy of Science (Munich), opened the congress with his speech on 'Polling and the Academy: An 18th-century competence centre.' Huw C. Davies (ETH, Zürich), Vice President of the International Association for Meteorology and Atmospheric Science, gave a keynote speech on 'Conformity to observations: A banner and bane in the development of weather prediction,' and James R. Fleming spoke on 'Climate dynamics, science dynamics, and technological change, 1804–2004.' The fourteen sessions that followed represented a broad spectrum of perspectives examining the development of meteorology and the physics of the atmosphere. In addition to individual discussion of each paper, the session chair led a overall discussion that often spilled out into the coffee or meal breaks. The first two sessions referred to 'Early Modern Issues' to the 'Nineteenth Century.'

At the end of the first day the President of the European Meteorological Society (EMS) Werner Wehry awarded two Young Student Travel Awards to presenters from England and the Czech Republic for their contributions to the ICHM conference. This was followed by an ice breaker party with Bavarian buffet and beer sponsored by the Spaten Brewery (Munich) at the beer garden of the Klosterwirt. This was a wonderful opportunity for participants from different disciplines and nations, from the professor emeritus to the undergraduate student, to mingle and interact.

Tuesday morning began with a session on 'Dynamics of Climate Change,' followed by a session on the 'Societas Meteorologica Palatina.'

An afternoon excursion by bus to Hohenpeißenberg introduced us to the oldest meteorological mountain station in the world, where measurements have been taken continuously since 1781. On display were historic instruments and manuscripts from the 18th century. Groups could also climb up to the original observation platform on the roof of the pilgrimage church. Then Peter Winkler, the director of the observatory, explained the different tasks of the current observatory, which is run by the German Weather Service and is part of the network of Global Atmospheric Watch of the World Meteorological Organization. Late afternoon refreshments at the mountain-top restaurant completed the outing.

A full day of sessions Wednesday included 'Focus on America,' 'Practical and Theoretical Issues,' 'Focus on Asia,' and 'Tools and Techniques.'

To relax after such an interesting and intense day, we had a classical concert by the Rubin Trio of Munich, performing a variety of weather-related music, including Felix Mendelssohn-Bartholdy's piano trio in d-minor op. 49, Astor Piazzolla's Four Seasons, and "meteorological themes" from Viennese salon music.

Thursday's sessions dealt with another session on 'Nineteenth Century' (broadly construed), 'Early

Institutions, Networks, and Observations,' and two sessions on 'Particular Locales.'

An ICHM business meeting following the sessions pointed to future projects and possibilities, including the upcoming XX International Congress of History of Science in Beijing.

The conference dinner in the Tassilo Hall of the Dominican Monastery around the corner highlighted the evening. It was served by the catering service of the local countrywomen. The wine came from the former vine-growing estate of the Monastery of Polling at Meran (Southern Tyrol, Italy). Cheerful toasts made sure that the atmosphere was wonderful like during a lovely family party.

During the last morning (Friday) still more than fifty participants listened to papers on 'Pedagogical Issues' and on 'Bjerknes and beyond.'

All participants enjoyed the conference very much with its different sessions and contributions from North and South America, Europe, Scandinavia and Asia. The venue offering a rich historical atmosphere was called "spectacular." Meals were shared at the restaurant or the beergarden across the street. Housing was nearby or at the next town connected by a bus shuttle or a pleasant half-hour walk through the fields. This created a very special atmosphere of "scholarship and friendship" throughout the entire week. As Werner Wehry commented, "the flair of the conference has been like a meeting of relatives . . ." By many objective measures, the conference was a great success. One scholar remarked that it was "the largest gathering of historians of meteorology ever held."

Publication of the extended abstracts is at: http://www.meteohistory.org/2004polling_preprints/

A group picture of the participants can be found at: <http://www.meteohistory.org/pollinggroup20040706.ppt>.

It is planned to publish selected papers from the meeting in *Algorismus*, the journal of the Institute of History of Natural Sciences at Munich.

Cornelia Lüdecke, Munich, and James R. Fleming, Waterville, Maine

German Society for the History of Geophysics and Cosmical Physics

During 2004 the commission has organized, in cooperation with the Leibniz Society, a scientific colloquium on the life and work of Hans Ertel, formerly Professor of Geophysics and Theoretical Mechanics in Berlin. Ertel played a leading role in the 1950s in founding the Society for Geological Science, and he was Editor of such internationally recognized geophysical journals as *Gerlands Beiträge zur Geophysik*. Furthermore, a book to commemorate the anniversary of the birth of Hans Ertel has been edited by Wilfried Schröder (Bremen, Science Edition, 2004, 446 pages).

Further aspects of the Society's work concern the geophysical work of Albert Einstein. Hans Jürgen Treder and Wilfried Schröder collected a source-book on Einstein's relevant papers. Discussions of Einstein's work on geomagnetism have been done by members Karl-Heinrich Wiederkehr, Thomas Schalk, Holger Filling, Hans Scheurich, and Prof. Treder. Treder continued his studies in relativistic physics, including some geophysical application of the Mach-Einstein doctrine (with Wilfried Schröder); Holger Filling works on the star disc of Nebra; Karl-Heinrich Wiederkehr on Ertel and geomagnetism; and Hans Scheurich in relativistic physics and related topics. The same has been done by Rainer Burghardt.

Wilfried Schröder worked on a source-book on the solar and auroral minima, and the relation of Emil Wiechert with the aspects of some Arctic expeditions.

Interested scholars are invited to contact Dr. Wilfried Schröder, Geophysical Institute, Hechelstrasse 8, D-28777 Bremen-Rönnebeck, Germany.

ARTICLE

Geological Disasters in Canada: A Brief Overview

Introduction

I was already preparing a preliminary bibliography of geological disasters in Canada for the next INHIGEO *Newsletter* when the Boxing Day Tsunami struck many areas of Asia. Since most of the media reporting on this seemed unaware of the Krakatoa explosion of 1883, which created similar devastation in some of the same areas, it seems there is one area of the history of earth sciences which may be perceived to be of immediate practical value to the modern world.

Tsunamis are not unknown in Canada, but the geological disasters most familiar on a world scale—earthquakes and volcanic eruptions—have had little impact in Canada. There have been major earthquakes in the past, but there has not as yet been one that is considered a disaster in human terms, though such an event is widely anticipated. Volcanic activity is more limited and has generally been remote from settlement. The most damaging geological disasters take the form of landslides (rock and or mud) in the mountainous regions. The interaction of weather and geomorphology is responsible for avalanches (snow slides) and floods. Other Canadian natural disasters, caused entirely by the weather, have a serious effect but are not discussed here.

Documentation of Canadian Disasters

When compared with the 2004 tsunami, Canadian disasters have little profile internationally; for instance the

National Geographic Society's *Nature on the Rampage* (1986) doesn't refer to any Canadian geological events. At a more sophisticated level, Sarjeant's bibliography of *Geologists and the History of Geology* (Sarjeant, 1980–1996), prepared in Canada, includes sections on "events significant in the history of geology," including earthquakes (with passing reference to tsunamis) and volcanoes. No specific Canadian references are included. Yet within Canada numerous disasters related to geology have occurred, and some of these are of considerable human significance in terms of lives lost and disrupted, and economic implications. Several hundred people have, for instance, been killed in landslides alone, and damage in some individual events is measured in the millions of dollars.

Canadian media discuss disasters close to the time in which they take place, but content is generally focused on the human-interest angle—the number of dead, tragic incidents, and amazing escapes. This data can be important for interpretation, as landslides can occur very quickly, when no professional observers are present. The scientific literature generally gathers data, presents explanations of the mechanisms, and perhaps anticipates the likelihood of a repetition, and suggestions for preventing or mitigating the impact of future disasters of the same kind. Both kinds of literature tell a significant part of the story of the disasters, and both are referred to here.

Study of Disasters

Pre-contact geological events are remembered in First Nations ("Indian") lore, with documented legends remembering earthquakes and volcanic eruptions. Documented floods are recorded from the fur trade period (early 19th century). Historically, the 1903 Frank Slide was striking in its death toll, and the speed with which it attracted immediate political and therefore scientific support. Avalanches became important as trails, roads and railways threaded the western cordillera, and have caused much more loss of life in recent years with the extension of recreational skiing into remote areas by helicopter. However, the widely scattered and generally unpredictable occurrence of such events makes it difficult to study them on a systematic basis.

Local expertise, where available, was used from the first. By the beginning of the 20th century, scientific study of some geological disasters in Canada was carried out by the Geological Survey. More local agencies in some provinces have also paid attention to the more important events occurring within their jurisdiction.

Studying the Frank Slide

The Frank Slide in Alberta is a well-documented example, showing how research took place soon after the event, and has continued ever since. Frank was a small village built below Turtle Mountain in the Crowsnest Pass. A coal mine penetrated the steeply dipping beds at the bottom of the mountain.

The slide took place on April 29, 1903, when some ninety million tons of Upper Paleozoic limestone fell, covering over a square mile of the valley floor and reaching 400 feet up the opposite slope. Part of the village was demolished, killing around seventy people, and another nineteen were trapped underground in the coal mine. The road and the Canadian Pacific Railway tracks were buried.

The following day, the Federal Superintendent of Mines in far-away Ottawa, peremptorily ordered two officers of the Geological Survey (who were not directly under his command) to "proceed at once to the scene of the disaster and investigate thoroughly the nature and causes of the catastrophe." Zaslow, in his history of the Geological Survey (1975), briefly discusses the organizational politics involved.

The geologists were Richard McConnell (1857–1942) and Reginald Brock (1874–1935). McConnell had graduated from McGill University and been with the Survey since 1879, working extensively in the west. His associate had studied in several universities in Canada and Heidelberg in Germany. He joined the Survey in 1897, and had left to become a professor at Queens in 1902 before the time of the slide. It was common at that time for university professors to continue to work with the Survey during vacations, and Brock later returned to the Survey full time in 1906.

The two visited the site, observed the topography and geological features, gathered eyewitness reports and information about the mine, observed and measured the debris. They reported by June 12, 1903, describing and illustrating the impact of the slide, exploring possible explanations, and relating the event to the wider literature, particularly of German speaking authors A. Baltzer, Albert Heim, E. Reidl, and August Rothpletz. Their report was published by the Survey in its Annual Report.

Ongoing concern about Turtle Mountain led to a later commission, which brought in an engineer (G.S. Rice) and two geologists associated with the Survey. Rice, Reginald Aldworth Daly (1871–1957) was a Canadian-born geologist who had a faculty appointment at Harvard. T, then in 1901 he joined the 49th Parallel International Boundary Survey before returning to the US to teach at M.I.T. in 1907 (Middleton, 2004). Willet Green Miller (1839–1925) had been a geologist with the Survey from 1891–1895 and then become Chief Geologist with the Ontario Bureau of Mines. The commission reported in 1911, and concluded that another slide was probable. The village was rebuilt in a different location, out of reach of the anticipated danger.

Dr John Andrew Allan (1884–1955) of the University of Alberta and Alberta Research Council made further studies in 1931 and 1932, and showed danger of a landslide in a different direction, which led leading to removal of some of the residents (Cousins, 1981).

Continuing instability has led the Research Council of Alberta to continue to monitor the mountain (Cruden, 2001). There is now an interpretive center across the valley explaining its history.

Other Disasters

The Geological Survey now maintains the Canadian Disaster database, which maintains data on over 700 events. It is available on a web site at www.ocjpep.gc.ca/disaster.

Examples of some of the major or best-documented disasters are given below. Priority is given to events that led to most deaths, the greatest property damage, or social disruption.

Avalanches

Rogers Pass, British Columbia

Rogers Pass, in the Selkirk Mountains, first became a safety concern when the Canadian Pacific Railway was built through it in 1885–1856, and again after the Yellowhead Highway was constructed in the 1960s. Annual snowfall was fifteen meters, and numerous avalanches occurred (and occur) every winter. The pass has been the scene of “Snow Wars” between avalanches and those responsible for keeping transportation moving. A major avalanche in 1910 killed sixty-two men. A succession of tunnels and snow sheds, and anticipatory explosions have limited harm in recent years (Berton, 1971, 331ff; Hollihan, 2004: 48–51; Looker, 2000: 204–208).

Granduc Mines, B.C.

A 1965 avalanche killed twenty-six people.

Bugaboo Glacier, B.C.

In 1991, an avalanche killed nine people

Kangisualuijuag, Quebec

A New Year’s Day avalanche in 1999 killed nine people and injured another twenty-five.

Terrace, B.C.

In 1971 an avalanche killed seven people.

Earthquakes

Earthquakes have occurred in many parts of Canada, with magnitudes as high as 8.1, but have caused no disasters because they occurred in sparsely populated or unpopulated areas.

The province most likely to be affected by a disastrous earthquake is British Columbia, on the Pacific “ring of fire.” That province’s Geological Survey prepared its first regional earthquake hazard map in 1995, and is planning others (Brown, 1998).

One earthquake, in Jonquiere, Quebec, took place in 1988, with a magnitude of 6.0. There was some minor damage in various communities.

A 1949 submarine earthquake off the Queen Charlotte Islands had a magnitude 8.1. It was one of the world’s largest, and was felt in many regions of North America, but caused no casualties or damage in Canada. However, an earthquake of similar scale affecting large cities of the west coast could be a major disaster.

Floods

St Lawrence River, Quebec

A flood caused by an ice jam twenty miles from Montreal on the St Lawrence River in 1965 was responsible for the deaths of twenty people.

Fraser Valley, British Columbia

The Fraser River, some 1,360 km long, drains a quarter of the mountainous province of British Columbia. As the low-lying flood plains of the widening valley through the coast range were settled and farmed, the area became increasingly vulnerable to seasonal floods. Extensive flooding in 1894 did little damage as there were few settlers at that time. However, in 1948, spring came late after a heavy snowfall. As the waters rose, many towns were flooded, and thousands fled to temporary accommodation. Eventually 35,000 troops and volunteers labored to build dikes, and provide other assistance. Ten people died, and 16,000 were evacuated. Flooding affected 22,000 hectares, hundreds of homes were damaged, and eighty-two bridges were washed out (Hollihan, 2004: 87–98).

Saguenay Deluge, Quebec

Unusually heavy rain in 1996 drowned a landscape, overwhelmed the natural drainage, and created devastation in populated areas too close to the flood waters. 488 homes were destroyed, 1,230 damaged. Ten people were killed and 16,000 people evacuated (Looker, 2000: 182–183).

Southern New Brunswick

Seven people died during flooding in 1933.

Red River Floods, Manitoba

The Red River flows 900 km north from Minnesota, USA, through Winnipeg, joining the Assiniboine River and flowing across the bed of glacial Lake Agassiz into Lake Winnipeg. Combinations of rainfall, ice and a flat prairie landscape cause periodic flooding in the region, which was unimportant until settlers realized that the lake deposits offered fertile farmland, and the level ground near the river was later developed as the city of Winnipeg, the crossroads of Western Canada. The first major flood to impact settlers was in 1826, destroying forty-seven dwellings. The population had substantially increased by 1852, when the river widened to three miles (4.8 km) and 3,500 people were driven away.

When a major flood occurred again in 1950 it was necessary to evacuate 40,000 people. In Winnipeg the flood crested at nine meters above normal, destroying some 11,000 homes.

This flood stimulated extensive public works, building dikes and digging floodways to detour waters around the city. Some mitigation was achieved by these measures in the next major flood in 1974, though it was still necessary to evacuate 10,000 people and 100,000 head of livestock. Floods of record levels occurred in 1997, however. A 2,000-square-km lake developed above the city, which was further protected when emergency reaction produced a 40-km dike in a week. Approximately 25,000 people were evacuated, but only fifty-four houses in the city were flooded (Red River Rising, 1997; Hollihan, 2004: 38–47, 62–74, 107–116; Looker, 2000: 172–179).

Landslides

Frank Slide, Alberta

The famous Frank Slide, of 1903, has been discussed above. References of note include: Anderson, 1961; Cruden, 2001; Hollihan, 2004: 29–38; Looker, 2000: 74–81; McConnell and Brock, 2003.).

Cooper Mine, British Columbia

In 1915, fifty-six were killed in a landslide.

Quebec City Rock fall, Quebec

Rock falls into houses clustering beneath the cliffs in 1841 and 1852 killed thirty-nine people, but the message was not heeded. In 1889, a further rock fall from Cape Diamond crushed forty-seven people in their homes beneath the crag (Looker, 2000: 82–84).

Britannia Beach, British Columbia

In a landslide in 1921, thirty-seven people were killed and fifty houses swept away (Levson, 1992).

Saint-Jean-Vianney Landslide, Quebec

In 1971, fifteen million tonnes of mud killed some thirty-one people and destroyed thirty-four houses (Looker, 2000: 92–96).

Hope Slide, British Columbia

Four people were killed when a landslide of some 91 million tonnes, apparently triggered by small earthquakes, covered two miles of the Hope Princeton Highway (Anderson, 1985).

Tsunamis

Only two tsunamis have done damage in Canada in historic times. Others (such as a wave 1.2 m high at Tofino in 1960, caused by a magnitude 9.5 earthquake in Chile) occurred without doing damage.

Burin Peninsula, Newfoundland

A force 7.2 earthquake with an epicenter 560 km away in the ocean was the source of Canada's first recorded tsunami in 1929. It was felt as a tremor on shore, but there was no warning of the wave until two hours later, when water level in a number of harbors suddenly fell some thirty meters, and then returned as a huge wave. Twenty-eight lives were lost in Newfoundland (plus one more in Nova Scotia), and 500 buildings and some 126 ships were washed away. Despite the destruction there were remarkable rescues, as wooden houses were washed away intact. In one house found floating, the family downstairs had been drowned, but upstairs a baby was peacefully sleeping beside a lit kerosene lamp (Looker, 2000, 184–189).

Port Alberni, British Columbia

Following the 1964 Alaska earthquake (magnitude 8.5), a 3.6 m wave funneled into the narrow Alberni Inlet and devastated Port Alberni, a community built on the valley floor at its head. No lives were lost, but damage was over \$8 million.

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David A.E. Spalding, Pender Island, British Columbia

AWARDS

Philippe Taquet elected to the *Académie des Sciences* (France)

Philippe Taquet, Director of the *Laboratoire de Paléontologie du Muséum National d'Histoire Naturelle* (Paris), has been elected (10 November 2004) to the prestigious *Académie des Sciences* (France). A past Director of the *Muséum*, Philippe actively participated in sixty field expeditions, primarily concerned with vertebrate paleontology, and contributed to the development of 125 exhibits at the museum. He directed the renovation of the Zoological Gallery, transposing it into the striking Evolution Gallery. Holder of numerous awards, including recognition as a *Chevalier* of the *Légion d'Honneur*, Philippe has written extensively on vertebrate paleontology, focused on dinosaurs, and is active in the history of geology. His book *Dinosaur Impressions* presents a vivid account of the quest for vertebrate fossils. (Please see p. 26 for an insightful interview that sheds light on Philippe's own life and professional evolution.)

Professor Taquet's formal induction into the *Académie* is to occur in Paris on 14 June 2005. It is a pleasure to congratulate our own President of INHIGEO for this exceptional honor.

Citation for the Award of the Wegmann Prize to Michel Durand-Delga

Everyone knows the attainments of Michel Durand-Delga as a geologist. His work on Mediterranean geology, as a tectonicist, as well as stratigrapher and micro-paleontologist, led to his being awarded our Society's Prestwich Prize in 1972. The same year, Michel Durand-Delga, who began his career in 1945 as an assistant to Paul Fallot at the *Collège de France*—after two years participating in the campaigns in North Africa, France, and Germany—took up an appointment at the *Université Paul Sabatier* in Toulouse. Having been born in Gaillac in 1923, this involved his return to his roots in the Albigeois, whereas his university career had, up till then, been in Paris, at the *Collège de France* and the National Institute of Agronomy, and then at the Sorbonne, where he became a full professor in 1963. Subsequently he was Director of the Laboratory for Mediterranean Geology at Toulouse (LA 145 of CNRS) until his retirement in 1985.

Meantime, from 1953, Michel Durand-Delga was involved in the joint tasks of, and actively participated in, the business of the *Société Géologique de France*, serving as its President in 1975.

Without giving up his geological activities, our colleague subsequently devoted himself assiduously to studies in the history of science. Also, after having become a Member of the *Comité Français d'Histoire de la Géologie* (COFRHIGEO) from its establishment in 1976, Michel Durand-Delga became a regular participant at its meetings, to which he presented various communications before an audience that was well aware of the pertinacity that he displayed in his researches, the fertility of his thinking, and his linguistic elegance.

His contributions began with a master stroke, the resonances of which are still not completely silent, as witnessed by several articles subsequently published in the journal *Palaïos*. A work entitled *L'affaire Deprat*, which Michel Durand-Delga presented at a meeting of COFRHIGEO on 28 November, 1990, was published as a long article in the *Comité's Travaux* (1991, 3rd series, Vol. 4, No. 10, pp. 17–212).

We recall that the author conducted an enquiry of exemplary thoroughness into the singular story that agitated the French geological community in the years 1918–1920. Jacques Deprat, Head of the Geological Survey of Indochina, regarded at the time as a distinguished scientist, was accused of fraud, being suspected of having introduced some trilobites of European origin into his collection, supposedly made from Asiatic strata. Found guilty by a "Commission of Scholars" of five members, Deprat was struck out of the membership of the *Société Géologique de France* on 4 November, 1919, an event unique in the *Société's* history. Michel Durand-Delga sought to unravel the threads of this extremely complex affair, undertaking comprehensive researches concerning all the people involved. His report, which in often witty passages underscored the broadsides of the "mandarins" of the period, led to a conclusion favorable to the accused. Even if he could only offer hypotheses for the origins and instigators of the "cabal," the author demonstrated Deprat's innocence in a way that was sufficiently convincing for our Society to "rehabilitate" him in 1991. The work that led to this result was unquestionably a model of historical enquiry.

But Michel Durand-Delga has given us many other articles in the history of geology and portraits of geologists. The latter are generally full of relish and wit, with amusing anecdotes, while at the same time the author's attachment to our more or less recent predecessors is evident. Another particularly beguiling aspect of his analyses comes from the constant concern with which Michel Durand-Delga places the recorded works of our discipline's pioneers in a modern interpretative context. His vast knowledge of tectonics and stratigraphy enables him to produce a style of work that is eminently instructive and entertaining to the reader. It is in this spirit that he has devoted himself, as co-author, to studies of Jules Marcou (1994) and Ami Boué (1996). And it is with the same care that he edited the real "feast" of his 1997 article on Bernard Gèze, combined with a short history of our Society from the 1950s. It is with the same pleasure that one can follow the vicissitudes of the "'rows' between 'two friends of twenty years': Professors Alexandre Leymerie of Toulouse, and Victor Raulin of Bordeaux (2000)."

It can be seen that Michel Durand-Delga has become a distinguished historian of our discipline, and our Society does itself honor in awarding him the Wegmann Prize, for which it is a particular pleasure for me to present here his candidature.

Claude Babin, Honorary Professor, *Université de Lyon*, and Past-President of the *Société Géologique de France*.

Retracing European Geology: From Eugène Wegmann to Ami Boué

The Wegmann Prize keeps alive the memory of a notable Swiss geologist, whose work, focused on the geometrical analysis of geological structures, developed under the influence of some of the "greats" of geology: Emile Argand in Neuchâtel, J.J. Sederholm in Finland, and Hans Cloos in Germany. This man of trenchant humor found audiences on both sides of the Rhine, and particularly in France. This explains the endowment that he made upon his decease to the *Société Géologique de France*, in response to a call by François Ellenberger, who, in 1976, founded the active *Comité Français d'Histoire de la Géologie*. Wegmann (1896–1982) wanted his gift to be dedicated to this aspect of our science. Thus a memoir (No. 168, 1995) was published by the *Société* as an appropriate homage to a man whom Jean-Paul Schaer, his successor at Neuchâtel, rightly described as "*géologue européen*."

The *Société Géologique de France*'s prize for the history of our discipline, conferred this year, 2004, on the occasion of a Meeting held in a European capital, inevitably evokes the personality of Ami Boué (1794–1881), who was such an exceptional precursor of the *géologue européen*.

Boué was already a European in his own person, for it is difficult even to give him a definite nationality. Born into a Huguenot family in Hamburg, then a Free City of the German Holy Roman Empire, one of his grandparents having fled from Bordeaux (apparently in a barrel!) in the previous century; finding himself in "France" again, willy nilly, during the time of the short-lived Department of *Bouches-de-l'Elbe*; becoming orphaned; finding refuge in Geneva at the house of his maternal guardians; of uncertain nationality—while his two brothers opted for France—at the time of his long sojourn in Paris between 1817 and 1835, including an unsuccessful attempt to become a citizen of Bern; and finally settling in Vienna, where he became a citizen by the purchase of two houses—in order, he wrote, to pay lower taxes than a foreigner—thus becoming a subject of His Majesty the Emperor of Austria, though he was both an avowed republican and a "man of order" . . .

Our Hamburger no longer spoke any single language. While he juggled with his two mother tongues (German in public and French for family), the lucky man also learnt English "easily . . . in six months"; Italian, "in three"; whilst for his expeditions in eastern Europe he picked up Serbian, colloquial Turkish, and a little Albanian, and he used Ancient Greek in the land of Alexander—not to mention written Spanish, Portuguese, and Russian. He acknowledged, however, in his delightful autobiography, published posthumously, from which the extracts above have been given, that Hungarian defeated him. It will not be surprising that, knowing so many languages, Ami Boué became a remarkable and universal "documentalist" of the sciences of his day.

Boué became a *géologue européen* by virtue of the geographical extent of his enquiries. Having been all over the British Isles (between 1815 and 1817), he tackled, often on foot, the examination of the Continent, from the Pyrenees to the frontiers of the Russian Empire. His method of work was as follows. He would first read all that was written on a region that he was to cover, writing to scholars who lived there, consulting them and visiting—either in their company or alone—the most important sectors of the selected itineraries. He began with Scotland: the downfall of Napoleon enabling him to study medicine at Edinburgh, while at the same time following lecture courses of the scholars (especially geologists) of the Athens of the North. He based his first work on his explorations in mist and rain (*Essai géologique sur l'Écosse*, 1820). Returning to the Continent, he then made a systematic examination of "old Europe," especially France and the German-speaking countries.

Having already read and seen so much, Boué distilled his impressions on a great variety of topics in many journals, initially across the Channel, then mostly in Paris and especially at the *Société Géologique*, and as he would continue to do after 1845 in Vienna. Leaving Paris, too politically unstable at that time in his view, Boué chose the Austrian capital as his base to accomplish his *magnum opus*: the exploration of "European Turkey," that is to say, the Balkans, then under the yoke of the Ottoman Empire, and about which there was almost no scientific information. After Transylvania (1824) and Galicia (1829) he launched into three long

journeys (1836 to 1838) on the trails and paths from Bosnia to Bulgaria to the Aegean Sea, avoiding the bandits that infested the woods and the epidemics that ravaged the towns, always, he tells us, armed and escorted so that he never got into serious danger. From all this there resulted four volumes, totalling 2,447 pages, covering the most varied topics, with the first geological map of southeast Europe.

It is difficult to imagine the growth of science at the beginning of the nineteenth century in Paris, London, or Berlin. "The advances of science are so rapid and new scientific information accumulated so rapidly" wrote Boué in 1820 in his foreword to his work on Scotland. With his golden rule ("don't believe the words of authority"), he showed himself to be an "extreme Plutonist *vis-à-vis* his teacher Professor Jameson, who was then still a Wernerian" (and in the land of Hutton!). Boué's main scientific background was principally acquired "according to the French school of geology, [which] developed many of his ideas picked up in Scotland and England." For this purpose, he went "every Sunday in winter . . . to the private cabinet of M. Alexandre Brongniart to discuss geology with the leading experts in the field in Paris and to view rocks and fossils there." "His plain-spoken language," said the celebrated von Buch in 1829, sometimes led him to play the busybody before the big-shots of the day, such as Léonce Élie de Beaumont, the inflexibility of whose "systems of elevation" Boué quickly challenged.

In his autobiography, Boué expounded his research philosophy: "I concern myself strictly with the sciences to fulfil myself in life, not to gain positions or honors . . . I have only sought to unravel Nature's secrets, without submitting to the theoretical views of otherwise distinguished scholars, and even of my teachers." Moreover, he continued: "All my life I have detested intrigues and intriguers . . . but that is almost the only way to get on in Paris." The time appears to have been a difficult one! However, one must question the appropriateness of certain jibes at "the frequent conceitedness of the movers and shakers [*grands faiseurs*] of Paris." Doubtless he had to display a certain chagrin. While calling himself an opponent of honors, he nevertheless prided himself in having received the Wollaston Medal of the Geological Society of London (1847) and on being elected to the Imperial Academy of Vienna in 1849. Nothing similar came from his Paris "friends" . . . His frank words explained this without rancour: "*Messieurs les Professeurs* generally appeared unable to change their opinions for fear of losing their credibility . . . In keeping with my character and my position as a non-professor, I'm not ashamed to eat my words and I have changed my mind several times": which was intended to draw attention to M. de Beaumont who was often able to persevere with his errors.

A pioneer geologist in southeastern Europe, Ami Boué also updated geological facts in the huge Austro-Hungarian Empire: "it is unusual for a single person to have been able to contribute to the knowledge of his country [of adoption] as you have done," proclaimed his *confrères* at the Imperial Institute of Vienna in 1870, on the occasion of his 75th birthday. And, on the map of ideas, among his many contributions, Ami Boué was justifiably proud in having affirmed since 1824 that "the crystalline schists [the term was his] are no longer regarded as azoic [the notion of "primitive rock (*terrain*)" was still alive and well], but are merely the product of the metamorphism of the oldest sedimentary deposits, which pass by degrees into crystalline argillaceous schists, to mica-schists and gneisses, and through to granitoid gneisses . . ." And while recognizing—along with Hutton, Playfair, and Sir James Hall—the role of "heat and pressure" in "the metamorphism of rocks" Ami Boué anticipated, from as early as 1822, that this last was "due in the final analysis to the molecular movement of the constituent chemical parts . . . favored . . . by gases . . . and aqueous vapors." To launch such somewhat unorthodox ideas was doubtless easier at that time, when the freedom of scientific expression in publications allowed one to diverge from the prevailing concepts.

Finally, Ami Boué was, as is well known, the principal co-founder of the *Société Géologique de France*, which, with its older sister society in London, has long been the crucible of progress for European geology. This takes us to the Wegmann Prize. Following François Ellenberger, Albert Carozzi, and Gabriel Gohau—people who have played fundamentally important roles in the study of the history of geology—the new recipient of this distinction, flattered though he is, can only show his grateful confusion.

Michel Durand-Delga, Avon, France

Rhoda Rappaport: Sue Tyler Friedman Medal of the Geological Society of London for 2003

Citation by Sir Mark Moody-Stuart

The Sue Tyler Friedman Medal of the Society, awarded for distinguished research in the history of the science, goes this year to Professor Emerita Rhoda Rappaport of Vassar College, Poughkeepsie, New York. Rhoda Rappaport has devoted her distinguished career to the study of geology in the 17th and 18th Centuries, the crucial formative period just before the foundation and first golden age of this Society.

Professor Rappaport's early work focused on the geological research of Antoine Lavoisier, which had ranked highly in the famous chemist's own evaluation of his achievements, but which had been largely overlooked by historians. Her first publications put that omission to rights, describing Lavoisier's pre-revolutionary contributions to the mineral and geological surveys of France. She also showed how he had arrived at a subtle causal explanation of the Tertiary formations around Paris, using a then novel explanation based on what we would call transgression and regression.

Since then, Professor Rappaport has widened out her studies of the geological research of this period, centering on France, which was then the centre of the scientific world. Her papers have had an influence out of all proportion to their bulk. Her greatest contribution, her book entitled *When Geologists Were Historians* (1977) is a superb survey of the practice of Earth sciences across Europe from the time of the foundation of scientific societies and academies in the late 17th Century to the age of Buffon.

Rhoda Rappaport, for a research career that has thrown light on a remarkably fertile period in our science's history—a period when it truly can be said that new concepts modern geology takes for granted as its foundation stones were first conceived—I am pleased to award you the 2003 Sue Tyler Friedman Medal of the Geological Society.

Rhoda Rappaport replied:

President, may I first express my gratitude to the Society, and say how much I regret being unable to travel to London to receive this award in person? [Martin Rudwick accepted the medal on her behalf and it was later presented to her in the USA by Gerald Friedman.]

Early this year, I informed the President of the Society that I was "astonished, pleased and honored" by this award. I need hardly explain to this audience the honor and pleasure in having my work appreciated by a Society with so distinguished and venerable a history. What may surprise you, however, is that this award has at last reconciled me to the fact that geologists, not historians, are the natural audience for my research.

Years ago, I had persuaded myself that the history of science could serve to bring together C.P. Snow's "two cultures," and I set out as a missionary. I would surreptitiously teach some science to non-scientists, showing them that the study of nature is but one aspect of human history. The plan failed, as it has failed at American universities where historians of science, not welcome among historians, have formed their own academic departments. At Vassar my students came chiefly from science departments, while my colleagues regarded me as a historian of the French Revolution.

Like most historians of science, I began as a science student, an undergraduate physicist who unthinkingly absorbed the notion that proper science was perforce expressed mathematically. The human dimension, so to speak, came in a history of science class where I found I could study what lay behind the polished results in scientific publications. In that class, too, I discovered in geology a science not wholly mathematized; despite the best efforts of Charles Lyell and his successors, I happily abandoned physics.

In conclusion, I shall not attempt to formulate any profound reflections, but only a glimpse of my current project: an examination of early "catastrophism." Although geologists have recently been reconsidering the possible role of catastrophes, my interest stems from my own long-standing concern with Noah's Flood and the vocabulary of geological "revolutions." It has also come to my attention that some French scientists, as early as the 1790s, were accusing their predecessors of being catastrophists. Clearly, the word signified bad science, perhaps prompted by religious bias. But it could also be meaningless polemic, for in one striking case the accusation was directed against a geologist who had rejected use of the Flood and had described his fossil ferns as deposited so gently that they were laid out "as if they had been mounted."

In due time, I hope to produce a study of the second half of the Eighteenth Century, with a focus on questions of geological dynamics, and some examination of geology and religion. I hope the results—whatever they may be!—will be of interest to members of this Society.

[From *Awards 2003*, Geological Society of London, unnumbered, pp. 15–17]

OBITUARIES

Death of Dr Francisco Javier Ayala-Carcedo, Spanish INHIGEO Member, at Burgos, Spain, 28 November 2004

Born in the town of Burgos, Spain, in December 1948, Francisco Ayala-Carcedo studied at the Mining School (Polytechnical University of Madrid). He worked in the mining regions of Chile, South America, from 1971 to 1973 but was imprisoned for political reasons by President Pinochet. He returned to his home country and in 1973 was appointed to the Geological Survey of Spain. For many years (1973–2004) he worked on geological risk assessment, geotechnical maps, mining heritage, history of geology, etc. He produced three hundred articles, books and memoirs, the best known of which is his *History of Spanish Technology* (2001).

Octavio Puche, Madrid



Francisco Ayala

Francisco Javier Ayala-Carcedo (1948–2004)

AN INTERVIEW WITH INHIGEO PRESIDENT, PHILIPPE TAQUET
David Oldroyd, Verona, Italy, 1 September 2004

David Oldroyd

We are in Verona, having just finished a fine dinner during the INHIGEO Conference in Italy. You are now elected the Commission's President and I'm just departing from the position of Secretary-General. I want to take this opportunity to have a chat with you and ask you to say something about your very interesting background and career. I'm sure Members of INHIGEO will be pleased to have the chance to get to know their new President through the transcript of our conversation.

Philippe Taquet

Thank you very much David. I must confess that if I've become President of INHIGEO it was because you prepared a trap with someone to ask me. And you succeeded!

Yes, I guess it must have been a well-designed trap and I'm glad it was successful. As you know, we've previously had interviews like this one transcribed and reproduced in our newsletters, and people have found them very interesting. I think what you may tell us this evening will be most attractive to Members. So, to begin at the beginning, which part of the world were you born in?

Well, I'm French and I'm from the northern part of France, near the Belgian border. My first town was Saint Quentin in the Department of Aisne, and my family lived, and brother and sister are still living, in the north of Aisne, twenty-five kilometers from the Belgian border, near the city of Laon, where the painter Le Nain was born during the time of Louis XIV. It was once an important place. It was the former capital of France, and has a very nice cathedral. I lived in a small village in the middle of the *bocage* [woodland with pasture] like Normandy, but in the north of France, with grassland and cattle for milk. It's quite a nice area and a little-known part of the country.

And were your parents scientists?

No, none of them. This is the first surprise. My family—that is, my father and grandfather—were involved in the textile industry, the weaving of wool, because the area was wet and there were large forests to power the steam engines, using wood. And from what my grandfather told me, the family's first factory had nearly a hundred machines. But the story became tragic. My father was studying at the *École textile de Mulhouse*, in Elsass, which was a famous industrial school for people working in the area. But he was young and my grandfather was killed. He'd been in the First World War and was killed during the Second World War, when I was only three weeks old, in June 1940. So after the War my father (he'd been in the Partisan Resistance) had to succeed his father, for the family, to become manager of the factory. And I was also to go to the *École textile* to follow him into the same industry; but I preferred not to go into industry. My father was interested in natural history: birds and so on. I went to work collecting my first fossil in the countryside. It was a brachiopod from a Jurassic formation of the Paris Basin;

and I started a collection.

At what age?

Ten. And I went to school afterwards, with my sister and brother; but we were far from any college. So I asked to move: to stay in a house in the city of Champagne, to be able to study there. We started our studies and I was initially at the University of France, which provided the first-year course; and after that I had to move to Paris to take my courses in natural history. And I was happy because my parents were saying to me: "OK you can do what I want." This was a great privilege and I was happy for that. Looking back now, I think I was right, because the textile industry became completely extinct in the north of Europe, and especially in the north of France. As you know, things are now made in Southeast Asia at lower prices, so the factory closed and all was stopped. Fortunately, I was studying natural history and geology, and so I can say that my future was in fact with the past.

Which university in Paris were you studying at?

At that time, the Sorbonne. It's a great memory to have studied in the lecture theatres with prestigious professors like Henri Termier, Pierre Pruvost, Edouard Roch, and Michel Durand-Delga, and also François Ellenberger. I chose to do all branches of geology: stratigraphy, dynamic geology, applied geology with Ellenberger; and of course, paleontology. The applied geology was very interesting to me: oil and coal, and so on. I remember that François Ellenberger was teaching applied geology, coming back from Norway. He gave fascinating lectures. He was very good at explaining geology together with the life and birth of mosquitoes! He was one of the rare professors at the Sorbonne to take the students into the field, not only for field excursions, but also field camps. For three weeks, we were "pushed in nature" in the south of France, in the Corbières. It was a rather small, complicated mountain (the *Montagne Noire*), north of the Pyrenees, and we were divided into small groups of eight students. Each had to make a geological map.

What year was that: in the second year, third year?

At the end of the first year. My first trip with Ellenberger was in the *Forêt de Fontainebleau*, to map the sandstones. It's a great souvenir for me. I have a picture of it taken at that time. Later I went to the small city of Lagrasse in the Corbières and we were following Ellenberger. He had long legs and we were running and hungry; but we discovered that he had some food in his bag and was eating secretly during the long days when we were running behind him. It was a great souvenir because we were hiking all together. It was an excellent situation for friendship and for studying. He was a very good teacher in the field. We were looking for bauxite.

Was he your favorite teacher?

One of them.

Termier and such like also?

Termier was more distant. His wife Genevieve Termier helped the students. There was also Pierre Pruvost, a specialist on the history of sedimentary basins with coal. He was a very nice man. There was also Glangeaud who was a very strange professor, sometimes with peculiar ideas in geology, and Roch who was working first in Morocco; and there was Jean Auboin, who at that time was teaching geosyncline theory. But they were all excellent professors.

But then you ended up as a vertebrate paleontologist.

Afterwards. I was very interested in paleontology, so I decided to do the *Troisième Cycle*, which was after the *Licence* [Master's degree]. There was a specialized two-year course, with Jean Piveteau as the professor, and also Madame Genet-Varcin, an anthropologist. During the two years at the Sorbonne I studied vertebrate paleontology, in connection with the Museum where I was the only one in the vertebrate paleontology laboratory. I followed a course at the Museum with Jean-Pierre Lehmann, Jean Piveteau, and Jean Anthony, on comparative anatomy; and I started my thesis for the *Troisième Cycle* on the small mammals from the "Quercy phosphorites," which were studied in part by Teilhard de Chardin.

You studied where?

I was studying in Paris, at the Museum. They gave me boxes of bones, from Eocene phosphorites.

From where?

From Quercy; it's in the south of France, near Montauban. Teilhard de Chardin was a famous writer on this fauna, and as an essay I described this small vertebrate for my diploma. Then everything changed. After the thesis was done, Professor Jean-Pierre Lehmann called me into his office—I was twenty-five years old at the time—and he said: "Philippe Taquet, if you want, a French geologist looking for uranium in Niger has found bones, and they want to know what kind of bones they are, and also perhaps some indication of the stratigraphy of the area where the uranium may be found. Are you ready to go to Africa?" So, I said immediately: "Yes of course!" And he opened his desk and said: "This is your plane ticket. You're to get on a plane next Monday. And don't forget to take medicines against parasites!" This was a great event in my life because I'd said "Yes" immediately. I learned just afterwards that he'd made the proposal to one of my colleagues, an older colleague, who was working in France, and this man, who was a friend of mine, had said "No, I'm too busy. I have no time to go to Africa." It was unfortunate for him, but fortunate for me. And I went to Niger alone. I went to Niamey and then to Agadès city and I learned that all the engineering geologists thought they would be working with an old man from the Museum, but they found that they were sent a twenty-five year old. And they were laughing at the airport. They pushed me into the desert for my first

experience of the African desert, and I arrived completely deserted (!) at the site of the biggest dinosaur locality in Africa. Never discovered before. The dinosaurs there have an outcrop a hundred kilometers long and two kilometers wide.

Did you have assistance or what?

No—just applied geologists with trucks and radio. They invited me for three weeks: took me in and paid for the trip. There was no time to collect fossils. I was alone with my small hammer, and there were complete skeletons of dinosaurs, prepared by the wind in the desert. It was an incredible situation. So, I learned all about how to make an expedition in the desert, how to collect bones, how to make plaster jackets, to follow the north and south, to take water, . . . It was rather dangerous.

Did you have guides?

Yes. There were local guides. We learned to drive over sand dunes and in the second year I was left alone with some money.

So you had a lot to learn. Do they speak French there?

Yes. Niger was an old French colony and they all spoke French. But I had to organize everything; and the second expedition involved bringing a lot of stuff from France through the Sahara to Niger across the Algerian desert. The arrangement was to bring cars. So it was a fantastic trip. The fossil locality in Niger was far from anywhere: ten hours from Agadès, without any word from my colleagues, though there was a small radio: once a day speaking with the uranium geologists. And if we had any problems we could make a call. There was no GPS at that time of course, but I had some aerial photographs. It was a very exciting experience and we were looking to find complete dinosaurs. In 1966, I found my first dinosaurs, *Ouranosaurus nigeriensis* and *Lurdusaurus arenatus*, and also a complete skeleton of a giant crocodile. It's now in the Museum in Paris.

Yes, you showed it to me when INHIGEO met there two years ago.

Yes, that's right. And it was very exciting and I went back to France to try to raise more money and I made a dossier too, because there was a Foundation for young students, to assist them if they had a "good vocation"; and that was my case.

So you got a grant?

Yes, I got a good grant and also the possibility of finding more money.

So this work in Niger became the basis for your PhD?

Right. I made several expeditions collecting forty-five tons of bones. And the problem was to bring the bones to the lab, but first to make boxes. There was no wood in the desert, of course, and I used boxes brought by the geologists—empty boxes, which I used to put my dinosaur bones in, to send them back to France. But if you waited too long in Agadès, the termites would eat the wood. There was some trouble, but finally we succeeded, and we had the opportunity to have a plane and to stop it in Agadès to take back my bones to France. The plane was supposed to come into Africa with material and return empty to France, but with arrangements between different Ministers of Civil Aviation I obtained a permit to bring back the bones by this way.

So you got them back to France, and then the problem was to put them together in the right order, and so on and so on.

Yes.

And ultimately you had to do a "Cuvier kind of thing"?

The work was exactly that: to make a comparative anatomy and to analyze the differences between the different dinosaurs. Apart from Albert de Lapparent, who was a geologist studying dinosaurs as a hobby, I was the first in France to study dinosaurs full time.

In France. Not in America of course.

No, in France. So that was the reason why I contacted my colleagues in America, particularly John Ostrom at Yale University, who'd studied the *Tenontosaurus*, an ornithopod dinosaur, in Montana and had just published on it; and I found an ornithopod in Africa, different from the famous European ornithopod, the *Iguanodon*. Different because (you would have seen a specimen in Venice) it has bumped nasals and long spines above the dorsal vertebrae. So I asked to compare this specimen. I went first to the United States in '71, before finishing my PhD. Because these African cousins of the *Iguanodon* were more evolved and seemed to be more closely related to duck-billed dinosaurs; and I made a wonderful trip of five weeks in all the museums and universities around Canada and the United States.

So whereas Cuvier studied mammoths or mastodons on the basis of modern elephants, you were studying your African dinosaurs by comparison with the American ones. I imagine you took photographs of them already reassembled?

Absolutely. And so, after all the comparisons, I could see that I had a new genus and a new species; and now the restoration was complete, from the head to the tail. This is rather rare. Complete. It was splendid! One day I put the different separated bones of the skull on a table, to make the first "assemblage." And suddenly you have the dino looking at you, and you are the first to see this animal. The animal seemed to look at me and say: "Hello, it's me!" And it's an incredible experience. I've remembered this all my life. It seemed to give life to this kind of animal once more. Unlike the hunter who kills the animal, the paleontologist recreates.

So that was the beginning of a long journey, taking you to so many parts of the world. Which parts of the world have you been hunting dinosaurs in?

So that was the beginning. After that, one of the expeditions I was involved with was with an Italian foundation called the Ligabue Foundation. Giancarlo Ligabue was a very rich man living in Venice, who was interested in this kind of research and he gave me grants. Large ones! And we put together an exhibition in Venice. And he was so happy with this that he proposed to me to go around the world in all the countries [where there were dinosaurs]. So we went to Patagonia.

Together?

Yes. I prepared the expedition and he joined us.

And provided the money?

Yes. We went to Madagascar. We went to the Gobi Desert. But the second large field for my work was in Morocco in the High Atlas Mountains. One day, a very good colleague—a Swiss colleague from the University of Neuchâtel, who was working for the Moroccan Geological Survey, making a map—found dinosaur bones and he needed to know the exact age of the *argile chocolat* (*chocolate mudstones*) of the High Atlas Mountains. There were problems. Nobody knew whether they were Jurassic or Cretaceous. But they had dinosaur bones and someone had to try to solve the problem. So they asked me to come to Morocco. It was a second experience. Very nice. With this kind of Swiss man. Quiet and serious, impressive in stratigraphy. And we explored the mountain where he was working, trying to find a good place to collect an almost complete skeleton; because if you only have “scrap” bones it’s difficult to say anything for certain. And after the tour we made with mules in the mountains—splendid mountains—we found a place with part of the tail of a dinosaur, just sticking out of the ground. So I decided to make an excavation, and I came back the following year. And we started to excavate the bone: one day, two days, three days, four days, . . . After six months in the same quarry we had a big animal with a femur that was two meters long, with a complete limb four meters and sixteen centimeters long, with heavy bones; and we found a complex skeleton. I’d promised my workers that if we found the skull, we’d have a grand feast with roast mutton, as we traditionally eat. And we found the skull. So it was great event. It was a rather rare discovery. It was a big show for the Middle Jurassic! And we solved the problem of the stratigraphy. It’s now called *Atlosaurus imelakei*.

There was also a logistical problem because we were far into the mountains and the mules could not carry out the heavy bones. So we used a helicopter of the Royal Moroccan Gendarmes and transported all the bones directly from the site to the capital of Morocco, Rabat, becoming a sort of flying dinosaur; and now the dinosaur is located in the Museum of Earth Science in Rabat. After that, I started to compare the African discovery with South American types. I also found a giant crocodile in Brazil.

So you are getting “drifty”?

Exactly. We published a paper in *Nature* on this question and then M. Ligabue wanted to go to Mongolia to see the Gobi Desert, which is full of dinosaurs, following the American expedition, the Russian expedition, and a Polish expedition—to prepare an exhibition for the Museum in Venice and for the Museum in Paris on Mongolian dinosaurs; and so we went to Mongolia with our Mongolian colleague, Rinchen Barsbold. It was a great expedition, and the exhibition in Paris was an incredible success with long queues and lines waiting to see the dinosaurs. That was a great experience too.

But, it was an administrative life in Paris. Things changed suddenly when Jean-Pierre Lehmann, my professor, died of a heart attack. I was at the Museum and people said to me, you have to succeed to Jean-Pierre Lehmann. I was so young. It was in 1981, and the system of appointments at the Museum at the time was very old, since Cuvier’s time, because the professors hold an election and then the Academy of Science holds a second election, sometimes contrary to the Museum, and after that the Minister chooses, and then there is a result. (That was the former procedure. It’s not the same today.) There were eight candidates, four from our laboratory and four external candidates. And I was very surprised because I was elected, and I became at that time the youngest of the professors in the Museum. It was quite a big responsibility with a lab of seventy people.

Things went well, but together with the expeditions around the world I was stuck with the problem of the administration of the Museum. As is often in the case of sheep, the young are riding and pushing to make him do some things he doesn’t want to do. And so they asked me to be in charge of the temporary exhibits of the Museum. And I started to like the organization of such things, together with my work of collaborating. The temporary exhibits of the Museum were not only on dinosaurs but on crystals, birds, etc.; and I worked with Claude Levi-Strauss to make an exhibit on the Indian feather artifacts of the Americas for the Museum of Mankind. That was a rather big organization—it was very successful too; and on botany and so on. But in ’85, the Director of the Museum, who was an ornithologist, resigned because there was some reform that he disagreed with, and then the professors of the Museum said: “you have to succeed to the former Director.” So, I was again very surprised because I was elected. After that, the Minister accepted the recommendation and I became the Director for five years from 1985 to 1990. This was another experience, for on top of being in charge of the lab, and as well as my expeditions, I had to do the administration. The Museum has one thousand five hundred people, and has very large premises with twenty-five laboratories, a zoo, winter gardens, and many things. My main task was to repair the Zoology Gallery which had been closed to the public for twenty-five years. And I succeeded. . . .

You chatted up the President I believe?!

Yes, Mitterand was visiting the Museum with Queen Noor of Jordan, and it was a good opportunity. He was very pleased with his visit to a temporary exhibition, so I suggested that he should have a look inside the Zoology Gallery, which had been closed for so many years. It was a good thing, because when people see something for themselves it is easier to convince them. And when the President saw the giraffe and the elephant all abandoned, he said: "You have to repair all this." I said "Of course, Mr. President." "And how long will it take to repair this building—before the Council of Ministers, seven years away?" I said: "Less than your term as President."

Seven years. So, it could be done within the time of his Presidency.

Exactly. So they were all laughing and Mitterand realized that if he got the money, he would be present for the opening. So that day was a good one. We got four hundred million francs.

How much is that in euros?

You have to calculate in dollars. I can't say in euros. It was several million dollars, I don't remember exactly, but quite a lot [80 million US dollars]. So I had to organize an international competition with the architect for the building, and I had to have an architectural team with a "trio." This was the key to success: an architect, scenograph, and museograph. A team of three people together.

That second was a scenograph, did you say?

Yes. To make exhibitions, theater décor, movie sets—we call it scenography.

I don't know this word.

To put things on the stage ("scene"), like in the theater. That was the key to success. The main reason for the success was to prepare a good project. I was describing this to Manuel Pinto this afternoon, how you prepare a project to transform the mind of a politician who is not interested in a new museum of natural history. The key was to propose to transform the Zoology Gallery into an Evolution Gallery, which is a different concept.

Which we saw when we had our meeting, our d'Orbigny meeting in Paris in 2002.

That's right. Some of my colleagues in the Museum were conservative and, said "No, no, no! It must stay the Gallery of Zoology." But the concept of a Gallery of Evolution was quite different. We had to explain to people, and also to the President, that life changes, things are changing. We prepared a synopsis, like an opera in three acts. Act 1, biodiversity of life. Act 2, the explanation of biodiversity by evolution. And Act 3, a very important point, the relationships between humans and nature. It was very nice for a politician to have that new kind of approach.

As I remember the exhibition (and who would forget it?), you'd constructed a large, sloping platform, with animals walking out onto it. People might walk in and think: "Oh, these are all the animals walking into or out of the ark."

Was that your intention?

No. The scenograph had the idea of the arrangement.

I mean, was that an idea in the back of his mind?

No, no. I don't think so. Not at all. But he found the idea very spectacular. It's a symbol of biodiversity, not a Biblical example.

It had that sort of sense to me!

Well perhaps it did. Anyway, we also put sounds and lights, all around. That was rather unusual for a natural history museum.

"Son et lumière." Very French!

That's right.

And it's a great success now.

A great success. Also there were some other influences that provided good ideas. I had the example of the British Museum in mind. And I had the idea of opening the Museum even late in the evening, when the gallery was closed, so it was possible to rent it out for industrial companies to have cocktail parties inside the beautiful gallery. It makes quite a lot of money that way, and that's convincing to politicians. It also introduced people who never visit museums to come and see things. This is also a good feature and part of the exhibition's success.

I liked the touches such as the giraffe leaning over the balcony inspecting everything. This captures people's minds; at least it captured mine.

Yes, there are some points with humor ("with a wink"). And also it impressed people with a gallery of extinct or endangered species, which is very impressive because there's plenty of emotion there. Some animals have disappeared, like the American pigeon. There used to be million and millions, but now not one. So even children can understand what has happened and what Darwin was saying.

Down in the basement, you've got specimens collected at the beginning of the nineteenth century, like those of the Baudin Expedition.

That's right. Yes.

I liked that, because when we looked at it, I saw you had specimens collected from Australia, like ones I have in my back garden.

Yes. You mean in the storage part?

Yes. Like any museum, it's like an iceberg—10 to 20% above the water, and 80 to 90% under water.

Yes, that's right. Well, for five years I was involved by this kind of work, more than in paleontology, but I stayed

active as a paleontologist. After this period, the Minister of Research, who was a mineralogist, invited me to lunch and asked me to stay for five years more as Museum Director as all was going well. I said: "No, I want to get back to research. If I stay five years more, I would be a dead like a fossil. Probably a bad Director too." He said: "OK, you're right." And so I came back to my laboratory; and I think it was a good thing because I didn't want to be doing administration year after year. Our profession is so beautiful, and I preferred to get back to it.

Have you become involved with theoretical debates such as whether dinosaurs were warm-blooded? What position did you take on that?

Yes. I was involved with my colleague and friend, Armand de Ricqlès, who was doing his PhD at that time on the paleo-histology, so I knew all the debates well. At that time, some people thought they were hot-blooded animals and others thought they were cold-blooded. The situation was more complicated. Some of them could be very active hot-blooded animals, but not necessarily so. But, at that time, I agreed with the new ideas describing some dinosaurs as very active and agile. Did you see the newspaper today?

Yes, I did.

We were working on this question and we found dinos perfectly adapted to their environment, and not at all stupid animals, whereas back in '66 dinosaurs were thought to be disappearing because they were stupid. But we realized that, on the contrary, the dino was a success story in evolution. I'll tell you a funny anecdote. The Congress of *Patronats Français* [French Employers] chose a *Diplodocus* as a symbol of management enterprise, implying that if you don't want to become extinct like the dinosaurs you have to act like an entrepreneur. And they asked me to give a document on the dinosaur and I said to them—to the press attaché—that I would provide such a document for the Congress. But remember: I shall tell your colleagues that the dinosaurs were on the Earth for one hundred and sixty-five million years and I should be pleased if the *Patronats Français* had the same long life before disappearing!

Now presumably you became interested in the history of biology, history of zoology, and history of paleontology, because you had these enormously valuable collections in Paris. Is that right?

Yes. We're in the Museum, and there are many important historical documents. I have a collection of Quaternary fossils in my room sent to Cuvier by Goethe, and in the gallery there is the first mastodon described by Cuvier—the first mammal proving the extinction of species. And there are the fossils from the gypsum deposits of Paris. And there's the whole environment of the Gallery: the statue of Lamarck in the entrance of the garden of plants (*Jardin des Plantes*); the others from Buffon or Bernardin de Saint Pierre. Of course, not all my colleagues are interested in the history of natural history, but I was. And, I was interested in the history of the discovery of dinosaurs; and, little by little, I collected many data on the history of all these things and on the fossils of the Institution too, because I was asked to make a report on all this when I had to give a talk about what was a museum, and to make some introduction or discourse, as the Director, for the celebration of the bicentenary of the death of Buffon. It was a great event in France: in Paris, in Montbard, and in Dijon, I spent quite a bit of time preparing all this, looking into the history of Buffon, the history of accounts of Buffon, and his ideas on the history of the Earth. And slowly, but surely, I became more and more interested in and involved with the history of science

Then you got caught up in d'Orbigny.

Yes, and I was a member of COFRHIGEO.

What date was that?

I don't remember a specific date, but it was before I was Secretary of the *Société Géologique de France*, and then Vice President. They asked me to be President, but I was Director of the Museum at that time, and so it was not possible to do all three things at once, but at the time, I remember, COFRHIGEO was in the same building as the Geological Society of France. I was a member of COFRHIGEO at the beginning. But I can't remember the date.

So are you an active member?

Yes, I gave some lectures on the lignites of Soissons in Aisne, in the country where I saw or found something interesting. It was a special thematic meeting, with François Ellenberger, on the problem of the lignites of the Soissonnais with the progression and the migration of the sea there and in the Department of Aisne. There had been people there who were writing good papers in Lamarck's day; and I found some old documents and relevant literature. I found more documents on Cuvier, with the story of his first hiking from Stuttgart to Tübingen in Germany, and I gave several lectures on Cuvier and after that I was involved in many, many other things. There were historical events with which I was involved when I was Director of the Museum. When there was a historical celebration in the Humboldt Museum in Berlin I had to go there to represent our Museum. And for a historical event in the Geology Museum in Copenhagen, I had to go there too, and so on and so on. Also, I was always asked to help with TV documentaries that had to do with the history of paleontology, and the history of the discovery of dinosaurs; and I had a big thematic evening, doing four hours on the history on the discovery of dinosaurs in Europe. That was a very nice program for Arte Channel, which is a popular German-French TV program, as I proposed to go into the field to see all my colleagues from Portugal, London, Maastricht, Eichstätt, and Spain, and to discuss with specialists in the localities where the dinosaurs were found. And I went to London and I saw Angela Milner and the *Archaeopteryx*. We went to Oxford to see Philip Powell, the collection of *Megalosaurus*. We went to Islip to see the grave of William Buckland, and to Stonesfield. We went to Lewes to see Gideon Mantell's house, and to other historical places, which was very pleasant, with a good man who was making the documentaries. The series was

most successful and was filled with laughter and spirit. It was a complicated history of science and history of paleontology. I also wrote an autobiographical book to tell the story of my different expeditions.

I've read that.

It was published first in French, and then it was well translated by Kevin Padian (with all the jokes), and published by Cambridge University Press. In this book, there are some approaches with historical points: on Cuvier, the history of the problem of extinction, with Normandy discoveries, with Maastricht, the Mosasaur. There are some historical approaches but it was mainly a book explaining the position of dinosaurs of course. For many years, I would say that I've spent "all the day" with Cuvier's collection, which we still use a little today.

So now you're working on a book on Cuvier?

Yes, Cuvier's personality is fascinating to me for many reasons. I'll explain why. Of course, as a paleontologist, I am following his method; but it's also because he was an administrator of a museum. (In fact he was Director several times.) Some of his problems still exist today. It's funny to follow that. Then, or because, I'm a Corresponding Member of the Academy of Science [*Philippe was elected a Full Member of the Academy in November 2004. Editor*], I'm looking from inside at the life of this strange society of men of science, and also at all the Cuvier archives. He fascinated me, because he was a Unitarian. I'm a Huguenot Calvinist from the north of France, so sociologically speaking there are many points that interested me in Cuvier's education. This is another reason. And, of course, he lived through a very interesting period of French history: from the Old Regime to the Restoration. This period was fascinating because we had the Revolution, the Empire, and the Restoration; and Cuvier crossed all these, as a scientist, of course, but also as an administrator of the University or as a Minister of the State. He was Minister for the non-Catholic denominations, and I'm fascinated how he arranged all this together and how he successfully "crossed" all the different changes of government without problems. Many people were jealous of his career. I think that there have been some excellent works on Cuvier but they don't consider all aspects of his personality, which was very complex. We have very good accounts of Cuvier's zoology, like William Coleman's—excellent, but only for his zoology.

That's right.

We also have a fine biography from Dorinda Outram. I've met her. I had a charming meeting with that excellent historian. But she's not a scientist and her book is mainly devoted to Cuvier's career, which is very interesting. She was not interested in paleontology, comparative anatomy, and questions of zoology. And Martin Rudwick focuses his research on Cuvier and the origin of stratigraphy, and the first descriptions of extinct species.

He is close to publishing his book on that, as you know.

Yes, I know that well. We've discussed that. But he's not interested in Cuvier as an administrator or Cuvier as a Huguenot or Cuvier's private life. So, for many years, I've decided to make a full inventory of Cuvier's archives: a text. It's taken quite a lot of time. And now I've finished that and I'm writing a volume on the first part of the life of Cuvier: from his birth to his arrival in Paris.

That would be just the beginning of the story. Could there be a multi-volume work?

I don't know. We shall see. I keep finding new things. Even last month, I discovered new documents on the youth of Cuvier during his life in Normandy.

Really?

Yes, it was a very surprising discovery; I agree with Martin Rudwick—we've discussed it together—that Cuvier was a very great man. Probably French people are more interested in Lamarck and his ideas on transformism, and consider that Cuvier was an enemy of Lamarck. And they forgot all the other parts of the scientific aspects of the life of Cuvier, which are very important too. I think that Cuvier merits the treatment of a full biography, as the British community has done for Darwin.

Certainly, but I hope one won't get too carried away, as they have done with the Darwin Industry in Anglophone countries.

In France, few people know the life of Cuvier.

Well, perhaps there's scope for a nascent Cuvier industry!

So I don't know what the result may be but I want to try to do something, with many details. I want to follow his life and the progress of his mind, his discoveries in natural history, why he was so interested in everything, and how he could do it.

Turning the conversation just a little bit, if I may, what would you like INHIGEO to be doing usefully in the period while you are President?

Yes, it's a hard task to succeed Manuel Pinto, or Hugh Torrens, of course, and many other people. I think it's good now for the Commission to make some kind of "divagation" [change of direction] of our discipline, of history of geology, for a larger public. I was impressed to see in the last Geological Congress, in Florence, that nearly fifteen percent of the lectures were devoted to contacts with the public, geological heritage, and education. This is interesting because it proves that there is now a larger public and people want to know what we are doing and what is the use of our disciplinary field. In France, we follow the history and activities of famous writers like Marcel Proust, Gustave Flaubert, Zola, or Balzac. If it's possible, I'd like to prepare more detailed synopses in a similar way for geologists. Each country could contribute to this by preparing some booklets on the histories of particular

geologists or paleontologists—the places where they were born, where they lived, where they went, where they made their discoveries, and where their artifacts are now; the things they used, what they found, which museums they worked in, and so on. I should be interested in following William Buckland with a rucksack, and going from one place to another, with a simple but high-quality booklet, with good pictures and good maps and with practical information on how to go, where to go, what to see, etc.

It's an interesting suggestion.

Each country could choose its own William Smith, Murchison, or Lyell, and have some kind of collection or introduction, with the logo of INHIGEO, which could be a suitable body to give a kind of imprimatur, I would like to think.

The Geologist's Association in London produces little geological booklets for amateurs for particular localities. But you're not thinking of special localities, but particular persons, or perhaps particular themes, and their backgrounds.

Yes.

So someone might take a holiday focused on, say, William Smith.

Yes. I'd like to see such a thing. I discussed with Hugh Torrens about writing a "guidebook" on William Smith, following him through the country and where he was living, and I'm sure that this kind of collection could be very interesting for a large group of people. People have more time to travel, to discover the world, and be intelligent tourists also. It would be a nice way to promote the history of geology, and to explain what we're doing, and why we're doing it.

Yes, but that's a going to take a lot of organization, isn't it?

That's right!

And intercommunication.

But it could be a financial success.

So that's for future thinking?

That's right. We'll discuss it next year.

The trouble is: we don't have a world President, like Mitterand in France, whom we could "chat up."

I would say that in the next Congress in Prague, we can probably make some progress.

Barrande would be a very good choice for Bohemia.

Excellent. Excellent.

Well, Philippe, very many thanks for all your interesting thoughts and reminiscences. But we should perhaps now draw this conversation to a close.

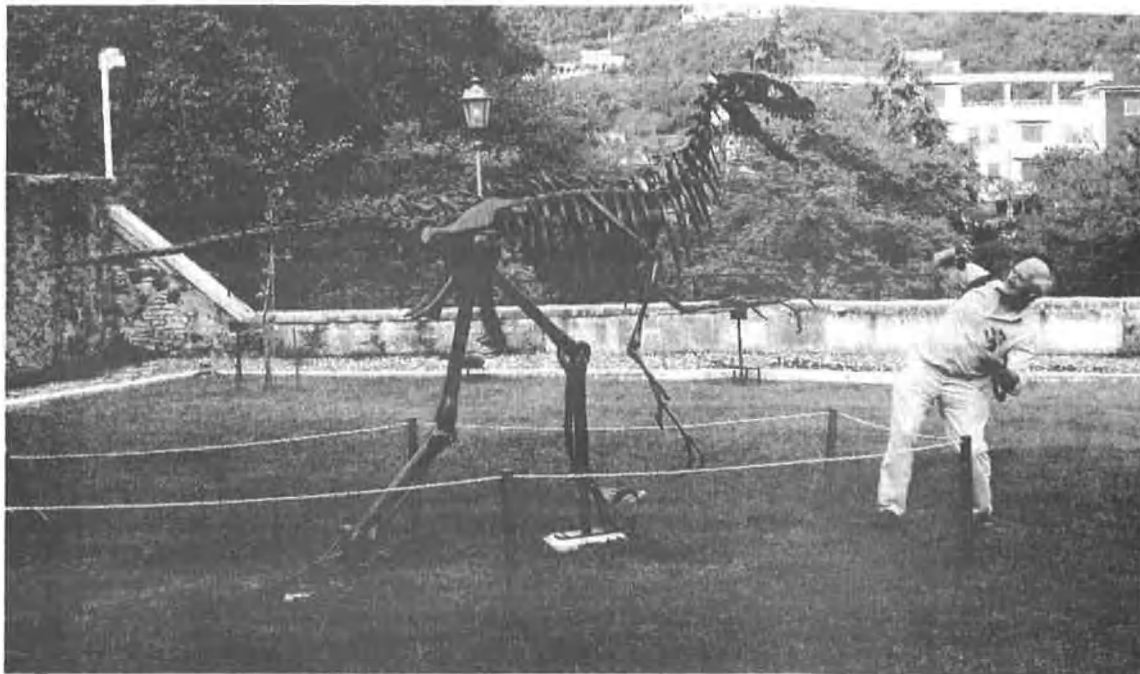
Well before we do, I just want to say that I think that an informal organization like INHIGEO is excellent. It's not a heavy or cumbersome organization. It's very well "adapted" and it provides a good way of encouraging good research, good science, good publication, and spreading information. And I'd say that you were the key person, preparing year after year, the INHIGEO bulletin for all the members. The nice news we have by this way on the members demonstrates that we're all making—with our so peculiar profession—a *broderie* of our life . . .

I suppose you might say if you can make your profession a hobby, that's a very good thing

Yes, but hobby is not the exact word. In France we use the word *broderie*, which literally means embroidery, but it can also mean "embellishment." *Broderie* is more light, but more than a hobby. It is used in a literary context.

Interesting. Philippe, thank you very, very much. People will be interested. I think one thing people that will say is that you've had a most fortunate life, and they would be only too happy to have lived your life.

Oh, sure, I'm very happy. I said to my friend: "I never think of having a period of holiday and a period of work. The two are never separate."



Our noble leader, INHIGEO President Philippe Taquet, a renowned expert on dinosaurs, has a serious discussion with a *Deinonychus*-like dinosaur. Valdagno, Italy, Museo Civico de Dal Lago, 2 September 2004.
Photo by K. B. Bork.

FORTHCOMING MEETINGS

V International Symposium on 'Mineralogical Museums' St Petersburg State University, Russia 21–24 June 2005

We are pleased to invite you to attend the Vth International Symposium 'Mineralogical Museums,' which is jointly organized by Saint Petersburg State University (Russia) and Christian-Albrechts University (Kiel, Germany). The Symposium will be held in one of the oldest Universities of Russia—St Petersburg State University—in the famous historical building "Twelve Collegia," from the 21st through the 24th June, 2005.

The scientific program of the Symposium will include the following topics: history of mineralogy and mineralogical museums; the role of museums in the development of fundamental scientific knowledge; scientific research in museums; all aspects of museum's activity—description, storage and display of specimens, exhibition and excursion activity.

In addition to the subjects of the Symposium, there will be discussions of the latest discoveries and results of research in mineralogy, crystal chemistry, crystallogeneses and gemology; mineralogy in fine arts, architecture, archaeology; problems in teaching mineralogy, and other related geological disciplines at universities; and computer technologies in scientific, museum and educational work.

The SCIENTIFIC PROGRAM will include oral and poster presentations and will cover the natural history museum and research and collection management in the broadest sense. Preliminary Topics: 1) History of Mineralogical Museums and Mineralogy; 2) Museums and fundamental sciences; 3) Scientific research in Mineralogical Museums; 4) Structural Mineralogy and Crystal Chemistry; 5) Mineralogy and Crystallogeneses; 6) Mineralogy in fine arts, architecture, archaeology; 7) Gemology; and 8) Mineral databases

The official languages of the Symposium will be Russian and English. Address for all Correspondence:

MM220, Secretaries

Dept. of Mineralogy, Faculty of Geology,

St.- Petersburg State University, Universitetskaya Emb. 7/9

St.- Petersburg 199034, RUSSIA

E-mail: mm_220@geology.pu.ru.

Please use the subject "mm" when sending your message by e-mail.

Tel: 007 (812) 328-9481

Please do not hesitate to contact the Secretaries of the Symposium, Dr Galina Anastasenko or Olga Golynskaya, if you require any further information or assistance. All Symposium information is presented at our website:

<http://www.mineral.pu.ru/conf/>

**INHIGEO Symposium in Prague, 2005:
History of Geophysics; History of Geology in Bohemia, Moravia, and Central and Eastern Europe; Early
Mining in Bohemia
2-12 July 2005**

The INHIGEO Symposium for 2005 will be held in Prague and Mikulov, Czech Republic, from 2 July to 12 July, with an interesting and varied program of field excursions. Along with the customary INHIGEO topics in the history of geoscience, there will be emphasis on topics in the history of geophysics.

Since the field excursions will necessarily give attention to general Czech geology, with visits to mining localities such as Kutná Hora, papers on the history of geology and mining in Eastern Europe are also invited.

(A) Pre-Symposium Program to Western Bohemia: 2 days = 2–3 July 2005

Objectives: Environmental impacts of the brown opencast mining will be observed. Visit to Karlovy Vary (Carsbad) Spa. Visit to the carbon dioxide mineral water geyser (73°C) issuing from deep granite formations, the basin being filled with Holocene sedge bog and diatomaceous deposits, with dry CO₂ exhalations (moffettes). The Komorní Hurka National Nature Reserve (a Quaternary volcano). (This is a site where an exploratory shaft was driven at the beginning of the nineteenth century to try to solve the controversy between Neptunists and Plutonists.)

(B) Symposium Program: 8 days, with five excursions, 4–11 July

4 July (Monday) (Prague): Registration, Opening addresses, Lecture presentations

5 July (Tuesday) (Prague): Lecture and poster presentations

6 July (Wednesday): 1-day excursion to northwest and north Bohemia

7 July (Thursday): Half-day excursion in the Prague area

Objectives: Visit to 'Barrande Rock': the first protected geological feature of Central Europe; stratigraphy of Lower Devonian

8 July (Friday): One-day excursion to Kutná Hora

Objectives: The coastal facies of the Bohemian Cretaceous Basin; Kutná Hora (a UNESCO-listed town, founded in the Middle Ages owing to the rich silver ore deposits discovered in the vicinity); visits to the Mining Museum; viewing of exhibition (specially prepared for the Symposium) of 17th- and 18-century manuscript mining maps; visit to a medieval mine, an original alchemical laboratory, and the famous local charnel house.

9 July (Saturday): Travel from Prague to Mikulov

Objectives: Visit to famous Moravian karst caves; navigation of the hidden River Punkva; visit to the Macocha Cavern; arrival at Mikulov

Itinerary:

10 July (Sunday) (Mikulov): Morning: paper presentations; Afternoon: visit to the Lednice Park National Reserve; Evening: Farewell Dinner in a Mikulov wine cellar

11 July 11 (Monday): Transportation back to Prague, traveling through southern Moravia and southeast Bohemia.

Objectives: Visit to Podyjí, the smallest Czech National Park (natural curiosities); visits to the beautiful Gothic and Renaissance towns of Znojmo, Telc, and Tabor.

End of Symposium.

(C) Post-Symposium Program: 12 July (Tuesday)

One-day excursion in the Bohemian karst region

Objectives: Stratigraphy of the Silurian and Devonian formations of the 'Barrandian Region'; holostratotype of the Silurian/Devonian boundary; visit to a Silurian volcano; karstic caves. and localities with petrified flora and fauna.

Contact address for the Local Organizing Committee:

Dr Jan T. Kozák,

Geophysical Institute,

Czech Academy of Sciences,

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141 31 Prague 4,

Czech Republic.

Email: kozak@ig.cas.cz

Tel. 420 267 103 018

Fax: 420 272 761 549

**22nd International Congress of History of Science, Beijing, China
July 24–30, 2005**

International Union of History and Philosophy of Science / Division History of Science (IUHPS/DHS)

'Politically Engaged Scientists, 1920–1950:

Science, Politics, Philosophy, History.'

Goals for the symposium

In the decades following the First World War, a number of scientists making prominent contributions to their own

disciplines simultaneously turned their attention, both theoretically and in practice, to issues of science policy and to the social and international roles of science. Several also began focusing on the history of science and contributed to a new flourishing of interest in that field. These trends continued during the Second World War and its immediate aftermath. Scientists at Cambridge University played an essential role in promoting them, but many elsewhere were also involved.

The aim of this symposium is to draw together discussions on the historiography of science, the history of particular disciplines, and the history of the involvement of 20th-century scientists in the public sphere. Our primary focus is on biologists and physicists active in the 1930s, especially those working in Great Britain, the Soviet Union, France and China, who contributed to the construction of scientific and ideological networks committed to politically activist approaches to burning issues of the day. Scientific humanism provided a common point of reference shared by Marxists and non-Marxists alike, and a crucial social and political role was allotted to the history of science.

Origins of this proposal

The idea for this symposium emerges from the international colloquium '*Biologistes engagés: science, histoire, philosophie, politique, autour de Cambridge dans les années 1930*,' organized in Paris in June 2004 by the REHSEIS team (*Recherches Épistémologiques et Historiques sur les Sciences Exactes et les Institutions Scientifiques*) associated with the *Centre National de Recherche Scientifique* and the *Université Paris 7*. That colloquium concentrated especially on the work of J. Needham, C.H. Waddington, J.D. Bernal, J.S. Huxley and J.B.S. Haldane. Contributions to that event focused on particular aspects of the activities of these scientists. The proposed ICHS colloquium aims to highlight the connections between these aspects and to demonstrate some of the consequences of those connections. In these ways it will continue and broaden our discussions initiated at the Paris colloquium.

General Information

Length of each paper: 20 minutes plus 10 minutes discussion.

Congress languages: English and French.

For registration, please, contact:

Congress Website: <http://2005bj.ihns.ac.cn>

Fax: *86-10-6401-7637;

E-mail: 2005bj@ihns.ac.cn

Addresses of the organizers:

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**11th International Conference on the History of Science in East Asia
15–20 August 2005
Munich, Germany**

In August 2005 the 11th International Conference on the History of Science in East Asia will take place in Munich, Germany. Continuing the tradition of the previous conferences, this meeting will offer a forum to present and discuss research and research findings, views and controversies related to the history of science, technology, and medicine in East Asia. As the venue of the Munich conference will be the Deutsches Museum, housing one of the world's largest collections and research institutes of the history of science and technology in Europe, one of the general subjects permeating the conference may be East-West comparison, as well as mutual influences between East and West in the fields of science, medicine, and technology. Also, the conference will offer a platform to discuss issues associated with the historical legacies of ethical perspectives on science, technology, and medicine in East Asia.

We are confident that both the beautiful city of Munich, the fascinating venue of the Deutsches Museum, and the opportunity to meet colleagues and discuss issues of mutual interest will attract historians and others interested in the history of science, technology, and medicine to participate in the conference.

As President of the International Society for the History of East Asian Science, Technology, and Medicine, and as President of the Local Organizing Committee, respectively, we would like to invite you to attend the conference and to register with the local organizing committee as soon as possible. All details on the various formats of scientific sessions and further organizational guidelines are outlined in the accompanying letter of information.

Prof. Paul U. Unschuld: President of the Local Organizing Committee

Prof. Liu Dun: President, International Society for the History of East Asian Science, Technology, and Medicine
Official Web site was to have been available by 1 November 2004, but was not in operation as we went to press. A search on Google or other search engine for ISHEASTM will yield current information concerning registration costs and topics.

**Dinosaur Provincial Park Symposium and Royal Tyrrell Museum 20th Anniversary celebration.
September 2005**

In September of 2005 there will be a dual celebration of a century of research in the area of Dinosaur Provincial Park, Alberta (with the launching of a publication edited by Phil Currie and Eva Koppelhus, published by Indiana University Press). Much of the recent research work in the park has been done by staff of the Royal Tyrrell Museum, which is also celebrating its 20th anniversary. Events will take place at both locations, and a symposium will be held at the park, with keynote papers by Scott Sampson and David Spalding. An extended abstracts volume for the symposium is planned for publication as an Occasional Paper of the Royal Tyrrell Museum. For further information, please go to <http://www.tyrrellmuseum.com> and click on the Dinosaur Park Symposium button!

**14th Meeting of the Association of the European Geological Societies
September 19–23, 2005
Turin, Italy**

The *Association of European Geological Societies* (AEGS) entrusted the Earth Sciences Department of the University of Torino with the organization of its 14th European Meeting, to be held in Turin, 19–23 September 2005. The meeting will be held at the "*Centro Incontri Regione Piemonte*."

The AEGS is the "umbrella" organization for the Geological Societies of all European Countries (EC and extra-EC); it is also affiliated to the International Union of Geological Sciences (IUGS). AEGS' primary task is the strengthening of the cooperation among European Geological Societies: since 1975, European biennial meetings have been organized and then named a Meeting of Association of European Geological Societies (MAEGS). MAEGS-14 (www.maegs14.com), will be held in Turin 19–23 September 2005. It will continue the AEGS's strategy of treating geoscience subjects relevant to trans-European cooperation and society needs. For this purpose, the University of Turin and the A.R.P.A.-Piemonte (Piemonte Regional Agency for Environmental Protection) will join their effort for the organization of the meeting. In accordance with AEGS directions, indicating scientific, applied and Public policy themes concerning Earth Sciences for the meeting's discussion, MAEGS14 will be devoted to 'Natural hazards related to recent geological processes and regional evolution.'

The backgrounds of the proposed topic are: 1) the recent catastrophic floods and landslides and sizable seismic events that affected Northwestern Italy; 2) the research and application activities for geological risk assessment and prevention conducted by regional and Local Governments supported by scientific institutions.

The meeting is structured in 6 different sessions: 1) Active tectonics and seismic hazards; 2) Floods, landslides and related hazards; 3) Subsidence hazards; 4) Volcanic hazards; 5) Geohazards and the public policy; 6) Geohazards and communication

You can find all details and information in the web site: www.maegs14.com. I wait for your participation. See you in Turin, Signed: Professor Francesco Carraro (President).

International Symposium on 'Metallurgy in Southeast Europe from Ancient Times until the end of the 19th Century'

28–29 September 2005

Sozopol, Bulgaria

The meeting is organized by the Union of Bulgarian Metallurgists, the Association of Metallurgical Engineers of Serbia and Montenegro, and the Balkan Union of Metallurgists. If you are interested in attending this Symposium, please inform Prof. Avramov or Prof. Zivkovic.

Prof. A. Avramov,

Union of Bulgarian Metallurgists,

108 Rakovsky Street, 1000 Sofia,

phone/fax: (+3592) 986 2964

E-mail: bum@ttm.bg

Prof. Dr Dragana Zivkovic

University of Belgrade, Technical Faculty

VJ 12, 19210 Bor, Serbia and Montenegro

Phone/Fax: + 381 30 424 547

E-mail: dzivkovic@tf.bor.ac.yu

8th International Symposium: 'Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries, Archives, Collections'

3–7 October 2005

Tyrol, Austria

The meeting will be held in Schwaz, Tyrol, Austria, and will be devoted to the history of mining and early geological exploration in the Tyrol. Dr Christoph Hauser is the Executive-Secretary of the local steering-committee and he may be contacted at: Tel.: ++43-(0)676-329-7996; Fax: ++43-(0)1-8902183-15; E-Mail: christoph@hauser. Important information on the 8th Cultural Heritage Symposium and the registration-form can be found at: <http://www.hauser.cc/schwaz/>. Information and correspondence can also be directed to Dr Albert Schedl, c/o Geologische Bundesanstalt (Geological Survey of Austria), Postfach 127, A-1031 Wien/Vienna, Österreich/Austria. Dr Lieselotte Jontes is chair of the local steering-committee and Dr Tillfried Cernajsek is co-chair of local steering-committee.

10th International Earth Sciences Colloquium on Aegean Regions

4–7 October 2005

Izmir, Turkey

The 10th International Earth Sciences Colloquium on Aegean Regions (IESCA 2005) which will be held in Izmir (Turkey), 4–7 October 2005. You may get detailed information concerning this important scientific meeting by visiting the web site <http://kisi.deu.edu.tr/iesca2005>. The meeting will be organized in Izmir, known as one of the most attractive cities around the world, with its active social and rich cultural identity. Professor Dr M. Eran Nakoman is President of the Organizing and Executive Committee.

II Congreso Nacional de Historia de las Presas
(National Congress on the History of Dams)

Burgos, Spain; 20–22 October 2005

SEPREM (*Sociedad Española de Presas y Embalses*) will be conducting a three-day congress on the history of dams. The site of the congress will be Burgos, Spain. Relevant information can be acquired by visiting the websites or contacting the persons below:

Webpage of SEPREM: www.seprem.com

Secretary of SEPREM: secretaria@seprem.com

Secretary-General of the Congress: fbueno@ubu.es y dsaldana@ubs.es

Address: II Congreso de Historia de las Presas, Area de Ingeniería Hidráulica, Escuela Superior de Ingenieros de Caminos, Universidad de Burgos, C/Villadiego s/n, 09001, Burgos, Spain

International Commission on the History of Geological Sciences
(INHIGEO)

International Conference and Field Trip

'History of Quaternary Geology and Geomorphology'

Conference: 28 July–29 July 2006, Vilnius, LITHUANIA

Field Trip: 30 July–4 August 2006, LITHUANIA–LATVIA–ESTONIA

Preliminary time schedule (2004-12-03 version)

27 July 2006, Wed. Arrival. Vilnius, Hotels: "Congress" and "City Park"

CONFERENCE

- 28–29 July, Th.–Fri. Lithuanian Academy of Sciences. Reports. Annual Meeting. Sightseeing (walk). Vilnius University (established in 1579), Library, Gallery of famous scientists. Cathedral. Amber Gallery. Exhibition 'Fine minerals in church art.' State Museum of Lithuanian art.
- 30 July, Sat. A day trip to South Baltic Glacial Belt in Vilnius vicinities (60 km). Trakai Medieval Castle and Museum. Lunch in Trakai. Aukstadvaris village, "Devil Hole." Night in Vilnius.
- 31 July, Sun . FIELD TRIP
Vilnius–Klaipeda (320 km). Baltic Sea coast. Klaipeda University. Museum of Clocks. Klaipeda–Nida (50 km). Lunch in Nida. Curonian Spit, Holocene eolian processes, recent sand dunes (till 66 m high). Nida–Klaipeda. Maritime Museum. Night in Klaipeda.
- 1 August, Mon. Klaipeda–Mosedis (70 km), State Museum of Stones (thousands of erratic boulders). Mosedis–Skuodas–Latvian border–Liepaja– (65 km). Lunch in Liepaja. River Letiza bluff outcrop at Legernieki. Skrunda (60 km). Branki gravel pit at Zirni (30 km). Traverse through Kurzeme to Jelgava (80 km), Academia Petropolitana (XVII c.). Jelgava–Riga (40 km). Night in Riga.
- 2 August, Tues. University of Latvia. Sightseeing (walk) Riga Old City, Domus. Museum of Natural History. Riga–Sigulda–Cesis (90 km). Lunch. Cesis Medieval Castle. Cesis–Estonian border–Tartu (220 km). North Baltic Glacial Belt, Munamägi (318 m high)–Ilumetsa–Tartu. University (geology, history, K.E. von Baer Museum, Observatory). Night in Tartu.
- 3 August, Wed. Tartu–Vooremaa–Lake Peipsi–Kohtla-Järve (160 km). Southern shore of Gulf of Finland, Valaste waterfall. Kohtla-Järve Ordovician "Oil shales" (kokersite). Lunch. Cambrian blue clays. Field of erratic boulders. Tallinn (160 km). Night in Tallinn.
- 4 August, Thurs. Tallinn–Türisalu–Keila-Joa (*Dictyonema* shale). Sightseeing (walk). Old City, Toompea. Lunch. Free time. Closing party. Night in Tallinn.
- 5 August, Fri. Departure from Tallinn.

BOOK REVIEWS

The Skin of a Serpent

Dilek, Yildirim and Newcomb, Sally (editors). *Ophiolite Concept and the Evolution of Geological Thought*, The Geological Society of America, Boulder (Colorado), Special Paper 373, 2003.

This is not an easy publication to review in that it consists of twenty-three papers, totaling 504 pages, on a specialized topic. However, this opening statement is no reflection on the thirty-four authors, which reads like a 'who's who' of the geological world, or of the very professional presentation of the papers, which in itself is a credit to the editors. It is undoubtedly a volume that will be much consulted by earth scientists working on ophiolites and also those with an interest in crustal and mantle processes, both ancient and modern. However, it also contains something of interest to those whose overriding geological passion does not focus on ophiolites (unlike this reviewer who was brought up in the shadow of Dun Mountain in the Dun Mountain Ophiolite Belt of Nelson, New Zealand). Indeed most members of INHIGEO, and those interested in the history of geology and the development of our understanding of geological processes will find items of interest amongst the varied papers. Before singling out some of note to historians of geology, and to counter any personal bias, it is only appropriate to list all of the papers in this Special Paper:

1. *Ophiolite concept and evolution* – Yildirim Dilek
2. *A personal history of the ophiolite concept* – Eldredge M. Moores
3. *Identification of a mantle unit in ophiolites: A major step in the evolution of the ophiolite concept* – Thierry Juteau
4. *N.L. Bowen, H.H. Hess, and ultramafic rocks: Perspectives on ophiolites before plate tectonics* – Davis A. Young
5. *Ophiolites, ocean crust formation, and magnetic studies: a personal view* – F.J. Vine
6. *Die ophiolithischen Zonen in den mediterranen Kettengebirgeb* (The ophiolitic zones in the Mediterranean mountain chains) – Gustav Steinmann (Daniel Bernoulli and Gerald M. Friedman, translators)

7. *Where did Gustav Steinmann see the trinity? Back to the roots of an Alpine ophiolite concept* – Daniel Bernoulli, Gianreto Manatschal, Laurent Desmurs and Othmar Muntener
8. *Ophiolites, historical contingency, and the Wilson cycle* – Martin F.J. Flower
9. *Where ophiolites come from and what they tell us* – Adolphe Nicolas and Françoise Boudier
10. *Ophiolites and lost oceans: Riffs, ridges, arcs, and/or scrapings?* – John Dewey
11. *Role of ophiolites in archipelago model of orogenesis* – Kenneth J. Hsu
12. *Ophiolites and the interpretation of marine geophysical data: How well does the ophiolite model work for the Pacific Ocean crust?* – James S. McClain
13. *Development of ophiolitic perspectives on models of ocean magma chambers beneath active spreading centres* – Peter Thy and Yildirim Dilek
14. *Geology of supra-subduction zones – Implications for the origin of ophiolites* – James W. Hawkins
15. *Supra-subduction zones ophiolites: The search for modern analogues* – Julian A. Pearce
16. *The Troodos Massif of Cyprus: Its role in the evolution of the ophiolitic concept* – Paul T. Robinson, John Malpas and Costas Xenophontos
17. *The Troodos ophiolite and the upper crust: a reciprocal traffic in scientific concepts* – J.R. Cann
18. *The sheeted dike complex of the Troodos ophiolite and its role in understanding mid-ocean ridge processes* – Robert J. Varga
19. *The evolution of ideas for the origin and emplacement of the western Hellenic ophiolites* – A.G. Smith and A. Rassios
20. *Development of the ideas on the origin of Albanian ophiolites* – Minella Shallo and Yildirim Dilek
21. *High-pressure and ultrahigh-pressure metamorphic belts—Subduction, recrystallization, exhumation, and significance for ophiolite study* – W.G. Ernst
22. *The repeated discovery of mélanges and its implications for the possibility and the role of objective evidence in the scientific enterprise* – A.M.C. Sengor
23. *History of asbestos discovery and the use and asbestos-related disease in context with the occurrence of asbestos within ophiolite complexes* – Malcolm Ross and Robert P. Nolan

Ophiolites are commonly narrow liner belts, which can extend for hundreds of kilometers, that are composed of heavy iron and magnesium-rich rocks classified as ultramafics. Such rocks, lacking in quartz, constitute one end member of the igneous rock classification. Even the name conjures up the extraordinary with 'ophios' coming from the Greek for snake, which reflects the feel of its most common rock type, serpentinite. Other ophiolitic rocks include dunite, harzburgite, serpentinite, pyroxenite and a range of lesser, but equally distinctive types. Some ophiolites are economically important, being host to platinoid minerals, chromite, copper, nickel and asbestos and others contain attractive ornamental rock, including jade. However, in this volume there is only one paper that concentrates on an economic mineral—the mining of asbestos both ancient and modern.

Until the advent of plate tectonics, the origin of ophiolites was to be an enigma as earth scientists pondered how rocks, with such a high specific gravity and unusual composition, could be generated and emplaced in the earth's crust. Up until about the end of the 19th century there was a school of thought that regarded them as metamorphosed sedimentary rocks. Others, a little more credibly, regarded them as large intrusive dikes or sills, and emphasized their occurrence in fold belts ('Alpine Peridotites'). This was despite N.L. Bowen and others demonstrating that there was a disturbing absence of anticipated high-temperature contact metamorphism, although high-pressure minerals were present, as discussed in the paper by Ernst. Others, like the German Gustav Steinmann (1856–1929), working in Italy, noted that serpentinite was almost invariably associated with basalt and chert and the name Steinmann Trinity was coined. Steinmann's classic paper, of 1927, has been translated and its inclusion in this GSA special volume reinforces its importance as a reference for both earth scientists and the students of the history of geology. Bernoulli and others document how Steinmann came to see his "trinity."

Steinmann, however, did not introduce the name ophiolite, which dates back to 1813. This, as explained in Dilek's paper, was by the French mineralogist Alexandre Brongniart. Dilek, and also Moores in his paper, goes on to trace the evolution of the ophiolite concept by pioneers such as W.N. Benson, T.P. Thayer and H.H. Hess, to name a few. The careers of Hess and Bowen are summarized in the paper by Young. One looks forward to biographies of the others, such as the eccentric Benson. Discussed in more depth is the period dealing with the advent of plate tectonics and the defining, at the historic GSA Penrose Conference of 1972, of what an ophiolitic sequence should comprise. Namely, ophiolites are segments of sea floor and the underlying upper part of the mantle. Following generation at a mid-ocean rift and rafting by sea-floor spreading, they were incorporated into continental crust, rather than being subducted back into the mantle—the "Wilson Cycle" of plate tectonics. As documented by Flower, Hawkin, Pearce and others in their papers, the cycle is not always this simple. This is perhaps fortuitous, as the emplacement of ophiolites continues to challenge earth scientists as they attempt to interpret the geological history of our planet.

However, the recognition of the ultramafic part of an ophiolite as a slice of mantle and the mafic part as ocean floor, as documented in the papers by Juteau and Vine respectively, were fundamental in removing lingering support for ophiolites being emplaced as igneous intrusions into continental crust. Another important factor was the

recognition and interpretation of the origin of mélanges. Mélanges are those, often as not, poorly exposed mixtures of sheared rocks that, in this context, contain a high percentage of ophiolitic material. They can be found adjacent to ophiolite belts and in places may completely replace the belts. The recognition and re-recognition of mélanges, by a relatively large number of scientists over a long period of time, is described in the detailed paper by Sengor. Many mélanges are widely interpreted as separating terranes and marking the zones of plate-collisions. However, this has been challenged by Hsu in his paper.

Many of the other papers summarize the evolution of ophiolites, their potentially different origins, but still within the concept of plate tectonics and sea-floor spreading. A number, such as the one by Hsu and Dewey, do so within their own understanding and learning. McClain, and Thy and Dilek, recount the connection that was made between the magnetic stripes on the modern ocean floors, on either side of mid ocean ridge magma chambers, and the gabbro dike swarms recognized in the Troodos massif of Cyprus. The massif is one of the best preserved and arguably the best studied ophiolite (see, for example, the papers by Robinson and others; Cann; Varga). The history of the research into other ophiolites around the Mediterranean is provided by Varga, Smith and Rassios, and Shallo and Dilek. Rounding off this collection of papers is a dedication to Robert G Coleman, Emeritus Professor of Geology at Stanford University, who was one of the leaders in the recognition of the importance of ophiolites in the plate tectonics revolution.

Ophiolites have played a major role in the understanding of the dynamic processes that are continually taking place within planet Earth and how this has govern the drift of continents through geological time. The unusual characteristics of ophiolites, and the difficulties scientists experienced in comprehending how they originated, provide a fertile field for research. This Special Paper, although at times somewhat technical, is nevertheless readily readable due to the contributors' intimate knowledge of ophiolites and the history of the development of ophiolitic concepts, coupled with the skilled editing by Yildirim Dilek and Sally Newcomb (Sally has been a stalwart presence at INHIGEO meetings and was elected in 2004 to membership in INHIGEO). It provides an excellent opportunity to more fully understand how we have attained our present understanding of these rocks and, as a consequence, Special Paper 373—*Ophiolite Concept and the Evolution of Geological Thought* contains much of interest to earth scientists and to historians of geology.

Mike Johnston, Nelson, New Zealand

A Good Guide to Steno as a 'Geologist'

Cutler, Alan, *The Seashell on the Mountaintop: A Story of Science, Sainthood, and the Humble Genius Who Discovered a New History of the Earth*, Dutton, New York, 2003, 228 pp.

A fresh history of Steno's life and work has appeared. It includes seventeen chapters, a prologue and epilogue, a bibliography, an index; and even an audio CD of the book, read by Grover Gardner, is available. (It sounds very well.) Cutler's book provides a well-told story of Steno's life and a good guide to the studies on Steno as a 'geologist,' giving also a useful guide to the history of geoscience before the nineteenth century, the age of 'geology proper.' The author, a geologist and science writer affiliated with the Smithsonian Institution, has accomplished the fascinating but difficult task of describing the "romantic and interesting" life of Steno and reviving his scientific work, as well as examining his religious one.

Nicolaus Steno (Niels Steensen, 1638–1686) was born in Copenhagen, son of a goldsmith, and trained in the medical faculties of Copenhagen, Amsterdam, and Leiden universities. He soon became famous for his anatomical discoveries and the finesse of his dissection techniques. For example, he undertook a public brain dissection in Paris that implied criticism of Descartes' physiology, though he had been much fascinated with Cartesian thinking. The crucial periods for Steno as a 'geologist' were the times he spent in France and Italy, and especially Tuscany: 1666–1668.

The 'story of seashells' begins with the dissection of a gigantic shark, as described in the second episode ("Natural Antiquities") of Martin Rudwick's *Meaning of Fossils* (1972). Steno's investigation into the shark's teeth and his comparison of them with 'tongue stones' guided him to the conclusion that 'fossils' were of organic origin. Moreover, in generalizing the issues, Steno described 'fossils' as solids within solids, which could be formed either from fluids or from non-organic materials or from organic ones. He went further. One could tell which was older if one considered carefully the relations between the enclosing and enclosed objects. Even the famous principles of stratigraphy described in Steno's *De solido* (1669) were just corollaries of this relationship. Steno paved a way to the scientific study of the past using these guiding principles. Ultimately, he presented the six phases or stages of Earth-history in Tuscany. According to Cutler this "new science" of Steno made it possible to "explore a new history of the world" (p. 114).

The book deals with two "enigmas": the enigma of Steno's life (p. 15ff) and the enigma of fossils (p. 173ff). Why did Steno, a successful anatomist, withdraw from science and become a priest in the Catholic Church? And why didn't many scholars regard fossil objects as the remains of organisms in Steno's time?

With these questions in mind, Cutler represents Steno's career under the "twin themes of religion and science" (p. 24), which Steno was destined to have from the beginning of his career. He (Cutler) found that he had to study the religious background to be able to achieve an understanding of Steno's contributions in science. In fact,

Steno became interested in chemical and mechanical matters very early on in the goldsmith workshop, and became acquainted with religious matters when he was ill in bed during his youth. Moreover, there must have been a remarkable mental drama that culminated in his conversion to Catholicism in Florence, just at the time when he was studying the fossils. He eventually became a bishop and engaged in missionary work in northern Europe: the Lutheran territories of Hanover, Munster, Hamburg, and Schwerin, where he died of gallstone. However, even in that late period of his life, Steno sometimes demonstrated dissections of animals, discussed geological questions with Leibniz, and wrote manuscripts about physiology.

But Cutler does not write about Steno alone. He discusses also his many predecessors and contemporaries, and his successors in the history of geoscience, in order to investigate the problem of the interpretation of “the seashell on the mountaintop.” From Thales, Plato and Aristotle, through Avicenna and Jean Buridan, to da Vinci, Colonna, Rondelet, and Descartes, he describes various ways of thinking about the Earth, especially fossil objects, and concludes that “there were *too many* explanations” of fossils (p. 62, Cutler’s italics). Although he admits the influence of Descartes on Steno, and, probably more importantly, the Italian scholars of the Accademia del Cimento, Cutler specifically focuses on the geocosmic world of Athanasius Kircher—in which all things were supposedly connected to everything else by secret ‘knots’—as a contemporary example for the theory of the Earth (Chapter 6). Meanwhile, in England, Robert Hooke began to discuss the organic origin of fossils, though the Royal Society did not adopt his idea, with Martin Lister’s opinion, which criticized Steno’s *De solido*, being influential (Chapter 12). The conception of spontaneous generation and the action of a latent ‘plastic force’ led many scholars to believe in the generation of the fossils *in situ*.

As for Steno’s successors, Cutler adopts a *new* history of “Steno’s triumph” in the eighteenth century (Chapter 17). This is a good choice. Because the old story was too simple—that Steno’s contribution was quickly forgotten and was only revived by the attention of nineteenth-century geologists. A good example was the case of Leibniz, who was evidently influenced by Steno. Cutler describes him “as a missionary for his new science. [and] he would make one final convert [Leibniz]” (p. 149) in the field of geology. Fortunately, the *Protogaea* manuscript of Leibniz survived and was published in “mid-century”: 1749 in Latin (but the French version was published in a different “mid-century” [1859], so the description on page 188 is incorrect). Thus the Stenonian theory of the Earth certainly found its way into the eighteenth-century Enlightenment.

The story proceeds, not only about English cases such as Thomas Burnet and John Woodward, but also French ones: Benoît de Maillet, René Réaumur, Nicolas Boulanger, and Comte Buffon. Cutler also keeps a careful watch over the continental situation, including the Italian contributions of Giovanni Arduino. Here we have a good guide to eighteenth-century history of geoscience and the role of Steno therein.

With the prologue beginning with a scene of pilgrims in San Lorenzo and the epilogue ending with the canonization of Steno, one of the important themes of this book is, as said before, the relationship between science and religion. Steno’s life in this respect is impressive and attractive, though it is by now a traditional theme of historiography of science. But Cutler does not adopt the conflict thesis as may be applicable in the case of Galileo or even a “clash” case (p. 202), as between modern evolutionists and fundamentalists.

In a sense, Steno’s case causes one to consider the more complex relationship portrayed in Chapter 8, “Conversion” (pp. 85–92). Therefore, in the later part, Cutler suggests a “cross-fertilization” relationship (p. 202). There is neither winner nor loser. This theme has been highlighted by the fact that Steno was beatified as a Catholic saint in 1988; and some writers have also called him the “patron saint” of geology.

Thus, Steno’s life and work are well surveyed and the text is well-written. The assertive narrative or even the mistake that occurred in the note of Simon Winchester’s “popular” book on William Smith (*The Map that Changed the World*, Harper Collins, 2001, p. 38) might have been prevented if the author had read Cutler’s book.

However, I have some differences of opinion from Cutler. First, I suggest that he does not pay sufficient attention to the influence of Cartesian thought on Steno. For, failing to mention the role of Erasmus Bartholin, Cutler mistakes the person who taught Steno Cartesian philosophy as Ole Borch (p. 87). But in fact, Borch was the one who introduced Steno to Gassendi’s philosophy as an alternative to that of Descartes.

A second point that I would like to emphasize is the meaning of the Gassendist system for Steno. In his youthful “Chaos Manuscript” (a student notebook that records Steno’s reading and his thoughts about what he read), Steno made extensive transcriptions from Gassendi’s *Animadversiones* (1649), and later he consulted the *Syntagma philosophicum* (1658), in which Gassendi’s ‘theory of the Earth’ was included.

Third, by contrast with the high evaluation of Steno’s stratigraphical principles, Cutler does not give much attention to his crystallographical ones (pp. 107–108). But one should not omit Steno’s remarkable explanation of crystal growth. The Japanese crystallographer Ichiro Sunagawa has previously pointed out that Steno indicated the variation of quartz crystals, which was explained by the unevenness of the growth of crystal faces (*Housetki ha kataru* [*Gems as Letters from the Subterranean*], Iwanami, Tokyo, 1983, p. 22). Indeed, Steno showed two forms of pyrite crystal in the explanation of his figures in *De solido*. The one could be converted to the other.

It is regrettable that in this semi-popular book few notes are provided, even in the case of quotations. I think it would not have been a major task to have inserted some indications in the text connecting with the cited sources at

the end of the book to enable the interested reader to pursue matters at a deeper level. Smooth reading need not have been impeded.

As for the two 'enigmas,' there are others that should have been investigated. One would be the relationship between Steno and Spinoza, whose friendship was close in Holland. But later Steno opposed Spinoza's ideas, following the publication of his *Tractatus theologico-politicus* (1670). There is a clue to understand Steno's religious activities. Even in the eighteenth century, the Spinoza–Steno relationship should not be ignored. For, if referring to the Romantic Movement and geology (pp. 197–198), Cutler should have mentioned a figure such as Goethe, as also having been a Spinozist.

Anyway, in the tradition of good American science writing, Cutler has successfully depicted the attractive life and the geological work of the illustrious Dane. Utilizing appropriately the work of professional historians and researchers in the United States and Denmark, his account is basically reliable. Many readers will not be disappointed, being provided with numerous facts that were previously not known to them. The book is highly recommended to students and teachers of geosciences, historians, and general readers who are interested in the history of historical sciences.

Toshihiro YAMADA, Tokyo

A Spanish View of Charles Lyell

Virgili, Carmina, *El fin de los mitos geológicos: Lyell*, Científicos para la Historia, 13, Nivola libros y ediciones, S. L., Tres Cantos, Madrid, 2003.

There is no doubt about the importance of Charles Lyell (1797–1875) in the development of modern geology. During the lifetime of the Scottish geologist his works enjoyed great prestige, to such an extent that there is possibly no other author who has influenced the evolution of a branch of science so much by the publication of his first book. It was by his innovative scientific approach—which implied the independence of geological reasoning from dogmatic creeds—that Lyell achieved his greatest impact; and this is the matter that Carmina Virgili focuses on in her book.

Carmina Virgili, Doctor of Geology, trained in Barcelona University. In 1963 she was appointed to the Professorship of Stratigraphy and Historical Geology in Oviedo University, one of the first female full professors in Spain. Later on she moved to Madrid where she was Dean of the Faculty of Geology in the Complutense University. She has combined education with politics, undertaking posts of responsibility, such as Secretary of Universities and Research during the eighties and serving as a Senator from Barcelona in the period 1996–2000. This is her first book on the history of geology.

El fin de los mitos geológicos: Lyell (318 pages) is divided into five major sections, with several chapters in each. In Section 1, Virgili briefly outlines the situation in the geosciences at the end of the eighteenth century and the beginning of the nineteenth century. It was a period of heated debates and conflicting ideas in which the rationality advocated by the Enlightenment was still mingled with the shadows of biblical myths. Sections 2 and 3 make up the core of the book and deal with the life and work of Charles Lyell, respectively. Section 4 is dedicated to presenting the principles of actualism or uniformitarianism, as they were understood and defended by Lyell. Finally, Section 5 refers to Lyell's travels in Spain and the influence of his ideas on Spanish geologists during the nineteenth century. Virgili completes her book with an epilogue that includes acknowledgments, a chronology, and a not exhaustive but sufficient bibliography.

It is commendable that Professor Virgili has been able to summarize the long life and the huge oeuvre of Charles Lyell in so few pages. For this purpose she consulted a large part of the existing literature on Lyell up until the present moment, from his extensive correspondence to the biographical issues by the Lyell authority Leonard Wilson. The main aspects of Lyell's personality and the most relevant episodes of his life are described, taking into account not only his own character and accomplishments but also the social and scientific conditionings of the time. Virgili emphasizes the learning process of his vocation in geology and his evident determination in contributing to the development of that science, as well as his breaking the traditional beliefs which, from his point of view, impeded the full establishment of geology as a science.

In the chapter on Lyell's work, the author provides an excellent summary of his most important contributions in various fields (volcanology, age of the Earth, metamorphism, . . .); a summary that is all the more valuable if we consider the wide variety of Lyell's interests and the implications of his new conceptual framework. Virgili pays special attention to emphasizing the significance and influence of Lyell's most outstanding geological publications, led by *Principles of Geology* and *Elements of Geology*, but not forgetting works such as *Travels in North America in the Years 1841–1842* or his foray into the world of paleoanthropology and the evolution of human species in *Geological Evidences of the Antiquity of Man*.

The fact that the author has divided the life and the work of Lyell into two distinct parts has led to the separation of some events which initially are quite difficult to separate or to analyze individually, and this has led to some repetition throughout the book. Nevertheless, these repetitions did not annoy this reader; indeed, on occasions they underscored the relevance of certain events. The section on the doctrine of actualism is the most philosophical part of the book. The author evidently wished to provide an exposition of this concept: one of the corner-stones of

geological thought. She has distinguished between what Lyell actually said in his books and what he is claimed to have said. Much of the criticism of Lyellian uniformitarianism during Lyell's own lifetime, and after, has been concerned with aspects or subtleties introduced into the polemics by his commentators or his opponents. Virgili deals with the task of showing the multiple meanings of "uniformity" and concludes that the actualism–catastrophism debate—now distanced from the extreme attitudes of the past—is today resolved satisfactorily.

The last section, on Lyell in Spain—a subject scarcely approached by Anglophone researchers—provides a synthesis of several publications by Spanish authors, mainly confined to journals of low circulation and difficult to locate. Virgili concentrates on Lyell's two trips to Spanish territory: the first to observe the extinct volcanoes in the Catalan region of Olot (1833), and the second to the Canary Islands to study the volcanism in Tenerife and La Palma (1853–1854). In speaking of the last travel, Virgili includes some interesting extracts from letters exchanged between Lyell and his correspondent in the islands, the naturalist Pedro Maffiote. Lastly, Lyell's influence on Spanish geology is explained, especially from the translation of *Elements of Geology* made in 1847 by the mining engineer and geologist Joaquín Ezquerro del Bayo.

Professor Virgili's book is written in a clear, understandable, and attractive prose. It contains numerous "boxes," with additional information about other noted geologists and related topics, which facilitate and enrich the reading of the text. The editing is careful and the book has a foreword by the series editor, Antonio Moreno, pointing out that this is the first biography of Lyell that has been published in Spanish. With this fact in mind, the book is more wide than deep in its research, and can be read with pleasure and benefit not only by science historians and professionals in Earth sciences but also by the general public. The book constitutes a welcome and valuable contribution to the Hispanic bibliography on Charles Lyell and the birth of modern geology.

Jorge Ordaz, Oviedo

Views of Murchison in Russia

Collie, Michael and John Diemer (eds), *Murchison's Wanderings in Russia: His Geological Exploration of Russia in Europe and the Ural Mountains, 1840 and 1841*, The British Geological Survey, Occasional Publication No. 2, Keyworth (Nottinghamshire, UK), 2004.

(Sir) Roderick Murchison is well known to geohistorians as one of the major figures of nineteenth-century geology, and he has previously received considerable attention, especially for the debates in which he was involved during the course of his career. His controversies with Henry de la Beche concerning the Devonian System, his controversy with Adam Sedgwick about the Cambrian and Silurian Systems, and his controversy about the interpretation of the rocks of the Northwest Highlands of Scotland, have previously been studied in detail by three INHIGEO Members (Martin Rudwick, James Secord, and David Oldroyd respectively). His work in promoting geographical exploration has been examined in detail by Robert Stafford; and the editors of the volume here under review have written a considerable amount on Murchison's work on the Triassic fauna of Scotland and associated matters. But hitherto the only paper in English that we know that has been concerned specifically with Murchison's work in Russia is that by the late John Thackray (*Journal of the Society for the Bibliography of Natural History*, 1978), which was chiefly concerned with bibliographical matters. Of course, the redoubtable Archibald Geikie included a section on Murchison's travels in Russia in his biography of his former chief (1875). This has been freely used in a popular biography of Murchison by John Morton, published in 2004, which, however, adds little to what was already known.

The various authors mentioned above have all made use of the Murchison archive, now held at the Geological Society of London, which was cataloged and briefly summarized some years ago by Thackray. In the Society's collections, we have found most of the field notebooks of Murchison that have survived (very difficult to read), plus a transcription of these in the hand of an unknown amanuensis (much easier to read). Seven volumes of the transcriptions are bound together and titled "Wanderings in Russia." It is this document that Collie and Diemer have attentively transcribed and published in their 400 pages of text, providing also an introduction and five appendices: "Geologists Mentioned in Wanderings in Russia" (most useful thumbnail biographical sketches); "The Murchison Social Circle" (ditto); "Articles, Books and Addresses by Murchison Relating to Russia"; "Field Notebooks and Maps Used by Murchison in Russia" (a list of maps, which gives an idea of the scale of Murchison's project and the base-maps that he utilized, and indicates the resources that were available to him in this regard, including some earlier Russian geological maps); and "Memoranda of Events in England During the Summer of 1842, and the Succeeding Winter, 1843" (which fills in the story of Murchison's work while he was back in England and elsewhere in the period between his two major Russian journeys). There is also an index, an "Editorial Postscript," and a few pages titled "The Challenge of the New," which provide some assessment of Murchison's work and its influence. Route maps of the various parts of the journey are provided, as well as useful half-page summaries of the events of the different parts of Murchison's epic journeys. A great bonus is to be found in the back pocket of the book, which contains a color copy of Murchison's notable geological map of Russia, and five colored geological sections, reproduced from the now rare *Geology of Russia* (1845). The "Select Bibliography" would have been more correctly headed "Incomplete Bibliography" (see further on this point below). The book, which altogether runs to 474 pages, represents a notable effort on the part of the editors to make generally available a major part of Murchison's oeuvre that hitherto has only been known to a few Murchison aficionados.

Both Thackray and the present volume's editors have pointed out that there was uncertainty in Murchison's mind as to whether his big book on Russia was to be a geological treatise or a travelogue. When eventually published in two volumes in 1845, it was primarily a geological text; but the idea of a travelogue was not wholly forgotten, and the amanuensis's manuscript, "Wanderings in Russia," would have been that book, had it ever been published. But it was not. The text was transcribed in Murchison's old age, and has some words omitted (which the unfortunate amanuensis presumably could not decipher from Murchison's scrawl in his notebooks). In fact, the whole text is in a somewhat raw state. And, of course, it contains a good deal of geology, which might not appeal to the reader of a travel book, interested in the condition of Russia in the 1840s. Whether Murchison's publisher John Murray would ever have taken it on one may doubt: in a sense it was neither fish nor fowl.

That criticism still holds today, of course. But as most modern readers will be interested in the state of Russian geology in the 1840s, Murchison's work in Russia on the Devonian and Permian Systems, his ideas on the "validity" of the Silurian System in Russia, on glaciation, and the formation of Russia's black soils, and his *modus operandi* as a traveler and geologist, *Wanderings in Russia* certainly has much to offer, and one cannot but be impressed by the way Murchison "coped." He traveled vast distances, often over terrible roads, in which his coach wheels sometimes sank up to their axles. One is amazed that he could journey as far and as fast as he did, making seemingly impossible repairs to his coaches in various remote places. It is also interesting to have his eye-witness accounts of the customs and character of Russian people: from the lowly serfs to the Czar himself. We also enter Russian towns and villages and view the scenery through the eyes of the English gentleman traveler. Murchison's French served him well for getting around and getting information. It was the lingua franca of the day!

As is well known, Murchison was a man of upper-class perspective (though not an aristocrat), and saw life (and terrain) with the ideas of the retired military man that he was. He viewed the "enlightened despotism" of Czar Nicholas with favor, and thought that it was an excellent way of running a country as vast as Russia; and from what Murchison tells us it was a peaceful and orderly empire. He found the people mostly good-hearted and friendly, and competent in their work. There was more prosperity than Oldroyd (DRO) had imagined, though there were pockets of real poverty, particularly among some ethnic minorities. Though part of Murchison's remit from the Russian Government (Czar!) was to examine and report on the coal deposits of the Donetz Basin, the travelogue says nothing much about the work conditions of the mine workers, which (a priori!) one may suppose were terrible. The conditions up at Archangel are described quite favorably, and Ekaterinburg (Sverdlovsk) was apparently a fine city in those days (which is at odds with what DRO had always thought of the place).

The book is provided with many illustrations, taken from Murchison's *Geology of Russia* (but the editors forgot to mention their provenance in that book, though the page numbers from the *Geology of Russia* are listed), each placed at the appropriate places in the narrative. However, there are no modern photographs of the localities, so it is hard to form mental pictures other than those provided by Murchison himself. This is unfortunate, as, on the basis of television programs, etc., anglophone readers will very likely know more about the Amazon jungle, Antarctica, Nepal, or wherever, than they do about rural Russia. And the omission of any modern illustrations of geological sites manifests a substantial weakness of the book, for it appears that the editors do not know Russian, have not been to Russia, know little about the Russian literature on Murchison, and have made no contacts with Russian geologists or historians of Russian geology in an effort to remedy these disadvantages. Notably, they have taken no account of a book that deals with Murchison's Russian work, published by the famous Russian geologist Nikolay S. Shatsky in 1941 (see Figure 1).

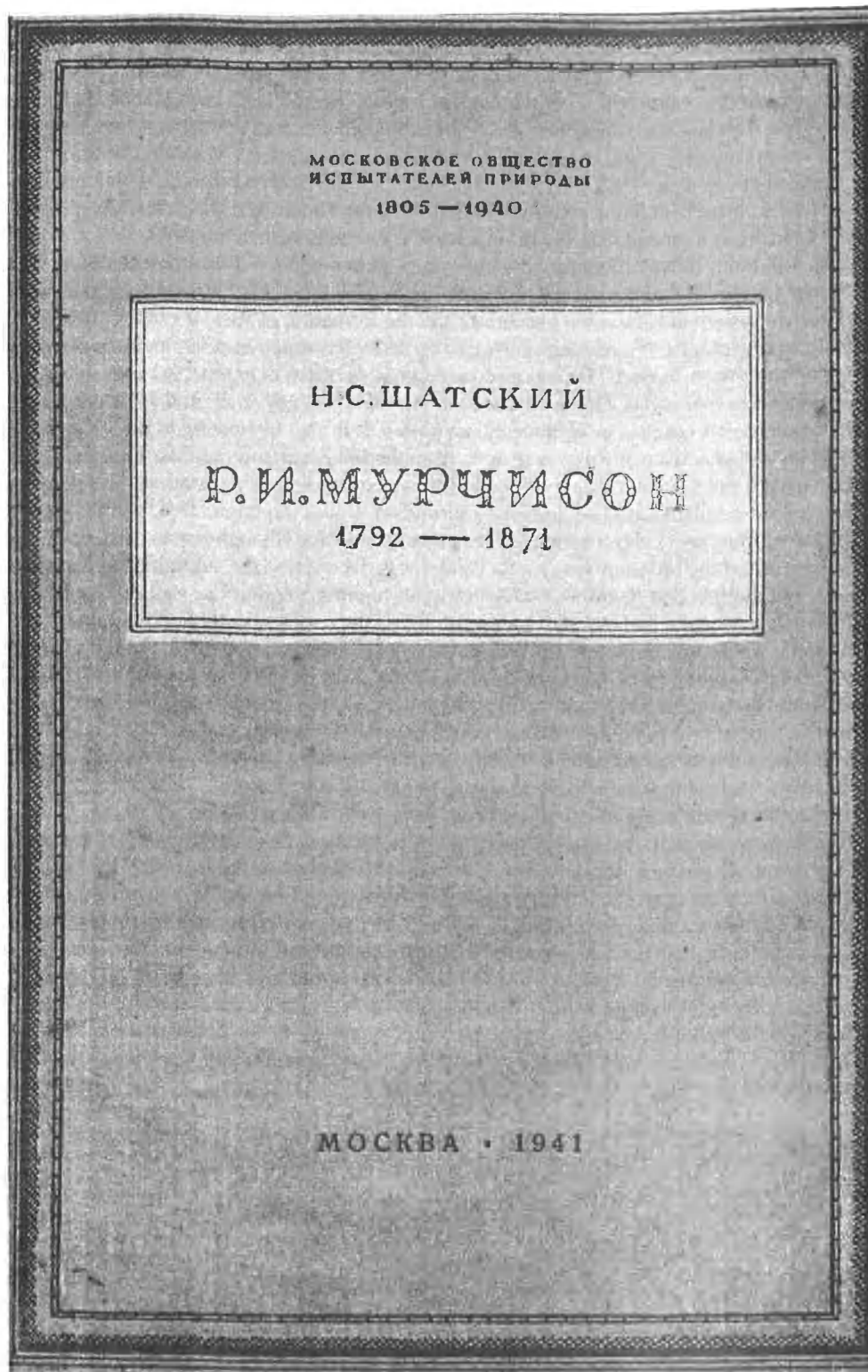


Figure 1
Cover of Shatsky's book: *Roderick Impey Murchison (1792-1874)*

The writing on the cover of the Shatsky volume says: Moskovskoe Obshchestvo Ispytateley Prirody [The Moscow Society of Naturalists], Publishers (1805-1940) N.S. Shatsky, R.I. Murchison 1792-1871, Moskva [Moscow], 1941. This highly relevant document is not referred to anywhere by the editors, and there is no mention of an article by INHIGEO's first President, Vladimir Tikhomirov: "On Regional Researches of Russian Geologists in the Mid-Nineteenth Century," *Essays on the History of Geological Knowledge*, No. 3, Publishing House of the Academy of Sciences USSR, Moscow, 1955, pp. 3-44. Neither is there any mention of the Russian and German translations of

Geology of Russia. For example, Alexander Ozersky (1813–1880) translated the book into Russian in 1849. Murchison gave him permission to do this in 1846, and make changes and additions. In his notes to his translation, Ozersky listed the Russian primary sources (maps, articles, collections) that underpinned Murchison's work, but which were not mentioned in the English edition. Information on Russian history is only represented in the "Select Bibliography" by Hopkins's *The Great Game: On Secret Service in High Asia* (1990) and *A History of Russia* (1984) by N. V. Riasanovsky. That's pretty thin!

We believe that connecting up with Russian geologists or historians of geology could have been valuable in a number of ways. For example, it should surely have drawn the editors' attention more closely to the extraordinary deposit of Cambrian clay near the Baltic coast, which—as might be expected—Murchison regarded as Lower Silurian. The peculiarity of this deposit, which INHIGEO Members will be able to visit in 2006, is surely worthy of comment. Why did it not seem odd to Murchison? He reported the occurrence near St Petersburg of a blue clay, with some fucoids, lying conformably and horizontally below more sandy and calcareous rocks that contained what he regarded as Lower Silurian shelly fossils, including trilobites. The peculiarity of there being an outcrop of clay, lying right at the bottom of the sedimentary sequence above the Azoic rocks, seems not to have been surprising to him. But he gave its stratigraphic position correctly.

In fact, for Murchison, the discovery of "Silurian" rocks lying unconformably on Azoic rocks in Scandinavia was (he thought) a great triumph for his version of the stratigraphic column, though in practice it had little to do with the viability of the Silurian as an independent system, defined by characteristic fossils.

But Murchison was even more pleased to find a section where, he reported, rocks containing fossil fish of Old Red Sandstone type, and shells such as those found in the sedimentary strata of Devonshire, were found in association. This he regarded as an important "confirmation" of the Devonian System, which occurred with different facies in different parts of Britain, whereas in Russia the fossil types equivalent to the two British facies were found in close association. We think that this point is of such major importance that the editors should have checked the matter out with Russian geologists and obtained a photograph of the important site, even if they were not able to visit the locality in person. Then the reader could have a better idea of the validity of Murchison's claims. So far as we are aware, this is not an issue that has been looked into "on the ground" by anglophone geohistorians (though Martin Rudwick referred to the locality in his *Great Devonian Controversy*). It should be added here that one of us (DRO) made a sincere effort to locate the places where the Devon molluscs/Old Red Sandstone fish beds occurred in Russia, by examining the volume here under review plus *Geology of Russia*. But the effort was unrewarding. No detailed map for this critical area is given in *Wanderings*, and the names of the relevant places are not marked on Collie and Diemer's route map for the region northeast of St Petersburg. DRO found it difficult to make sense of the narrative, and very difficult to form a mental picture of the locality.

And then there is the question of the Permian System, which Murchison "founded" as one of the main outcomes of his Russian travels. Had this System been envisaged or proposed (with a different name, of course) by any Russian geologists before Murchison? In fact, a set of "cupreous sandstones" had been recognized in Russia prior to Murchison by Georgy E. Stchurovsky (1803–1884), Head of the Moscow University Natural History Museum; and it approximated to the rocks of Murchison's Permian. This fact has not, so far as we know, been noted by Western (or anglophone) historians of geology. It does not mean that Murchison's work was any the less significant, but such matters surely should have been looked into by Collie and Diemer with the assistance of Russian colleagues. An organization such as INHIGEO would have been well placed, and willing, to assist in such a project. It is unfortunate, therefore, that the Commission did not become involved in any way.

We would also draw attention to some other factors relating to Murchison's Russian work, which may not be evident to those seeing matters through British eyes. First, there is the question of geological maps of Russia that pre-dated Murchison's. These are listed by Collie and Diemer, with reference to the ones that were used by Murchison and are preserved in the archives of the British Geological Survey. An item of particular interest is a hand-colored map of the European part of Russia, compiled in 1840 by the ethnic German, Grigoriy von Helmersen (1803–1885), and published in St Petersburg's *Gorny Zhurnal (Mining Journal)* in 1841, entitled (actually in German; see Figure 4) "General Map of the Mining Formations of European Russia." For this, he was awarded the important Demidov Prize of the St Petersburg Academy of Sciences in 1842 and he became a Full Member of that body in 1850. Murchison's copy of Helmersen's map, *Wanderings* informs us, contained some penciled corrections, made by him. Murchison commented in his journal that Helmersen was the only person he encountered during his journeys who "possesse[d] the character" of a geologist. They were in the field together for some of the earlier part of Murchison's "wanderings."*

Further on the question of the occurrence in close association of Devon shells and Old Red Sandstone fish, Collie and Diemer draw our attention to an interesting point. It appears that not everyone in Western Europe believed Murchison on this issue, so that years later he wrote to Helmersen requesting further corroboratory evidence. He was informed in reply that, in order to be convinced, any skeptic only needed to visit the Museum of the Imperial School of Mines in St Petersburg (now the Museum of the Mining Institute in that city), where one could view hand-specimens containing both Devonian molluscs and Old Red fish. This fact was referred to later, in the fourth edition of Murchison's *Siluria*, as Collie and Diemer helpfully point out. We think it would also have been

appropriate for the editors to have followed up this important clue and obtained a photograph of such a telling specimen.

Returning to Shatsky, it should be mentioned that he provided a comparison of Helmersen's map with that of Murchison, as is shown in Figures 2 and 3. Figure 4 reproduces Helmersen's original hand-colored map. It will be seen that while his contribution was generally more "primitive" than that of Murchison, Helmersen nevertheless recognized the broad area of distinctive strata that Murchison soon afterwards designated as Permian. Further, though Helmersen's map might, from its title and provenance, be thought to be a "mineral map" it was in fact depicting the stratigraphy of the vast region, whether by fossils or lithologies.



Figure 2

Helmser's Geological Map of European Russia (1841), as summarized by Shatsky
 1 = Newest Deposits; 2 = Tertiary Deposits; 3 = Cretaceous; 4 = Jurassic; 5 = New Red Sandstone; 6 = Carboniferous; 7 = Old Red Sandstone; 8 = Silurian System; 9 = Crystalline Rocks



Figure 3

Murchison's Geological Map of European Russia (1845), as summarized by Shatsky
 1 = Older Caspian [Pliocene]; 2 = Eocene; 3 = Cretaceous; 4 = Jurassic; 5 = Permian; 6 = Carboniferous; 7 = Devonian; 8 = Lower Silurian; 9 = Azoic**

Генеральная карта горныхъ формаций Европейской Россіи
составлена Ф. Гельмерсомъ
 в Петербургѣ 1841

Uebersichtskarte der Gebirgsformationen im europäischen Russland.
Zusammengestellt von G. von Helmersen
 in Petersburg 1841



Уменьшено в 1,5 разъ по сравнению с оригиналом

Пояснения и легенда на картѣ: 1. Горы кристаллическія (на оригинале цветъ розовый). 2. Системы силурійскія (на оригинале цветъ сѣрый). 3. Древній красный песчанн (на оригинале цветъ оранжевый). 4. Долья каменноугольная (на оригинале цветъ сѣрый). 5. Новый красный песчанн (на оригинале цветъ сѣнокопачный). 6. Разнообразныя известны (на оригинале цветъ розовый). 7. Юрскія известы (на оригинале цветъ голубой). 8. Меловыя известы (на оригинале цветъ желтый). 9. Третичныя известы (на оригинале цветъ желтый). См. общепонятную карту

Figure 4
 Copy of Helmersen's map (hand-colored) (1841)
 Reproduced from Tikhomirov (1955)

Thus the rocks that Murchison labeled Permian (Figure 3: 5) were called New Red Sandstone by von Helmersen (Figure 2: 5); but Murchison's map provided no clear boundary between New Red Sandstone and Permian in some of the large tracts to the west of the Urals, merely writing in different numbers in areas marked in the same color.

Other Russian geologists such as Alexander Meyendorff, Nikolay Koksharov, and Christian Pander (the Russian authority on Silurian and Devonian fishes) also aided Murchison; and their names appear in *Wanderings* and are indexed. So Murchison had significant helping hands from Russian geologists in the matter of knowing which places would be useful to visit; and his expenses were met by the Russians for much of his work. Nevertheless, one must applaud Murchison for his skill and tenacity in planning and carrying through his immense journey to a successful conclusion and eventual publication.

On the other hand, it should be remembered that the Russian Government supported foreign scientists more than Russian ones at that time. The St Petersburg Professor Edward Eichwald (1795–1876) wrote: “If Russian geologists had been given the same Government resources as Murchison received, they also would have been in the position to promote the development of geology in Russia” (*Geology, Mainly in Relation to Russia*, St Petersburg, 1846, p. 412 [in Russian]). And G. E. Stchurovsky wrote: “The remarkable successes with which Murchison’s expedition was crowned belonged not to one scientist alone but many; and among them the Russian geologists did not come last” (*History of the Geology of the Moscow Basin*, Vol. 1, Nos 1–2, Moscow, 1866, p. 20 [in Russian]).

However, the foregoing considerations should not detract from the vast amount of work that the editors have accomplished, for it is indeed a notable effort. Anglophones will now be able to know more about Murchison, more about the history of geology, and a lot more about places, people, customs, and daily life in Russia during the 1840s. The book’s purchasers will also become the fortunate owners of a good copy of Murchison’s remarkable geological map of eastern Europe/western Russia. The book was, however, a long read . . . DRO took it on holiday with him over the Christmas period, and his wife tactlessly remarked on the number of occasions he fell asleep reading it! But that has to be held against Murchison and DRO, if anyone, not Collie and Diemer.

David Oldroyd, Sydney, and Zoya Bessudnova, Moscow***

* On a point of detail, Von Helmersen came from Estonia, not Latvia, as stated in *Wanderings*. He was born near Dorpat (now Tartu), went to school in St Petersburg, and studied at Dorpat University (founded in 1802). From 1837, he was Keeper of the Museum of the Imperial School of Mines in St Petersburg and later became Professor there. He died in St Petersburg, but was buried in Dorpat. He was the first Director of the Geological Committee of Russia, which was the first State geological establishment in that country. See: Z.A. Bessudnova, ‘Helmersen, Grigory (Gregor) Petrovich von (1803–1885): Outstanding Russian Geologist,’ in Yu.Ya. Soloviev, Z.A. Bessudnova, and L.T. Przhedetskaya, *Native Active and Honorary Members of the Russian Academy of Sciences in XVIII–XX Centuries: Geology and Mining Sciences*, Scientific World, Moscow, 2000, pp. 82–86 (in Russian).

** The numbering given by Shatsky is the reverse of that employed by Murchison himself.

*** It should be made clear that Dr Bessudnova has not read the Collie and Diemer edition. Her role has been to provide DRO with information about Russian sources.

Some Nice Pictures!*

Ashworth, William B., Jr., *Vulcan’s Forge and Fingal’s Cave*, Linda Hall Library of Science, Engineering & Technology, Kansas City, 2004.

This small volume provides a kind of catalog of some of the rare books held at the Linda Hall Library, Kansas City (Missouri), which were on display from August 2003 to February 2004. But, in a sense, it is also a pictorial history of ideas about volcanoes and igneous rocks from the seventeenth to the early nineteenth century. The book is beautifully illustrated by eighty-five plates, many colored, each supported by a few paragraphs of explanation or descriptive text. There are reproductions of woodcuts, engravings, and lithographs, some paintings, a few maps, and a few title pages or tables of contents. Each item is referenced with exemplary exactitude. Additionally, there is a judiciously selected bibliography (six pages) and a handy index. The book gives a useful conspectus of ideas about volcanoes in the period covered and some idea of the empirical basis for the debates that developed in those years. In a few cases, we even see the geologists themselves at work. One is struck by the elegance and attention to detail found in many of the pictures and the artistic skills of early geologists. It is a pleasure to have this little book on my shelves.

David Oldroyd, Sydney

A View of the Emergence of Geology as a New Science*

Rudwick, Martin J. S., *The New Science of Geology: Studies in the Earth Sciences in the Age of Revolution*. Ashgate, Variorum Collected Studies Series CS 789, Aldershot and Burlington, 2004.

Martin Rudwick is, by my book, the scholar who has made the most significant contribution to the study of the history of geoscience since it emerged as a recognizable (albeit small) field in the second half of the twentieth century. Starting as a paleontologist at the Sedgwick Museum in Cambridge, he was handily placed to the then

* Previously published in *Metascience*.

* Previously published in *Metascience*.

emerging History and Philosophy of Science department and began to interest himself in its work, first giving lectures there on the history of paleontology and eventually committing himself to a full-time career as a geohistorian. Since that time, he has held chairs at the Free University in Amsterdam, Princeton, and the University of California, San Diego, and having returned to England he is now a research associate at his former department in Cambridge.

In 2003, I had occasion to write an essay on the historiography of nineteenth-century geoscience, and it was remarkable how many of the most innovative ideas and approaches to this historiography came from Rudwick's work. To a considerable extent, he dominated the field. Now we have the first of a pair of Ashgate Variorum books, this one presenting fourteen of his papers. The sister volume is scheduled for publication in 2005. We are also looking forward with keen anticipation to the appearance of his matured thoughts on the question of the origin of geology as a science, and in particular the role of Georges Cuvier in its emergence as an *historical* science. (This will appear as a University of Chicago Press book, and I assume that it will both synthesize and expand upon the work published in the volume under discussion here.)

Rudwick has long been interested in the question of 'visual imagery' in geoscience, its role in the cognitive processes of geologists, and the manner of presentation of their ideas; also the social formations of geoscientists. Such matters are well to the fore in his Variorum I, but there are also contributions on the history of ideas about time-scales, with material showing how Ussher-type chronologies gave way to modern ideas of geological time and history. Rudwick shows, for example, how figures such as Jean-André de Luc (who was pilloried in Charles Gillispie's paradigmatically whiggish *Genesis and Geology*, 1951—a nonetheless interesting and influential book) in fact gave interpretations of the processes of weathering and deposition that make much sense to us today, despite being situated within the context of a 'binary' history of ante- and post-diluvian epochs. In this, as for other issues, Rudwick is always an opponent of whiggery and historiographical anachronism.

However, I suppose the principal thesis that Rudwick would wish to uphold, so far as his Variorum I reveals, is that *Cuvier*—though later called a 'catastrophist' and sometimes represented as unscientific by Lyellians—was the pivotal figure in the emergence of geology as an historical science, not just because of his commanding position in French scientific life but because he 'historicized' geology, and showed how one could read the Earth's history from the 'records' left in the rocks, or its 'archives.' (Gabriel Gohau in France has also made much of the notion of 'geo-archives.'). Seen in this light, Cuvier's work is presented as the key to the emergence of *geology*, as opposed to the earlier 'theories of the Earth,' which Rudwick correctly regards as substantially different cognitive enterprises.

In support of his thesis, Rudwick gives considerable attention to the aforementioned matter of 'visual imagery.' He tracks the changes from eighteenth-century 'geognostic' maps to the early nineteenth-century stratal maps and sections, which conveyed both structural and historical information. (They revealed the historical order of deposition, and could also be linked to the climatic and physical conditions that obtained at different places in the world at different times.) William Smith has often been credited with being the progenitor of such maps, but, as Rudwick cogently points out, Smith did not advance conceptually to the production of a geohistorical map of Britain. Rather, his map (1815) provided a means for the 'reading' (interpretation) of the three-dimensional structure of the country (aided by his sections, produced in symbiotic association with his maps). Rudwick maintains that Smith's maps and sections were 'geognostic' in character, in keeping with the tradition of mining engineers and surveyors of which Smith was a part, rather than geohistorical productions, such as the map of the Paris 'basin' of Cuvier and Brongniart (1808/1811).

In support of this thesis, Rudwick points out (in a footnote to the work of Rachel Laudan) that in the keys to his maps Smith sometimes shaded his colour boxes more intensely at the top, and sometimes more at the bottom. This may suggest that, while his well-known method of shading assisted the depiction of the three-dimensional geological structure of Britain, the temporal order was less important to him than it was for Cuvier and Brongniart, with their concern for the 'conditions of existence' at the time of the strata's deposition (fresh-water, marine, or whatever).

However, against this one may now point to a geological map of part of Derbyshire produced for Joseph Banks by Smith's friend John Farey, also from the surveying and engineering community. Dated 1812/1813, it was found by Hugh Torrens in California, of all places, and has been reproduced by him in: R.E.R. Banks *et al.* (eds), *Joseph Banks: A Global Picture*, 1994. It raises some questions about the distinction between Smithian and Cuvierian maps that Rudwick sought to make back in 1976, for Farey's production can hardly be distinguished from many mid or late nineteenth-century maps. On the other hand, at the time of its compilation it was represented as a 'mineralogical map,' and Farey is known to have consulted the Cuvier and Brongniart map and memoir (1811) by 1812. Moreover, Farey was unable to get his map published in Britain. In any case, I would not claim that Farey's interests were really geohistorical in the sense of Cuvier (and Rudwick).

Passing on from that issue, I find what Rudwick has to say about geological illustration intensely interesting. He discusses the techniques of metal engraving, lithography, and woodcuts, and the kinds of information that could be conveyed with the different technologies (e.g., through the use of various kinds of shading). More than this, with Rudwick as our guide, we can follow the preparation of Cuvier's memoir illustrations, from his extraction of fossils or dissection of specimens, their drawing, and the transformation of his drawings by professional engravers into

published pictures (with mirror-image reversals in the process). On occasions, different scales were used for the depiction of different fossil types, so that their homologies were more evident when their representations appeared in the same plate.

Moreover, the representations of fossil vertebrates' skeletons could be brought together as "proxy specimens" (p. IX, 57) within the pages of a book or books, and thence by their publication and distribution they became "mobile" (*ibid.*). Cuvier's knowledge—produced from the work of his collectors, his own hands as a dissector and artist, the engravers, and the publishers—became disseminated, and to a considerable extent was accepted as authoritative. Thus Rudwick pays attention to both the 'internal' cognitive processes of the comparative anatomist, and the technical, social, and economic processes whereby his knowledge was transferred to other workers. Cuvier's books, Rudwick suggests, became a "paper museum of fossil bones" (part of title of Paper IX).

In keeping with his visual imagery interest, Rudwick's papers are themselves generously illustrated, with items from major or minor 'geo-texts,' and some ingenious diagrams of the author's own design: for example, one to represent the development of concepts of geo-time or geo-history; a diagram representing the "emergence and historical development of the visual language of geology" (p. V 178); and another showing the "social and cognitive topography of geology in the 1830s" (p. XIII 197).

The reader will find insights into the history of geology on almost every page, prompting this reviewer to say to himself (in an unoriginal fashion) "how stupid not to have thought of *that*." So: many historians of science will turn to the anthology with satisfaction and profit for a conspectus of the author's work over the years (plus one essay original to *Variorum I*). We look forward to *Variorum II* in 2005, which will presumably focus on Lyell and Darwin. Also in 2005 there will be the Chicago *magnum opus* on the origin of geology as an historical science, with—I imagine—Cuvier presented as the key figure. But that raises a query, already prompted by *Variorum I*: if Cuvier was the major figure in early French (or world) geology, why were the founding fathers of the *Société géologique de France* (Constant Prévost, Ami Boué, Jules Desnoyers), which was established in 1830, anti-Cuvierians?

But this need not alarm Rudwick. He would, I think, simply say that there was more to Cuvier than his 'catastrophism.' The question of thinking about the Earth's history in a manner analogous to human history, using 'archives' both for geohistorical work and for human historiography, in order to comprehend what happened in the past and former conditions of existence, was the mark of the new science of geology.

David Oldroyd, Sydney

The Correspondence of Australia's First Major Geologist*

Moyal, Ann, *The Web of Science: The Scientific Correspondence of the Rev. W.B. Clarke, Australia's Pioneer Geologist*. 2 volumes, Australia Scholarly Publishing, Melbourne, 2003.

The leading early geologist in Australia was the Reverend William Branwhite Clarke (1798–1878). His father was a blind schoolmaster in a Suffolk village and the family was not well off. Nevertheless, they managed to send William to Jesus College, Cambridge, where he studied to enter the Church. During his time as a student he came under the influence of the redoubtable Professor of Geology, Adam Sedgwick, and took up geology seriously. Nevertheless, he became a clergyman and held a series of minor ecclesiastical positions, besides teaching at his father's old school for a period. He also undertook geological studies, was elected a Fellow of the Geological Society, and published a number of (fairly minor) papers in Britain.

Clarke's financial situation remained unsound, however, and in 1839 he decided to look for better opportunities by migrating with his family to Australia, where he was appointed Headmaster of King's School Parramatta [the early township to the west of Sydney, now a Sydney suburb], with responsibility for neighboring parishes. He soon moved to other posts, and in 1846 he took charge of St Thomas's, St Leonards, his parish covering much of the North Shore [the area north of Sydney Harbour], as far as the Hawkesbury River.

Clarke's superiors were flexible enough to allow him time to geologize over much of New South Wales, especially in the Sydney Basin and in the mountains of the Great Dividing Range. It was Clarke who first discovered gold near Bathurst in the 1840s, but without letting on to the public, so that the NSW gold rush did not begin till the following decade with the announcement of gold by Edward Hargraves. Clarke also did much work on the geology of the coalfields. His travels were justified to his superiors in that he could provide ministry in places that had no priest; but his parishioners at St Leonards may have felt somewhat 'short-changed,' while appreciating his heroic efforts and the importance of his scientific contributions.

Like many naturalists of the Victorian era, Clarke was an indefatigable correspondent, and from his position at the scientific 'periphery' he endeavored to keep the scientific 'big-shots' at the 'centre,' such as Sedgwick, informed of developments in Australian geology and especially his own labors. His numerous correspondents treated him both as a friend and a source of valuable information on antipodean geology. Their correspondence is now published in two handsome volumes by Ann Moyal—the doyenne of history of science in this country. She has labored for many years on the project, and it is a pleasure to see it now brought to a triumphant conclusion. A total of 895 letters, both ingoing and outgoing, are transcribed and published, the correspondents including major northern

* Previously published in *Australian Book Review*.

hemisphere geologists such as Sedgwick, Roderick Murchison, and James Dana; men in Australia such as Phillip Parker King and Philip Gidley King (son and grandson of Governor P.G. King), William Sharpe MacLeay, Richard Daintree, and Frederick McCoy; or James Hector and Julius von Haast in New Zealand. The work involved in the transcriptions must have been immense. Sedgwick and Murchison, for example, and Clarke himself, had execrable handwriting, as did many Victorian scribblers.

Besides the letters, the volumes have detailed name and subject indexes, a register of the letters, a comprehensive bibliography of relevant secondary sources, plus a list of what I take to be the whole of Clarke's scientific writings, a great number of which in fact appeared in the pages of the *Sydney Herald* (later renamed the *Sydney Morning Herald*). In Clarke's day, it was usual for the 'colonial scientists' to try to maintain their links with the 'centre' by publishing in Britain (or some other colonial power); but Clarke chiefly maintained his connection by correspondence, for the most part publishing his ideas in local journals, newspapers, or books. Thus his name is not well known to today's historians of science at the 'centre.' Moyal's work will, however, bring Clarke to their attention, if for no other reason than that some of the ideas, activities, or private feelings, of the British 'big-shots' were made known to Clarke by their letters.

The volumes are introduced by an excellent account of Clarke's geological work in Australia, notably in relation to his debates with the paleontologist McCoy, Professor at Melbourne, about the correct interpretation of the age of the coals of the Sydney Basin. Major issues were: whether plants could be relied on as guide fossils; whether the Australian coals were the same age as those in Europe; and whether or not the southern continent had the same stratigraphic column as that which was being unravelled in Europe. Such questions were of fundamental importance for nineteenth-century geology. Put another way (albeit in post-Darwinian terms), did evolution proceed in the same rate or order in different parts of the world?

Clarke started off with the (mistaken) idea that the coals of NSW were Jurassic ('Oolitic'), but he soon relocated them in the Carboniferous—like the British coals. The museum geologist McCoy averred that the fossils pointed to a Jurassic age, but he did not deign to come north to look at the field evidence with Clarke. So a typical Victorian scientific controversy bubbled away for years, as can be seen in the correspondence (though readers will find it easier to get hold of the issues from Moyal's introduction). McCoy had some advantages as a paleontologist of international standing, and from sitting on a Melbourne chair. But Clarke was 'more right' than McCoy—the coals now being classified as Permian. All this was written up in 1981 by the late Thomas Vallance of Sydney University, in a somewhat obscure publication. Moyal makes excellent, as well as undoubted, use of this earlier publication, and I get no sense of plagiarism.

Scholars rarely sit down and read books such as this from cover to cover. They 'quarry' them for information. Such quarries are essential for historical research, provided that one can rely on the work of the compiler. So far as I can judge, one can indeed rely on Moyal's work. I can point to a few errors of transcription (for example, Caradoc—an important unit in the stratigraphic column, as well as a hill in Shropshire—has been construed as Caridoc), but such glitches appear to be rare. Much more serious is the omission of the occasional geological sketches with which Victorian geologists were accustomed to adorn their letters. As the cliché rightly has it: a picture can tell a thousand words. The omission of all such sketches is most regrettable. A sample of Clarke's handwriting would have been appreciated. One must also deplore the diminutive size of the footnote numbers, though the notes themselves are highly informative. Fortunately, the size problem can be cured with the aid of a powerful magnifying glass!

The vast majority of the letters here published are held in the Mitchell Library, Sydney, with only a few letters from the Cambridge University Library and a small number from other locations. I dare say there are other relevant items scattered about the world. Yet Ann Moyal has surely done enough to earn the grateful thanks of all historians of Australian science—and a good many other breeds of historians also. Admittedly, that mythic publishers' beast, the 'general reader,' may not be greatly interested! But as reviewers are wont to say in such cases: every good library *must* acquire this book. It is a notable addition to Australian scholarship.

David Oldroyd, Sydney (review previously published in *Australian Book Review*)

Two Noteworthy Books from Poland

Kleczkowski, Antoni S., *Studies on the Past of Stanislaw Staszic's Academy of Mining and Metallurgy in Cracow*, Publishing House of AGH University of Science and Technology, Crakow, 2004.

Antoni S. Kleczkowski, eminent hydrogeologist and ex-rector of AGH University of Science and Technology, is the author of numerous publications on the history of geology and mining. His considerable achievements in this field are summarized in the reviewed book. Kleczkowski has provided evidence that the roots of the present University of Science and Technology, with its Department of Geology, Geophysics and Environmental Protection, should be sought in the Mining Academy founded in 1816 by Stanislaw Staszic, in Kielce (Central Poland). Though closed by Russian invaders in 1827, it revived in 1912 in Cracow. However, because of events of World War I, it was not inaugurated until 1919. The University presently belongs to one of the biggest technical-natural and humanistic-technical universities in Europe. During World War II it did not stop its activity, working in underground conditions. The author was involved with the Academy during this very difficult period. After liberation of Poland from Nazi German occupation in 1945, he participated in its reconstruction. Subsequently, he passed through all the grades of

scientific and administrative career. Consequently, this book is a kind of monograph of this merited University, appearing in the 85th anniversary of its restoration. Apart from Kleczkowski's own accounts, the book also contains the texts of German geologists, his friends and co-workers. This superbly written book contains a complete bibliography, as well as an author's diary, presenting the atmosphere of scientific and corporate life in the AGH University.

Zbigniew Wojcik, Warsaw, and Wojciech Narebski, Crakow

Wojcik, Zbigniew, *Jozef Morozewicz, Scientist and Co-organizer of the Mining Academy (now = AGH University of Science and Technology) in Cracow*, Edited by the Association of Alumni of the University of Science and Technology, Crakow, 2004.

The book deals with the oldest period of attempts to form the AGH University and the first years of its activity. The author has documented that the professors of the Cracow University were interested in mining and geology at least since the Renaissance period. In 1781 the ministry of education, called the Commission on National Education, brought into being the Chair of Natural History in Cracow, led by Jan Jaskiewicz, who had been educated in Vienna and Paris. Later transformation of the Chair into specialized departments (botany, zoology, and mineralogy and geology) did not immediately result in the formation of a mining institute in the Cracow University. At least since the middle of the nineteenth century there was an attempt to bring a mining academy into being in Cracow. The institution would teach geology, mining and metallurgy. However, these attempts were not successful. The government in Vienna only allowed the faculty to form introductory courses of mining-metallurgical and petroleum-geological education in the Lvov Technical University.

In the years 1795–1918, the territory of Poland was occupied by three neighboring powers: Austria, Prussia, and Russia. In the Austrian sector the situation of the Polish population was relatively the best and since 1869 a kind of autonomy was declared. On the other side, the territory occupied by Prussia was totally germanized and that under Russian rule was russified. The strikes of schools within the Russian sector and the boycott of Russian universities in 1905 were the main cause to unite the attempts to form a Polish mining-metallurgical university in Cracow (in the Austrian sector). The pressure of cultural elites, and financial support from manufacturers, inclined the government in Vienna in 1912 to agree to form a mining academy in Cracow.

Jozef Morozewicz, an outstanding mineralogist and professor of the Cracow University, was charged with leading this newly-formed Academy. However, the organizational activity was stopped by the outbreak of World War I. Finally, in 1919, the head of the Polish State, Jozef Pilsudski, officially inaugurated the new university, which educated ore geologists, miners and metallurgists. Jozef Morozewicz was not only an outstanding scientist but also a very talented organizer. Moving to Petersburg in 1896, Morozewicz was employed in the Geological Committee (State Geological Survey) and carried out pioneer petrographic studies in the environs of Asov Sea, Urals (Magnitnaya Mountains) and at the Commandor Islands (Russian Pacific Coast). Before his arrival in Cracow in 1904, he was working at the Warsaw University (Russian) where he won fame due to successful syntheses of minerals and rocks. Morozewicz worked for fifteen years in Cracow (1904–1919), forming a well-known petrographic school. In 1919 he moved to Warsaw to organize the State Geological Institute, serving as its director until 1936. This Institute soon became one of the main centers of creative geological ideas in Poland.

Wojciech Narebski, Cracow

With Low in Labrador

Finkelstein, Max and James Stone, *Paddling the Boreal Forest: Rediscovering A.P. Low*, Natural Heritage Books, Paperback, Toronto, 2004.

This volume artfully weaves together the story of a modern canoe trip by the two authors into the wilds of the Labrador peninsula, and the story of the geologist Albert Peter Low (1861–1942) who inspired the trip. James Stone, who was principally responsible for the original historical research on Low, and his coauthor have written what is now the definitive biography of Low, the geologist-explorer who almost single-handedly explored the geology of the Labrador peninsula in the 1890s. In the process, Low discovered the iron ores of the Labrador trough. He rose in the ranks of the Geological Survey of Canada to the positions of Director (1906) and Deputy Minister of the newly created Department of Mines (1907). Tragically, that same year he was incapacitated by spinal meningitis, and had to resign his position in 1913.

Gerard V. Middleton, Hamilton, Ontario

Overview of the History of Canadian Geology

Macqueen, R.W. (ed.), *Proud Heritage: People and Progress in Early Canadian Geoscience*, Geoscience Canada Reprint Series No. 8, published by the Geological Association of Canada, St. John's, Newfoundland, 2004.

A notable 2004 publication is this compilation of papers, edited by R.W. Macqueen and published as Geoscience Canada Reprint Series 8. This hard-bound, 217–page volume is the most comprehensive, and perhaps the most notable contribution to the history of geosciences in Canada to appear since Zaslów's 1975 history of the Geological Survey of Canada. Dedicated to the late William Sarjeant, the volume features an Introductory survey of Canadian

geoscience, an 8-page bibliography of key source works, and a 13-page 'Timetable of Canadian Geology (to 1965).'

Some 150 pages of the volume are composed of biographical sketches of major figures, arranged under the headings of Early Geological Contributors (four subjects); Geological Pioneers, 19th Century (seven subjects, ten papers); Geological Leaders, 19th and 20th Centuries (seven subjects, eight papers), and Geological Leaders, 20th Century (five subjects, one of which is a group of five women geologists).

Seven 'early geological studies' discuss the discovery of geological features, surveys and other organizations, Quaternary botany and the early peat industry. A few more short biographies complete the volume. Illustrations include maps, early photographs, sections, and landscapes, and reproduction of pages from early publications and manuscripts.

The volume will be invaluable to anyone interested in the history of Canadian geology, and to other students of earth science history (particularly those of other former colonies once colored red on the maps of the British Empire), as well as to those concerned with geological topics of importance in Canada, including geochemistry, glacial history, mineral occurrence, paleontology, peat, placer gold, Precambrian shields, and structural geology.

Copies are available from the Geological Association of Canada, c/o Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland & Labrador, Canada, A1B 3X5. Further information may be obtained from the website www.gax.ca, or by email to publications@esd.mun.ca.

David Spalding, Pender Island, British Columbia

Dinosaurs of Tendaguru

Maier, Gerhard, *African Dinosaurs Unearthed. The Tendaguru Expeditions*, Indiana University Press, Bloomington, 2004.

In a previous *Newsletter*, mention was given of the work of Calgary resident Gerhard Maier on the history of the famous dinosaur site of Tendaguru in Tanzania, which has been studied by both German and English scientists. Formerly a technician at the Tyrrell Museum, Gerhard's fascination with this remarkable site has led him to write a history of this site.

David Spalding, Pender Island, British Columbia

Gallery of Famous Russian Geologists and Paleontologists

Soloviev, Yuri Yakovlevich, (ed.), *The Pavlov School of Geology*, Moscow, Nauka, 2004, 211 pp.

This solid book, published by the Vernadsky State Geological Museum of the Russian Academy of Science, presents a notable phenomenon in the history of geological sciences—the so-called "Pavlov Geological School," which existed in Moscow from the end of the nineteenth to the first quarter of the twentieth century. The book, written by ten well-known Russian authors (Starodubtseva, I.A., Bessudnova, Z.A., Pukhonto, S.K., Soloviev, Yu.Ya., Ivanov, A.V., Milanovsky, E.E., Semikhatov, M.A., Rzonitskaya, M.A., Lazarev, S.S., Lobacheva, S.V.) and edited by Yuri Soloviev, contains brief scientific biographies of Academician A.P. Pavlov and Honorary Academician M.V. Pavlova, and, for the first time, sketches the life and scientific work of forty-one representatives of their "school." The biographical information, based on various hitherto unknown archival and hand-written materials, provides accounts of many of the outstanding Russian geologists who worked together with the goal of "knowing the Earth's life." Several geological dynasties were born in this school and, in some cases, they still exist today. The book is illustrated with portraits and rare photographs. However, there are only few lines in English announcing the book's contents, which give very little understanding for non-Russian-speaking readers.

Alexei Petrovich Pavlov (born in Moscow in 1854; died in Bad-Telze, Germany in 1929) was an outstanding Russian naturalist, geologist, stratigrapher, paleontologist, paleogeographer, geomorphologist, tectonist, historian of geology, and talented educationist. He graduated from Moscow University in 1878, and then was employed for two years at the Tver' real secondary school, but in 1880 he returned to Moscow University, initially as a curator of the Cabinet of Geology and Mineralogy. He started to study the Jurassic–Early Cretaceous of the River Volga region (*Povolzhye*), and in 1884 defended his Master's thesis, entitled *The Lower Volga Jurassic*. That summer he went to Paris and Vienna, attended lectures on geology, went on geological excursions, and visited museums. In the autumn of 1884 he started his own lectures at Moscow University, and in May 1886 he presented his doctoral dissertation, *Ammonites of the zone Aspidoceras acanthicum of Eastern Russia*, and at the same year he got a professorial position at the University, where he spent his remaining forty-nine years.

Pavlov's scientific interests spanned the stratigraphy and paleontology of the Jurassic, Cretaceous and Paleogene systems, Quaternary geology, the origin of the relief of European Russia, the history of geosciences, tectonics, engineering geology, and rock classification. He was a pioneer in comparative stratigraphy and an expert on Mesozoic ammonites. Pavlov was the first to propose the term "Anthropogenic Era," which was adopted by his colleague, Academician V.I. Vernadsky. Pavlov introduced compulsory geological excursions for students in the vicinity of Moscow. And as a result of the years of fieldwork, large geological and paleontological collections were assembled, under Pavlov's guidance, for the University's Geological Museum; and this collection was the main reason why a new building for Geological and Mineralogical institutes, with museum and library, was built for the University in 1913–1918. (This is now the Vernadsky State Geological Museum RAS, Mokhovaya Street, 11, bld. 2,

Moscow.)

As an Academician (1905: Corresponding Member; 1916: Member of the Imperial St Petersburg Academy of Sciences), a participant in eleven International Geological Congresses, and a member of numerous scientific societies, Pavlov was a brilliant lecturer, led his students to take their first steps on the road to science, targeting their efforts to where they were needed. There were many outstanding names in the list of the students of Pavlov's "Moscow School of Geology," such as (by date of birth): V.A. Shchirovsky, A.P. Ivanov, N.I. Krishtafovich, V.M. Tsebrikov, K.I. Viskont, A.V. Pavlov, N.N. Bogolyubov, M.A. Bolkhovitinova, A.A. Chernov, D.I. Ilovaisky, A.D. Arkhangel'sky, M.M. Vassil'yevsky, A.G. Rhonsnitsky, K.I. Lisitsyn, V.G. Khimenkov, V.A. Zhukov, B.A. Mozharovsky, A.N. Rozanov, A.N. Semikhatov, O.K. Lange, S.A. Dobrov, F.W. Lungershausen, A.F. Sludsky, M.S. Shvetsov, A.N. Mazarovich, A.M. Zhirmunsky, G.F. Mirchink, V.A. Varsanof'eva, S.V. Obruchev, V.A. Teryaev, E.V. Milanovsky, N.S. Shatsky, V.V. Menner, and many others. V.A. Varsanof'eva, Pavlov's biographer, wrote in 1947, "No single Russian geologist had so many successors and no one created so large school."

Pavlov and his wife Maria Vassil'yevna Pavlova (Gortynskaya, primo voto Illich-Shishatskaya, born in Chernigov in 1854; died in Moscow in 1938) spent their whole careers together. She graduated from the 'Kiev Institute for Girl Aristocrats' in 1870. She went to Paris in 1880 but was widowed. She then spent four years studying geology and paleontology at the Sorbonne and the *Jardin des Plantes*, where Professor Albert Gaudry, the well-known specialist in Tertiary vertebrates, directed her interest towards paleontology. During her studies, Pavlova examined the paleontological collections of museums in London, Paris, Munich, St Petersburg, and Vienna. 1884 was a good one for Pavlova. She graduated from the Sorbonne with a diploma in paleozoology, and met A.P. Pavlov when he was in Paris, at the home of Professor Menzbir. In 1885 Pavlova returned to Chernigov, but in 1886 she went to Moscow, where the Pavlovs got married. She started work in the Geological Museum of Moscow University, and from that time the two worked "with one voice." It was an excellent marriage, founded on their common interests in science. As Andrei Belyi wrote (printed in 1989), "their apartments were a continuation of their paleontological cabinet, and their university cabinet was a continuation of their apartments."

Maria Pavlova specialized in the study of Tertiary mammals, first studying hoofed animals and later mastodons, fossil elephants, and mammoths. She collected tens of thousands of bones and skeletons of Tertiary mammals from Southern Russia, Bessarabia, the Baikal area, Mongolia, and the Novosibirsk islands, which were all stored in the Geological Museum of the Moscow University. In 1910, she published a fundamental study entitled *Les éléphants fossiles de la Russie*. She became Doctor of Zoology (1916), and was appointed Professor of Paleontology (1910), and Chair of the Paleontology Department of Moscow University (1919–1930). She was a member of the Ukrainian Academy of Science (1921) and the USSR Academy of Science (1925) (Honorary Academician [1930]). Pavlova was a vivacious woman showing an unstinting service to science.

In 1926, A.P. Pavlov and M.V. Pavlova were awarded the Albert Gaudry Gold Medal from the Geological Society of France. And in the same year the Geological–Paleontological Museum of Moscow University was named in their honor.

Algimantas Grigelis, Vilnius

Books of Relevance to Understanding the Moravian Karst (To be featured at the INHIGEO Meeting, Prague, July 2005)

Ivan Balak and Collective 1997: *The Rudicka Plosina Plateau in the Moravian Karst* (in Czech).

In the publication there is first of all an historical overview of speleology in the cave system. Important turning points in understanding the cave system include: 1863 (Jindrich Wankel—the descent through the *Horni chodba* corridor into the *Hugo* dome); 1921 (Frantisek Sedlak—subterranean active watercourse of the *Jedovnický* stream discovery); 1958 (amateur speleologists—active watercourse of the *Jedovnický potok* resumption discovery). Modern amateur speleologists made discoveries at the turn of the 20th century: the *Velikonocni* cave discovery; karst chimney and upper cave system exploration; and the descent through the *Spodni chodba* corridor and its documentation. The publication also describes the history of the *Rudice* deposits, with its mining and processing of local iron ore sources, from Neolithic times until the present.

Ivan Balak and Collective 1999: *Sloup and Pusty Zleb Valley in the Moravian Karst* (in Czech).

The publication aims its attention at the exploration and understanding of the *Sloupsko-sosuvské* cave system since 1669, when Johann Ferdinand Hertod von Todtenfeld published his medical book *Tartaro Mastix Moraviae*. A chapter called 'De cryptis mirandis Moraviae' (About admirable earth-sheltered spaces of Moravia) describes all the bigger caves of today's Moravian Karst, first of all the *Sloupsko-sosuvské* caves. The next detailed description comes from Johann Anton Nagel's pen in 1748. The publication deals with the history of modern cave-system exploration. Significant attention is paid to history of the cave's opening to the public. Detailed speleology and research history of *Kulna* cave are also presented. *Kulna* cave is still the only locality in the Czech Republic with stratigraphic, paleontologic and also archeologic documentation of the climatic transition from the Last Interglacial to the Recent. *Kulna* cave is, thanks to data and knowledge collection from 1961 through 1976, one of the most important localities of Neanderthal-settlement research. Today its main roles are constant calibration of data, use as a permanent educational excursion locality, discussion locality for determination of human seasonal uses of the region, and as a

research locality for studying the relationship between humans and big predatory animals.

Ivan Balak and Collective 2001: *Udoli Ricky Valley in the Moravian Karst* (in Czech).

In this book historical descriptions are given concerning research in speleology, paleontology and archeology in the southern part of the Moravian Karst. *Ochozka* cave (discovered about 1830) is the best known cave of this area. The cave was opened to the public in the 19th century. Significant discoveries include the recognition of the new *Ochozka* cave in 1900 and discovery of the Labyrinth (shaft part of the cave) in 1922. Important historical research regarding the paleontology and archeology of the cave are described, with the most significant analysis focusing on the seat of Magdalenian culture in *Pekarna* cave. The research has occurred since 1880 (Florian Koudelka, Jindrich Wankel, Jan Knies, Josef Szombathy) and includes: 1883 (Martin Kriz); 1925–1930 (Karel Absolon); and 1961–1963 (Bohuslav Klima, of the Archeological Institute, Czech Academy of Science, Brno). Cave *Sveduv stul* is the next notable locality, with the finds of *Homo neanderthalensis* relics: 1886 (Martin Kriz); 1904–1905 (Frantisek Cerny and Karel Kubasek); and 1953–1955 (Bohuslav Klima, of the Archeological Institute, Czech Academy of Science, Brno). Attention is paid, throughout the book, to the speleology of caves. A special chapter takes note of local mining and processing history (mineral resources such as iron ore, marble, building blocks and cement-works limestone) from the time of the Middle Ages to the present.

Ivan Balak and Collective 2003: *Macocha and Punkva in the Moravian Karst* (in Czech).

The publication describes karst phenomena and speleological history of the nether parts of the *Pusty zleb* and *Suchy zleb* valleys and *Harbessko-Vilemovicke* plateau. Attention is naturally paid to the area of the *Punkva* river karst resurgence with the *Macocha* abyss. Speleological history of other important caves is mentioned also (*Balcarka* cave, *Katerinska* cave, etc.). The exact description refers to the *Punkevni* cave and the speleology of the *Macocha* abyss, including notes about the history of the cave's opening to the public. Investigation of the *Macocha* abyss has a rich history: 1723—the first recorded descent into the abyss by Franciscan Lazar Schopper; 1748—the descent into the *Macocha* abyss organized by J.A. Nagel; 1784—the first professional expedition organized by Karel Jan Rudzinsky (the first graphic representation of *Macocha* abyss based on two plans and one section); 1808—the descent into the *Macocha* abyss managed by Count Hugo Frantisek of Salm-Refferscheidt (discovery of *Tramova* cave and later discovery of the gate from *Macocha* abyss to *Punkevni* cave); 1856—the expedition organized by Jindrich Wankel into *Macocha* abyss (barometric measure of the depth of the abyss, measurement of the small lakes' depth by plumb line); 1864—expedition managed by Martin Kriz (exploration of the all known spaces); 1898—the expedition organized by Florian Koudelka; 1901–1909—the exploration expeditions organized by Karel Absolon, with a range of valued pieces of knowledge important for later exploration. Wankel got to a depth of 80 m (to the so-called *3rd cavity*) up the *Punkva* river in *Punkevni* cave in 1857. In 1909 the *Predni* dome was discovered by members of the Speleology section of the Natural Science Club of Brno. In 1910 the *Reichenbach* dome and *Zadni* dome were discovered. Exploration of the *Punkevni* cave occurred in 1913, using installation of a steel ladder into the *Macocha* abyss, driving of the adit and discovery of the *U Andela* dome and the *Tunelova* corridor. In 1920 the riddle of siphons on the *Punkva* River was investigated and discovery of *Sklenene domy* cave took place. Then in 1924 the *Punkva* river branch from *Macocha* abyss (today's upper anchorage) was recognized. During 1928 to 1929 the adjustment adit was driven and in 1932 to 1933 a series of large pumping experiments on the *Punkva* River were conducted. In 1933 the *Bad* siphon was opened and interconnection was made between *Pusty zleb* valley and *Macocha* abyss.

Jindrich Wankel 2003: *Sloupska Jeskyne Cave and its Prehistoric Age* (in Czech).

In 2003 translation of the German original text by J. Wankel was published (Heinrich Wankel, *Die Slouper Höhle und ihre Vorzeit*. Denkschriften der Kaiserlichen Akademie der Wissenschaften, Math. Nat. Klasse, 28, 95–31, Wien 1868, translation by Vratislav Grolich, Jiri Urban, Rudolf Musil and Karel Valoch, 2003). It is the first Czech translation of the principal work written by Dr Jindrich Wankel, who was a physician, paleontologist, archeologist, biologist and speleologist. Wankel's publication is focused on three main topics: cave sediments; finds of Pleistocene animals; and pathological bones. The descriptions of cave sediments are the only ones of that time. Wankel's descriptions of the Quaternary fauna sediments (especially Last Glacial, bears, lions, fox and wolverines) are very elaborate. Thorough descriptions of the skulls show us Wankel's knowledge of anatomy and European field literature. A large part of work is devoted to the pathology of the bones. Wankel was the first and also last Czech scientist with interests in these problems. The publication is not the first translation of Wankel's work. At least we can mention 'Pictures from Moravian Switzerland and its History' (Heinrich Wankel, *Bilder aus der Mährischen Schweiz und ihrer Vergangenheit*, Wien 1882), published in Czech by *Museum and Geographical Association of Brno* (Muzejni a vlastivedna spolecnost v Brne) and *Regional Museum of Blansko* (Okresni muzeum v Blansku) in 1984 (reprinted in 1988). Wankel's works have crucial importance for today's understanding of natural and social science genesis—not only in the closely defined region of the Moravian Karst.

Vera Souchopova, Jiri Merta, Jiri Truhlar, Ivan Balak, Leos Stefka 2002: *Moravian Karst Iron Trail* (in Czech).

The *Moravian Karst Iron Trail* describes the history of iron ore mining and its processing since prehistoric times until the present. The introductory chapters are focused on the central part of the Moravian Karst's geological history and iron ore genesis in the paleokarst depressions. The following chapters describe historical colonization and its impact on the iron ore mining and processing, with examples of experimental melting (direct and indirect methods).

A special chapter concentrates on the archeological excavation history of metallurgical workshops in the central part of the Moravian Karst. Wankel's find of the Hallstatt smithy in the *Byci Skala* Cave is described. Analyses and descriptions of archeological finds of metallurgical workshops dating from the 8th through 11th centuries are given. Texts are supplemented with many pictures, maps and diagrams, which better clarify life in the time of the ancient smelters. Medieval and modern metallurgical industries are the other important topics of the publication. The last part of the publication helps readers by presenting a practical guidebook through the *Moravian Karst Iron Trail*, which is an integral part of the international project entitled *European Iron Trail*.

Karel Valoch, Jiri Svoboda, Ivan Balak: *Catalog of Moravian Caves with Palaeolithic Finds* (in Czech).

The catalog includes a total of sixty-five caves and overhanging rocks of Moravia and Silesia, with discussion of human-presence traces dating from the Pleistocene and early Holocene. Elementary geological and geographical characteristics are mentioned for each locality (setting, population intensity and known cultures). Part of the description is also an historical overview of research, with a list of literary sources.

Ivan Balak, Rudolf Musil and Antonin Prichystal, Brno, Czech Republic

NOTES AND QUERIES

INHIGEO Website

Thanks to the general support of the IUGS and particular expertise of Dr John Aaron, webmaster for IUGS, the INHIGEO website is operative and in a constant state of being updated. You are welcome to visit it at your convenience. It can be entered by means of search-engine queries for INHIGEO, or through the IUGS master site: <http://www.iugs.org/iugs/science/sci-chog.htm>. Once at the IUGS Home Page, one can click on 'Directory.' That will take you to 'Scientific Commissions,' of which 'History of Geological Science (INHIGEO)' is an option. If you click on that listing, it will give you the current officers. Or, you can click on 'Calendar' at the top and have a year by year overview of what all of the IUGS Commissions are doing. If you click on 'Scientific Activities' at the top of the INHIGEO page, it will take you to our 'Objectives' and the 'News' section. Under 'News,' you will find information about our 2005 meeting in Prague and the 2004 meeting in Italy. If you click on 'Profile,' you will find a valuable history of INHIGEO. If you click on '2004 Activities,' it will take you to the INHIGEO Annual Report for 2004 (but it requires an Adobe Reader to open the file). You could also begin with typing in INHIGEO on Google, and that would take you directly to the 'Profile,' with headings at the top of the page that would allow transfer to other INHIGEO and IUGS sites. These comments apply as of April 2005 and are subject to change and updating.

Forthcoming INHIGEO Proceedings (Dublin, 2003)

Geological Travellers—On Foot, Bicycle, Sledge or Camel: The Search for Geological Knowledge. Patrick N. Wyse Jackson (editor). Proceedings of the INHIGEO symposium, Dublin July 2003. Pober Publications, Staten Island, New York, 2005.

This volume contains twenty-eight contributions. It will be published in late 2005 and copies may be purchased from the publisher: Pober Publications, 315 Main Street, Staten Island, New York 10307, USA. E-mail: pober@poberpublishing.com [Web Address: www.poberpublishing.com]. Please note that delegates who attended the Dublin meeting will receive a copy as part of their registration payment.

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History of the Earth Sciences Society (HESS)

In 2004 Gregory A. Good (of West Virginia University in the USA) completed his second term of service as Editor of the Society's journal, *Earth Sciences History*. He is succeeded by Patrick Wyse Jackson, of Trinity College, Dublin, Ireland. At the end of 2004 the Society's Presidency passed from William R. Brice (University of Pittsburgh at Johnstown, Pennsylvania, USA) to Martin J.S. Rudwick (University of Cambridge, England). As can be seen in the relocation of the Society's editorial offices to Ireland, and in the election of a British subject as the Society's chief officer for 2005–2006 (two years after that office was held by a Brazilian, Silvia F. de M. Figueirôa), the Society is trying to emphasize that it aspires to act as a genuinely international organization. One indication is that of seven main articles in the first issue of Volume 23 of *Earth Sciences History*, three are by authors from outside the USA (a German, a Russian, and an Argentinean). More information about HESS and *Earth Sciences History* can be accessed at www.historyearthscience.org.

About SCIEMP

The Sciences and Empires mail list is an "unmoderated" list operated by the *Sciences et Empires Groupe*, a Commission of the International Congress of the History of Science. The group itself was founded in conjunction with an international meeting held at UNESCO in Paris in April, 1990. The theme of that meeting was 'Sciences and Empires: European Expansion and Scientific Development of Asia, Africa, America and Oceania.'

The group owes its continued existence to the energy of clusters of scholars in Europe, Asia, North America, and Latin America. Now more than a decade old, crucial support and promotion of the group has come from the following individuals, among so many others, Patrick Petitjean, Catherine Jami, Anne Marie Moulin, Kapil Raj, Deepak Kumar, Venni Krishna, Roland Waast, Mic Worboys, and Silvia Figueiroa.

While open to all who are interested in our topic, it is primarily intended to serve as the major forum for discussions by historians, philosophers, and sociologists of science, technology, and medicine who study how these activities intersect with colonialism, imperialism, and postcolonialism. The group also maintains a website at: <http://www.ige.unicamp.br/sciemp/>.

To see the collection of prior postings to the list, visit the sciemp Archives. (The current archive is only available to the list members.) *Website information:*

sciemp@mail.lsit.ucsb.edu

<https://secure.lsit.ucsb.edu/mailman/listinfo/sciemp>

Petroleum History Institute and its Journal

Oil-Industry History

The Petroleum History Institute (PHI) was founded in June of 2003 after the Drake Well Foundation (DWF) was officially dissolved. The activities of the DWF had spread beyond Oil Creek Valley, PA, and so we felt a totally new organization should be created to better reflect this expansion. So we made the change. PHI has an international membership and the organization is devoted to the preservation of our world oil and gas heritage. This is carried out through our meetings and field trips and our journal. The next meeting is in Morgantown, WV, April 6-9, 2005, and another one is planned for 2006 in Wichita, Kansas. Membership for individuals and institutions is \$40.00 (US) and

that includes the annual issue of the journal and discounts on meeting registrations and other publications. We have a very nice reprint of the first edition of Gesner's book *Practical Treatise on Coal, Petroleum & other Distilled Oils* (1861) for \$35.00 (US).

The journal is in its fifth year of publication (annual issues) and all back issues are still available at \$35.00 (US) (\$30.00 for members). The most recent issue (2003) has papers from the Shreveport, Louisiana meeting (March 2004); including a review of the various ideas on how to move the oil from the Alaskan north slope (including submarines), history of the Caddo-Pine Island Field (Louisiana); history of diving in off-shore oil exploration; and personal stories (taken from interviews) from the early days of the Spindletop oil boom in Beaumont, Texas. In the first volume there was an article on the history of oil exploration in India. We now have a new series of articles called "Recollections" which are first person (or biographical) narratives of work in some aspect of the oil and gas industry. Here is a chance for the "old timers" to tell their story. For these the editorial style is a bit more relaxed than for regular research papers.

For the moment, most of the articles refer to locations in North America, but I would like to publish more international articles. So far the publication date is usually in September–November, so there is still plenty of time for submission of papers. But articles can be about any aspect of the oil industry, either "up stream," or "down stream" as they say in the trade.

Inquires can be directed to Bill Brice: wbrice@pitt.edu or people can check our web site: www.petroleumhistory.org.

Full-size Copy of Rare Map by William Smith Is on Display at the University of New Hampshire (USA)

A replica of an extraordinary and important map was unveiled at the University of New Hampshire (UNH) on May 11 (2004) in James Hall, where it will remain on display for the public.

John Phillips, a British geologist and nephew of William Smith, described William Smith's map as "Perhaps the most varied and beautiful sheets that have ever appeared in geological colours."

More than eight feet high and six feet across, William Smith's "Great Map" depicts the layers of bedrock beneath England, Wales and part of Scotland in staggering detail—5 miles per inch. First produced in 1815, Smith's masterpiece forever changed geology, causing Simon Winchester to dub it "The Map that Changed the World" in his 2001 bestseller of the same name.

By realizing that fossils changed with the layers of rock, and that specific layers of rock always corresponded to specific groups of fossils, Smith laid the groundwork for Darwin's theory of evolution. "He transformed both geology and biology into historical sciences, as opposed to being merely descriptive and theoretical," explained Dr Cecil Schneer, the UNH Professor Emeritus of Geology and History of Science, who was the driving force behind producing a copy of the map. "After Smith's map, geologists and biologists were describing the evolution of the earth and the evolution of life on earth."

However, the 15 hand-colored, copperplate engravings, which made up the original map were as much a work of art as a work of science. Each was hand water-colored by an army of young women to show the distinct strata at the surface. "There are subtle differences in water color with every stroke of the brush," said Schneer. "It's like looking at an oriental rug that's handmade with hand-dyed wools as compared to an oriental rug made by a factory."

Approximately four hundred copies of the map were printed between 1815 and 1817. Only about one hundred are believed to have survived. Because watercolors fade rapidly under ordinary light, libraries and museums with original copies store them carefully and expose them infrequently. Few geologists or historians of science have ever seen an original. Only three other full-size replicas are known to exist—all in England.

To make this important map more accessible, Schneer, who taught at UNH from 1954 to 1988, convinced an anonymous donor to have the map photographed in nineteen separate films that UNH Photo Services scanned. Schneer then put the map on the Web in fifteen downloadable letter-size blocks.

"Once we had it at that size, I realized that nothing kept me from getting it at full size except the reworking of the scans," said Schneer. UNH Photo Services took on the challenge, scanning the images several times and filling a dozen CD-ROMs to get the best possible image. Schneer then spent many months reworking the digital images for the best possible fit and color match. The entire project took more than three years, sixty-two CDs and two DVDs. To learn more about the map, visit <http://www.unh.edu/esci/wmsmith.html>. (Article is by Robert Emro, CEPS.)

Vulcan's Forge and Fingal's Cave: Volcanoes, Basalt, and the Discovery of Geological Time

A striking book about volcanoes in historical context, produced by William B. Ashworth, Jr., of the Linda Hall Library of Science, Engineering & Technology (Kansas City, Missouri, USA) appeared in 2004. Please see the Book Review section for a commentary by David Oldroyd. A Website concerning the book may be found at: http://www.lindahall.org/events_exhib/exhibit/exhibits/vulcan/.

Toshirio YAMADA attains the PhD at the University of Tokyo

INHIGEO is pleased to congratulate Toshihiro YAMADA on the successful completion in March 2004 of his PhD at the Graduate School of Arts and Sciences (History of Science), The University of Tokyo, for a dissertation entitled "The Emergence and Development of Theories of the Earth in Seventeenth-Century Western Europe: With Special Reference to Nicolaus Steno's Works" (458 pp.). Written in Japanese (with an abstract in English), it analyses material in Latin, English, French, German, and Italian, and provides a comprehensive coverage of the secondary literature.

Congratulations to Simon Knell, Professor at Leicester University

INHIGEO is pleased to congratulate Dr Simon Knell on his appointment as a full professor at Leicester University, where he is head of the Department of Museum Studies. Simon is currently working on a book on the history of conodont studies.

For our Spanish-speaking Friends . . .

***La Teoría de la Tierra* de James Hutton, traducida al castellano**

En los últimos día de 2004 ha visto la luz la primera traducción al castellano de uno de los textos "fundacionales" de la geología: la Teoría de la Tierra del médico y geólogo escocés James Hutton. Lo publica la AEPECT (Asociación española para la Enseñanza de las Ciencias de la Tierra: www.aepect.org) como volumen 12 (2) de su revista Enseñanza de las Ciencias de la Tierra. Ha sido uno de los más activos miembros de este Grupo de Trabajo, Cándido Manuel García Cruz (cgarcr@gobiernodecanarias.org) quien ha elaborado este interesantísimo material, tanto la traducción y las numerosas notas a pie de página, como 5 estudios históricos y didácticos sobre Hutton y su época. Los interesados en su adquisición, pueden dirigirse a david.brusi@udg.es.

Web de la Comisión de Historia de la Geología de España

Esta es la página web: http://www.aepect.org/SGE-historia_geologia/.

Geology and Geophysics in the New *Dictionary of Scientific Biography*

A note from Greg Good

Dear Colleagues, Many of you may be aware that Scribner's Sons has decided to publish eight new volumes of the stalwart resource the DSB (*Dictionary of Scientific Biography*). These volumes will be dedicated to scientists who significantly affected their disciplines during the 20th century. Subjects should also be deceased, but there might be a rare instance in which an article could be about a living figure.

I have agreed to act as associate editor for the contributions on geologists and geophysicists, the latter being restricted to solid-earth geophysics. We are not allotted an overwhelming number, only fifteen to twenty articles. So it is critically important that these subjects be carefully chosen.

Please give me the benefit of your advice. Who do you think were the most important geologists and geophysicists of the 20th century? Some obvious ones are already in the existing volumes of the DSB and we should probably not duplicate them with a new entry. For example, Edward Bullard is already there. To examine a list of all of the entries in the original DSB, go to <http://www.indiana.edu/~newdsb/sug.html>.

Some considerations to keep in mind. I want to be sure the selection includes a variety of kinds of earth science and that if there is a preponderance of scientists from one country, that it is a justifiable preponderance. Also, some very important figures might also be important in other sciences and might well be covered there. For example, paleontologists and physicists who happened also to be active in geology or geophysics may be suggested, but my method will be to try to convince the associate editors for the life sciences and physics to include such people on their lists, thus opening the door for more people in the earth sciences.

I also encourage you to pass this message on to others in any form that you can. Feel free to edit and publish it in newsletters to INHIGEO, the British HOGG, the History of Geology Division at GSA, etc. At a later stage I will be soliciting authors for these articles. At that time I will explain rates of compensation, etc., that Scribner's Sons will offer.

Thanks in advance for your help.

Dr. Gregory A. Good

Director, CRM Certificate and M.A. in Public History until June 2005

History Department, West Virginia University

Morgantown, WV 26506-6303 U.S.A.

Greg.Good@mail.wvu.edu

Please note: After 1 July 2005, Dr Barbara Rasmussen becomes Director of CRM and PH.

Her email is Barbara.Rasmussen@mail.wvu.edu or www.as.wvu.edu/crm.

Geology Department Building Named after Professor C. Mahadevan

The building of the Department of Geology of the Andhra University, Visakhapatnam, Andhra Pradesh, India, was named after late Professor Calamur Mahadevan, at a function held on August 11, 2004. The Vice-Chancellor of the

University, Mr. Y.C. Simhadri, unveiled a marble tablet inscribing Prof. Mahadevan's name. Mahadevan headed the department from 1945 to 1962 and was also the Principal of the A. U. Science College for some time. Prof. Calamur Mahadevan's "Students and Admirers Association" had requested that the Andhra University recognize the contributions of the professor, and the university responded graciously to that proposal.

Prof. Mahadevan took a B.A. (honors) degree in geology in 1925, and an M.A. in Geology, in 1927, from the Madras University. At the Indian Association for the Cultivation of Science (Calcutta), he worked under Dr C.V. Raman, the first Nobel-Laureate in science from India. Mahadevan was awarded the DSc by the Madras University in 1931 for his thesis on the constitution of coal, a pioneering work involving the use of X-ray analysis. In 1931 he then joined the Hyderabad Geological Survey of the Nizam State as an Assistant Superintending Geologist. He became Superintending Geologist in 1943. His work on the Pakhals of the Godavari Valley was a classic in several respects and formed the basis of his presidential address to the Geology and Geography Section of the Indian Science Congress Association in Allahabad in 1949. Dr Mahadevan joined the Andhra University as Professor and Head of the Department of Geology in 1944. During his tenure he put the department on a fine course, trained hundreds of students, started several new courses in applied geology, and guided several students for DSc and PhD degrees. New courses in nuclear geology, marine geology, and oceanography were initiated by him with much foresight. The department reached its peak level of scholarship and excellence under his tenure, which could be called the Mahadevan Era. He conducted investigations into the natural gas deposits whose reserves have now been proved to be very large in the Krishna-Godavari Basin, copper deposits in the Khammam District, and zinc-lead deposits of Karamchedu in the Guntur District. His own work in the Pakhals started critical discussion in geological circles and several colleagues continued work in the areas for a long time. He was a UNESCO expert in Brazil during 1955-'56. Many of his students rose to high positions in administrative and scientific fields. Mahadevan was a humanist to the core, and he helped many a student in need, while participating in social and humanitarian work. It is a fitting tribute that the Andhra University paid him by naming the Geology Department building after him.

Kottapalli Murty, Nagpur, India

Albert Carozzi's Continuing Work on Horace-Bénédict de Saussure (1740-1799)

As noted in the USA report in this *Newsletter*, Albert Carozzi is currently working on a new full-length biography of Saussure. The last major project of this nature was produced in 1920. The Carozzi book will be in French, is entitled *Horace-Bénédict de Saussure 1740-1799, Biographie d'un pionnier des Sciences de la Terre* and is under contract with Editions Slatkine in Geneva.

Kennard B. Bork, Granville, OH

Publication of the Elsevier *Encyclopedia of Geology*

The recent publication of the lavish five-volume *Encyclopedia of Geology* by Elsevier Ltd should be noted. Volume 3 contains twenty-one articles on the history of geology, all but three written by INHIGEO Members. Please encourage your institutional library to purchase a copy of the *Encyclopedia*. I thank those Members who supplied articles, following my call for offers. The volumes actually appeared in 2004, but the year of publication and copyright is given as 2005. (Perhaps they were not sure it would be ready in 2004?!)

David Oldroyd, Sydney

Publication of the Oxford Dictionary of Scientific Quotations

Several years ago, I asked INHIGEO Members to submit 'geological items' that might be included in a forthcoming *Dictionary of Scientific Quotations*, to be published by Oxford University Press. Many quotations were sent in and I passed these on to the Wellcome Institute for the History of Medicine, which was organizing the project. Thereafter, nothing happened for a long time, and a few people wrote to enquire about the progress of the operation. I could only reply that I had no information to offer. In fact, the project was interrupted by the death of one of the co-editors, the illustrious Roy Porter, and by other hindering factors of which I have no knowledge. Eventually the project was restarted, with much work put in by Caroline Overy and Sharon Messenger, and I have recently received two copies of the handsome 712-page volume. The final product is most worthwhile, I think, and 'all good libraries' should have a copy. Please see that they do in your part of the world! May I thank the INHIGEO Members who supplied many valuable quotations? The reference is: W.F. Bynum and Roy Porter (eds), *Oxford Dictionary of Scientific Quotations*, Oxford University Press, Oxford and New York, 2005. Price £30 or \$50.

David Oldroyd, Sydney

Encyclopedia of Biographical History of Earth Sciences

The new publisher of the Earth Science encyclopedia series is interested in an expansion of this series, and I am proposing a revival of an earlier project, set aside a few years ago owing to a publishing change. I myself have prepared 30% of the work, but much more is needed, and this letter is to inquire about your possible interest. I have planned the volume in two parts:

Part A: Minibiographies of about 800 persons (most only 1-3 typed pages) with 2-4 references,

Part B: Regional and Topical, 10–20 typed pages, e.g., “Geology in Australia”; “Darwin as a Geologist”; “Catastrophism: Classical and Modern”; “Inorganic Evolutions”; “Geosyncline Concept”; “Granite and Granitization,”; “Sequence Stratigraphy”; “Absolute Dating”; “Rise of Geophysics”; “Soils and Pedology”; “Marine Expeditions and Oceanography”; “Sunspots: Galileo to Schöve”; “Petroleum Exploration and Serendipity.”

As you may guess, I would like to cast the net rather widely. The result will make a bonanza for teachers in the field of science in general. The readership should be in a wide range from the professional to the student, and totally international.

Rhodes W. Fairbridge
Professor Emeritus of Geology

Please return any responses to Professor Fairbridge, either:

(a) by mail to him at Columbia University, 2880 Broadway, New York, NY 10025 or

(b) by e-mail to elicardo@giss.nasa.gov.

1. YES. I would like to hear more and hope to contribute something. (Contributors of twenty or more typed pages will receive a complimentary copy of the volume.)
2. NO. Sorry I cannot help at this time.

Commemorative Book, Dedicated to the 90th Birthday of Academician Jia Fuhai

Jia Fuhai was born in 1914, in Shanxi province of northern China. In 1941, he graduated from the Geology Department of South-western United University, based in Kunming City. (During World War II, the university temporarily united three famous universities: Peking University, Qinghua University, and Nankai University.) He was elected a member of the Chinese Academy of Sciences in 1980. His professional career lasted for more than sixty years and included twenty-three years (1959–1982) as Chief Engineer of the Bureau of Hydrogeology and Engineering Geology, Ministry of Geology, People's Republic of China and a term (1986–1990) as President of the Chinese National Committee of IAH (International Association of Hydrogeologists).

The book is a valuable source for understanding the rapid developments of hydrogeology and engineering geology in China during that last fifty years. It is also a record of achievement of an outstanding geologist of the older generation. A chronicle of his professional career is presented at the beginning of the book. Then papers and speeches concerning ten aspects of his work and main projects are provided.

- 1) Mineral resources investigation (1941–1950).
- 2) Engineering geology associated with the dam site of Three-Gate-Gorge in the middle reach of the Yellow River (1955–1959).
- 3) Land-subsidence research in the Shanghai area (1962–1965).
- 4) Research on water-well fields in buried confined karst aquifers in Tainjin City—a city with severe water shortages at the time (1975–1977).
- 5) Hydrogeological and engineering geological zonation of China (1981–1984).
- 6) Research on groundwater in Cenozoic volcanic rocks in China (1985–1990).
- 7) Consulting work in foreign countries, mainly in Vietnam (1960–1961).
- 8) Written prefaces for geological monographs.
- 9) Consulting comments on important issues concerning the development of hydrogeology and engineering geology (1982–1996).
- 10) Speeches given at conferences and seminars, convened by the Geological Society of China.

More than fifty valuable photographs, taken in the last half of the twentieth century, are also presented in the book. An Appendix includes a full list of Jia's books and papers. The book was compiled by JI Chuanmao and WANG Jianmin. It was published (in Chinese) in June of 2004 by the Geological Publishing House, Beijing.

JI Chuanmao, Beijing

Soil Sciences in the News

The various organizations devoted to soil sciences produced an informative newsletter (No. 12, February 2005) that includes a happy 80th-birthday wish to INHIGEO Honorary Senior Member Dr Dan H. Yaalon (Israel). A number of items of historical note concerning the evolution of soil sciences are also included. The newsletter is produced through the joint efforts of the Commission on History, Philosophy, and Sociology of Soil Science, the International Union of Soil Sciences, the Council on the History, Philosophy and Sociology of Soil Sciences, and the Soil Science Society of America. Interested readers may pursue relevant topics by consulting the websites www.iuss.org or www.soils.org.

'International Year of the Planet': A Major Initiative of IUGS

As this *Newsletter* was going to press, we learned of a significant undertaking of the IUGS, which is teaming up with UNESCO to propose an 'International Year of the Planet.' The hope is that the United Nations General Assembly will endorse the concept later this year (2005). It has taken years of planning to reach this stage and much more work remains to be done, so that the actual target date for the 'Year of the Planet' will be something like 2007 or 2008. At

this time, ten major themes have been isolated and teams of specialists are already assigned to each of the topics. The issues for study are: groundwater; climate; health; deep Earth; megacities; resources; hazards; the oceans; soils; and life. Anyone interested in the evolution of this project is invited to consult the web site: <http://www.esfs.org>.

Kennard B. Bork, Granville, OH

Call for Editors of a Possible New Book

It is possible that the Geological Society (London) Publishing House will be interested in producing a book generated from the papers to be given at the INHIGEO Symposium on the 'Histories of Geomorphology and Quaternary Geology,' to be held in Vilnius, Lithuania, in late July and early August of 2006. INHIGEO would be interested in hearing from individuals with editorial experience and facility in English who would be interested in acting as Editor (or a Co-Editor), or in providing papers for such a publication (even if they cannot attend the Baltic States conference. The task will be non-paying but should be professionally rewarding. The Society's Special Publications are well regarded and they represent a highly professional product. Please send expressions of interest to the Secretary-General, acting for the INHIGEO Board: Kennard B. Bork, Geology and Geography, Denison University, Granville, OH 43023 USA; or e-mails are welcomed at: bork@denison.edu.

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Pedro Gonçalves, 'James Hutton: Taxonomy, Interpreting Geological Bodies and Teaching Earth System Science';
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COUNTRY REPORTS

Australia

Neil Archbold is chairman of the Earth Sciences History Group of the Geological Society of Australia. During 2004, the Group supported a well-attended session of the 17th Australian Geological Convention, held in Hobart during February. The history session was entitled 'Contributions made by Visiting Geologists in Southeastern Australia in the Nineteenth Century.' Abstracts of the session were reprinted in the Group's *Newsletter* No. 34, issued in September 2004. Much of that issue was taken up with notes on the discovery and exploration of the black coal measures (now known to be Early Cretaceous in age) of Victoria during the nineteenth century. The notes are part of an on-going project by Neil on these deposits and their age, as debated during the nineteenth century.

- In early 2004, David Branagan attended the Australian Geology Convention held in Hobart, Tasmania, presenting a paper on the contributions of the French savants of the various nineteenth-century expeditions to the Pacific, expanding on a paper given at INHIGEO, Paris, in 2003. This work is scheduled for completion in 2005. With INHIGEO members Neil Archbold and Doug McCann, he made a brief visit to far southern Tasmania to visit the sites recorded by the French Expedition of D'Entrecasteaux, including the coal discovered by Labillardière.

An illustrated talk 'Forty Years Meandering in Australian Geoscience History' was given to the Australian Science History Club, Sydney in March.

Two papers for the *Encyclopedia of Geology*: 'The History of Geology from 1900 to 1962' and (in collaboration with INHIGEO member, Johan Looock) a biographical note on the South African geologist Alexander du Toit, were completed and published by Elsevier during the year. A long paper on 'The Desert Sandstone of Australia' was published in *Earth Sciences History* (2004, 23, 208–256).

Research has continued on early geology and art, and a paper on this topic, 'Geology and the Artists of the 15th and 16th Centuries, mainly Florence,' was presented at the International Geological Congress in Florence in August. This paper will be published in a volume being edited by new INHIGEO member from Italy, Professor Gian Battista Vai. A second paper was given at the Congress with the title '150 years of Geosciences at the University of Sydney.' But the main project for the year has been the completion of a volume on the life of Sir T.W. Edgeworth David, long-time Professor of Geology at Sydney University (1891–1924), Antarctic explorer, and WW I geological hero, now in press with the National Library of Australia.

Branagan says that he was privileged to attend the magnificent history of geology excursion which followed the Congress, an excursion ably organised and led by Nicoletta Morello and Ezio Vaccari, with local help from others including Claudia Principe and Gian Battista Vai.

- *Barry Cooper* continues his interest in the history of South Australian building stones and plans a book on this subject in retirement. He continues his interest on the history of South Australian geology in general and has several papers, first given as talks, which deserve publication. These include the 'History of Geological Investigations at the Hallett Cove Gondwana Glaciation Site' and 'Walter Howchin and the Discovery of Precambrian Glaciation.' Barry is also assisting fellow INHIGEO member Susan Turner with research into Reginald Sprigg and the discovery of the Ediacara fauna. The latter has become especially important as the IUGS has named the Ediacaran as a new international geological period, defining its base in South Australia.

Over the past year, Cooper has assisted PhD research student Derek Monz, who is studying the contribution of Robert Bedford (1874–1951), a British scientist who migrated to South Australia and established a Museum in the remote town of Kyancutta. From this base he became a pioneering researcher into fossil archaeocyatha as well as an internationally known collector of meteorites. He also published his own scientific serial *The Memoirs of the Kyancutta Museum*. Derek is researching the previously uninvestigated archives of the Australian Museums Association.

Cooper remains an active member of the "History of Science, Technology and Ideas Group," a small discussion group that meets every two to three months in Adelaide to discuss history of science topics.

INHIGEO members may be interested in a series of historical notes that have appeared recently in the *West Australian Geologist*, the newsletter of the Western Australian Division of the Geological Society of Australia, written by geologist John Glover. They include 'The 1935 Visit to Western Australia of the Dutch Geodesist A. Vening Meinesz' (February, 2005), and 'Andrew Gibb Maitland: An Outstanding Civil Servant and Geologist' (November, 2004).

- *Tom Darragh* has been editing letters sent by the Victorian geologist Richard Daintree to James Hector with a view to publication. He has also been assessing for the Queensland Herbarium the possibility of transcribing the Queensland sections of Ludwig Leichhardt's diaries/notebooks, with a view to a future translation. The notebooks/diaries include observations on botany, geology and natural history generally. Leichhardt's geographical work has tended to overshadow his work in natural history, which perhaps accounts for the neglect of his Queensland observations.

- *Douglas McCann* is nominally editor of the Geological Society of Australia's *Earth Sciences History Group Newsletter*. With Neil Archbold he is currently working on Issue No. 35, which will contain an interview with geologist and plant paleontologist Jack Douglas with a brief biography of his life. There will also be a note on Professor Edwin Sherbon Hills' relief model of Australia, commissioned by the Australian Army in WW II.

McCann is also working on the history of the Geology Department at Melbourne University. Fifteen interviews of past staff members have been conducted, all of which have been transcribed, and mailed questionnaires have also been distributed. Progress has also been made on an archive of historical materials, such as specimens, maps, photographs, and papers at Melbourne University. It is hoped to publish on this material in 2006.

- *David Oldroyd's* eight-year stint as Secretary-General of INHIGEO was completed at the International Geological Congress in Italy, and the reins were placed in the capable hands of Kennard Bork (USA). Oldroyd was elected to the new position of Vice-President (Australasia and Oceania). It was a pleasure to participate in the excellent INHIGEO "traveling circus," starting in Pisa and coming to rest in Venice, visiting numerous institutions, wonderful museums and geological sites, *en route*, not to mention the gastronomic delights of Italy and its ancient architecture.* Everyone was greatly indebted to Nicoletta Morello and Ezio Vaccari for their noble efforts. Oldroyd was also happy to share the responsibility with Nicoletta for the organization of the program for Symposium 20.02 on 'Institutions,

* It has been suggested that, for the future INHIGEO's logo should display a crossed knife and fork, rather than a hammer.

Museums, and Scientific Societies in the History of the Geosciences.¹ Despite the pressure on time, some good papers were presented and the Symposium was well attended. In fact, it exceeded his initial expectations. A paper, 'Conditions of Employment and Work Practices in the Early Years of The Geological Survey of Great Britain,' a bi-product of that meeting, has been submitted to *Earth Sciences History*.

During 2004, a considerable number of "encyclopedia-type" articles found their way into the light, including fifteen contributions to the *Oxford Dictionary of National Biography* (on Barrow, Bonney, Callaway, Hicks, Archibald Geikie, Horne, Marr, Nicol, Benjamin Peach, Charles Peach, Ramsay, Symmonds, Harker, Teall, and Ward), and nine contributions to the Elsevier *Encyclopedia of Geology* (on History of Geology: 1785 to 1835, History of Geology: 1835 to 1900, Agassiz, Darwin, Hutton, Lyell, Murchison, Sedgwick, and Smith). In fact, the organization of all the historical contributions to the *Encyclopedia* was undertaken by Oldroyd, as also has been the continuation of the supply of historical articles to *Episodes*. Additionally, it was a pleasure to see the recent (but belated) publication of the *Oxford Dictionary of Scientific Quotations*, for which Oldroyd had organized the geological entries, and for which several INHIGEO Members provided contributions. (He successfully slipped a quotation from one of his own works into the *Dictionary*, in the hope thereby of achieving immortality!)

Besides this, twelve reviews of history of geology books were published and a translation into Russian by Professor Milanovsky of an "INHIGEO-originated" paper on 'Why study the history of geology?' appeared in the *Bulletin of the Moscow Society of Naturalists, Geology Section*. Additionally, two old papers were republished in A.G. Debus (ed.), *Alchemy and Early Modern Chemistry: Papers from Ambix*.

After the Italian meeting, Oldroyd made an extended trip to the United States, visiting history of geology friends and colleagues: Ellen Drake, Sally Newcomb, Ursula Marvin, Ellis Yochelson, and Sandra Herbert. Following these pleasant experiences, he spent three weeks as a guest of the University of Oklahoma, being befriended there by INHIGEO Members Kenneth Taylor and Kerry Magruder. Work was completed there on a book co-authored with Czech Member Jan Kozák and the late Victor Moreira on the *Iconography of the Lisbon Earthquake* (recently published in Prague) and chapters were drafted for *Geological Cycles: A Historical Perspective* for Greenwood Press (now very close to completion).

- Susan Turner: *Old and New Work*. My research on historical subjects began during my years at the Hancock Museum, Newcastle-upon-Tyne (UK). At that time I was gathering material on museum workers, collectors and scientists using the collections. Through the mounting of an Institute of Geological Sciences (London) travelling exhibition on the early history of geoscience, I met Dr David Bain (formerly Geological Surveys of Great Britain and Victoria, then on colonial service in Nigeria) and through helping to prepare his biography I became interested in "colonial" geoscience. This exhibition also led me to begin work with Professor Bill Dearman (then University of Newcastle) on the origins of 3-D representation in geology, following my discovery of Thomas Sopwith's working drawings for his well-known 3-dimensional models. A visit from Jack Mahoney (University of Sydney) in the late 1970s led me to consider the early discovery of animals and fossils in Australia and the fate of those specimens in the UK. I have a long-standing project, searching for the first fossil fish specimen sent to the UK by Strzelecki, circa 1845—but no luck in finding it yet. When I migrated to Australia in 1980 I began to consider collectors, etc., at the Queensland Museum and I particularly became interested in the history of vertebrate paleontology in Australia. This also links to a long-term project on the history of fossil fish research (part of my own discipline) and a new bibliography of fossil fish workers is underway.

I became seriously involved in UNESCO-IUGS International Geological Correlation Programme (IGCP) work in 1991 when I became a project leader; the subsequent appointment to the Scientific Board and recognition in 2002 that Australians might have originated the idea for the research program led me, as Australian representative, to investigate the claim. A small Department of Foreign Affairs and Trade/Australian UNESCO Commission grant and the Inaugural History grant from the Geological Society of Australian Earth Sciences History Group to work on the "prehistory" of the IGCP has involved collecting biographical and oral material on various people including Norman Fisher, Martin Glaessner, Larry Harrington, Ken Campbell, and Mac Dickens. In 2004, through my colleague, Professor Patricia Vickers-Rich (Monash University, School of Geosciences), I received an Australian Research Council "Discovery grant" on 'Australian Contributions to "Big Science."' The time-span for this project was mid-20th century (principally post-World War II), to the 1970s. Around 1000 documents have already been found in archives in UNESCO and Australia. This led me to consider the international profile of several Australian geologists/paleontologists, particularly (inspired by Homer Le Grand) in the changes that occurred in thinking in Australia with the plate-tectonics revolution. People on whom I am concentrating are Martin Glaessner (whose work overlaps several themes), Mary Wade and Reg Sprigg and the dissemination of ideas on the Ediacara fauna. Much was done, but our grant was not renewed for 2005 so all is currently in limbo. I was delighted to be elected to join INHIGEO at the Florence International Geological Congress where I was able to give a paper based on this work on the history of Australian involvement in IGCP. I am now concentrating on the IGCP Planning Phase work by the Hedberg-Harland-Zoubek-Glaessner *et al.* team from 1969 to 1972.

In general, I am interested in making chronological summaries of the efforts of people to arrive at a certain juncture or theory. I want to know the way in which these scientists (or often non-professional amateurs) behave while doing science, how science proceeds, and how science is really done. A lot of this hinges on understanding the

people themselves and the social conditions that they worked in. As a woman, I also became interested in the work of woman geoscientists and have been gathering material on Australian female "pioneers" and the difficulties (or otherwise) they had in pursuing and maintaining a scientific life or career. (That includes my own situation at present with almost complete lack of funds and no salary again in 2005!). A database on women paleontologists in Australia has been maintained since 1985 to complement the Vallance database on Australian geoscientists and in 2004 work was done in various archives on Dorothy Hill, Isabel Cookson, Irene Crespin, Nelly Ludbrook, Joan Crockford Beattie, Betty Ripper and others.

I obtained from the Dutch Royal Academy of Science a grant from the *Schure-Beyerinck-Popping Fonds* [Foundation] to conduct research in Holland on the work of Dr Margaretha Brongersma-Sanders (1905–1996) and the importance of fish mass mortalities in the fossil record. This Dutch woman was an international scientist of repute but following her death she received only two minor obituaries in Dutch in newsletters. This study is the first assessment of her pioneering work on mass mortalities, especially in fish. Not strictly a paleontologist nor a geologist, perhaps more of an oceanographer but one who could not cope with being on a boat, "Greet" Sanders, like many women scientists, "fell between the cracks." A first biographical account was prepared after a month in Leiden in September 2004, meeting contemporaries and researching in the Naturalis Museum and family archives, with the assistance of co-fundee Dr Gerhard Cadée and the Brongersma family, which has been submitted to *Zoologische Mededelingen*.

I made several presentations in 2004 for International Women's Day: a talk on Heber and Irene Longman (former Director of the Queensland Museum and his wife, first woman parliamentarian in Queensland) and their work; to the Zonta and Ionian clubs in Brisbane on 'Women hooked on fossils.' Heber Longman's perceptive recognition of a Cretaceous dicynodont 'Not supposed to be there.' was the subject of a talk to the Lyceum Club of Brisbane, part of a general review of Longman's vertebrate paleontological and other contributions (now in press with the Memoirs of the Queensland Museum); following the Florence IGC, I joined Patricia Vickers-Rich at her IGCP 493: Prato Workshop to give a talk and poster on Sprigg, Glaessner, and Wade and their work in the discovery of the Ediacara fauna.

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David Oldroyd, Sydney

Belarus

Scientific Conferences.

The Institute of Geology of the National Academy of Sciences of Belarus held an International Conference on "The Pleistocene of Belarus and Contiguous Territories" in October 2004. The Conference was dedicated to the 75th anniversary of a well-known scientist, Leonid Voznyachuk (1929–1981) who worked in the field of Quaternary Geology. Scientists from Belarus, the Ukraine, Russia, the Baltic Countries and Poland participated in the conference. The papers concerned the following subjects:

- Geology of Quaternary deposits and Geomorphology;
- Stratigraphy, Paleontology, Lithology and Archeology of the Pleistocene;
- Methods of absolute geochronology in Quaternary Geology;
- Reminiscences about L.N. Voznyachuk.

Anniversaries.

Nina Aksamentowa, a senior research officer at the Institute of Geology of the Academy of Sciences of Belarus, has turned 70. She is a graduate of Moscow University, with a Doctorate in Geology and Mineralogy. Her work is in the field of tectonics, as it relates to the foundation of Belarus and adjacent territories. She has published nearly 150 scientific works and is the author of the *Geological map of the crystalline foundation of Belarus*, produced at a scale of 1:1,000,000. She continues her work at the Institute.

Inga Bordon is a prominent specialist in the field of exploration of petrography and petrochemistry of the crystalline foundation of Belarus and contiguous territories. She is a graduate of Lvov University and since 1958 has worked in the geological expeditions of the Department of Geology of the Council of Ministers of the Republic of Belarus. She has published over 150 works, including three monographs.

Galina Zinovenko, a senior research officer at the Institute of Geology of the Academy of Sciences of Belarus, has turned 70. She is a graduate of Belarussian University, and holds a Doctorate in Geology and Mineralogy. She is currently a Professor and studies the tectonics of the platform cover of Belarus and contiguous territories. She has published 175 scientific works, among which are eleven monographs, and twelve works published in Poland and Germany. Professor Zinovenko was awarded the "State Prize of Belarus" (1978). She continues her work at the Institute.

Losses to Science

Professor Anatoli Pap died on 17 June 2004. He was a Doctor of Geology and Mineralogy and a prominent specialist on Early Precambrian geology of Belarus. Born in the Ukraine (1923), he graduated from Kiev University (1950), and worked in the Far East of Russia. From 1957 he was the head of the laboratory of petrography of the crystalline foundation at the Institute of Geology of the Academy of Sciences of Belarus. He authored more than 200 scientific works, among which were four monographs, including a treatise on the *Crystalline Foundation of Belarus* (1977), *Lower Precambrian Period in Belarus* (1996), and others.

Memorable dates.

A century has passed since the death of Zygmunt Wojslaw (1850–1904), founder of diamond boring. He died on 25 January 1904 and was buried in St Petersburg at the Catholic Cemetery.

It is also 100 years since the death of Vitold Zglenitski (1850–1904), a pioneer of sub-marine oil-fields. He died on 19 June 1904 and was buried in the family crypt in Bialystok province, Poland.

It is 125 years since the birth of Pavel Pototski (1879–1932), creator of the first oil well in the Caspian Sea, near Baku. He died on 15 March 1932 and was buried on the coast of the Caspian Sea.

Publications

A book titled *Arctic: Following the Compatriots*, Minsk, 2004, 302 pp., by V. Drabo and V. Ermolenko was published. It presents the contribution made into mastering the Arctic by seamen and explorers, as well as the first geologists, who were Belarussians. Among them were Ivan Cherski (1845–1892), Aleksander Chekanovski (1833–1876), Karl Bogdanowich (1864–1947) and others.

In the *Addition* to the last volume (No. 18) of the Belarussian Encyclopedia (2004) V. Ermolenko published articles on the geologists K. Bogdanovich (1864–1947) and B. Dobrynin (1885–1951).

The journal *Lithosphere* (Minsk; No. 1, 2004) published an article by V. Ermolenko about Genrikh Chechot (1875–1928), a Russian scientist who was the founder of the ore concentrating industry in Russia. Chechot was a professor in the St Petersburg Institute of Mines (1909–1922) and Cracow Academy of Mines in Poland (1922–1928). He was born in St Petersburg in a Belarussian family. He graduated as a geologist from St Petersburg Institute of Mines (1900). In 1922 he left Russia for Poland, as he opposed the ideas of Soviet Power.

At the request of the magazine *Novaya Polsha / New Poland*, Warsaw, 2004, V. Ermolenko prepared an essay on an 'Initiator of Diamond Boring, Zygmunt Wojslaw, on the occasion of the 100th Anniversary of his Death (1850–1904).' An outstanding geologist of the end of nineteenth century, Wojslaw was born in Belarus but considered himself a Pole. He graduated from St. Petersburg Institute of Mines (1875), worked in the Don Basin and after successfully defending his thesis (1877) was invited to the department of mining and applied mechanics in the St Petersburg Institute of mines, where he taught until 1895. Later he worked in St Petersburg in the Geology Committee of Russia, Professor Wojslaw was the first to use industrial diamonds for boring hard rock and worked out the theory and technique of diamond boring, making a great contribution to the practice of exploratory and boring works. He was also one of the founders of the Society of Mining Engineers of Russia (St Petersburg, 1887) and was Chief Editor of "Proceedings" of that Society. His works were a cornerstone of geological research in Russia on the borderline of the nineteenth and twentieth centuries, and his inventions in the field of boring gave a great impetus to this branch of the mining art.

Valeri Ermolenko, Minsk

Bolivia

The Heritage Office of the city of Potosi has organized several activities and I was invited to take part in its Cycle of Lectures. In those events two lectures were presented on different occasions: one on 'Mining, weather and health' and the second on 'Potosi: Heritage of Mankind.' For the seventeenth anniversary of the awarding of the title by the UNESCO (11 December 1987), the Tourism Office of the Restoration Plan programmed a circuit under the slogan 'Get on the Hereditary Bus.' The circuit (it lasted for five hours) involved approximately thirty persons (foreign tourists and local citizens) and included visits to the Caracoles mine at the Rich Mountain, the San Sebastian Lake, and the San Marcos processing mill.

A Regional Seminar took place (12–13 July 2004) in Quito, Ecuador, on 'The Weather Archive in the North of the Andes.' The lecturers came from the following countries: France, England, Mexico, Venezuela, Colombia, Ecuador, Peru, and Bolivia. A total of sixteen lectures presented results reached in the different sub-regions of the Andean countries concerning the wealth of the ancient-document archives. Organization of future work in the area was also discussed. I was in charge of the theme, 'Relation between the weather and the history of mining in the Bolivian Andes.'

In the magazine of the Medical Institute of the city of Sucre, the article 'Proto-medicine and the proto-medical practitioners' was published. Some examples of the practice of medicine in the mining city of Potosi were shown. At the end of the year, the contribution 'On the colonial management' was published in the *Yearbook of the National Archive of Bolivia* (p. 641–687). This paper is a historical work on the organization of the Audience, the chief magistrate, the mining concession and the unpaid Indian servants. Finally, the El Potosi newspaper carried articles on salubrity (favorable to health or well-being) in mining areas, published under the auspices of the Italian Cooperation.

From July to December, I have performed research on Bolivian mining in the 16th to 20th centuries, following a request from ARCHISS (Archival Climate History Survey). The report is made up of two parts: the first is related to the colonial history (16th to early 19th centuries) and the second one to the era of republican history (early 19th century to date). Mining has been and still is one of the most important activities in Bolivian life and economy. Many collateral themes, such as weather, health, and the environment are closely related to mining. With historical information on mining it is possible to help in the study of the various disciplines, with the potential to enrich our knowledge of the geosciences. After a short introduction, the first chapter describes the medieval technology of the Saxon expert Georgius Agricola, taking as examples the mining practice (16th through 18th centuries) at the Rich Mountain of Potosi, the chronology of the veins and the way in which the mining exploitation is made, the exchange of experiences in amalgamation processes, the process of crates and the variants that were introduced at that time, and facts related to melting. The second chapter outlines the mining activity in the Audience of Charcas, specifically in the present-day departments of Potosi, Oruro, La Paz, Cochabamba and Chuquisaca. In the third chapter, a case study related to the origins and consequences of pollution, as a result of the mining and metallurgical activities, is discussed. In the next chapter we consider mining during the republican era, based on a 19th-century report of J.B. Pentland, who mainly described the most important metallic deposits in the then-young country of Bolivia. The fifth chapter shows the interest of foreign and national people in the Bolivian mining industry. There were many enterprising managers who helped in the development of productive mining activity. The sixth chapter deals with mining in the first decades of the 20th century. The seventh chapter analyzes two reports on how the mines of the Rich Mountain were exploited and which processes and equipment were used for treatment of the ore. The eighth chapter deals with tin between the two world wars, how tin mining emerged in Bolivia, the fall of the stock exchange, the direct and collateral problems in the activity of great producers, and improvements introduced in the exploitation, processing and smelting of the ore. Facts related to academic training are also presented, as it effected the work of experts and consultants. Biographical sketches of the main mining personalities, and some of their activities and worries, are presented in the ninth chapter. Finally, the tenth chapter shows what happened as a consequence of the nationalization of the mining industry. That is to say, the management of the nationalized enterprises, the engineering in the state holdings, and the work of the consultants.

Carlos Serrano, Potosi

Brazil

During 2004, the main forum for the history of geological sciences in Brazil was the 42nd Brazilian Geological Congress, held in Araxá (Minas Gerais State) from the 17th to the 22th of October. A symposium on the history of geology and mining took place with an opening lecture followed by eight papers, plus discussion.

Silvia Figueirôa attended the INHIGEO symposium in Florence in August (within the 32nd IGC). It is also worth mentioning that Clarete Paranhos da Silva has successfully completed the first PhD dissertation on the history of geosciences at the Dept. of Geoscience Education/UNICAMP, in October 2004.

Silvia Figueirôa, São Paulo

Canada

Ernst Hamm

My report focuses on Canadian historians of science who are doing work of interest to INHIGEO. This information is unlikely to be complete, but over time I hope that it will become more fulsome as the connections between INHIGEO and the history of science in Canada grow stronger.

The history of geology is not always as well represented as it should be among historians of science, but I am happy to report that in 2004 there were a number of papers on the history of geology at two Canadian conferences, (1) the annual meeting of the Canadian Society for the History and Philosophy of Science (CSHPS), which is held as part of the Congress of the Social Sciences and Humanities, and (2) the Fifth British-North American Joint Meeting of the British Society for the History of Science, the History of Science Society (US), and CSHPS, a triennial meeting that was held in Halifax in 2004.

At the CSHPS meeting, held in Winnipeg, 30 May–1 June 2004, Steven Turner, University of New Brunswick, chaired a session on 'Twentieth-Century History of Science,' which consisted of two papers: Andrew Ede, University of Alberta, 'Discovering the Earth: The International Geophysical Year'; and Jennifer Hubbard, Ryerson University, 'Arctic Exploration and Canada's Marine Scientists 1914–1930.'

The British-North American Joint Meeting, convened in Halifax, 5–7 August 2004. Brian Shipley

organized a session on 'Atlantic Geologies,' with David Spanagel, Harvard University, as chair and commentator on four papers. Elizabeth Haigh, Saint Mary's University, considered 'Maritime Geology in the Work of Abraham Gesner.' Brian C. Shipley, Rutgers University, spoke on 'Logan at Joggins: Fieldwork in the Carboniferous between Britain and Canada.' Paul Lucier, Independent Scholar, discussed 'The Albert Controversy: Geology, Industry, and the Law in the Mid-Nineteenth Century Maritimes.' Debra Lindsay, University of New Brunswick, Saint John, presented her views on '*Prototaxites* (Daw.) versus *Nematophycus* (Carr.): Geologists v. Botanists in the Formative Period of the Science of Paleobotany.'

James Secord, Cambridge University, chaired a session on 'Evolution and Extinctions,' with three papers: Patricia Princehouse, Case Western Reserve University, 'Transforming Fossils: Macroevolution, Paleobiology and Punctuated Equilibria in Europe and North America'; David Boersema, Pacific University, 'Mass Extinctions: Circulating Knowledge and Circulating Debates'; and Keynyn Brysse, University of Toronto, 'A Hierarchy by Any Other Name: Walter Alvarez and the "Spectrum" of Scientific Disciplines.'

Ernst Hamm, York University, chaired a session on 'Geology in 19th-century North America,' with two papers: Rob-Roy Douglas, University of Toronto, 'Finding Fossils and Building Reputations: John William Dawson, Charles Lyell and the Joggins Fossil Beds' and Robert H. Silliman, Emory University, 'Floods, Ice Floes, or Glaciers: Nova Scotia's Conflicting Testimony in 19th-Century Interpretations of the Diluvium-Drift.'

Several of my colleagues have passed on to me their work of relevance to INHIGEO. Eric Mills, well known to many of our members, is a senior Canadian historian of science and President of the Commission of Oceanography, Division of the History of Science, International Union of the History and Philosophy of Science. Eric reports that "the proceedings of the VIth International Congress on the History of Oceanography, held in Qingdao, China, in 1998, have just been published under the title *Ocean Sciences Bridging the Millennia. A Spectrum of Historical Accounts* (China Ocean Press and the International Oceanographic Commission of UNESCO, 2004)." Eric also notes that "A new step has been taken with *History of Oceanography* in 2004. Beginning with issue 16 for 2004, it will be available on-line, linked to the *International Journal of Nautical History*. This significant change was made possible by the generous offer of Dr Gary Weir, editor of the *IJNH*, to offer the Commission of Oceanography space on his web site for the newsletter linked to the journal."

Brian Shipley, currently of Rutgers University, though a graduate of Dalhousie and very much a Canadian at heart and in fact, organized the session on 'Atlantic Geologies' (noted above), and co-authored an entry on "surveying" for the *Oxford Companion to Canadian History*, edited by Gerald Hallowell (Oxford University Press, Toronto, 2004). Brian also wrote the entry on 'William Edmond Logan' for the *Dictionary of Nineteenth-Century British Scientists*, edited by Bernard Lightman (Thoemmes, Bristol, 2004).

Rob-Roy Douglas, University of Toronto, presented his 'Finding Fossils and Building Reputations: J.W. Dawson, Charles Lyell and the Joggins Fossil Beds' at the Joint-Meeting of the BSHS, HSS and CSHPS, and at the Geological Association of Canada Annual Meeting, St Catherines, 12-14 May, 2004.

- Gerard V. Middleton

My work on Joseph Winthrop Spencer, a local geologist born and buried in Dundas, Ontario, is now drawing to a conclusion. Two papers have been published (see below) and an article for the *Dictionary of Canadian Biography* is in press. In addition, I delivered a paper on Spencer's family, entitled 'The Spencers of Dundas,' to the Dundas Historical Society, April 21, 2004; and a partial text is now available on their website.

The Geological Association of Canada (GAC) held its Annual Meeting at Brock University in Ontario, in May 2004. The program included a 'Retrospect/Prospect' symposium on sedimentology in Canada. G.V. Middleton read a paper on 'History of sedimentology in Canadian universities: personal reflections.' Unfortunately, the proceedings will not be published.

During the summer, the GAC's new publication *Proud Heritage*, edited by Roger Macqueen appeared (see below). It includes reprints of papers previously published in *Geoscience Canada* and its predecessor, the *GAC Proceedings*, and also a new "Timetable" of Canadian geology and a bibliography of its history (see below).

In March, 2005, I delivered a paper on 'Geologists elected fellows of the Royal Society of Canada, 1883-1932' as part of a symposium on 'History of Geology of Northeastern North America,' organized by Gerald M. Friedman (see Geological Society of America 2005 Abstracts with Programs, v. 37, no.1).

Besides these topics I have interests in the overall development of geology, which have led me to compile a number of "Chronologies" on such subjects as: (i) Glacial Geology; (ii) the Theory of Petroleum Geology; (iii) Clay Mineralogy; (iv) Geology in the Twentieth Century; and (v) Sedimentology. Though these were originally produced as "background studies" for work in progress, at least two will probably be published in some form or another: I am prepared to send an electronic form on request.

Publications by Middleton

Middleton, G.V., 'J.W. Spencer (1851-1921): His Life in Canada, and his Work on Preglacial River Valleys,' *Geoscience Canada*, 2004, 31, 49-56.

Middleton, G.V., 'J.W. Spencer (1851-1921): His life in Missouri and Georgia, and Work on Proglacial Lakes,' *Geoscience Canada*, 2004, 31, 147-156.

Middleton, G.V., 'Introduction and Timetable of Canadian Geology (to 1965),' in R.W. Macqueen, ed., *Proud*

Heritage: People and Progress in Early Canadian Geoscience. Geological Association of Canada, Geoscience Reprint Series 8, 2004, xiii–xxiii.

Middleton, G.V., 'Short Biographies: Frank Dawson Adams (1859–1942); Robert Bell (1841–1917); Reginald Aldworth Daly (1871–1957); John William Dawson (1820–1899); Joseph William Winthrop Spencer (1851–1921),' in R.W. Macqueen, ed., *Proud Heritage: People and Progress in Early Canadian Geoscience*. Geological Association of Canada, Geoscience Reprint Series 8, 2004, 209–217.

- David A.E. Spalding

I reported on the death of Professor William Sarjeant in *INHIGEO Newsletter* 35, 31–33. Since then I have been busy writing or contributing to obituaries, and as Bill's literary executor completing (or facilitating completion of) his various projects. This brief update may be helpful to those interested in Sarjeant's various activities.

Obituaries and other posthumous tributes known to me that have been published, are in press, or may be found on the web, are as follows. In the spirit of Bill's bibliography I have cast a wide net, generally including anything with an author's name, or including any different information, but have excluded passing mentions or other minor references. Some of these have come my way as offprints, photocopies, or references from other sources, so I do not always have full citations of periodicals. In each instance I have reproduced Bill's name exactly as presented in the pertinent publication; but note that he used the spelling "Antony" whereas a number of his obituarists (including, alas, myself on occasion) have incorrectly used "Anthony."

I am indebted to Peggy Sarjeant and many individual contributors for assistance in compiling this data.

Anon, 'Memorial, William Antony Swithin Sarjeant, D.Sc., F.R.S.C. (1935–2002),' *Parineh (PALEO)*, [no date on offprint], published in Esfahan, Iran, in English and Farsi (?).

Anon, 'DIED: Paleontologist, geologist and naturalist William A.S. (Bill) Sarjeant.' *The Report*. September 2, 2002, 51. (Photograph featured is incorrect, Bill's is on p. 50.)

Anon, 'Vale: Bill Sarjeant 1935–2002,' *Mercian Geologist*, 2002, 15, 3, 155.

Anon, 'William Antony Swithin Sarjeant, D.Sc., F.R.S.C.,' *Science Fiction and Fantasy Writers of America*, 2002.

Anon, 'William "Bill" Antony Swithin Sarjeant,' *SF Canada*, 2002,

Anon, 'William Antony Swithin Sarjeant, D.Sc., F.R.S.C., University of Saskatchewan,' 2002,

Anon, 'Tribute to Bill Sarjeant 1935–2002,' Saskatoon Public Library, *Library News*, September–November 2002, 25.

Anon, 'In Memoriam, Dr. W.A.S. Sarjeant (1935–2002),' *Saskatchewan History*, Fall 2002, 2–3.

Anon, 'Bill Sarjeant dies at 66,' *freeLance*, July–August 2002, 24.

Anon, 'Farewell to Bill Sarjeant,' *Saskatoon Nature Society Newsletter*, 2002, 24, 7, 4.

Anon, 'Departmental Diary. University of Saskatchewan Department of Geological Sciences,' *Geolog*, 2002, 31, 3, 16.

Anon, 'From the Secretary: Professor W.A.S. Sarjeant, DSc, FRSC, (1935–2002),' *Albertiana*, 27 Dec 2002, 5.

Anon, 'Bill Sarjeant,' Geologists Association, North Staffordshire Group, *Bulletin*, 2003, 64, 5.

Bradley, Alan, 'Remembering W.A.S. (Bill) Sarjeant, Master Bootmaker (1935–2002),' *Canadian Holmes*, Christmas 2002, 26, 2, 14–20.

Cushon, Allan, 'W.A.S. (Bill) Sarjeant,' *Canadian Holmes*, Michaelmas 2002, 47.

Duerkop, John, 'Lives Lived. William Antony Swithin Sarjeant.' *Toronto Globe and Mail*, 2002.08.01.

Dyck, Bruce, 'William Sarjeant. Renaissance Man a "rare breed."' *Toronto Globe and Mail*, 2002.08.17.

Fensome, Rob, 'William Antony Swithin Sarjeant, D.Sc., F.R.S.C. 1935–2002,' *Canadian Association of Palynologists. Newsletter*, 2002, 25, 2, 6–8.

Foster, Mike *et al.*, 'William Sarjeant (Antony Swithin) 1935–2002,' American Mensa Tolkien Special Interest Group, *Beyond Bree*, September 2002, 7–8.

Howarth, Richard J., 'Professor William Antony Swithin Sarjeant, 1935–2002,' *Proceedings of the Geologists' Association*, 114, 367–374.

Kerr, Don, 'In memoriam: Bill Sarjeant—1935–2002,' *Facade: Newsletter of the Saskatchewan Architectural Heritage Society*, December 2002, 11–12.

Kupsch, Walter O. and David A.E. Spalding, 'William Antony Swithin Sarjeant. 1935–2002,' *Proceedings of the Royal Society of Canada*, Seventh Series, Volume 1 [on line], 2002 to be published soon, www.rsc.ca.

Maguire, Charlie, 'Bill Sarjeant Remembered,' *Canadian Folk Music Bulletin*, Fall 2002, 36, 3, 21.

Mason, Alan, 'William Anthony Swithin Sarjeant 15 July 1935–8 July 2002,' *Geological Society of New Zealand. Historical Studies Group*, September 2002, 25, 3–4.

Middleton, Gerard V., 'William Antony Swithin Sarjeant, 1935–2002,' in Macqueen, R.W. ed., *Proud Heritage: People and Progress in Early Canadian Geoscience*. 2004. Geological Association of Canada. Geoscience Canada Reprint Series 8, 2004, ix (dedication).

Murphy, Derry/Locus Staff, 'William [Antony Swithin] Sarjeant,' *Locus*, August 2002, 70.

Poulsen, Niels E., 'Bill Sarjeant er doed,' *Collegium Palynologicum Scandinavicum. CPS News*, July 2002.

Robson, Diana, 'In Memoriam,' *Nature Saskatchewan*, Fall 2002.

Sarjeant, W.A.S., 'Letters of W.A.S. Sarjeant,' *Saskatoon History Review*, 2003, 17, 1–6.

- Sawyer, Robert J., *CBC radio*, 10 Dec 2002.
- Spalding, David A.E., 'OBITUARY: William (Bill) Anthony Swithin Sarjeant,' 1935–2002, *BC Folklore*, February 2002 [2003?], 16, 4
- Spalding, David A.E., 'In Memoriam: Bill Sarjeant (1935–2002),' *Canadian Folk Music Bulletin*, 2002, 36, 3, 1.
- Spalding, David A.E., *Annual Report 2002*. Geological Society of London. 2003.
- (Spalding, David A.E.), 'Professor William Anthony Swithin Sarjeant (1935–2002),' *INHIGEO Newsletter* 2003, 35, 31–33.
- Spalding, David A.E., S. George Pemberton, Richard T. McCrea and Martin G. Lockley, 'William Antony Swithin Sarjeant (1935–2002). A Celebration of His Life and Ichnological Contributions,' *Ichnos*. 11 (1–2), 1–3; (2–3), 181–182.
- Srivastava, Satish K., 'William "Bill" Antony Swithin Sarjeant (1935–2002),' *AASP Newsletter*, October 2002, 35, 3, 5–6. See: <http://www.palynology.org/history/sarjeant.html> 21 pp. (includes an extensive list of Bill's palynological publications.
- Tokaryk, Tim. 'Obituary: William Anthony Swithin Sarjeant 1935–2002,' *Geology Today* 18 (6): 210–211.
- Tutty, Paddy, 'A Personal Farewell,' *Canadian Folk Music Bulletin*, 2002, 36, 3, 47.
- Wooding, Lois A. 'In Memoriam. William Antony Swithin Sarjeant, 1935–2002,' *Blue Jay*, September 2002, 60, 3, 186–188.

I would appreciate information about any other obituaries known to members and not included on this list.

A 'William A.S. Sarjeant Memorial Lecture' has been established at the University of Saskatchewan in Bill's memory. The first one was given on October 13, 2004, by Dr Philip Currie, of the Royal Tyrrell Museum, on the topic of 'The History of Dinosaur Hunting in Western Canada: A perspective on the eve of the centenaries of Alberta, *Albertosaurus* and *Tyrannosaurus rex*.' Future lectures are planned in alternate years.

A fairly full list of Bill Sarjeant's academic publications may be found at:

<http://www.palynology.org/history/sarjeant.html> (21 pp.)

One of the principal sources of Bill Sarjeant's bibliography was his remarkable personal library of books and papers. The Sarjeant book collection is summarized in the Directory of Special Collections of Research Value in Canadian Libraries. (<http://www.nlc-bnc.ca/collectionssp-bin/colldisp/1=0/c=588>). It is now based in the Cameron Library at the University of Alberta. Librarian Merrill Distad informed me that the bulk of the history of science collection was shipped from Saskatoon in spring 2003, but that other collections of Bill's have been given priority in the cataloguing process. Some 50% of the Sarjeant collection was catalogued by spring 2004, and may be accessed through the On-line Public Access Catalogue (www.library.ualberta.ca). The provenance note (field 590) uses Sarjeant as a source, and may be searched. However, potential users should be aware that the Sarjeant donations/bequests contain extensive childrens' and other literature, including, science fiction/fantasy, detective stories, and humor in addition to the important history of earth science collection for which he is known in INHIGEO circles.

As mentioned in my report last year, I have revised Sarjeant's paper on 'Early Dinosaur Discoveries' for a new edition of *The Complete Dinosaur*. The new edition is to be published by the Indiana University Press (no date yet announced).

Of much greater moment—and complexity—is the question of the fate of the Sarjeant bibliography, *Geologists and the History of Geology*. At Sarjeant's death it stretched to ten volumes (the original work and two supplements). One commentator has said that "without exaggeration . . . it did for the history of geology, what the Oxford Dictionary did for the English language." (Middleton in MacQueen, 2004, p. ix).

An attempt to discuss its fate as a published work with its current publisher, Krieger, was abruptly cut short by their reported decision to remainder the work. Enough additional entries exist on index cards to make another supplement, and Sarjeant had also hoped to extend the latter to include the resource he was gathering on mining history. The original computer records and supplementary cards are at present stored in Saskatoon.

Even in the few years since Sarjeant's death, there has been much new publication in the field. It is perfectly possible to leave the ten volumes published as a basic resource, while the new material is made known by other channels, such as this newsletter and the Interesting Publications column in *Earth Sciences History*. However, before his death Bill was exploring the possibility of developing an integrated electronic version.

With the increasing expense of publication and the readiness of access to electronic resources it seems that some sort of CD-ROM or web republication for the complete work would be the most useful. It could in theory include an electronic version of the original ten volumes and the new supplementary material, ideally collated into a single resource, and brought up to date periodically. However, such a project could only be undertaken by a society or other organization willing to take over responsibility for the entire enterprise, and willing to solicit the funds and provide the management, staff or volunteer support, and working space. Some costs could in theory be recovered by sale of a CD-ROM or through paid registration for use of a website. NOTE: I would be happy to explore these possibilities with any interested individual or organization.

Bill Sarjeant was long interested in the possibility of reprinting historic geological works in his collection. After an initial project fell through due to the bankruptcy of a publisher, I produced a pilot volume, a new edition of

Charles Sternberg's *Hunting Dinosaurs on the Red Deer River, Alberta, Canada*, using Bill's copies and other research resources. This appeared with NeWest Press, Edmonton, Alberta, in 1993, with a new introduction and appended bibliography of the author. It sold 2000 copies in Alberta alone, becoming the press's best seller. Unfortunately, the press declined to reprint, regarding the work as peripheral to its literary mandate.

I am exploring with the University of Alberta Press the possibility of establishing a reprint series acknowledging Sarjeant's contribution to the field. This could include hard-to-obtain classics of geological exploration and other works which are of ongoing interest, introduced by experts able to show the work in perspective of current research. Ideally with the collaboration of a press in the country where the work is set, each volume could be distributed there, and could also sell world wide to those institutions and individuals with specialized interest in the region and topic. Anyone interested in suggesting volumes for such a series, in preparation of an introduction, or with contacts with possible co-publishers could contact me at david@davidspalding.com.

My role as Bill's literary executor has left me little opportunity for original work during the past year. A paper on the 1893 expedition by the brothers J.B. and J.W. Tyrrell across a then unknown area of Canada's Northwest Territories was prepared and presented at the INHIGEO Dublin conference. This has now been revised for publication in the conference proceedings.

Ernst Hamm, Toronto, ON, Gerard Middleton, Hamilton, ON, and David Spalding, Pender Island, BC

China

At the business meeting of The Commission on the History of Geology of the Geological Society of China (HGGSC), held in December 2004, at China University of Geosciences, Beijing, Professor Wang Hongzhen retired from his presidency. Professor Zhai Yushen was elected to be the President of the commission on HGGSC and Professor Wang Xunlian became the Secretary-General.

Meetings

Two symposiums were held by the Commission on History of Geology of the Geological Society of China. 'The Symposium on the Discipline of History of Structural Geology' and a 'Symposium on the Discipline of History of Earth Material Science' were held in February and October 2004, respectively, by the Commission of History of Geology. On the basis of the paper 'Development of geological science in the twentieth Century,' written by Professors Wang Hongzhen, Zhai Yusheng, *et al.*, published in 2002, the symposiums had wide-ranging discussions about the guiding ideology, the subdivision of development stages, the handling of the contents and the selection of important research results and representative personages. During the discussion, President of the Commission Professor Wang Hongzhen proposed that, "while respecting the traditional thoughts we should lay more stress on the present developments and the general trends; grasping major events, important research results and innovations in theory and research methods for each branch discipline; we should integrate them and avoid hairsplitting. For the periods since the nineties of the previous century; we should avoid the division of disciplines and should lay stress on the cooperative research and the merging of disciplines in order to reflect the new concept of Earth-system Science."

Memorial celebration of the 100th anniversary of professor Huang Jiqing (formerly T.K. Huang)

Professor Huang Jiqing is one of the founders and pioneers of the geological cause in China, a famous stratigraphic paleontologist, tectonist and petroleum geologist. He was the director of the Geological Survey of China, Chief engineer of the Petroleum Geology Bureau of the then Ministry of Geology, the honorary president of the Chinese Academy of Geological Science and the Director of the council of The Geological Society of China. On 7 June 2004, The Ministry of Land and Resources, Ministry of Science and Technology, Chinese Academy of Science, The Geological Society of China, The Paleontological Society of China, The Petroleum Society of China, and more than ten other units were joined to hold the ceremony to celebrate the 100th anniversary of Professor Huang. More than fifty academicians from the Chinese Academy of Science and Chinese Academy of Engineering and more than 500 geoscientists took part in this meeting. In the Ceremony the Vice-premier of the State Council, Mr Zeng Peiyan, gave a speech on the distinguished contributions made by Professor Huang Jiqing to the geological cause in China. Famous geologists Liu Dongsheng, Ye Lianjun, Wang Hongzhen and others cherished the memory of the achievements of Professor Huang Jiqing. In the ceremony the Huang Jiqing Prize for young geoscientists was awarded.

Publications

Books

1. *My Memory—Passages from the Memoirs of Professor Huang Jiqing and A Chronicle of Professor Huang Jiqing* were published in memory of the 100th anniversary of the birth of Professor Huang Jiqing, one of the founders and pioneers of the geological cause in China. The book *My Memory* was compiled by Huang Yusheng and published by the Geological Publishing House in 2004. It is a record of the first half of Professor Huang's life (1904–1954), including learning, life and working practice, through which we can understand his academic experience and spiritual features. The book *A Chronicle of Professor Huang Jiqing* was edited under the direction of The Geological Society of China and was published by The Geological Publishing House in 2004. This book thoroughly records his hard work and notable achievements on learning, work, scientific research, and education.

2. Professor Xie Jiarong (formerly C.Y. Hsieh)(1898–1966) was a famous geologist and ore geologist, the pioneer and developer of modern mineral exploration in China. The book *Prof. C.Y. Hsieh and the Mineral Exploration Bureau* is a collected work in memory of the 100th anniversary of the birth of Professor Xie Jiarong in 1898. It was published by the Oil Industry Press of China in 2004. The first part of the book narrates the tremendous contributions made by Professor Xie on the aspects of economic geology, geology of ore deposits, petroleum geology, geological education and the art of organization and leading; the second part includes brief accounts of fifty geologists who worked for then Mineral Exploration Bureau in China; the third part publishes the tens of papers that Professor Xie published in the years 1946–1950 as 'Novelties of Mineral Exploration.' In addition, the book includes tens of valuable photographs of historical interest.

3. Professor Wang Hongzhen is a famous paleontologist, historical geologist, stratigrapher, paleo-geographer and geotectonist. He became the President of the Commission on History of Geology in China (1986–2004) and was honored to be the Vice President (1990–2000) and Honorary Senior Member (2004–) of INHIGEO. *Selected Works of Wang Hongzhen* was published by the Science Press, Beijing in 2004. It reflects his notable achievements in the fields of paleontology, stratigraphy, and paleogeography, geotectonics, and the history of geology. In addition, the book carries a number of interesting pictures that reflect his learning life as a PhD student in Cambridge, England, in the 1940s, as well as his important academic activities, both domestic and abroad.

4. Mr Wu Fengming is a famous editor working for the Science Press in Beijing. He has made distinguished contributions for normalizing Chinese scientific and technological terminology and had done much work on the history of geology and the interchange between Chinese and western academic ideas. His book *Selected Work of Wu Fengming* covers his important papers on history of geology, philosophy in geological science, and matters pertaining to terminology and scientific technological terms. In the appendix of this book, his life story, a list of his published works, and pictures of his academic activities and life are included. The book was published in October 2004 by the Daxiang publishing house in Zhengzhou, Henan Province.

5. Professor Li Chunyu was a well-known geotectonist in China. After he finished his doctoral studies at Berlin University in Germany, in the year 1937, he was appointed Director of the Geological Survey of Sichuan Province and then promoted to the post of Director of the former Central Geological Survey of China. He conducted a series of regional geological studies in Sichuan, Hebei, and areas along the railroad of Beijing-Guangzhou early in the 1920s and 1930s, and had predicted the coal field of Zhonglianshang in Sichuan. He was the first to introduce the theory of plate tectonics to China and in the light of plate tectonics he and his colleagues completed the compilation of 'The Geotectonic Map of Asia 1:8,000,000' and his group was awarded the First-rank Prize of the National Natural Science Foundation of China. *The Chronicle of Professor Li Chunyu (1904–1988)* was compiled by related organization of the Chinese Academy of Sciences and was published in *The Research on the History of Chinese Academy of Sciences*, 2004, No. 4.

6. Professor Weng Wenbo (1912–1994) is a founder and pioneer of Chinese geophysical research, a famous petroleum geologist, and a geophysicist. A book, *Achievements of Professor Weng Wenbo* was published by the Weng Wenbo Foundation for the Development of Science and Technology in China, 2004.

7. The book, *Selected Work of Professor Jia Fuhai in Congratulation of his 90th Birthday*, was published by the Geological Publishing House, Beijing, in 2004.

Papers

Yang Zunyi, Zhang Xiangong, and Yang Guangrong, 'The major academic achievements of Professor Yuan Fuli and his important contributions to the reconstruction in China,' *Newsletter History of Geology for 2004*, 2004, 13–18.

Zhai Yusheng, 'The contributions of Professor Xie Jiarong to the geology of mineral deposits and the cause of mineral exploration,' *Newsletter History of Geology for 2004*, 2004, 19–23.

Liu Haolong, 'In memory of professor Feng Jinglan's important contribution to the foundation of hydraulic engineering of China in the 1950s,' *Newsletter History of Geology for 2004*, 2004, 26–28.

Du Nulin and Liu Yamin, 'The contribution of Professor Wang Yuelun to the Precambrian research in China,' *Newsletter History of Geology for 2004*, 2004, 34–37.

Wang Zhiming and Liu Bingyi, 'Weng Wenbo—The father of modern theory on prognosis,' *Newsletter History of Geology for 2004*, 2004, 40–45.

Xu Qingqi, 'Teilhard de Chardin and the Paleontological research in China,' *Newsletter History of Geology for 2004*, 2004, 47–53.

Chen Mengxiong, 'Stride forward towards the strength of stratigraphical science—the learnings in compiling the book *The Development and Achievements in Hydrology and Engineering Geology of China*, *Newsletter History of Geology for 2004*, 2004, 68–71.

Jiang Zhi, 'The originality in the studies of Earth material science,' *Newsletter History of Geology for 2004*, 2004, 71–72.

Wu Fengming, 'A few comments on the modern frontiers in geological science,' *Newsletter History of Geology for 2004*, 2004, 76–79.

Wu Fengmin, 'The excavation of Dinosaur fossils and the Medal of the North star,' *Newsletter History of Geology*

for 2004, 2004, 116–117.

Lu Huibua, 'The ancient and recent coal mining in Beijing,' *Newsletter History of Geology for 2004*, 2004, 84–88.

You Zhendong, 'Modern advances in the study of Earth material sciences: a glance on the 13th annual V.M. Goldschmidt conference,' *Geological Science and Technology Information*, 23, 1–4.

ZHAI Yusheng and YOU Zhendong, Beijing

Costa Rica

In late 2003, Prof. Alfonso Segura Paguaga, who despite never having obtained a degree in Geology, can be considered as the first Costa Rican geologist, passed away. An *In Memoriam* was published soon after his death (Alvarado and Laguna, 2003).

In June 2004, the Fifth Geological Congress of Costa Rica was held. Seventy works were presented (fifty-two oral, eighteen posters), and from them, three (two posters, one oral) were related to the history of geological sciences (Campos, 2004; Peraldo, 2004; Valerio and Laurito, 2004).

During the 32nd International Geological Congress in Florence, Gerardo J. Soto was appointed Vice-President for Latin America. His duties have included a constant communication with the regional members of INHIGEO, especially those from Venezuela and Argentina. The efforts for trying to recruit new members from Latin American countries not represented yet in INHIGEO are waiting for future negotiations. Cooperation with the Board in its business has been active since his appointment.

The *Centro de Investigaciones Geofísicas* (CIGEFI, Center for Geophysical Research) from the University of Costa Rica, organized the II CIGEFI Minicongress and the I National Meeting on Social Studies of Science, Technic and Environment, on 1–3 December. Two talks related to the history of geosciences were presented: 'Fenómenos celestes en Costa Rica, finales del siglo XVIII, XIX y principios del XX' [Celestial phenomena in Costa Rica, late 18th, 19th and early 20th centuries] by Flora Solano, Ronald Díaz and Mario Fernández, and 'Redes y comunidades científicas en la Costa Rica liberal, 1870–1930' [Networks and scientific communities in the liberal Costa Rica, 1870–1930] by Ronny Viales and Patricia Clare.

On December 13, a special number on volcanology of *Revista Geológica de América Central* was issued. During the official presentation, the special number was dedicated to four geologists, because of their outstanding contributions to volcanology. Also during the ceremony, an historical review of volcanology in Costa Rica was read (Soto and Alvarado, 2004).

In October, an agreement between INHIGEO member G.J. Soto and the Colegio de Geólogos de Costa Rica allowed the organization of the 'Colloquium Karl Sapper on the History of Geology.' Sapper (1866–1945) was a German geologist who widely contributed to the knowledge of Central American geology through almost fifty years, from 1888 to late 1930s. Thus, his name was honored with the colloquium title. The first colloquium was held on March 4, 2005, with the theme 'Evolution of the ideas related to the Nicoya Ophiolite Complex,' presented by Prof. Percy Denyer (University of Costa Rica), commented upon by Guillermo E. Alvarado (INHIGEO member), and moderated by G.J. Soto. Three more colloquia are planned for the rest of 2005.

A paper pertaining to historical seismicity in Central America, much of it dealing with the history of seismology, was published by Montero & Peraldo (2004).

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- Montero, Walter and Peraldo, Giovanni, 'Current knowledge on the Central America historical seismicity: an analysis of recent catalogues,' *Annals of Geophysics*, 2004, 47, 2–3: 477–485.
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- Soto, Gerardo J. and Alvarado, Guillermo E., 'Introducción y dedicatoria al volumen especial "La Vulcanología y su entorno geoambiental,"' in: Gerardo J. Soto and Guillermo E. Alvarado (eds), *La Vulcanología y su entorno geoambiental*, *Revista Geológica de América Central*, 2004, *Special number*, 30, 7–13.
- Valerio, Ana Lucía and Laurito, César, 'La Sección de Geología del Museo Nacional de Costa Rica,' in: Gerardo J. Soto, Percy Denyer and Mauricio Mora (eds), *V Congreso Geológico Nacional. Programa y resúmenes*, San José, Costa Rica, 2004, 155–156.

Gerardo J. Soto, San José

Czech Republic

In 2004–2005, the main attention of Czech INHIGEO members was focused on organizing the INHIGEO Symposium in Prague, July 2–12, 2005. For details, see special remarks on this subject by INHIGEO Secretary-General Kennard Bork, presented in this *Newsletter* in the sections on 'Secretary-General's Report,' 'Forthcoming Meetings,' and 'INHIGEO Business Meeting, Prague, Czech Republic, July 2005, Provisional Agenda.'

As concerns publishing activities, the following titles could be mentioned:

- Kozák, J.T., V.S. Moreira and D.R. Oldroyd, *Iconography of the 1755 Lisbon earthquake*, ACADEMIA and Geophysical Institute, Prague, 2005. This pictorial book was prepared to commemorate the 250-year anniversary of the Great Lisbon Earthquake and to point out important consequences of this disastrous event for further development of the study of natural phenomena in Europe. For book illustrations, original engravings of the Collection Kozak (nisee.berkeley.edu/kozak) were used.
- Kozák, J.T., 'Beginings and subsequent development of seismology in Bohemia,' (in Czech), *Military Geographical Horizon*, 2004, 1, 45–51.
- Kozák, J.T., A. Guterch and Z. Venera, 'Pictorial series of the manifestations of the Earth, 6, South Pacific and Antarctica,' *Studia Geophysica and Geodaetica*, 2004, 48, 661–671.
- Kozák, J.T., 'Historical depictions of geophysical character,' *Ceskoslovensky casopis pro fyziku (Czechoslovak journal for physics)*, 2004, 4, 54, 164–167.
- Kozák, J.T. and M. Svamberkova, 'Seismic Calendar 2005,' Geophysical Institute of the Academy of Sciences of the Czech Republic, Prague.
- Haubelt, J., *Czech Enlightenment* (2nd ed., in Czech), Synthetical work on intellectual elite development in Bohemia, Moravia and in the Moravian part of Silesia in the years 1740–1806. In the book, special attention is paid to development of geological and mining sciences, especially to these related to works by J.T. Peithner, I. Born, and K. M. Duke of Sternberg.
- Haubelt, J., 'Geological and geotechnical works of Eduard Suess,' 'On various aspects of the works by Eduard Suess.' and 'Mining Symposium, Pribram 2005 and National Technical Museum, Prague 2005.' (These lectures were presented, in Czech, in the Czech Regional Symposia. At present the pertinent texts are in press, to appear in the Symposia Proceedings.)

Jan Kozák, Prague

France

According to its tradition, the French Committee on the History of Geology (COFRHIGEO) held three meetings in 2004. The annual volume of "Travaux" is currently being prepared. It is expected to include, in order:

- Odin, G.S., 'Le catalogue du cabinet de curiosités de Jacques-François Borda d'Oro (1718–1804): bicentenaire d'une collection régionale de roches et de fossiles.'
- Laurent, G., 'Jacques Roger (1920–1990) et l'Évolution.'
- Godard, G., 'Le Discours sur les coquilles de mer qu'on trouve en terre ferme, particulièrement en Champagne, adressé à Peiresc dans les années 1630.'
- Gohau, G., 'De Stahl à Dolomieu: la notion de molécule intégrante.'
- Gaudant, J. and G. Bouillet, 'Johannes Reiskius (1687): une tentative de réfutation aristotélicienne des idées de Fabio Colonna et Nicolas Sténon sur la nature organique des glossopètres.'
- Lemoine, M., 'De Wegener à la tectonique des plaques: sept fois sept ans de réflexion.'
- Seidl, J., 'Eduard Suess (1831–1914)—Aperçu biographique.'
- Chauvel, J.-J. and J. Plaine, 'Marie Rouault (1813–1881), le perruquier-géologue.'
- Touret, J., 'Présentation d'ouvrage: R.P.W. Visser and J.L.R. Touret (eds), *Dutch Pioneers of the Earth Sciences*.
- Durand-Delga, M., 'Le 19e Congrès international de Géologie, Alger, 1952.'

Additionally, History of Geology was the topic which has been retained by the *Association des Géologues du Bassin de Paris* (A.G.B.P.) for celebrating its 40th birthday in 2004. This provided the opportunity for publishing three lectures and for organizing two geological excursions. The guide-books were printed in the *Bulletin d'Information des Géologues du Bassin de Paris*, and included:

- Aufrère, M.-F., 'De la Naissance de la Préhistoire.'
- Gaudant, J., 'La naissance et le développement de la stratigraphie dans le Bassin parisien: survol historique.'
- Durand-Delga, M., 'Géologie et géologues du Bassin d'Aquitaine du XVI siècle à la période moderne.'
- Gaudant, J., 'Lieux de mémoire géologiques du Bassin de Paris et protection du patrimoine naturel, *Journées d'étude de printemps* (20–22 mai 2004).'
- Gaudant, J., 'Les terrasses quaternaires de la vallée de la Somme et la naissance de la Préhistoire. *Journées d'étude d'automne* (16–17 octobre 2004).'

Jean Gaudant, Paris

Germany, 2004

Meetings

The 'German working group for the History of Earth Sciences' held its annual meeting as a joint meeting with the 'German working group for the History of Geography,' from June 4 to 6 at the 'Leibniz-Institut für Länderkunde' in Leipzig. The general topic of the symposium was 'Biographies and Autobiographies in the History of Earth Sciences and Geography'; more than thirty papers were presented by speakers from Germany and Austria. INHIGEO-member Cornelia Lüdecke, on behalf of the 'International Commission on History of Meteorology,' organized a conference on 'From Beaufort to Bjerknes and Beyond: Critical perspectives on observing, analyzing and predicting weather and climate,' which was held from 5–9 July 2004 at the Monastery of Polling, in Upper Bavaria.

Publications

- Fritscher, B., Articles 'Carl Abraham Gerhard' (p. 95), 'Victor Moritz Goldschmidt' (pp. 114–117), 'Paul von Groth' (p. 126), 'Jean-Étienne Guettard' (p. 130), 'Karl C. von Leonhard' (p. 402), 'Charles Lyell' (pp. 443–446), in: Hoffmann, D., Laitko, H. and Mueller-Wille, St. (eds), *Lexikon der bedeutenden Naturwissenschaftler*, vol. 2, Spektrum Akademischer Verlag, Heidelberg-Berlin, 2004.
- Fritscher, B., Articles 'Antonio Lazzaro Moro' (p. 45–46), 'Paul Niggli' (p. 79), 'Albrecht Penck' (pp. 138–139), 'Ferdinand von Richthofen' (p. 209), 'Carl Ritter' (pp. 215–216), 'Jean Baptist Romé de l'Isle' (p. 219–220), 'Adam Sedgwick' (p. 278), 'Antonio Vallisneri' (pp. 385–386), 'Johan Hermann Lie Vogt' (p. 400), 'Johann Carl Wilhelm Voigt' (pp. 401–402), 'Johannes Walther' (pp. 414–415), 'Henry Stephens Washington' (p. 421), 'John Woodward' (pp. 476–477), in: Hoffmann, D., Laitko, H. and Mueller-Wille, St. (eds), *Lexikon der bedeutenden Naturwissenschaftler*, vol. 2, Spektrum Akademischer Verlag, Heidelberg-Berlin, 2004.
- Fritscher, B., 'Mineralogie und Kultur im Wien der Donaumonarchie: Zu Leben und Werk Gustav Tschermaks,' in: Cernajsek, T., and Seidl, J. (eds), *Zwischen Lehrkanzel und Grubenhunt: Zur Entwicklung der Geo- und Montanwissenschaften in Österreich vom 18. bis zum 20. Jahrhundert, (= Jahrbuch der Geologischen Bundesanstalt)*, 144/1, Wien, 2004, 67–75.
- Fritscher, B., 'Humboldtian views: Hermann and Adolf Schlagintweit's panoramas and views from India and High Asia,' in: Geburtstag, Seising, R., Folkerts, M., and Hashagen, U. (eds), *Form, Zahl, Ordnung: Studien zur Wissenschafts- und Technikgeschichte. Festschrift für Ivo Schneider zum 65. Boethius*, Stuttgart, 2004, 48, 603–613.
- Fritscher, B., 'Eduard Suess,' in: Selley, R.C., Cocks, L.R.M., and Plimer, I.R. (eds), *Encyclopaedia of Geology*, Elsevier Academic Press, London, 2004, 3, 233–242.
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- Fritscher, B., Review of: Thomas Junker and Uwe Höpfeld, *Die Entdeckung der Evolution: Eine revolutionäre Theorie und ihre Geschichte*, Wissenschaftliche Buchgesellschaft, Darmstadt, 2001, pp. 264, 30 figs, in: *Isis*, 2004, 95, 314–315.
- Fritscher, B., Review of: Cornelia Lüdecke and Carl Ritters, *Lehrtätigkeit an der Allgemeinen Kriegsschule in Berlin (1820-1853)*, Verlag für Wissenschafts- und Regionalgeschichte Dr Michael Engel, Berlin, 2002; Ernst Martin: *Das Verhältnis Carl Ritters zu Pestalozzi und sein Einfluss auf die Geographie als Wissenschaft und als Schulfach*, Verlag Pestalozzianum, Zürich: 2003, in: *Berichte zur Wissenschaftsgeschichte*, 2004, 27, 319–20.
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- Guntau, M., 'Autobiographien von Geologen, Paläontologen, Mineralogen und Geophysikern,' in: *Kurzfassungen zu den Vorträgen der Tagung der Arbeitskreise für Geschichte der Geowissenschaften und Geographie 'Biographien und Autobiographien in der Geschichte der Geowissenschaften und Geographie, 4–6 June 2004*, Leibniz-Institut für Länderkunde in Leipzig, 2004, 45–47.
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- Lüdecke, C., 'German Contribution to unveiling the Southern Ocean Currents in the early 20th Century,' Maury IV workshop: History of Polar Oceanography, Barrow Arctic Science Centre, Barrow (Alaska, USA) (1 September 2004).
- Lüdecke, C., 'German marine weather station "Haudegen" (1944–1945) at Nordaustlandet (Svalbard),' Meeting 2004 of the International Polar Heritage Committee, 'Terre Australes at Antarctique Françaises,' St. Pierre (La Réunion) (30 October 2004).
- Lüdecke, C., 'German base station at Kerguelen (1901–1903),' Meeting 2004 of the International Polar Heritage Committee, 'Terre Australes at Antarctique Françaises,' St Pierre (La Réunion) (30 October 2004).
- Lüdecke, C., 'Friedrich Ratzel (1844–1904) and the investigation of the snow-cover in the Alps,' Ratzel Centennial Conference 'The spaces of Ratzel's Geography,' Institut für Länderkunde, Leipzig (19 November 2004).

Further Activities

INHIGEO Member Cornelia Lüdecke presented a series of posters at several meetings: 'Ship or sledge? Concepts of crossing Antarctica at the beginning of the 20th century' (XXVII SCAR Open Science Conference, Bremen, 26–28 July 2004; together with S. Emeis and H. Volkert: 'Von Beaufort bis Bjerknes und darüber hinaus: Aus der Arbeit des Fachausschusses Geschichte der Meteorologie' (Symposium of the German–Austrian–Swiss Meteorologists, University of Karlsruhe, 7–10 September 2004). Additionally, B. Fritscher and C. Lüdecke held several lecture courses on the history of earth sciences at the University of Munich and the University of Hamburg, respectively. Issue No. 14, for 2004, of 'Nachrichtenblatt des Arbeitskreises Geschichte der Geowissenschaften' was edited by Oskar Burghardt in 2005.

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

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

Hungary

The Geohistorical Section of the Hungarian Geological Society elected a new Board in 2003. The renewed Board developed a novel concept for the activity of the Section, putting the main emphasis on the following two points: a) To enlarge the field of the topics dealt with and to make the programs more varied, in order to evoke larger interest; and b) To continue and reinforce the co-operation with Hungarian geoscientists living outside the state borders of Hungary, mutually attending each other's meetings. In both fields considerable achievements have been attained. New topics discussed were: etymology of geological terms, history of meteor research, philosophical background of geology, and natural philosophy in general.

A special and rather joyful event was the celebration of the seventieth birthday of Dr Endre Dudich, Past-President of the Section and, 1984–1989 Secretary-General of INHIGEO, and at present Senior Honorary Member of INHIGEO, in January.

In March, another renowned Hungarian geologist, József Cseh-Németh (expert in manganese ore deposits) displayed his paintings, most of them landscapes inspired by the distinguished painter's geological field work, at an exhibiton organized in the Geological Institute of Hungary.

In November, a commemorative session was held about the training of geologists that was for some years going on at the University of Szeged (SE Hungary). A comprehensive book was published on this subject by Géza F. Tóth (himself one of the Szeged University graduates). A considerable number of ex-alumni attended.

Last but not least, in December, as it is already customary by now, a merry afternoon was organized in the Conference Hall of the Geological Institute of Hungary. This time Dr Tibor Kecskeméti collected anecdotes and funny stories from two centuries of Hungarian Geology; those were artistically presented by Mrs. A. Toth, G. Papp, and accompanied on guitar by Z. Kercsmar.

During 2004, altogether more than 340 participants were registered for the nine programs of the Section. At the most popular meetings sixty to 130 people were present.

The Section maintained active co-operation with the Section of Mineralogy and Geochemistry of the Hungarian Geological Society, as well as with the working groups of Hydrology and Mining of the Hungarian Mining and Metallurgical Association (OMBKE).

In the field of cross-border co-operation, members of the Section attended the Annual Itinerary Meeting of the Section of Mining, Metallurgy and Geology of the Technical and Scientific Society of Transylvania, held at Petrozsény / Petrosani in May, and at the VIth Meeting of the Geologists of Székelyland, at Csikszereda / Miercurea Ciuc in October (both in Romania).

The VIth World Meeting of Hungarian Geoscientists took place in late August at the University of Szeged, with a two-day field trip to the Vojvodina province (Serbia-Montenegro), visiting sites of both geological and historical interest, in co-operation with the Serbian Geological Society and the Ujvidék / Novi Sad University. Worthy of mention is the 100-year anniversary of Professor L. Eötvös' field campaign in the Fruska Gora Mountains, where he carried out simultaneously, for the first time in the world, gravity measurements with his newly invented torsion balance and a magnetometric survey, establishing the presence of a huge body of serpentinite (not iron ore as it had been supposed) in the underground.

Tereza Póka, Budapest

Ireland

Gordon Herries Davies continues to work on his history of the Geological Society of London, which celebrates its bicentenary in 2007. Both he and Patrick Wyse Jackson contributed biographical articles to *The Dictionary of Nineteenth-Century British Scientists* (B. Lightman (ed.)) 4 vols. (Thoemmes Continuum, Bristol, 2004).

Patrick Wyse Jackson spent the second half of 2004 on sabbatical at Dickinson College, Pennsylvania. While there he finished editing the forthcoming volume of papers from the INHIGEO symposium held in Dublin in 2003. This book, entitled *Geological Travellers—On foot, bicycle, sledge or camel: the search for geological knowledge*, contains twenty-eight papers and will be published by Pober Publications of Staten Island in late 2005. While in the USA, Patrick also spoke on Irish geochronologers at a meeting of the Geological Society of Washington, and met up with various friends at the Geological Society of America meeting in Denver. He has taken over from Greg Good as editor of *Earth Sciences History*, and was appointed Chairman of the National Committee for the History and Philosophy of Science early in 2005.

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Patrick Wyse Jackson, Dublin

Italy

In April 2002, Nicoletta Morello took part in the 34th International week of Economic History 'F. Datini' in Prato (Tuscany, Italy) and presented a paper in Italian on Georg Agricola (1494–1555) and the management of mining in the 16th century. In May, Ezio Vaccari contributed to the international meeting 'Impact of Travels on scientific knowledge'—organized in Novara (Italy) by the local Museum of Natural History, the California Academy of Sciences and the Italian section of the International Council of Museums—with an invited paper (in Italian) on Carlo Amoretti and his geological travels in the late 18th century. An enlarged version of this paper is now in press within a collection of essays on the history of techniques edited by the Institute of History of Mediterranean Europe (CNR, Cagliari and Genoa).

From May 21 to June 14, 2002, among the events organized in Italy on the occasion of the International Year of Mountains 2002, the University of Insubria in Varese hosted a new course on the History of the Mountain, organized by Luigi Zanzi and Ezio Vaccari, with several conferences and meetings, including lectures in the history of geological sciences: Nicoletta Morello presented a paper on mountains and the question of fossils in the early modern age; Giorgio Teruzzi introduced the history of paleontological research in the prealpine area of Besano (north of Varese); Ezio Vaccari analyzed some aspects of the history of mining in the Alps and in the Apennines, as well as the historical development of the geological study and "classification" of mountains.

In June, at the international workshop 'Nature and Culture' in Bressanone (Italy) Ezio Vaccari presented an invited paper, in Italian, with the title 'Images of the Alps in the 18th century: geological perspectives,' while in December he contributed to the meeting 'A new science for the mountain: the case of the Alps,' at the Museum of Natural History of Milan, with a paper in Italian on the geological travels in the Alps between the 18th and 19th centuries.

Finally, in November 2002, Ezio Vaccari organized, in Cuveglio near Varese (Italy), together with Giuseppe Armocida and Serena Contini, a symposium on the naturalist Leopoldo Maggi (1840–1905) who was the first official professor of geology and mineralogy at the University of Pavia from 1863 to 1875. The proceedings of this symposium (in Italian) may be requested, free of charge, from Ezio Vaccari, Dipartimento di Informatica e Comunicazione, Università dell'Insubria, via Mazzini 5, 21100 Varese, Italy (ezio.vaccari@uninsubria.it).

In January 2003, Nicoletta Morello spent a short period in Paris in order to undertake new researches in the École des Mines, Bibliothèque nationale de France and the Bibliothèque Interuniversitaire de Medicine, Paris 5. Later, in July, she was invited to Malta for a longer period, to continue her work on Maltese- Italian relationships in the history of geology and paleontology, within the exchange program between the University of Genoa and the University of Malta.

Between May and June, Ezio Vaccari organized a new series of conferences on the history of mountains, with the collaboration of Silvana Martin, a geologist and his colleague at the University of Insubria in Como. Prof. Giorgio Ranalli (Carleton University, Ottawa, Canada) was invited to give a lecture on the early history of experimental tectonics, as well as Marco Cuaz (University of Aosta Valley, Italy) who spoke on the role of "technical" travels in the scientific exploration of the Alps.

In June, Ezio Vaccari was invited to the meeting 'Relations savantes, voyages et discours scientifiques,' organized by the *Centre de Recherche sur la Littérature des Voyages at Château de La Napoule* (France), to give a talk in French entitled 'De l'exploitation minière à la recherche scientifique: voyages de géologues et de minéralogistes dans les montagnes italiennes (XVIIIe–XIXe)' and in July he contributed to the 28th INHIGEO meeting 'Geological Travellers' in Dublin with the paper 'The organized traveller. Scientific instructions for geological travels (18th–19th century).'

In the second half of 2003, Gian Battista Vai organized in the Museo "G. Capellini" of the University of Bologna the historical exhibition 'Linguedipietra: Fossils between myth and science,' which was open from mid-December 2003 to the end of August 2004. Its website is still available at the address:

<http://www.museocapellini.org:8080/paleonet/public/index.jsp?setLang=en>.

For the Italian members of INHIGEO the highlight of 2004 was undoubtedly participation in the 32nd International Geological Congress in Florence and the organization of the INHIGEO post congress fieldtrip 'Italian Institutions and Geological sites in the History of Geosciences' from Pisa to Venice (August 29 to September 3). At the congress in Florence, Ezio Vaccari contributed to the INHIGEO session 'Institutions, museums and scientific societies in the history of geosciences' (chaired by David Oldroyd and Nicoletta Morello) with the paper 'The 18th century scientific academies and the development of geology in Italy,' while the organization of the post-congress fieldtrip, led by Ezio Vaccari and Nicoletta Morello, received significant contributions from Gian Battista Vai, Stefano Marabini and Claudia Principe, also to the preparation of the Guidebook. More details and reports on these two events are available elsewhere in this *Newsletter*.

Within the IGC congress in Florence, another historical session was organized by Gian Battista Vai and W. Glen E. Caldwell on the subject 'Origin of modern geology in Italy.' The following papers were presented: N. Morello, 'Some considerations on Agricola towards the birth of the geominerological sciences in Italy in the 16th century'; D. Branagan, 'Geology and the artists in the 15th and 16th centuries'; T. Yamada, 'Kircher and Steno on the Geocosm'; C. Franceschelli, 'L.F. Marsili: a geomorphological and archaeological approach to the earth science'; G.B. Vai, 'Isostasy in Luigi Ferdinando Marsili's manuscripts'; E. Vaccari, 'The "classification of mountains" and the birth of historical geology in 18th century Italy'; H. Torrens, 'Gregory Watt and William Maclure's "proto-geological" map of Italy (1804)'; M. Serrano Pinto, 'The Italian contribution to the geology of Portugal (XVIII and XIX centuries)'; P. Corsi, 'Quintino Sella and the Italian Geological Survey. The ambiguous role of a political patron.' The proceedings of this meeting are in press: for further information, please contact Gian Battista Vai, Dipartimento Scienze della Terra, Università di Bologna, via Zamboni 67, 40126 Bologna, Italy (vai@geomin.unibo.it).

Moreover, in the summer of 2004, Nicoletta Morello, Ezio Vaccari, and Gian Battista Vai were nominated to be members of the Organizing Committee of the 'Celebrations for the fourth centenary of Ulisse Aldrovandi's death (1605–2005)' in Bologna. Further details are available in the website <http://www.centenarioaldrovandi.org/eng/index.html>

In autumn 2004, under the guidance of Nicoletta Morello, Francesco Gerali started a degree research project on the reorganization of the archive of Giovanni Capellini (1833–1922) housed in the Accademia Lunigianese di Scienze "Giovanni Capellini" in La Spezia, where he also gave a talk on this subject in October.

Finally, Nicoletta Morello was invited in October, at the University of Verona, to give a talk (in Italian) on the geological studies of the Veronese scholar Francesco Bianchini (1662–1729) and later in November at the congress on the geologist and paleontologist Gaetano Giorgio Gemmellaro (1832–1904) in Palermo, where she presented a paper on an overview of Italian geology in the 19th century. Other historical papers read during this symposium include G. Buccheri on Gemmellaro's contribution to the late Paleozoic and Mesozoic paleontology and stratigraphy; R. Cristofolini on Gemmellaro and volcanology; B. D'Argenio on the contribution of L. Pilla and G. De Lorenzo to the 19th century geology of southern Italy; and R. Matteucci on the paleontological studies of Gemmellaro.

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Ezio Vaccari, Varese, and Nicoletta Morello, Genoa

Japan 2004

The Japanese Association for History of Geological Sciences (JAHIGEO) held its ordinary meeting at Hokutopia, Tokyo, on 12 June 2004, its evening session at the annual meeting at the Geological Society of Japan at Chiba University on 19 September 2004, and its general meeting at Hokutopia on 23 December 2004.

The following presentations were made at the general meeting in June. Satoshi Kanisawa, considered 'Goethe and his journey to Italy.' Kenzo Yagi, spoke on 'Prof. Shukusuke Koze's life and contribution to geology and mineralogy.' Shukusuke Koze (1880–1955) was the first professor at Tohoku University and was appreciated for his studies, using microscopes and X-rays, on the change of varicolored characters during heating of moonstone. He founded the Japanese Association of Mineralogists, Petrologists and Economic Geologists.

Two lectures relating to Chiba Prefecture were presented at the evening meeting at Chiba University in September. Yu Higuchi discussed, 'A brief historical review of foraminiferal research in the Boso Peninsula, Chiba Prefecture.' Takashi Ohara then considered, 'On the Education Research Association of Geosciences of Chiba Prefecture.'

The following two lectures were given at the general meeting in December. Toshihiro Yamada presented his 'Historical review on the study of Nicolaus Steno.' Secondly, Takashi Suzuki spoke on 'Torahiko Terada's advanced view on geosciences.' Torahiko Terada (1878–1935) was a professor at Tokyo University, and he specialized in experimental physics, seismology and geodetic crustal movements. He appreciated Wegener's continental drift hypothesis and proposed the opening of the Sea of Japan and subduction processes in front of the Japanese islands.

Also at the December business meeting, Hakuyu Okada gave two lectures and provided comments concerning the INHIGEO excursion in Italy, after the 32nd IGC in Florence. He also showed the Danish geology near the KT boundary, studied by Walter Alvarez, which Okada visited on his way back to Japan.

Seminars on the history of the geosciences were held on four occasions, under the leadership of the younger members of the Association, on 20 March, 13 June, 2 October, and 25 December at Aogaku-kaikan, Tokyo. The following presentations were made, 1) Michiko Yajima, 'Mary Anning's adventure—Female contribution to founding dinosaur learning.' 2) Masaaki Osada, 'Ichiro Hayasaka's life and contribution to geology and paleontology.' Ichiro Hayasaka (1891–1977) was a professor at Taihoku University (Formosa) before World War II, and at Kanazawa and Hokkaido Universities after the war. He was appreciated for finding Lower Carboniferous brachiopods in Japan. He was interested in 'Akutuopaleontologie,' advocated by R. Richter, studied Ichology, and observed the recent traces on the beaches. 3) Manabu Yoshioka, 'Takeaki Enomoto's swords made from meteorites.' Takeaki Enomoto (1836–1908) was a high official and technocrat interested in geology in the Edo and Meiji eras. 4) Kenji Hamazaki, 'Kin'ichi Sakurai's contribution to mineralogy and his activity in Mumeikai, a club of amateur mineralogists.' Kin'ichi Sakurai (1912–1993) was an amateur mineralogist famous for his collection and finding new minerals, including Yugawarite, a kind of zeolite. He was one of the authors editing *Minerals of Japan*, 3rd ed., published in 1947, and *Introduction to Japanese Minerals*, published in 1970.

Toshihiro Yamada translated *De solido intra solidum naturaliter contento dissertationis prodromus*, published in 1669 by Nicolaus Steno, into Japanese. The book was published by Tokai University Press, Tokyo. Toshio Kutsukake translated *Mineralium*, published in the 13th century by Dr Albertus Magnus and published it through Asakura Publishing Co., Tokyo. The Japanese Association for History of Geological Sciences issued its Bulletin no. 22 and 23, and JAHIGEO Newsletter no. 7 in 2004.

Yasumoto Suzuki, Ichikawa, and Hakuyu Okada, Fukuoka

Lithuania

Activity

The Lithuanian members of INHIGEO, Professor Algimantas Grigelis (since 1972), Dr Gaile Zaludienė (elected in 2004) and other interested geoscientists are taking part in the doings of the National Association of History and Philosophy of Sciences, established in 1994. The 10th Lithuanian Conference, on 'Scientia et Historia,' was held in Vilnius, March 25–26, 2004. A broad program contained twenty-six reports and two keynote lectures. Five reports were specifically devoted to various aspects of history of geological and geographical sciences.

The second annual meeting of the Lithuanian Ignotas Domeika Society that was held in the Lithuanian Academy of Sciences, Vilnius, March 30, 2004, had a keynote presentation made by A. Grigelis and S. Michno on 'The History of Gierwiaty, Domeyko's roots in the XIX Century.'

Prof. Grigelis participated in the 32nd International Geological Congress (IGC), held in Florence, Italy, August 20–28, 2004, and in the post-congress INHIGEO Field excursion 'Italian Institutions and Geological Sites in the History of Geosciences,' conducted from 29 August to 3 September 2004. During the IGC, A. Grigelis presented a talk on 'Mineralogy and Wernerian ideas in old Vilnius University.'

A report on the results of the 32nd IGC, was delivered by A. Grigelis in the course of the October 13 meeting of the Lithuanian Institute of Geology and Geography, Vilnius.

Publications

Grigelis, A., '32nd International Geological Congress—towards a Global Geological Renaissance,' *Geological Horizons*, No. 2, 2004, 9–18.

Grigelis, A., 'Twists of History of Domeyko's Family,' *Science and Life*, No. 7–8, 2004, 24–25.

Grigelis, A., and Juodkazis, V., 'Geosciences in the Lithuanian Academy of Sciences,' *Geological Horizons*, No. 1, 2004, 46–51.

Grigelis, A., and Michno, S., 'On Domeyko's Pathways in Gierwiaty,' *Geological Horizons*, No. 2, 2004, 40–47.

Grigelis, A., and Gudelis, V., 'International Yearbook BALTICA—40 years,' *Science and Life*, No. 4, 2004.

Zaludiene, G., 'Juozas Lukosevicius' View on the Earth Evolution,' A Monograph, *Institute of Geology and Geography*, Vilnius, 2005, 129 pp., 32 figs.

Zaludiene, G., 'Expedition of the Eduard Eichwald, Professor of Vilnius University,' *Geologija*, No. 47, 2004, 1–7.

Miscellaneous matters

A 50th Session of the All-Russian Palaeontological Society was attended by Prof. Grigelis in April 2004, in St Petersburg, where he gave a talk on 'Aleksandr Vasiljevich Fursenko and modern micropalaeontology.'

Prof. Grigelis, INHIGEO Member, was elected President of the Lithuanian Ignotas Domeika Society.

The second annual meeting of the society was held in Vilnius on March 30, 2004.

Prof. Grigelis is Editor and Publisher of *BALTICA: International Journal on Earth Sciences of the Circum-Baltic States*. Two numbers of Volume 17 were published in English in 2004: No. 1, June, 50 p., No. 2, December, 50 p.

A first draft on Ignacy Domeyko's classical work, *A View of the Chilean Cordilleras*, originally published in Polish in 1878, is under preparation for the 'Classic Papers' series in *EPISODES*.

An International Conference on 'The Vilnius Water-Supply and its Historical Significance' is planned to be held in Vilnius during September 2005. Host institutions are the Lithuanian Academy of Sciences, Vilnius University, and the Lithuanian Society of Nature Conservation. Contact: Professor Vytautas Juodkazis

vytautas.juodkazis@gmf.vu.lt

An important INHIGEO event is the forthcoming 31st International Symposium on 'The History of Quaternary Geology and Geomorphology,' to be organized in Vilnius, 28 July–4 August 2006. The meeting will include a field excursion on Quaternary and geomorphologic phenomena in Lithuania, Latvia and Estonia. Host institutions are the Lithuanian Academy of Sciences, the Institute of Geology and Geography (Vilnius), the University of Latvia (Riga), Tartu University (Tartu), and the Estonian Academy of Sciences (Tallinn). Contact: Professor Algimantas Grigelis <grigelis@geo.lt>. More detailed information may be found at: <http://www.iugs.org/iugs/calendar/cal06.htm>.

A 22nd Baltic Conference on the History of Sciences is to be held in Vilnius, 5–7 October, 2006. The Conference coincides with the historical date of publication of the General Relativity Theory (1916). Contact: Professor Juozas Algimantas Krikstopaitis, baltconf@kfmi.lt.

Algimantas Grigelis, Vilnius

New Zealand

Although research into history of geology in New Zealand continues at a high level, there are no major additions to the topics listed in the 2003 report. The Historical Studies Group of the Geological Society of New Zealand, although relatively small, continues to be active. Two issues of its *Newsletter* were published during the year. The March issue was the last under the editorship of Alan Mason, who has been the *Newsletter's* inaugural editor. The twenty-eight issues of the newsletter of which Alan was editor are a fitting testimonial to his endeavors over the 14 years the group has been in existence to ensure that the history of geology in New Zealand is documented. In addition, Alan was for many years convenor of the Group and, until this year, was its treasurer. The diversity of the articles in the Newsletters has been highlighted by Bill Watters of Lower Hutt, who has updated the index of the articles contained in them. The *Alan Mason Historical Fund*, established by the Geological Society in 2000, in recognition of Alan's efforts, is for the purpose of supporting research into the history of geology. He was also elected an Honorary Senior Member of INHIGEO at the meeting in Italy in 2004.

Alan has been replaced as editor by Tony Hocken of Oamaru, who has ensured that the 29th issue, in a new format, was published in September 2004. Tony is well experienced for this role in that he has edited somewhat similar sized newsletters for other organisations. He is author of the definitive *Geology at the University of Otago: The First 100 Years* published in 2003 by the Geological Society as *Miscellaneous Publication 115*. As for the Geological Society, it will celebrate its 50th birthday during 2005 and steps are underway to publish highlights from

its half-century. Dr Bruce Hayward of Auckland, who has earlier compiled an account of the Society, will be updating his research. Unfortunately, Ian Keyes died in 2004. Ian, since his retirement from the Geological Survey, had been the Society's archivist and will be sadly missed. Ursula Cochran of the Institute of Geological & Nuclear Sciences is now archivist to the Society.

A biography of Harold Wellman, by Simon Nathan, is now with the publisher and should be available in the latter part of 2005. Wellman (1909–1999), popularly known as 'the man who moved mountains,' was an energetic and lateral thinker who progressed into geology without any formal training. He rose to be Professor of Geology at Victoria University of Wellington, in New Zealand. He is, however, best remembered as the man who, during his Geological Survey career, first recognized the Alpine Fault then, secondly, proposed that similar rocks in the northern and southern parts of the South Island had been displaced by 480 km of strike-slip movement on it. His 19th-century counterpart was the largely self-taught Alexander McKay (1841–1917) whose biography by Graham Bishop is now being prepared for publication. McKay was a keen field man who was able to interpret the rocks unencumbered by the constraints that European-trained geologists were saddled with when they tried to decipher New Zealand's geology. Unfortunately some of McKay's conclusions were not immediately accepted, such as his recognition of strike-slip movement on faults, which he graphically recorded after an earthquake in 1888 dramatically horizontally offset by several metres a fence that crossed it. His recognition that the mountains of New Zealand were not geologically old features but were instead very young, and still growing, was also not immediately accepted until after his death. A third biography, of Edward Hydelbach Davis (1845–1871), has been completed by Mike Johnston. Davis was the third geologist to be appointed to the Geological Survey, in 1870, but was drowned while carrying out fieldwork the following year. He is, perhaps, best remembered for his work on the Dun Mountain Ophiolite Belt.

Leonore Hoke, with James Bade of the University of Auckland, continues to translate and prepare for publication the 'Sixth Diary' of Ferdinand von Hochstetter who was geologist on the Austrian *Novara* expedition. While in New Zealand, in 1858–1859, he compiled the first geological maps, covering much of Auckland and Nelson provinces, of New Zealand. His mapping included the active Taupo Volcanic Zone in Auckland and Dun Mountain in Nelson. A separate German edition will form part of the 150th Anniversary of the sailing of the *Novara* expedition. Heather Nicholson of Auckland has just been awarded a doctorate from the University of Auckland. Her outstanding thesis deals with how the 19th and 20th century geologists attempted to classify and understand the Late Paleozoic–Early Mesozoic rocks of New Zealand or, as they tend to be locally known, 'the greywackes.'

Aspects of the life of Sir James Hector, the first Director of the New Zealand Geological Survey are being researched by Daphne Lee, of Otago, and Tony Hocken of Oamaru. Hector, a graduate of Edinburgh University, was appointed doctor and geologist to the Palliser Expedition to western Canada. He was nearly killed by a kick from his horse at a pass in the Canadian Rockies that was subsequently called Kicking Horse Pass. In 1861, he was appointed geologist to Otago Province in New Zealand and then four years later to the directorship of the New Zealand Geological Survey. Alan Mason continues his interest in Charles Heaphy, an early colonial explorer, surveyor and a sometime gold-fields warden. He is also researching Frederick Peppercorne, who wrote one of the earliest accounts of the geology of Auckland, and Richard Taylor, an Anglican missionary who made geological observations while traveling through the North Island. Douglas Coombs of Otago is persevering with his research into the history of zeolite studies, whereas the Permo-Triassic rocks of New Zealand are the domains of Bruce Waterhouse and Jack Grant-Mackie. Keith Lewis of Wellington is documenting the history of marine geology and Bob Brathwaite and David Skinner are delving into various aspects of mining. Bob has also begun accumulating material for a biography of Percy Gates Morgan, director of the New Zealand Geological Survey from 1911 to 1927.

Mike Johnston, Nelson, New Zealand

Poland

As in previous years, topics in the history of geosciences were studied professionally mainly by scientists of the Museum of the Earth, Polish Academy of Sciences, in Warsaw, and by geologists using materials collected by Stanislaw Czarniecki in the Laboratory of History of Polish Geology in Cracow. Besides the work done at those institutions, studies in the history of geology were carried out by members of the Committee of History of Science and Technics, Polish Academy of Sciences, Commission on the History of Sciences, Polish Academy of Arts and Sciences, as well as by members of the Polish Geological and Mineralogical Societies.

The main problems studied in the last years in Poland were related to the history of geology of Central Europe, the achievements of Polish naturalists in Russia (J. Garbowska, Z. Wojcik), mainly Siberia, and the history of mining and geology (A.S. Kleczkowski, A.J. Wojcik). The latter was the author of an interesting PhD thesis entitled 'Mining and mining geology in the western district of the Polish Kingdom in the years 1815–1869,' supervised by Z. Wojcik and reviewed by A.S. Kleczkowski and W. Narebski. A.J. Wojcik is currently forming a laboratory of history of geosciences in the Institute of History of Science and Technics of the Polish Academy of Sciences.

The 85th anniversary of the former Academy of Mining and Metallurgy (now called the University of Science and Technology) in Cracow was accompanied by the edition of two valuable books: *Studies on the Past of the*

Stanislaw Staszic's *Academy of Mining and Metallurgy in Cracow* by A.S. Kleczkowski and Jozef Morozewicz: *Scientist and Co-organizer of the Mining Academy in Cracow* by Z. Wojcik. (Please see the Book Review section for further discussion of these two works.)

Two interesting books were edited by the Polish Academy of Arts and Sciences. One is *Ignacy Domeyko in the 200th Anniversary of His Birth*, with included papers by Z.J. Ryn, A. Paulo, W. Narebski, Z. Wojcik, E. Niedzialkowska and T. Stupnicka-Kepinska. Also worth attention is the book *Starunia and Quaternary Researches in the Tradition and Initiatives of the Polish Academy of Arts and Sciences*, by Stefan Alexandrowicz. It deals with the history of study of rare Pleistocene big mammals, such as the rhinoceros, in Starunia, East Carpathians (actually in Ukraine). The book is edited as Vol. III of the series 'Studies and Materials for the History of the Polish Academy of Arts and Sciences.'

Among periodical publications worth emphasizing is 'Staszic's Fascicule' No. 4, containing papers by S. Czarniecki, J. Skoczylas, A.S. Kleczkowski and Z. Wojcik. Some new interesting data indicating the connections of "the father of Polish geology" with Saxon and French Enlightenment ideas are discussed by A.S. Kleczkowski. In connection with the approaching 250th anniversary of Stanislaw Staszic's birth, an excellent secondary school bearing his name was inaugurated in Jaroslawiec, near Hrubieszow, in southern Poland, where this eminent scientist and social worker had formed an exemplarily organized agricultural region. Radoslaw Tarkowski, studying historical relations of Polish and French geoscientists, has recently published a paper on 'New data on Jean-Etienne Guettard's journey to Poland in the years 1760–1762' (*Comptes Rendus, Geoscience, Paris, 2004, 1227–1232*).

Also worth mentioning is the activity of A.J. Wojcik in the field of protection of monuments of mining techniques in abandoned underground coal and sulphur mines.

Wojciech Narebski, Cracow, and Zbigniew Wojcik, Warsaw

Portugal

Miscellaneous matters

Following the election of the new INHIGEO Board, during the 32nd International Geological Congress, in Florence, Italy, Manuel S. Pinto became Past President of the Commission.

INHIGEO members Ana Carneiro and Manuel S. Pinto participated in the Scientific session 301 '*Institutions, Museums and Scientific Societies in the History of Geosciences*,' promoted by the Commission and L. Aires-Barros in the Scientific session 145 '*Deterioration and Conservation of Monuments Stone*,' both held during the International Geological Congress in Florence. Manuel Pinto participated also in session 274 '*Origin of Modern Geology in Italy*.'

The 2nd edition of a treatise on paleontology (in Portuguese) was published in Rio de Janeiro, Brazil, in September–October, 2004, co-author and INHIGEO member Miguel Telles Antunes having participated in the public presentation of the book.

A final report on the *Palaeontological Heritage* of Portugal was conveyed to the Portuguese Ministry of Science and Technology by a working group led by Miguel Telles Antunes.

A pamphlet of twelve pages, with the title '*Convento de Santana (Campo dos Mártires da Pátria, Lisboa), séculos XVI–XVIII, Elementos arqueozoológicos*' has been prepared by Miguel Telles Antunes as part of a larger work to be published.

In the context of the project *Laying down the Foundation Stone: 19th Century Geology in the Context of the Mining and Metals General Committee and the Geological Survey*, funded by the Foundation for Science and Technology, Portugal, the site <http://campus.fct.unl.pt/proedra/default.htm> was built. It allows access to the 19th century manuscripts kept at the Portuguese Institute of Geology and Mining, so far catalogued.

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- Antunes, Miguel Telles, 'O que comiam os eborenses antigos—estudo arqueozoológico do sítio da Praça do Giraldo', *O Arqueólogo Português*, 2004, *Série IV*, 22, 393–451.
- Antunes, Miguel Telles, 'The "Zebro" (Equidae) and its extinction in Portugal with an Appendix on the noun "Zebro" and the modern "Zebra,"' in: Marjan Mashkour (ed.), *The Equids in time and space. [In Honorem Vera Eisenmann]*, *Proceedings of the 9th Conference of the International Council of Archaeozoology (ICAZ), University of Durham, 23–28, August, 2002*, Oxbow Books Series, Oxford, 2004.
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- Mota, Teresa Salomé, 'The Shadow of an Institution: the Portuguese Geological Survey in the Interwar Period,' Organizing Committee (ed.), *Volume of Abstracts 32nd International Geological Congress, 20-28, August, 2004*, Florence, Italy, 2004, part 2, 1352.
- Pinto, Manuel Serrano, 'The Italian Contribution to the Geology of Portugal (XVIII and XIX Centuries),' in: Organizing Committee (ed.), *Volume of Abstracts 32nd International Geological Congress, 20-28, August, 2004*, Florence, Italy, 2004, part 2, 1123.
- Pinto, Manuel Serrano, 'Portuguese Institutions, Museums and Scientific Societies in the History of Geology and Mineralogy of Portugal (XVIII Century),' in: Organizing Committee (ed.), *Volume of Abstracts 32nd International Geological Congress, 20-28, August, 2004*, Florence, Italy, 2004; part 2, 1353.
- Pinto, Manuel Serrano and Maranhães, Teresa, 'The Mineral Collection of the Royal Ajuda Museum, Lisbon, Portugal,' *Scripta Geologica, Spec. Issue*, 4, 2004, 4, 236.
- Talks, Seminars and Oral presentations (not abstracted) in meetings*
- 'Aspectos da evolução do litoral português do final do Cretácico ao Plistocénico: incidências paleogeográficas e paleocológicas'—Talk by Miguel Telles Antunes delivered at the colloquium *Evolução Geohistórica do Litoral Português e Fenómenos Correlativos/ Geologia, História, Arqueologia e Climatologia*, Universidade Aberta, Lisbon, on the 3rd, June, 2004
- 'Os Dinossauros em Portugal'—Talk by Miguel Telles Antunes delivered at the opening of the exhibition of specimens of Portuguese dinosaurs from the Lourinhã Museum to the Portuguese Parliament on the 15th, September, 2004. (INHIGEO members visited the Lourinhã Museum in 2001 in the course of the INHIGEO Meeting in Portugal).
- 'Paleontologia e Fósseis em Portugal'—Talk by Miguel Telles Antunes delivered at the Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, on the 30th, September, 2004.
- 'O Brasil na Obra de Domingos Vandelli'—Seminar conducted by Manuel S. Pinto at the Centro Interunidade de História da Ciência, University of São Paulo, São Paulo, Brazil, on the 21st, September, 2004.
- 'The Museum of the Geological Survey of Portugal. The Role of the 'Bilobites' Collection in a 19th Century Palaeoichnological Controversy'—Oral presentation by Ana Carneiro, at the meeting *From Private to Public. Natural Collections and Museums*, European Science Foundation Network on New Perspectives on the Enhancement of the European Scientific Heritage, Bologna-Ravenna, Italy, 17-19 June 2004.
- 'Home and Away: the Views on Science in Portugal and Europe of an Eighteenth-century Portuguese Naturalist'—Paper by Ana Simões, Maria Paula Diogo and Ana Carneiro read at the meeting *Science in Europe-Europe in Science: 1500-2000*, Maastricht, Holland, 4-6 November 2004.
- 'The Afterlives of the Abbé Correia da Serra (1751-1823)'—Paper by Ana Simões, Maria Paula Diogo and Ana Carneiro read at the 4th STEP (*Science and Technology in the European Periphery*) Meeting 2004, *Traditions and Realities of National Historiographies of Science*, Aarhus, Denmark, 2-6 June 2004.

Manuel S. Pinto, Aveiro

Russia

Publications

- Bessudnova, Z.A., 'The contributions of the Moscow University Natural History Museum to the history of geology in Russia in 19th century,' in: Manuel S. Pinto (ed.) *Proceedings of the 27th INHIGEO Meeting, on "Geological Resources and History,"* University of Aveiro, Portugal, 2003, 151-157. (In English)
- Bessudnova, Z.A., 'The collection of Meteorites in the Vernadsky State Geological Museum of the Russian Academy of Science (19th-20th centuries—the history of its origin and study),' *Scripta Geologica, Special Issue* 4, 20-24. (In English)
- Collective work, *Pavlov's geological school*, Moscow, Science, 2004, 211 pp.
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- Nikiforova, N.I., 'Pathbreakers of domestic deposits (the list of pathbreakers of the Russian deposits till 2001 inclusive),' *Native Geology*, 2003, No. 1, 81–85.
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- Rezanov, I.A., 'The history of geology in the works of A.P. Pavlov: 150th anniversary of his birth,' in: *Questions of History of Natural Sciences and Technology*, 2004, No. 4, 50–59.
- Seiranian, V.B., 'The history of the study and use of stones in the territory of Armenian highland,' in: *Questions of History of Natural Sciences and Technology*, 2004, No. 4, 31–49.
- Sonin, A.S., *Georgy Viktorovich Vulf (1863–1925)*, Science, Moscow, 2001, 272 pp.
- Starodubtseva, I.A., 'Trautschold's collections in the Vernadsky State Geological Museum of the Russian Academy of Science (Moscow, Russia),' *Scripta Geologica*, Special Issue 4, 249–252. (In English)
Georgy Khomizuri, Moscow

In addition, Zoya Bessudnova has provided the following information:

At the 32nd IGC, in Florence, Italy, I presented a paper on 'Geological, mineralogical and paleontological investigations in the Moscow University Natural History Museum (1759–1930).' The paper was part of Session T.20.02, convened by David Oldroyd and Nicoletta Morello, on "Institutions, museums and scientific societies in the history of geosciences."

In October 2004, I gave a paper on 'Maria Pavlova and the creation of the Moscow University Paleontological Museum.' It was part of a conference on 'The Personality in a Museum,' held in Darwin's museum, Moscow. Also in October, I presented a paper on 'The Moscow University Natural History Museum up to and after the Patriotic War of 1812.' It was part of a conference on 'The Patriotic War of 1812—Russian Province in human destinies, events, and museum collections' (Maly Yaroslavets, Kaluga Region).

Together with Iraida Starodubtseva and Michel Kandinov, I was Secretary of the Organizing Committee of the scientific conference on 'Problems of Regional Geology: Museum Perspective.' The conference was held in early December at the Vernadsky State Geological Museum RAS and was devoted to the 150th anniversary of the academician Alexey P. Pavlov (1854–1929), the founder of Moscow's geological school, and to honorary academician Maria V. Pavlova (1854–1938). During the conference I presented a report on 'Maria Vasil'evna Pavlova—Life in a museum.' I was also involved in preparing an exhibition celebrating the life and times of Alexey P. Pavlov and Maria V. Pavlova.

Publications

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- Bessudnova, Z.A., 'Mineralogical researches in the Natural History Museum of the Moscow University (1759–1930),' (in English) *Bulletin de liaison de la Société Française de Minéralogie et Cristallography*, 2004, 16, 29–30.
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Zoya Bessudnova, Moscow

Serbia and Montenegro

I'm sending this report from the country that used to be called Yugoslavia for several decades (no comments, although there would be a lot to tell about it).

After a substantial delay, the Proceedings of a Symposium held in Novi Sad (2002) on 'Natural and Mathematical Sciences in Serbia, 1850–1918,' were printed. The following articles concerning geology were included: A. Grubic: 'Geology in Serbia, 1850–1918,' pp. 35–58; G. Jovanovic: 'The Importance of the Tertiary Collections of P. Pavlovic from the Natural History Museum in Belgrade,' pp. 109–114; V. Jovic: 'The Geological Questionnaire of The Society of Serbian Science in 1860,' pp. 133–142; and T. Milic-Babic: 'The Origins of the Belgrade Natural History Museum Petrologic Collection,' pp. 181–186.

2003

In 2003 there was not much published about the history of Serbian geology, but the published articles were very interesting.

Professor V. Jovic published a monograph with the title, 'From the History of Geology in Serbia.' There were nineteen articles in it. Along with an introductory paper on 'A Short History of Geology in Serbia,' the book described the lives and works of several noteworthy geologists (Zujovic, Urosevic, Stevanovic, Dimitrijevic and others), but also other themes. The publication has 264 pages in Serbian Cyrillic, without summaries in any foreign language.

The Department of Historical Geology of the Faculty of Mining and Geology in Belgrade celebrated forty years since its foundation with the production of a brochure. The Library of the Natural History Museum in Belgrade celebrated one hundred years of work with an appropriate book exposition. The Technical Museum of the Serbian Academy of Science and Arts organized a successful exhibition entitled 'Mining in the Central Balkans: 8000 Years of History.' It was followed with a series of presentations and production of a brochure in English.

It has been exactly 200 years since the *Fysika* by Atanasije Stojkovic (1773–1832) was published. The author studied physics and mathematics in Göttingen, Germany, where he obtained a PhD in philosophy (1799). At the time he wrote and published his *Fysika* in a bit less than 1000 pages. In that thematical encyclopedia he presented contemporary knowledge in all natural sciences but chemistry. Geognosy was discussed in the 3rd and 7th chapters, according to German sources. The interior of the Earth was described mostly according to A. Kircher, the Earth crust and stratigraphy after the Neptunism concept of A.G. Werner, and origin of mountains after Pierre-Simon Pallas. Based on the way he presented the contents, Stojkovic was a deist, antideluvialist, primitive evolutionist, mild neptunist, and uniformitarian. The importance of this book in Serbian science and culture is outstanding because it transferred the knowledge of European natural sciences and introduced Serbian terminology. In 1803 Stojkovic immigrated to Russia, to the University of Harkov, where he taught natural sciences. He ended his career as corresponding member of the St Petersburg Academy of Sciences and State chancellor.

2004

The Section for the History of Geological Science of the Serbian Geological Society held two meetings. At the first one, the following topics were presented: 'How A. Stojkovic wrote about geology in 1801–1803'; 'The life and work of Alcide d'Orbigny'; and 'The 50th anniversary of the Paratethys discovery.' The second meeting was organized as an 'Exposition of Mineral Raw Materials of Serbia,' with several hundred samples being displayed.

The ninth book of the edition *Lives and Works of Serbian Scientists*, was published by the Serbian Academy of Sciences and Arts. It includes the following articles: V. Jovic on 'Branko Dimitrijevic,' pp. 47–70; V. Jovic concerning 'Jovan Tomic,' pp. 71–90; and M. Eremija and M. Pavlovic discussing 'Petar Stevanovic,' pp. 387–426.

The large monograph by P. Jovanovic on 'The Mining Engineers of Serbia in the XIX and XX Centuries' was published. The lives and works of three geologists were presented: S. Radovanovic; D. Antula; and V. Simic.

In September 2004, a Symposium on 'Paleoclimate and Earth Climate Systems' was held in the Serbian Academy of Sciences and Arts. The meeting was devoted to 'The Astronomical Theory of Climate Changes of Milutin Milankovic.'

Aleksandar Grubic, Belgrade

Spain

Perhaps the most emotional event in the Spanish Commission during 2004 was the premature death of our colleague Francisco Javier Ayala-Carcedo, familiarly known as "Paco Ayala." He will forever be with us.

During the year 2004, numbers 22, 23 and 24 of the *Boletín de la Comisión de Historia de la Geología de España* were published by the Spanish Society of Geology. In July 2004, the VI Spanish Congress of Geology was held in Zaragoza. Numbers 2 and 3 of the bulletin *De Re Metallica*, of the Spanish Society for the Defense of Geological and Mineral Heritage, were also published in 2004. Research projects pursued during the year included a study of the preservation of the mining and metallurgical heritage of the Madrid region. The work was conducted by

Dr Octavio Puche, Director of Industrial Archaeology, and it was supported by the Community of Madrid. An interesting meeting about the Spanish geologist and naturalist Daniel Jiménez de Cisneros (1863–1941) was celebrated at the University of Alicante in November.

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Leandro Sequeiros, Granada

United Kingdom

History of Geology Group

Anne O'Connor reports that HOGG began this year with the new status of an affiliated group of the Geological Society of London, and with a new committee who were appointed in December 2003. The highlight of the year was a lively meeting on 'Geofakes, Frauds and Hoaxes,' convened by Cherry Lewis in October 2004. A large audience learned how to spot a fake fly in amber, heard the latest theories about who was behind of the Piltown fraud, and listened to curious tales of fraudulent fossil fish and meteorites which had been tampered with. This provided a lively and enjoyable setting for the tenth anniversary of HOGG, and by the time the last glasses of wine had been drunk at the end of the evening, a large number of new members had been welcomed to the Group. This meeting was

probably the only one that resulted in no less than two articles in *New Scientist* in the whole history of the Geological Society! On a sadder note, the committee regretted to lose the services of John Martin and Richard Howarth, but were pleased to welcome Patrick Boylan.

2004 has also been a very successful year for publications inspired by past HOGG meetings. The Geological Society Special Publications series have welcomed volumes on the history of hydrogeology, the history of palaeobotany, and the history of meteoritic research. Judging from the animated discussions in committee meetings, HOGG looks set to continue the pattern of past years with a successful and varied programme of future activities. Members, new and old, will be welcomed to Torquay in April 2005 to learn about, and gather within, some of the caves which inspired past geologists.

News from INHIGEO members

Andrew Grout reports that in 2004, Edinburgh University Library Special Collections digitised a substantial collection of manuscripts of Charles Lyell relating to his researches in Madeira and the Canary Islands in 1854–1855. These images are now available to view on the web site of the Humboldt Project, a collaboration between the Max Planck Institute for the History of Science (MPIWG) in Berlin and the Fundación Canaria Orotava de Historia de la Ciencia (FCOHC) in Tenerife (see: <http://humboldt.mpiwg-berlin.mpg.de/05.sources.htm>). They include correspondence, extensive field notes, geological sketches and a manuscript draft of a paper analysing the origin of the Caldera de Taburiente in La Palma.

Simon Knell, writes that he presented a paper at the INHIGEO meeting in Florence in 2004 examining how stratigraphic practice, the museum, and the employed geologist went through a succession of socio-politically motivated changes in the early nineteenth century. Along with many others he enjoyed the absolutely wonderful tour through Northern Italy examining early geology, museums and societies—a brilliantly organised and truly unforgettable experience. He also joined Hugh Torrens at Scarborough in a joint presentation, on William Smith and John Phillips, to the Yorkshire Geological Society which was in support of Scarborough council's attempts to reinvent the wonderful Rotunda as a living monument to William Smith. Much of Knell's year was spent working on his current research project, 'Pander's Tooth,' a 150-year history of conodont research intended to become his next monograph: more than a record of discoveries and ideas, he is using it to understand more generally the processes of scientific inheritance and construction, and in this regard—with its focus on the fossil—it will have much in common with his book *Museums and the Future of Collecting*. For the new (paperback) edition (Ashgate, 2004) Knell has written a new and very long introductory chapter which, being targeted at a professional audience, is more reflection than detailed research.

Knell's Department of Museum Studies at Leicester has had some recent PhD student successes. Most relevant to INHIGEO is Shmuel Meiri's thesis on the museology of dinosaurs, which considered issues of authenticity particularly in American museums, and reviewed such things as the early-mid-twentieth century dinosaur murals and world trade fairs. Anastasia Filippopoliti completed a thesis on instrument collections in nineteenth century London which is very close to the kinds of historical research that have interested Knell. Richard Toon's thesis was a cultural study of the American science centre and Sergio Lira's concerned political influence in museums in Salazar's Portugal.

In 2006 Knell's Department will celebrate its 40th anniversary and Knell is organising a major multidisciplinary international conference. He is delighted to report that Professor Philippe Taquet will open proceedings with a talk on Cuvier and the establishment of what became an important paradigm for those aspiring to found museums across Europe in the early nineteenth century. Knell continues to try to squeeze the history of geology in wherever he can, even at art history conferences.

Martin Rudwick is to be congratulated on his election as President of the History of Earth Sciences Society for 2005–2006. His *The New Science of Geology*, the first of two volumes of selected articles reprinted with a new introduction, was published by Ashgate in 2004 (the second volume, *Lyell and Darwin, Geologists*, will follow in 2005).

Mike Taylor writes that in April 2004 the National Trust for Scotland (NTS) opened its fine new Hugh Miller Museum in Cromarty. This, as noted in last year's newsletter, is the stone house which Miller's father built next door to the thatched Cottage where Hugh himself was born. The new exhibitions in Miller House have, as planned, replaced exhibitions formerly in the Cottage, allowing the return of the Cottage more nearly to its original state. Taylor's colleague Lyall Anderson and himself provided the NTS team with specialist advice on exhibition content, and the exhibitions now include a few dozen original Hugh Miller (and other) specimens on long-term loan from the National Museums of Scotland. Miller thus continues to be one of the very few geologists with a museum all to himself—although it must be admitted that his fame rests also on his other editorial, literary and Kirk activities. Further information, and updates, on the Museum and the town can be seen on the NTS website www.nts.org.uk, the Hugh Miller website run by Martin Gostwick, the Property Manager, on www.hughmiller.org, and the Cromarty Courthouse Museum website www.cromarty-courthouse.org.uk, as well as the local website <http://www.black-isle.info/Cromarty/index.html>—see its virtual tour of Cromarty: Miller House is the building to the left of the Courthouse Museum (with the clock tower) as the viewer sees it on <http://www.cali.co.uk/highexp/cromvr/k.html>, and the whitewashed Cottage to its left in turn.

Apart from that, and helping with the forthcoming NTS booklet for the Miller Museum, Taylor says that he has done little historical work and published less this year, apart from his entries in the long-awaited and very welcome *Oxford Dictionary of National Biography* entries (see below), thanks to other priorities—including a very child-oriented and, so far, very successful exhibition of ‘animatronic’ dinosaurs (from Kokoro in Japan, via the Natural History Museum in London). This is, at the very least, a change from the last major exhibition which Taylor worked on, i.e., Miller 2002. It is also very appropriate for this museum which had the first modern dinosaur skeleton in the Old World (in the sense of an upright, rather than Mantellian or Owenian quadrupedal, stance) in the form of a Waterhouse Hawkins cast of the famous *Hadrosaurus* from the United States (and then scrapped it as out of date during the early 20th century!).

Another priority has been the redisplay of the natural science galleries in the Royal Museum in Edinburgh, some of which have already been closed and cleared in the first phase of the ‘Royal Museum Masterplan’—see the NMS website, www.nms.ac.uk. This has inevitably involved the closure of *Natural Curiosity*, the little gallery on the history of the natural sciences in NMS and its predecessors.

It is worth noting an interesting recent paper on the history of geology in Scotland, which might otherwise perhaps be easily missed, given its location. A special issue of the *Transactions of the Royal Society of Edinburgh*, edited by Nigel Trewin and Clive Rice, comprises a major reappraisal of the Rhynie site, in Aberdeenshire, Scotland, famous for its Devonian fauna and flora preserved in chert. This includes a historical review of previous work from the earliest geological surveys through the discovery of the chert itself by Dr William Mackie (1856–1932), to the present day: Trewin, Nigel, ‘History of research on the geology and palaeontology of the Rhynie area, Aberdeenshire, Scotland,’ *Transactions of the Royal Society of Edinburgh: Earth Sciences* 2004, 94, 285–297.

The Edinburgh Geological Society benevolently continues to place its Newsletter on its website http://www.edinburghgeolsoc.org/z_43_00.html—the latest issue containing pieces on Ben Nevis, Leadhills in 1857, and a walking tour of scientific Edinburgh.

Hugh Torrens is to be congratulated on the fact that, quite apart from being the ‘associate editor’ for all the geologists in the superb 60-volume *Oxford Dictionary of National Biography*, he somehow found the time to write an heroic forty-six entries for it (see below)! He also presented a paper on the ‘The Geological Work of Gregory Watt, his travels with William Maclure in Italy 1801–1802 and Watt’s “proto-Geological” Map of Italy 1804,’ at the International Geological Congress in Florence, Italy (at which Watt’s newly discovered map was on display for the first time). This paper will be published in a forthcoming Geological Society of America memoir. Thanks to the kindness, and hard work of INHIGEO Member Peter Rozsa of Debrecen, Hungary, Torrens and his wife helped to unveil a plaque to the forgotten English polymath Robert Townson (1762–1827) at the World Heritage site of the Aggtelek cave complex on the Hungarian-Slovakian border. Townson was one of the first to describe these caves in 1797.

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- agricultural writer and land surveyor,' 52, 911–912; 'James Tennant (1808–1881) mineralogist and mineral and shell dealer,' 54, 121–22; 'William Thomson (bap.1760, d.1806) mineralogist and physician,' 54, 562–563; 'Robert Townson (1762–1827) natural historian and traveller,' 55, 170–171; 'Joshua Trimmer (1795–1857) geologist and agriculturalist,' 55, 381; 'John Walcott (1754–1831) naturalist,' 56, 761–762; 'John Warltire (1725/6–1810) public lecturer,' 57, 426–427; 'Thomas Weaver (1773–1855) geologist and mining consultant,' 57, 798–799; 'John Williams (1732–1795) mining engineer and archaeologist,' 59, 237–238.
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Richard J. Howarth, London

United States of America

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

At the Annual Meeting of GSA in Denver, Colorado, November 7–10, the History of Geology Division (HoG) formally recommended the renaming of the Association's *History of Geology Award* (established in 1981 and first conferred in 1982), as the *Mary C. Rabbitt Award*. The recommended change in name of the Award, which must be approved by the GSA Council to go into effect, thus honors its third recipient, Mary C. Rabbitt (1915–2002), herself a distinguished contributor to the history of geology as author of a three-volume history of the U.S. Geological Survey, to 1939. She left a generous bequest to the HoG Division in her will.

The History of Geology Award for 2004 was presented to Stephen G. Brush, Distinguished University Professor of the History of Science at the University of Maryland. In her citation, Sally Newcomb provided an account of how Brush's scholarly work in the history of physics led him to explore many problems concerning geology's development. In his acceptance statement Brush explained how he came to examine the development of geological issues through a consideration of how 19th-century physicists, in their elaboration of thermodynamics, produced principles with increasingly time-dependent features and consequences. His work in the history of geology, he said, arose through study of interactions between geology and other sciences. (The citation and response can be accessed at: <http://www.geosociety.org/aboutus/awards/04speeches/HISTORY.htm#response>.)

A newly-established award created by the Division in 2003 is the *Student Award in the History of Geology*. The initial winner of the Award in 2004 is Mr Michael C. Rygel, a third-year graduate student in geology at Dalhousie University in Halifax, Nova Scotia. His winning paper, co-authored with Brian C. Shipley, is 'Logan in Acadia: Reexamination of Nineteenth-Century Measurements of the Joggins Section.'

A topical session at the Annual Meeting, organized by HoG Division Chair Charles Byers, addressed *The Concept of Layer-Cake Stratigraphy Then and Now*. Thirteen papers were presented in the session. In a general History of Geology session, twelve more papers were presented.

Another highlight of the meeting was the annual reception co-sponsored by the HoG Division and the History of the Earth Sciences Society (HESS), attended by over eighty people, at which books and journals and other items were distributed as door prizes for student attendees. (HESS donated gratis memberships and copies of *Earth Sciences History*, and the Petroleum History Institute donated a complete run of volumes 1–4 of *Oil-Industry History*.)

New officers of the HoG Division for 2005 are: Ed Rogers, Chair; Gary Rosenberg, First Vice-Chair; and Julie Newell, Second Vice-Chair.

Plans are under way for a session on Steno's geological work at the 2006 Annual Meeting of GSA in Philadelphia, under the leadership of Gary Rosenberg, Chair-elect of the HoG Division.

The fourth Oil History Symposium will be held in April 2005 at Morgantown, West Virginia. Papers from the meeting, which is organized by Larry Woodfork, will be published in volume 6 of *Oil-Industry History*. The journal is published by the Petroleum History Institute, which was created in 2003 as a successor to the Drake Well Foundation, which was dissolved in that year. More information is available online at www.petroleumhistory.org.

Communications from Members

- Victor R. Baker continues his service, begun the previous year, as Book Review Editor for *Earth Sciences History*. He also has been continuing his long-standing studies of Charles S. Peirce as a geoscientist and logician of science. In April he presented two invited papers related to Peirce, at Indiana University's School of Liberal Arts, Indianapolis. One, for the Geo Thought Symposium, was on 'Charles S. Peirce: Earth Scientist and Logician.' The

other, for the Symposium on Peirce's Logic of Science, addressed 'Earth Logic and Charles S. Peirce.' Baker also continued his work on philosophy of the Earth and planetary sciences, and in this regard, he presented an invited paper in April at the Utrecht-Dutch Philosophy of Geosciences Symposium, Utrecht, The Netherlands: 'Reductionism and the Nature of Earth Sciences.' A written version of the conference document is currently being prepared by its organizer.

- *Kennard B. Bork* is now retired from active teaching and serves as Secretary-General of INHIGEO (2004–2008). He also is on the Editorial Board of the 'Rock Star Committee' of the Geological Society of America. The group oversees publication, in *GSA TODAY*, of biographic sketches of significant geologists ("Rock Stars").

- *Albert V. Carozzi* is currently working on a new full-length biography of Horace-Bénédict de Saussure (1740–1799). The effort is being undertaken because little of this nature has been done since Freshfield, in 1920, and thus a new approach is needed. The book, in French, is entitled *Horace-Bénédict de Saussure 1740–1799, Biographie d'un pionnier des Sciences de la Terre*. It is under contract with Editions Slatkine in Geneva.

- *Robert H. Dott, Jr.*, spent much time in 2004 working on a geological guide for the layperson, *Roadside Geology of Wisconsin*, which he co-authored with glacial geologist J.W. Attig (Missoula, Montana, Mountain Press Publishing Company). At the Annual Meeting of the Geological Society of America in November, former students and colleagues organized a kind of Dott Fest, which included a half-day session of oral presentations and a half-day poster session under the title 'Sedimentary Geology and Earth History: Retrospective and Prospective in Honor of the Career and Contributions of Robert H. Dott, Jr.' These sessions were co-sponsored by the GSA History of Geology and Sedimentary Geology Divisions: An article by Dott about James Hall, which was solicited by David Oldroyd, appeared in the newly published *Encyclopedia of Geology* (Elsevier): 'Famous Geologists: Hall,' in: *Encyclopedia of Geology*, Elsevier, 2004, 194–200.

- *Gregory A. Good* retired at the end of 2004 from the editor's post for *Earth Sciences History*, having published thirteen issues of the journal since 1998. He was awarded a grant from the National Science Foundation for his project 'Magnetic World: Consensus, Separation, and Re-connection in Disciplinary Transformations of Geomagnetism in the 20th Century.' This grant will support his research and writing through 2006. He presented the paper 'On the Verge of a New Science: Meteorology in John Herschel's Terrestrial Physics,' at the meeting of the International Commission on the History of Meteorology, Polling, Germany. This paper will be published in a book from Science History Publications.

- *Léo F. Laporte* saw publication of two papers on G.G. Simpson. One, in the GSA 'Rock Stars' series, is 'George Gaylord Simpson (1902–1984),' *GSA Today*, September 2004, 14, 16–17. The other is 'Travel as a Predictor of Scientific Innovation: The Corroborating Case of George G. Simpson,' *Proceedings of the California Academy of Sciences*, 2004, 55, Supplement II, 136–143 (*Impact of Travels on Scientific Knowledge*, edited by Michael T. Ghiselin and Alan E. Leviton). Laporte states that he enjoyed the INHIGEO post-IGC field trip through central and northern Italy in late August, especially the superb dinner at The Quardi-Gran Caffè, Ristorante in Venice and the two wine-vault tours and tastings, one in Vinci, the other in Montecchia di Crosara. He found the geology interesting and as complicated as the Franciscan mélange in the San Francisco Bay area where he lives. In 2004 Laporte completed a five-month Stanford biology course to become a docent (the only one holding a doctorate in geology) at Stanford's Jasper Ridge Biological Preserve. Anyone wishing to do a tour of the Preserve can look at the JRBP web site for details: <http://jasper1.stanford.edu/home/>.

- *Kerry V. Magruder* had just completed a reference analysis of Thomas Burnet's Theory of the Earth (1684) for a library-school thesis, when 2004 began. Two articles that he co-authored with Ken Taylor, on 'Theories of the Earth' and 'Geology,' appeared in *Europe 1450 to 1789: Encyclopedia of the Early Modern World* (Scribner's). In the fall of 2004 he presented a colloquium for the University of Oklahoma School of Geology on 'Whole-Earth Thinking Before Wegener: Visual Representations in Theories of the Earth.' However, he reports, the most exciting professional event of 2004 for him was the news of his election to INHIGEO!

- *Ursula B. Marvin* reports the following two publications: 'Oral histories in meteoritics and planetary Science: XII. Gerald J. Wasserburg,' *Meteoritics and Planetary Science*, 2004, 39, Supplement A177–197; and 'Oral histories in meteoritics and planetary Science: XIII. Fred L. Whipple,' *Meteoritics and Planetary Science*, 2004, 39, Supplement A199–213. Ursula offers the following comment about the subject of this second oral history: "Fred L. Whipple, who made a long, distinguished career as a Professor of Astronomy at Harvard University, and served concurrently from 1955 to 1973 as Director of the Smithsonian Astrophysical Observatory, died on August 30, 2004, just short of his 98th birthday. The news that we had lost him took me completely by surprise. Early in the summer, I had taped an interview with him in which he clearly enjoyed recalling disputes in the 1940s and 1950s about the orbits of meteors and the possibilities of space flight. He still was maintaining his vigorous interest in science, particularly the progress of the Stardust Mission, which was on its way home from having sampled Comet Wild 2 on January 2, 2004. Fred was world-famous for his 'dirty snowball' theory, proposed in 1950, that comet nuclei consist of ice with frozen-in dust and rubble (rather than being unconsolidated gravel banks loosely compacted by gravity). The Stardust Mission was dedicated to Fred at liftoff on February 7, 1999, and is expected to return to Earth in 2006. I told Fred it was imperative that he be present to welcome it home in the year of his 100th birthday. Fred said he certainly would like to; he would do his best. Although he was somewhat frail, he was taking walks every day and I

felt he might well live for two more years. After the news came, I was glad to learn that Fred had seen our published interview and said he was pleased with it. In December, 2004, the Center for Astrophysics held a day of celebrations of Fred's life and career. As one of six invited speakers, I titled my talk: 'Small bits and Large Pieces from Interplanetary Space.' In it I reviewed Fred's contributions to our knowledge of the small bodies of the solar system—comets, asteroids, meteorites, and grains of interplanetary dust—and their relevance to the origin and evolution of the Earth."

- *Clifford M. Nelson* continued to work toward completing the fourth volume (1939–1979) of the history of the U.S. Geological Survey, of which the first three volumes were written by his colleague, the late Mary C. Rabbitt. At the request of David Oldroyd, Nelson also began preparing an article about the 5th International Geological Congress (Washington, 1891) for the ongoing series in *Episodes*. All other research and writing remain on hold until the volume is finished.

- *Sarah (Sally) Newcomb* has been busy working on a book manuscript, the working title of which is *The World in a Crucible: Laboratory practice and geological theory at the beginning of geology*. She is working with Maria Luisa Crawford, of Bryn Mawr, to organize a session for the 2006 GSA meeting at Philadelphia on two centuries of debate over the formation on which Philadelphia is built.

- *Julie R. Newell* continued to be very active in several disciplinary societies and organizations. Among her current offices: Associate Editor of *Earth Sciences History*; Second Vice-Chair of the History of Geology Division of GSA; Secretary-Treasurer of the Forum for the History of Science in America, in the History of Science Society (and assistant editor of the Forum Newsletter, *News and Views*); member of the Committee on Education of the History of Science Society. She presented a research paper at the Annual Meeting of GSA, in the session on 'The Concept of Layer-Cake Stratigraphy,' entitled 'Petit-Fours Rather than Layer-Cakes: American Geologists' Thinking on Stratigraphy in the First Half of the Nineteenth Century.' She also served as the commentator at the Annual Meeting of the History of Science Society, for the session on 'State-Sponsored Surveys in America: Providence, Politics and Capitalist Expansion.'

- *Cecil J. Schneer* had the satisfaction of seeing through to completion his work on a full-scale reproduction of William Smith's famous "Geological Map of England and Wales and Part of Scotland" (reported in last year's Newsletter). The mounted map now occupies a prominent space in the Earth Sciences Department at the University of New Hampshire. It can be viewed in full on the internet (<http://www.unh.edu/esci/wmsmith.html>), where Schneer also provides facsimile reproductions of Smith's *Strata Identified by Fossils* and *Geological Table of British Organized Fossils*, together with explanatory notes on both those documents as well as the map. Following up on this project, Schneer is considering the possibility of a similar geological-historical-architectural project in the form of an open program (modeled on the open software movement) for the construction of large-scale geological globes (minimum radius 1 meter). He would be happy to share notes on this project, which he calls *Project Coronelli*, with others who may take an interest.

- *Kenneth L. Taylor* presented three invited lectures at a workshop in history of science at the National Tsing Hua University in Hsinchu, Taiwan, in August. In addition to one lecture on Newtonian science and the Enlightenment, two of the lectures centered on issues in the history of geology: 'Theories of the Earth and the Beginnings of Geological Science,' and 'The Geological Background to Darwin's *Origin of Species*.'

- *Davis A. Young* retired from teaching duties at Calvin College in June, 2004, then spent most of the rest of the year moving to Tucson, Arizona, and getting settled into a new home. He reports that despite the distractions of retirement year, he started working on a project on igneous petrologist Joseph P. Iddings, focusing on how the American quantitative classification of igneous rocks developed by Cross, Iddings, Pirsson, and Washington at the beginning of the 20th century came into being. In other work, he also neared completion of a small book that deals with John Calvin's views of the natural world. From Calvin's writings he extracts a picture of what Calvin thought about cosmology and astronomy, physics, the earth, and animals and plants.

Kenneth L. Taylor, Norman, Oklahoma

Uzbekistan

A number of activities relevant to the history of geology took place in Uzbekistan during 2004.

At the Institute of History of the Uzbekistan Academy of Sciences, J.N. Jamolkhodji defended a PhD thesis on 'The history of the formation and development of the oil industry in the Fergana valley (1860–1917).' L.N. Lordkipanidze served as consultant on the thesis.

Lectures for the general public were held concerning the life and work of academician Kh.M. Abdullaev (1920–1962). Participants included academician F.A. Usmanov, L.N. Lordkipanidze, the daughter of R.Kh. Abdullaev, and others.

Work in preparation includes a conference of NIS (New Independent State) countries, to be devoted to the life and work of academician I.Kh. Khamrabaev (1920–2002). The conference is scheduled for May 3–5, 2005. Also in progress is a monograph by L.N. Lordkipanidze treating the 70th anniversary (1937–2007) of the Institute of Geology and Geophysics.

Publications

Abdullabekov, K.N. *et al.*, 'Abdumubdy Nugmanovich Sultankhodjaev' (75th anniversary of the hydrogeologist), *Geology and Mineral Resources*, 2004, No. 1, 49–50.

Akhmedov, N.A. *et al.*, 'Abdumannon Siradjiddinovich Khasanov' (80th anniversary of the hydrogeologist), *Geology and Mineral Resources*, 2004, No. 1, 48–49.

Akhmedov, N.A. *et al.*, 'Vladimir Nikolayevich Ushakov' (Obituary), *Geology and Mineral Resources*, 2004, No. 6, 55.

Lordkipanidze, L.N., 'Al-Khorezmi and problems of structural vergency' (submitted).

Usmanov, F.A. *et al.*, 'Petr Vladimirovich Pankratyev' (70th anniversary of the metallurgical scientist), *Geology and Mineral Resources*, 2004, No. 3, 45.

Lora N. Lordkipanidze, Tashkent

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