ISSN 1028-1533

INTERNATIONAL COMMISSION ON THE HISTORY OF GEOLOGICAL SCIENCES

INHIGEO

NEWSLETTER NO. 30 FOR 1997

Issued in 1998

INHIGEO is
A Commission of the International Union of Geological Sciences

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

Compiled and edited by David R. Oldroyd
INHIGEO Secretary-General

Printed at The University of New South Wales
Australia

CONTENTS

The INHIGEO Board 1

Reports
- **President's Report on the Review of INHIGEO by the IUGS Advisory Board** 1
- **Secretary-General's Message** 2

Minutes of the INHIGEO Business Meeting, Liège, 1997 4

Provisional Agenda for the INHIGEO Business Meeting, Neuchâtel, 1998 6

INHIGEO Meetings in 1997: Some Informal Reminiscences 7

Hutton Conference, Edinburgh, 1997, Closing Remarks by Robert Dott 11

Future Meetings, and Activities Related to the History of Geology 13

Awards to INHIGEO Members: Citations and Replies
- **Kennard Bork** 18
- **Martin Guntau** 20

Articles
- **Geology in the Land of the Dulcimer by Paul Mohr** 22
- **The Creation of the Mining Colleges under the Habsburg Monarchy by Josef Haubelt** 23
- **Kaspar Maria, Count of Sternberg (1761–1838) by Joseph Haubelt** 24
- **Report from the International Society of Soil Science (ISSS) Standing Committee on the History, Philosophy, and Sociology of Soil Science by Dan Yaalon** 25

Book Reviews
- **'A Russian View of the History and Philosophy of Geology'. Review: of Viktor E. Khain and Anatoly G. Rubin, *History and Methodology of Geological Sciences* by Martin Guntau** 26
- **'Essays on the History of Soil Science'. Review of: Dan Yaalon and S. Berkowicz (eds), *History of Soil Sciences: International Perspectives* by Keith Tinkler** 27
- **'Of Minerals and History'. Review of: D.D. Hogarth *et al.* (eds), *Martin Frobisher's Northwest Venture 1576–1581: Minerals and Metallurgy* by Cecil Schneer** 28
- **'Studying the Earth: Research, Reasoning, and Riddles'. Review of: Wang Hongzhen *et al.* (eds), *Comparative Planetology, Geological Education, History of Geology* by William Sarjeant** 29
- **'Geology at an Élite University'. Review of: E.A. Vincent *Geology and Mineralogy at Oxford 1860–1986: History and Reminiscence* by David Oldroyd** 32
- **'A Rose by Any Other Name'. Review of R.A. Batchelor, *Geology at St Andrews* by Gordon Craig** 34

Country Reports
- **Albania** 34
- **Armenia** 35
- **Australia** 36
- **Belgium** 38

Bolivia 38
Brazil 38
China 39
Colombia 40
Costa Rica 40
Czech Republic 40
France 41
Germany 42
Hungary 46
India 47
Ireland 47
Italy 48
Japan 49
New Zealand 50
Norway 51
Poland 51
Portugal 52
Russia 52
Spain 53
The Netherlands 54
United Kingdom 55
United States 56
Venezuela 58
Yugoslavia 59

Éloges
Professor Francisco Gonçalves (Portugal) 59
Professor Dr Helmuth Zapfe (Austria) 59

Back Issues of INHIGEO Newsletters on Microfiche 61

New Electronic Sites for Mining History 61

Advertisements of Books Received 62

Athlone Press: Studies in the History and Philosophy of Geology 62

INHIGEO Membership List 65

The INHIGEO Board for 1996–2000, as Confirmed by the IUGS Council in Beijing, August, 1996

President
Dr Hugh S. Torrens,
Department of Earth Sciences,
Keele University,
Staffordshire, ST5 5BG, U.K.
Fax: 44 1782 71 5261
Phone: 44 1782 58 3183
Email: gga10@keele.ac.uk

Vice Presidents
Dr Ursula B. Marvin, North America,
Harvard-Smithsonian Center for Astrophysics,
Cambridge (Mass), 02138,
U.S.A.
Fax: 1 617 495 7001
Phone: 1 617 495 7270
Email: umarvin@cfa.harvard.edu

Secretary-General
Professor David R. Oldroyd,
[The University of New South Wales],
28 Cassandra Avenue,
St Ives, NSW, 2075, Australia.
Fax: 61 2 9144 4529
Phone: 61 2 9449 5559
Email: D.Oldroyd@unsw.edu.au

Professor Franco Urbani, South America,
Facultad de Ingeniera, Escuela de Geologia,
Apartado 47028,
Caracas 1041-A, Venezuela.
Fax: 58 2 693 0927
Phone: 58 2 605 3120
Email: urbani@cantv.net

Past President
Dr David F.X. Branagan,
[The University of Sydney],
83 Mimimbah Road,
Northbridge, NSW, 2063, Australia.
Fax: 61 2 9351 0184
Phone 61 2 9958 7127
Email DBranaga@mail.usyd.edu.au

Professor Wang Hong Zhen, Asia,
China University of Geosciences,
Xueyuan Road 29,
100083 Beijing, P.R. China.
Fax: 86 10 6201 4874
Phone: 86 10 202 2244 2527
Email: Wanghz@cugb.edu.cn

REPORTS

President's Report on the Review of the Work of INHIGEO by the IUGS Advisory Board, Vienna, Morning of 25 January, 1998

Hugh Torrens, President, INHIGEO

It was wonderful to meet in such a historic place as Count Rasumovsky's Palace in Vienna (clearly an engagement our musical Secretary should not have been able to avoid!). It was equally wonderful that our meeting had been arranged for a Sunday morning, as otherwise I should have not have been able to attend (with teaching duties the next day back in England starting at 9.00 a.m.). Ezio Vaccari (then based at the *Geologisches Bundesanstalt* in Vienna) kindly agreed to act as our INHIGEO observer in my absence for the rest of the week's deliberations and his separate report is also available.

Past-President Martin Guntau and I represented INHIGEO and the IUGS Advisory Board for Research Development (ABRD) included Attilio Boriani (IUGS Secretary-General), Robin Brett (IUGS President), Glen Caldwell (ABRD Chairman) and Zdenek Johan (IUGS Treasurer), as well as representatives of the other two Commissions to be considered. These were CIMP (Commission on Igneous and Metamorphic Petrogenesis) and CSP (Commission on Systematics in Petrology).

INHIGEO was the first to be discussed. Our initial impressions were rather worried, arising from the IUGS Secretary-General's earlier comments (14 February, 1997) that our achievement had been 'limited' in 1996 to three symposia, with the accompanying news of the 100% cut in our budget from IUGS, from $4,000 in 1995 to $2,000 in 1997. Funding was clearly a problem for one of the other commissions under review. Rolf Schmid (CSP), whose Commission gets only a 1/3 of its budget from IUGS, now wants to meet only once every two years, to save funds. By contrast, N.T. Arndt's Commission (CIMP) manages to get annual royalties of $10,000, from a publishing deal with Elzevier, to help fund their activities!

Another initial point raised in discussion was that some Commissions were uniquely representing their field on the world stage, like INHIGEO and CIMP, there being no other fora for such activities, while in other fields this was much less the case. I also pointed out some particular problems for the history of geology, in that it studied the history of the most historical science, yet there were still no established positions in the field in universities; and paradoxically most of the support for history of geology within universities came from History, rather than Science, departments.

On the other hand, it was clearly, and generally, felt that some new blood was needed in the work of the IUGS and its commissions, and that some priorities were now clearly going to be newly encouraged. An example is the work of the new Global Geosites Working Group which had been given a new starting budget of $4,000, to help initiate and record a global inventory of geological sites and terrains. INHIGEO should have some input into this project, which we will be exploring together in the future.

Conclusions

After much valuable (and valued) discussion, the Chairman, Glen Caldwell, summarised INHIGEO's current situation as seen by the ABRD:

1. The Board commended the work of INHIGEO, which had resulted in an impressive list of publications over a wide geographical spread.
2. It was suggested that INHIGEO should try more to act as an umbrella organisation for *all* historical activities within the geo-sciences. The International Union of Geodesy and Geophysics (IUGG), the International Mineralogical Association (IMA) and the AMU (American Geophysical Union) were three other bodies named, which also support such historical activity, with which we should try to liaise. We also pointed out INHIGEO's joint role with IUHPS (the International Union for the History and Philosophy of Science), at whose 1997 Liège Congress we had recently (for the first time) been successfully active. The possibilities of joint future activity with ICOHTEC (the International Commission on the History of Technology) are also now being actively explored.
3. In order to start the two or three such new Commissions and/or Working Groups planned by IUGS, it may/will be necessary to cut back on the work of existing ones like INHIGEO. The extent of this will depend on future decisions of the Committee for Strategic Planning, which are still awaited. To counter this trend, INHIGEO must try to attract additional funds and run self-sufficient meetings in future.
4. The frequency or otherwise of future INHIGEO meetings should be a matter entirely for the INHIGEO Board. We should now feel under no pressure (as we certainly felt we had been) to organise meetings every year.
5. It was agreed that IUGS should continue to fund INHIGEO at present levels and that we could also continue in future with fewer meetings, *if* we felt this would help to help raise their quality. It was pointed out that historical researches can take just as much time as money, and that high productivity was *not* always equivalent to high quality.
6. INHIGEO had generated a fine continuity over thirty years and had already managed to encourage historical studies in different parts of the world, particularly in China and South America.

Postscript

Later, the role of *Episodes* was discussed and it was hoped that INHIGEO might be able to help with input of historical papers. Later deliberations also showed that there was some real disquiet (which we must address in future) about the perception of a changed role of INHIGEO, as a result of the 1991 Dresden Proclamation, from a properly international commission to a new role, thought by some to be more appropriate to a learned society. To counter this, we should try to increase our efforts to raise interest in the history of geosciences in areas like India and Africa, where little interest had so far been shown.

19 March, 1998

Secretary-General's Message

It must be said that the year has been a very busy one, maintaining contacts with colleagues around the globe, dealing with financial matters, getting the *Newsletter* together, worrying about conferences, organising the election of new Members, and so on. But I must say that everything has been done very amicably, and—as my predecessor Ursula Marvin promised would be the case—it has been most pleasurable to work with such co-operative people. Thank you all.

On the question of the ballot being conducted this year, I am delighted to see such a strong slate of candidates. At the time of writing, about half the Members have voted, and I urge those who have not done so to 'get a move on'. Please be warned that I shall be away from Australia from the end of May until mid-October so that any ballot papers addressed to me in Sydney after May may not get processed. Of course, votes may also be cast at the Business Meeting, which will be held in Neuchâtel in September, but all those Members who will not be there should either send their completed ballot papers to the President (see his address at head of the *Newsletter*), or make prior arrangement for their proxy vote by writing to the President.

Assuming that all goes well, however, I think one can say that by the end of this round of balloting the majority of major contributors to the study of the history of geology, worldwide, will be members of INHIGEO. The exceptions are, perhaps, Germany and (particularly) the United States, given the maximum membership of eleven members per country. In the States, where there is a great deal of history of science activity and a large number of publishing scholars, the pressure arises from the size and population of the country and the numerous contributions to the study of the history of geology emanating from that part of the world. In the case of Germany, the numbers are particularly tight now because of the unification of the eastern and western parts of the country, so whereas formerly there was a possible maximum membership of 22 there are now only 11 positions to be filled. By

contrast, there is 'space' in countries such as the Ukraine, the Baltic States, Slovakia, and all the former Soviet Union countries such as Kazakhstan, etc. If anyone knows of any history of geology activity in such countries, I should be much obliged if they would get in touch with me. I would, however, draw readers' attention to the splendid 'manifesto' received from Albania, which I have published in our country reports, even though we have no Albanian membership at present. (This state of affairs must be rectified when we have our next ballot!)

As Dr Torrens informs us in his report from Vienna, there was an important meeting held in that city in January, in which the affairs of the various IUGS Commissions were looked into. It appears that our activities were received with approbation. I received the following official message from Professor Attilio Boriani, Secretary-General of the IUGS (dated 28 March, 1998):

> "The IUGS Advisory Board for Research and Development commended INHIGEO for its work over the last several years and for its efforts to be strongly international in its coverage. The high scholarly calibre of much of INHIGEO's work has been noted. While unwilling to advocate that the Commission change its plans or reorientate its objectives in any substantial way, the Board concluded that the Commission nonetheless profitably might seek to engage more actively in co-ordinating its activities in the history of the earth sciences with the activities of other IUGS Commissions and affiliated organisations, and with the IUGC. The Board recognised the Commission's acute financial problems, emphasized that INHIGEO was not alone in this respect, and encouraged the Commission to make its meetings as self-supporting as possible."

I conclude from this that INHIGEO received a 'tick' from the IUGS for the work that we are or have been doing. We shall discuss our practical response to the IUGS Board's message at our next meeting in Neuchâtel.

On the question of money, we should like to be able to offer more to assist members to attend conferences. And *some* progress has been made on this front. Our Swiss colleagues have been able to obtain limited travel funds from their Academy, and a grant was received (retrospectively) from the International Union of History and Philosophy of Science for our Liège meeting, and another one has been promised for this year's conferences (but has not yet been received).

Regarding INHIGEO's publication activities, I should like to express our warm thanks to Professor Wang Hongzhen and his co-editors for their work in getting out the *Proceedings* of the Beijing meeting in 1996 so very promptly. The volume contains some most interesting material and is reviewed in this *Newsletter* by Professor William Sarjeant. (For Professor Milanovsky's record of the meeting in the form of a fine sketch of A.W. Grabau's Memorial, see p. 64.) Members are probably wondering what has happened to the *Proceedings* of the 'Volcanoes' conference in Italy in 1995. I can assure them that this really is in hand, but has been delayed by the fact that the editor, Professor Nicoletta Morello, had to have some eye operations. I understand that these have been successful, and that matters are moving well again. I have seen the excellent cover for the volume, and I corrected proofs for my own article some time back. So we hope that this volume will be available for the Neuchâtel meeting. The papers for the Liège congress, where INHIGEO sponsored two symposia, were to have been published in *Annals of Science* in July, but delays have meant that the issue in which our papers will appear is being held over until January 1999. The editorial process is being deftly handled by Professor Kenneth Taylor, and papers are being subjected to rigorous review, as is proper for this prestigious history of science journal.

Further on publication matters, I thank the many people who have sent me material for the present issue of this *Newsletter*. I would emphasise that it makes life much easier for me if items are sent by email or on a diskette. Last year, I requested that references be sent in a 'standard form' and *some* people this year *did* accede to my request. But (as anticipated!) most *did not*. I therefore repeat my request, putting examples of the desired format on the inside of the back cover of the present *Newsletter*, where it may be referred to conveniently in the future. On this matter, I would add that I should like to receive all references spelt out in full. **No abbreviations please.** Also, would contributors please *not* capitalise people's names? And would they, where possible, provide the given names of authors, lecturers, etc.? I suggest that, within a text, the given name be written as well as the family name on the first mention; but the family name only for subsequent mentions. (The Polish report this year is—after some 'toing and froing' of emails—in a state of perfection in this regard.) Without being dogmatic about the matter, I think it is an excellent thing to give the titles of papers or lectures presented at conferences, but the listing of 'abstracts' under 'publications' is probably unnecessary. (However, if they are submitted I shall include them.) I also leave it to your judgment as to whether you wish to send information about reviews. I have omitted material relating to 1998, which will be held over until next year's *Newsletter*. So next year, please send me material for 1998 only.

On the question of INHIGEO archives (see Minutes of 1997 Business Meeting), a start has been made on this, by contacting Trondheim, but the job still remains to be done.

A suggestion has been floated that INHIGEO should make contributions to the IUGS journal *Episodes*, on a fairly regular basis. The idea has been favoured by the IUGS President, Dr Robin Brett, and will be discussed at the Business Meeting of your Commission in Neuchâtel.

On the question of our future meetings, I look forward to seeing as many Members as possible at the conferences this year in Vienna and Neuchâtel. It is still not too late to make a decision to attend, should you wish to do so. And, given the retrospective grant of $1000 from the IUHPS, we are willing to entertain requests for small subventions, from persons who could not receive anything from the Swiss organisers, because of the limits to the funds available to them from the Swiss Academy. I have seen the abstracts of the papers that will be presented at the

Neuchâtel meeting, and can say with confidence that it should be a high-quality programme. For the provisional list of speakers and papers, see p. 16.

As will be clear, from the list of future meetings listed elsewhere in this *Newsletter*, there is a most unfortunate clash of dates between a meeting organised by our Slovak colleagues and our Neuchâtel meeting. This is most distressing to the Board. We are in no way responsible, and tried to get changes in dates made as soon as we heard of the clash; but by then it was too late to do anything. I express our sincere regret about the clash and apologise to those Members who might have wished to attend both meetings—I am one such person. Please try to avoid such clashes in the future.

As another word of regret, I apologise to our Czech and other eastern European colleagues for my inability to reproduce all the appropriate diacritical marks in their contributions. My computer is not up do dealing with such complexities.

Regarding other meetings of the Commission, there is one set down for Freiberg in 1999, celebrating the 250th anniversary of Abraham Werner's birth, and one in England to recall the work of the notable palaeontologist Mary Anning, who was also born in 1799. In addition, I have heard from Dr Josef Haubelt, of the Czech Republic, that the authorities there are planning a meeting in Prague, also in 1999, focusing on the work of Joachim Barrande, which would give Members the opportunity to have discussions on the history of palaeontology, view the great Barrande collection, and (no doubt) consider the virtues and vices of his 'theory of colonies'. I have written to the organiser, Dr Milan Stloukal, expressing INHIGEO's interest in participation, and I hope and trust that there will not be an unfortunate clash of dates in 1999. There may also be a meeting in Vienna in association with the Austrian Geological Survey, so further negotiation about dates will be necessary. I shall write to Members later in the year when dates are definitely known.

2000 AD will see the next International Geological Congress in Rio de Janeiro, where a programme concerned with the history of geology will form part of the activities. I inderstand that it will be organised chiefly by Brazilian Members Dr Silvia Figueirôa and Dr Maria Lopes. Nothing is settled yet for 2001, but the International Congress for the History of Science will be held in Mexico City that year, and I think it probable that an INHIGEO symposium will be organised for that, as we did in Liège in 1997. In 2002 we have a meeting pencilled in for Ireland, and very recently I have received a letter from our Norwegian Member, Dr Geir Hestmark, offering something in Norway for 2003, once he has completed some major writing projects (including a 900-page volume on Waldemar Brøgger).

I should like to thank my colleagues on the Board for all their assistance, especially Drs Marvin and Torrens. (I head some of my email messages to Hugh 'The Daily Mail'—which is the name of a well-known English newspaper.) I am also most grateful to Russian Member, Professor Efgenji Milanovsky, for sending me samples of his splendid ink drawings, some of which, relating to the Lyell/Hutton meetings in 1997, are reproduced in the present *Newsletter*.

Finally, I should mention that I have made numerous corrections and emendations to the list of Members given at the end of this *Newsletter*. **If you see any remaining errors, however minor, PLEASE let me know of them. And if you have an Email address that is not listed PLEASE let me have it.**

* * *

I shall be away from Australia from the end of May until mid-October. My forwarding address will be: c/o Mrs Anne Hedden, 92 Townsend Lane, Harpenden, Hertfordshire, AL5 2RQ, UK, but I shall not have much opportunity to attend to INHIGEO business in that period. It may be best to communicate with the President via Email. My own Email system will only be working in a very spasmodic fashion. during that time.

David Oldroyd, 4 May, 1998

Minutes of the INHIGEO Business Meeting, Liège, 25 July, 1997

The meeting was opened by the President, Dr H.S. Torrens, at 4.45 p.m., with 11 Members of the Commission present, and 4 additional persons in attendance:

Hugh Torrens (President, U.K.); David Oldroyd (Secretary-General, Australia); David Branagan (Australia); Carlos Serrano (Bolivia); Margaret Lopes (Brazil); Silvia Figueirôa (Brazil); Bernhard Fritscher (Germany); Martin Guntau (Germany); Patrick Wyse-Jackson (Ireland); Ezio Vaccari (Italy); Martin Rudwick (U.K.); Kenneth Taylor (U.S.A.); Donata Brianta (Italy); Lydie Touret (France); Jacques Touret (France/Holland); Roger Burt (United Kingdom).

1. *Apologies*

   Apologies were received from Endre Dudich (Hungary); Goulven Laurent (France); Wang Hong Zhen (China), K.R. Murty (India), and E.E. Milanovsky (Russia).

2. *Minutes of the Previous Meeting*

   It was moved by David Branagan, seconded by Kenneth Taylor, that the minutes of the 1996 Beijing meeting, printed in *Newsletter* No. 29, be accepted. The motion was carried *nem. con.*

3. *Matters Arising*

1. Dr Branagan commented that in his view Members who were not active in the pursuit of studies in the history of geology, or in the activities of the Commission, should not continue their membership indefinitely.

2. Professor Taylor inquired whether the regulation that membership should be restricted to 10 persons per country still applied. He was informed that it did.*

4. *Secretary-General's Report*

The Secretary-General (S-G) began by expressing his thanks to those who had eased his work in taking over from Dr Ursula Marvin. Specifically, he thanked David Branagan, Martin Guntau, Ursula Marvin, and Hugh Torrens. He then informed the meeting that he had submitted his report to the IUGS in the autumn of 1996, which had been accepted by the Union's Board. However, the wording of the letter of reply of the Union's Secretary-General, Professor Attilio Boriani, had led the Board to believe that the Commission was 'expected' to hold a meeting every year if it hoped to receive continuing financial support from the IUGS. Accordingly, the Commission's S-G had written to certain members in Portugal, Switzerland, and France, to see whether one or more of these countries would be willing to host a conference in 1998, for which year no conference had been planned previously. The Swiss members had responded by offering an excellent proposal for a meeting to be held in Neuchâtel, organized chiefly by Professors Rudolf Trümpy and Henri Masson. This offer had been warmly accepted, and a preliminary notice of the conference was distributed at the meeting to those present. The S-G also mentioned that, at the initiative of Dr Endre Dudich (Hungary), a history of geology section of the Carpathian-Balkan Geological Association was to be held in Vienna immediately prior to the Swiss conference. Further details of these meetings will be mailed to members of the Commission later in the year.

It was also mentioned that a statement of future activities planned by the Commission had been requested for June 1997 by the IUGS, and that this had been submitted. In response, the Commission had been requested to send a representative to meet with the IUGS Board in Vienna in January 1998 to discuss INHIGEO's past, present, and future activities. Dr Torrens will attend on behalf of the Commission.

On financial matters, the S-G reported that a grant of US$2000 had been received from the IUGS this year, which was half the sum provided two years previously. There had been no reply to a letter to the Treasurer of the IUHPS, requesting financial assistance for those who would be presenting papers at the Liège Congress. With $2000 available, approximately $500 had been spent on printing of the *Newsletter*, $300 each for the expenses of the President and S-G, $100 for postage, and the remainder on small grants to a small number of Members who had requested towards attending the Commission's meetings in 1997. The Commission had a small amount of money in reserve (A$3000) on short-term deposit in Australia.

The S-G thanked those who had submitted material for *Newsletter* No. 29, and apologised for the excessive number of misprints therein. The *Newsletter* had had to be prepared in some haste this year. It was hoped that there would be considerably fewer errors in 1998. It was requested that, as far as possible, contributions should be submitted by email or on diskette. Printing was now being done at the University of New South Wales in such a way that additional copies could be printed on request with minimal cost. A wider distribution to libraries was planned in the future. More book reviews and articles were solicited. A new ISSN number had been obtained.

Regarding membership, the S-G remarked on the small representation from Scandinavian countries, the Middle East, and Africa. Nominations from these regions were encouraged. [The appropriate procedures are set out on p. 6 of *Newsletter* No. 29.]

5. *Future INHIGEO Activities*

Professor Guntau wished to see the compilation of information about geologists 'working abroad'. The S-G responded that if a 'questionnaire' form were prepared it could be distributed with the next *Newsletter*. Professor Guntau undertook to prepare such a form. Suggestions were made about the compilation of email lists, old geological syllabuses, and lists of mining terms/synonyms/etc., but no decision was made to follow up such proposals. The S-G said that he had received a very limited response to his mailed request for suggestions as to future INHIGEO activities, and none of the proposals had seemed feasible. The picture of the future may be clearer when Dr Torrens has met with the IUGS Board in January 1998.

6. *Publications of the Commission*

With regard to the Dresden *Proceedings*, the Commission could only 'hope' that they would appear. (Papers have been received and the necessary funding is available.) The President had written to Dr Peter Schmidt, expressing the view of the Board that the project should be terminated and that contributions should be returned to their authors. This would be an undesirable turn of events as young scholars needed to see their efforts recorded in print as promptly as possible. It is understood that Dr Schmidt still hopes to bring the project to a successful conclusion, but his work has been hindered by ill health.

---

* This reply was not correct. Under the previous statutes, each country could have one Full Member and up to ten Corresponding Members. Under the new arrangements, the distinction has been abolished, so each country may have up to eleven Members.

The President reported that Professor Wang had all things in hand for the publication of the Beijing papers in Vol. 26 of the 30th IGC *Proceedings*. This volume was due to appear any time now.

Dr Vaccari reported that Professor Nicoletta Morello's editorial work on the publication of the *Proceedings* of the Italian 'Volcanoes' Conference (1995) was well advanced and second proofs, with illustrations were being completed. Publication in 1997 was assured. [But see the S-G's Report, above.]

5. *Future Meetings of the Commission*

Professor Jacques Touret (in attendance) drew attention to the meetings of the European Union of Geologists in Strasbourg in April/May every two years. The next meeting was being organised by Sweden, and there might be interest in holding a historical section. [He subsequently undertook to contact the organiser, David Gee, to inquire about the possibilities of INHIGEO involvement.] However, the general feeling of the meeting, as expressed by Dr Patrick Wyse-Jackson, was that 'quality' was more important than 'quantity', and the Commission might be well advised to hold a meeting once every two years rather than annually.

No additional proposals for official INHIGEO meetings were put forward [but after the meeting it was learned that the next International Congress of History of Science will be held in Mexico City in 2001, and it is possible that an INHIGEO meeting will be associated with this.] A schedule of other meetings up until 2002 was given in *Newsletter* No. 29.

Professor Taylor drew attention to a conference on 'Geology and Travel' in Norman, Oklahoma, in 1998, and distributed information regarding this to the meeting. Dr Torrens mentioned plans for a meeting on 'Mary Anning and her Times: The Discovery of British Palaeontology 1820–1850', to be held in Lyme Regis early June, 1999. [These two initiatives were independent of INHIGEO.]

8. *Proposals/Suggestions for Promotion of the Swiss and Austrian Conferences, 1998*

The names of three journals where announcements could be made were suggested. The organisers were encouraged to contact Swiss Air, to see if the company would be willing to act as the 'Official Carrier'.

9. *Relationship with the IUHPS*

These are not close. Dr Torrens and Professor Oldroyd had spoken separately with the President, Professor Robert Fox, but the outcome had been indefinite.

The Historical Commissions are, according to Article 8 of the status of the IUHPS, 'international associations financially dependent upon the Division', and are supposed to report to report annually to the Secretary-General of IUHPS. In view of the lack of communication with the Union, INHIGEO had not sent a copy of its *Newsletter* to the Secretary, though it had sent a copy of its IUGS Report to the History Union's Treasurer. No acknowledgment to this had been received. The matter would be followed up.

10. *Transfer of Archives to Trondheim*

The papers of Dr Dudich will be sent to the IUGS headquarters at Trondheim, Norway, by Dr Marvin. The papers of Professor Hooykaas were believed to be in the possession of his family. Dr Torrens undertook to contact them and arrange for the transfer of the papers to Trondheim if possible. Professor Guntau's papers are at Rostock University. He undertook to arrange for their transfer to Trondheim. Professor Tikhomirov's papers are now at the Vernadsky Institute in Russia. Professor Guntau undertook to contact INHIGEO Member Dr Y.Y. Soloviev of that Museum to see what could be done to arrange transfer.

11. *Business without Notice*

The President conveyed the congratulations of INHIGEO to Professor Guntau for his recent award of the Sue Tyler Friedman Medal by the Geological Society, for his contributions to the study of the history of geology.

Dr Torrens also mentioned the value of 'Geoclio' as a web site for the transmission of information about the history of geology [http://geoclio.st.usm.edu/]. Professor Roger Burt (in attendance) mentioned, in connection with electronic communication, the web site relating to the history of mining: http:www.ex.ac.uk/~RBurt/MinHistNet

Professor Taylor encouraged Members to join the History of Earth Sciences Society and distributed information about the organisation.

The meeting closed at 5.30 p.m., with Dr Torrens announcing that there would be an informal follow-up meeting in London to pass on information to those attending the Lyell/Hutton Conference.

Provisional Agenda for the Business Meeting of the Commission, to be held at the Neuchâtel Conference, at a precise time and venue to be determined

1. Apologies
2. Minutes of previous meeting
3. Matters arising
4. President's report and matters arising
5. Secretary-General's report and matters arising
6. Completion of ballot for election of new Members. Discussion of proxy voting
7. Policies for initiation of INHIGEO activities in countries where there is no present membership

8. Publications of the Commission: reports from editors of works currently in preparation
9. Consideration of statement from IUGS relating to the activities of INHIGEO [see p. 3], and formulation of policies and activities in the light of the statement
10. Possible contributions of INHIGEO to *Episodes*
11. INHIGEO meetings in 1999
12. The INHIGEO meeting in 2000 (Rio de Janeiro)
13. The INHIGEO meeting in 2001 (Mexico City)?
14. Arrangements for transfer of archives to Trondheim
15. Business without notice*
16. Vote of thanks to Swiss hosts

INHIGEO MEETINGS IN 1997

Some Informal Reminiscences*

As foreshadowed in *Newsletter* No. 29, two sessions of invited papers, organised by INHIGEO Members Kenneth Taylor, Hugh Torrens, and Silvia Figueiroa, were included in the programme for the 20th International Congress for the History of Science, held at Liège, Belgium, in July, 1997. Most of these will be published in the January 1999 issue of *Annals of Science*, following much editorial effort on the part of Professor Kenneth Taylor, to whom we are greatly indebted. Numerous other papers on the history of geology were also delivered at the Congress, including contributions by several INHIGEO Members.

The Congress itself was interesting in a number of ways. There was a well-organised social programme, mostly held in industrial museums, of which Liège is justly proud, it being one of the centres of the Industrial Revolution (even if, sadly, a lot of its efforts were devoted to the manufacture of armaments). However, with the decline of the coal industry in the region, the city is now 'rediscovering' its Mediaeval past and there is much restoration work of ancient buildings going on, and not much sign of heavy industry, at least in the central parts of the city. A magnificent chamber concert was presented in one of the many beautiful churches, with a little-known work by the Belgian composer César Franck being performed. The arrangements for the large Congress were not altogether convenient, as papers were delivered in several rather widely separated complexes of buildings, so that it was frequently not possible to attend all the lectures that one might have wished because of time lost walking round the city. There were, according to many reports, intense debates in the higher reaches of the IUHPS as to the body's administration, and there was much lobbying as to the venue for the next Congress, the contenders being Beijing, New York, and Mexico City. In the event, Mexico emerged the 'winner'.

Some INHIGEO Members, such as the indefatigable David Branagan, took the opportunity to look at the local geology and interest himself in the sites of the Flanders battlefields, where geologists played a not inconsiderable role in advising the armies on such matters as the permeability of strata to water, so important in trench warfare. The Australian geologist (Sir) T.W. Edgeworth David, on whose biography David Branagan is working, played an important role in the military activities of the geologists in the Great War. On a more peaceful note, delegates remarked the statue in the city of the notable Belgian geologist Jean Baptiste Julien d'Omalius d'Halloy (1783–1875), who hailed from Liège.

The Lyell/Hutton meetings were grand affairs, accommodation for the first part being provided in the magnificent Victorian Gothic 'pile' of Royal Holloway College, University of London. This was the backdrop for the Conference dinner, adjacent to the famous picture gallery, with its great array of paintings by famous Victorian artists (though several have been sold, like family silver, to sustain the College's finances). An amusing after-dinner speech was given by Lord Lyell of Kinnordy, an archetypal Tory peer and descendant of the great Sir Charles. Delegates were bussed into London for the papers (not all strictly historical), which were delivered at the Geological Society in Piccadilly. A brilliant evening lecture was given on Lyell and his social milieux ('Placing Lyell in History: the *Principles of Geology* in an age of Revolution') by Cambridge historian of science, James Secord, in the

---

* If Members have any items which they wish to add to this Agenda, they are requested to communicate with the President.

* It should be emphasised that the Lyell/Hutton Conference was organised by the Geological Society and the Royal Society of Edinburgh, not INHIGEO. There was only a very loose association of the Commission with the proceedings, but a considerable number of Members participated and ten presented papers or led excursions.

lecture room of the neighbouring Linnean Society. Much of the substance of this paper appears in Secord's introduction to the new abridged edition of Lyell's *Principles*, which was published towards the end of the year (see p. 62). The splendidly bearded President of the Linnean oversaw the proceedings from a dais somewhat resembling a throne, with a portrait of the Swedish botanist behind, looking down benignly on the packed assembly. It was a scene to remember.

Two field excursions were held: one to Lyell's former residence at Bartley Lodge in Hampshire, and another to look at some of the geology and industrial archaeology (canals) of the Sussex Weald and to pay our respects (in the drizzle) to the memory of Gideon Mantell in Brighton. As your correspondent had been to Bartley Lodge in 1975 on the occasion of the earlier Lyell conference, he chose to take the Sussex trip, led by INHIGEO President Hugh Torrens. Properly, Hugh was interested in the work of John Farey in the district, who, deploying the principles of his mentor William Smith, first revealed the geological structure of the region (which was ignored to the great detriment of those who then prospected for coal in Sussex in the early 19th century—the topic of Hugh's paper in Liège). We visited some interesting exposures of the Lower Tunbridge Wells Sandstone (Lower Cretaceous) in an out-of-the-way spot in Tilgate Forest, with remarkable sandstone boulders eroded into structures such as that known as 'Great-on-Little', sketched by Professor Milanovsky (see p. 9). Farey knew this locality and was the first to note what he called the 'strata ridged' structure for the anticline of the Weald (but he did not comprehend its mode of formation). A few iguanodon remains have reputedly been found in the Tilgate Forest area. The boulders bore many graffiti marks, the oldest noted being 1661. Your correspondent was quite unaware that such things were to be found in the Sussex Weald. A later visit to Devil's Dyke—a dry valley in the chalk hills near the coast—led him to think that it still presents as much of a puzzle to geomorphologists as ever.

Back in London, Gerry Friedman led a pilgrimage to Lyell's London home in Harley Street, and to Westminster Abbey to pay homage at the tombs of Lyell and Darwin, and view the busts of Lyell and William Buckland. Members of the party were able to participate in the traditional Abbey Evensong—much as Dean Buckland would have known it.

Members were then bussed or otherwise transported to Edinburgh, where the Scots had organised a splendid programme in the glorious architectural surroundings of that great city, *en fête* as it was Festival time, and with a splendid Henry Raeburn exhibition (including the famous Hutton portrait) available to those who wished to visit it. Events various were held at the Royal College of Physicians, the City Chambers, the Signet Library, and the Raeburn Room and the Playfair Library of Edinburgh University. The organisers had managed things in a canny way, with different commercial sponsors financing each meal. It was gratifying to see how the commercial 'competition' generated such excellent culinary results; and whereas the quality of the wine was noteworthy for the banquet in Holloway College, whisky (supplied by Glenmorangie distilleries) was the preferred tipple in the north. Important historical papers were presented by INHIGEO members and others, and there were some geological papers of great interest. The Edinburgh papers were all summarised judiciously by Professor Robert Dott in his concluding remarks, and he has kindly provided his thoughts to us in written form (see pp. 11–13). And just to put something of the occasion of the banquet on the record, the seating plan is reproduced on p. 10.

For field excursions, we were taken to famous exposures associated with Hutton on Arthur's Seat and Salisbury Crag and to the site of Hutton's home in Edinburgh, where a memorial plaque was unveiled. Scotland turned on remarkably hot weather for the day of the trip to Siccar Point, the site of Hutton's classic unconformity. There was close scrutiny and much photographing of perhaps the most famous and photographed geological site in the world; and some discussion of whether Hutton had visited the site *before* the excursion with his friends Sir James Hall and John Playfair in 1788, as described in Playfair's biography of Hutton. On the return journey, we visited Dunglass and payed homage there to the plaque erected in Hall's memory at the family mausoleum (1761–1832). We also visited Tantallon Castle and had a good view of the famous Bass Rock prison fortress, the island being formed of phonolite, made famous by the writing of Hugh Miller.

On the final Saturday, two field excursions were available: to Glen Tilt and to Lyell's ancestral home at Kinnordy House in Forfarshire. Your correspondent chose the latter as he had been to Glen Tilt previously (hence appearing *in situ* on the celebrated granitic veins in a recent publication). The Kinnordy visit was brilliantly organised by Dr Ian Rolfe, formerly Keeper of Geology at the national Museums of Scotland, and by long-time INHIGEO member Professor Gordon Craig. The bus took us across the Forth and into the northern parts of the Midland Valley. Arrived at Kinnordy, we were most hospitably welcomed by Lady Lyell and her son Lord Lyell, and were shown round the library where bibliophiles could admire (and envy) Charles Lyell's very substantial collection. By courtesy of Professor Leonard Wilson, an exhibition had been mounted displaying Lyell's field notebooks in

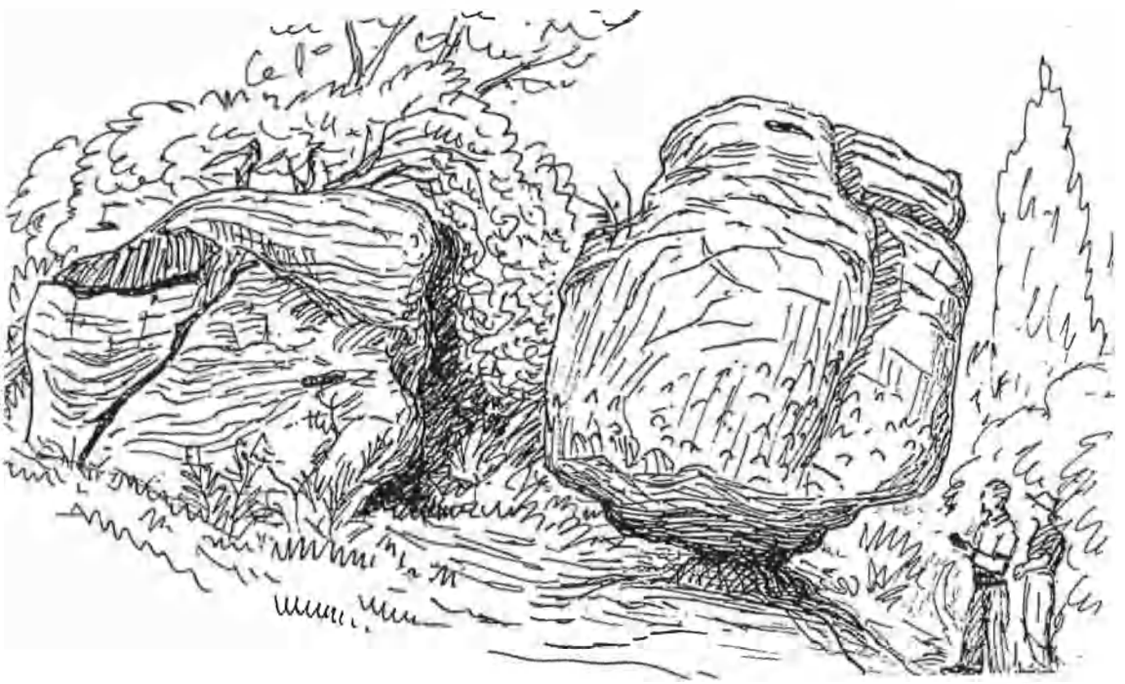
chronological order, and his early map of Forfarshire (1822–1824). Among the many memorabilia on display, I was particularly taken by a pair of Adam Sedgwick's shoes, as I had been following in his footsteps in the course of my historical researches in the Lake District in the weeks immediately preceding. It was, therefore, of surpassing interest to me to see what Sedgwick's shoes *actually* looked like. They were very tough, but of a curiously elegant design. Were they his party shoes or part of his geological rig? It was difficult to say. Anyway, they had apparently been left at Kinnordy House on some occasion when Sedgwick paid a visit, and had been allocated a place of honour on the grand piano ever since!

More significant historically were the visits to the fresh-water lochs on the Kinnordy estate, and the evidences for glaciation in the vicinity, which Lyell viewed with Buckland in 1840. The lochs were of great significance to Lyell, in that he deployed the evidence gleaned from them during the course of his survey of the district in the 1820s to establish his uniformitarian ideas, explaining the fresh-water limestones recorded by Brongniart and Cuvier in the Paris Basin by analogy with the processes that could be seen operating even today in Forfarshire, and sediments deposited there recently but no longer being formed. We also viewed a remarkable linear outcrop of serpentine in Carity Burn near Kinnordy House, running parallel to the Highland Boundary Fault (which Lyell did not 'recognise'—to use a whiggish term). Lyell construed the serpentine as a curious kind of dyke. Today it serves as part of the mass of evidence used by tectonic theorists to account for the structure of Scotland in terms of terrane theory and plate tectonics (as described in dazzling fashion by Oxford's Professor John Dewey in one of the lectures in London). Poor Lyell never knew that he was dealing with ophiolite obduction and subduction 'flip', not to mention sinistral terraning with consequent excision—all on his very doorstep! As Ian Rolfe observed, it could well have been the case that Lyell decided that soft-rock geology was something a bit easier to deal with, and kept his attention chiefly focused on the Tertiary: the Highlands were not his cup of tea.

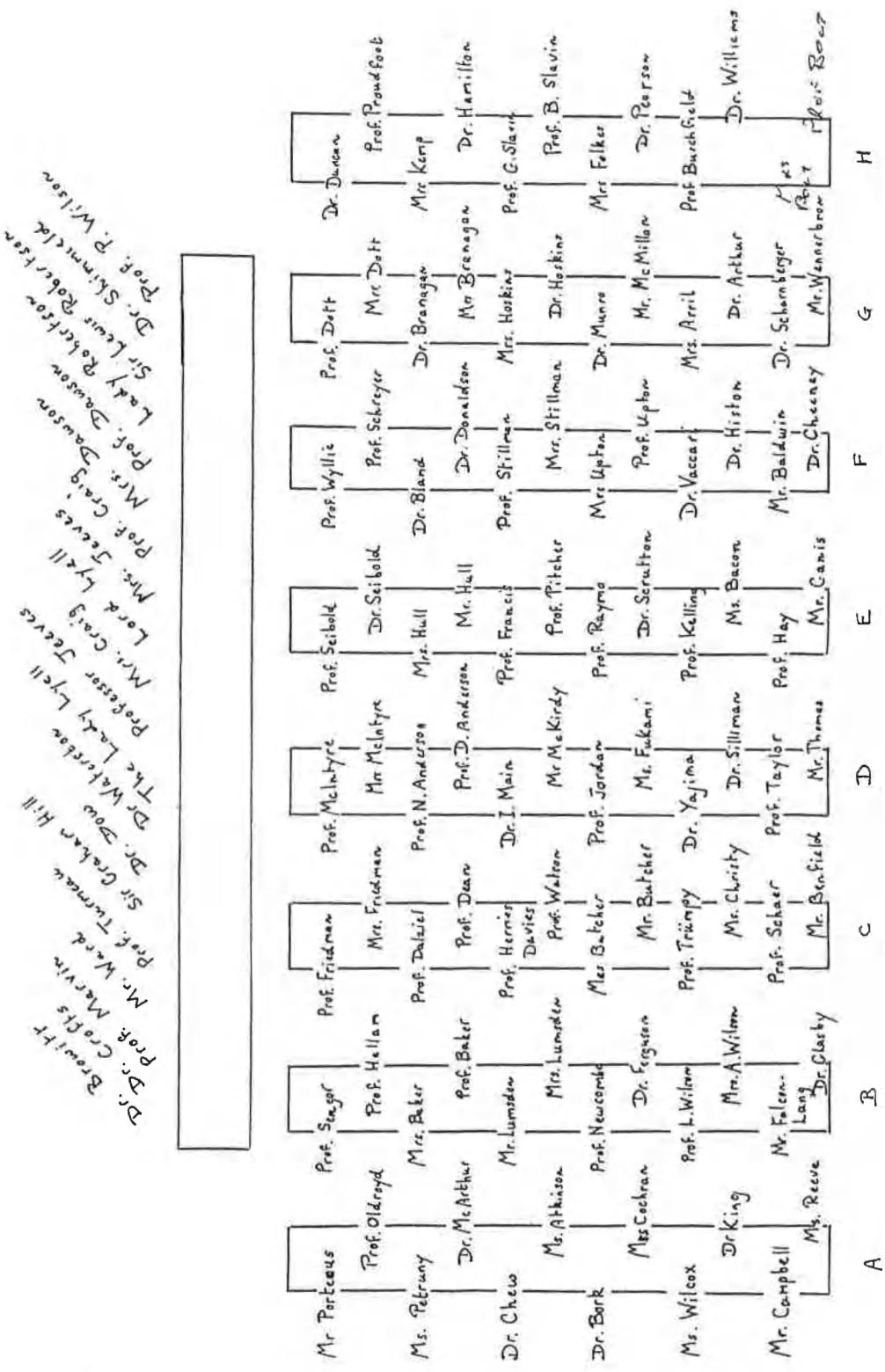
Be this as it may, I learnt a lot about Lyell in my short visit, and even a little bit about the geology of Forfarshire. On our return, devotees of Shakespeare and the Royal Family were able to enjoy a brief visit to Glamis Castle, but your corespondent preferred the view of the Forth Bridge, noting, as had D'Arcy Wentworth Thompson in his famous *Growth and Form* (1917), its structural similarity to a *Diplodocus*! It was a splendid end to a splendid week.

David Oldroyd, Sydney

Sketch of 'Great-on-Little', Tilgate Forest, by Efgenji Milanovsky



Seating Plan for Banquet at the Hutton Conference, Playfair Library, The University of Edinburgh. Supported by (much) Glenmorangie



Text of the Remarks made by Professor Robert Dott, in Summary of the Papers Presented at the Hutton Conference, Edinburgh

Quite a few things of note happened in 1797. Franz Schubert was born. Napoleon defeated the Austrians and was appointed to command forces to invade England. John Adams became the second president of the United States. Chromium was discovered. The first copper pennies and pound notes were issued here in Britain. And Merino sheep were introduced to Australia. None of these seems more important to *us*, of course, than the geological coincidence that brought us together for this outstanding Bicentennial Conference. I now ask all of you to join me in thanking our hosts, the Royal Society of Edinburgh and the University of Edinburgh for being such gracious hosts. We especially owe gratitude to Gordon Craig and his committee for organising the sessions, and, with the help of Session Chairpersons Charles Waterston, Graham Shimmield, Barry Dawson, Tony Hallam, and Dennis Dean, in helping the speakers be their most effective. We must also thank those who have arranged the excursions (Norman Butcher, Gordon Craig, Donald McIntyre, Ian Rolfe, David Stephenson, and Leonard Wilson).

If memory serves, this is my fourth visit to Edinburgh. I have a rather spectacular history of failures when visiting these parts—in spite of the fact that my paternal great grandfather emigrated from just across the firth in Fife and that both of my wife's paternal grandparents came from near Kinnordy, seat of the Lyell family.

During my first visit in 1963, after dining at the University Staff Club, Ian Dalziel and Ken Walton escorted me on a pilgrimage to Greyfriar's Churchyard to see Hutton's grave and a plaque, which I knew had been placed there on the 150th anniversary of his death. It was about 10 p.m., but in mid-summer at 56°N latitude it was still light. No amount of light, however, nor of guides' confidence was sufficient, for we failed to discover either grave or plaque. Some time later, my hosts sheepishly informed me that Hutton was secured in some remote corner behind locked doors—safe from all his enemies and creditors.

On two occasions, I have also managed to miss finding THE Siccar Point unconformity locality by getting into the wrong coves. So it will be a special pleasure for me to be taken to THE spot tomorrow! (I am happy to report that I had better luck on the Isle of Arran, where I did manage to find Hutton's unconformity all by myself).

My second visit to Edinburgh was in 1971 to participate in a special meeting at which the new Plate Tectonic paradigm was featured. How fitting to return here this week to assess some of the great past, present and future ideas about the earth on the 200th anniversary of the death of the man who initiated the first great paradigm shift in the history of the geological sciences.

When this Hutton-Lyell Bicentennial Conference was first announced, I was a bit apprehensive about the success of combining historical talks with contemporary and futuristic ones. But I need not have been, for the outcome has been spectacular! Donald McIntyre mesmerised us once again with his poetic description of Hutton's Edinburgh and how the climate of the Scottish Enlightenment and Hutton's friends influenced his theory. Ever since my first excursion into the history of geology 30 years ago, I have felt that the most important novelty of the theory was in regarding the earth as dynamic and ever-changing due to internal heat—proposed at a time when the ruling Neptunian paradigm considered that the subcrust was completely passive; only the ocean changed.

Throughout the century after Hutton's death, a lively debate raged about the character of the earth's interior—was it liquid or solid? Clearly there were profound consequences for any tectonic or petrologic hypothesis. For example, if entirely solid, how could there be magmas? The debate centred at Cambridge between two contending groups of physicist-mathematicians. William Hopkins and his promising disciple, William Thomson—the future Lord Kelvin—led the 'solids', while Osmond Fisher and George Darwin led the 'liquids'. The battle lines were sharpened by Kelvin's attack upon the geologists beginning in the 1860s. Osmond Fisher countered that, if the interior were liquid, much heat would have been dissipated through convection and Kelvin's calculation of age would be seriously in error. Meanwhile, the new theory of isostasy implied that the interior must not be quite 'as rigid as steel' as Kelvin was insisting. And at the end of the century—100 years after Hutton's death—radioactivity was discovered and eventually the heat generated thereby unravelled Kelvin's argument a bit further. At the turn of the century, compositional models for the interior were being refined by Suess and others using arguments based upon density and petrology. Simultaneously, the core-mantle boundary and the Moho were recognised from seismology.

Following from those long-ago discoveries, Don Anderson has transported 'fast-forward' to give a breathtaking look deeper than ever into the earth's abyss. He then returned us to the surface to show how the shallow and surface realms may be integrated in a New Theory of the Earth on a global scale in a more straightforward way than I, at least, would have expected. Long ago Don and I were lieutenants together in the United States Air Force, and I must share a story about him from that Precambrian period of our lives. He was engaged in studies of sea ice on Thule Bay in northern Greenland as a possible emergency landing site for aircraft. Don was out on the ice one day setting off explosions for seismic studies of ice thickness and ice strength, when a small figure approached. It was an eskimo, who walked toward him until in range, then stopped, opened his parka, took out a camera, and photographed this weird foreign tourist, who was obviously quite insane.

Early in our century, while geophysics was providing important new constraints for the structure of the inaccessible interior, geologists recognised that an impasse had been reached, which required knowledge of the properties and behaviour of earth materials at high pressures and temperatures. In the United States, this challenge was met by a small group of far-sighted individuals, who in 1906 created the Geophysical Laboratory within the new Carnegie Institution of Washington created by Scottish-born millionaire-philanthropist, Andrew Carnegie. The

Laboratory sponsored those experimental petrologic investigations based upon phase rule chemistry made famous by N.L. Bowen. Peter Wyllie has brought us from Bowen up to the present—after noting Sir James Hall's pioneering experiments in 'his hot little crucibles', which his friend James Hutton so disparaged. As Peter has shown us, thanks to technologies that would boggle the minds of both 'Jameses' (and mine, as well), it is now possible experimentally to take a vicarious Jules Vernian *Journey to the Centre of the Earth* by reproducing the thermo-chemical conditions for the core boundary as well as for Hutton's shallow little granite bodies—as well as to model the chemical differentiation of the entire earth. Similarly, Werner Schreyer took us on another deep P-T trip through the changing environments of metamorphism. His discussion linked nicely with the Huttonian theory of cycles of burial, alteration, uplift, and exhumation. Just imagine how Hutton and his Oyster Club cronies might have celebrated these achievements with rounds of malt Scotch!

It has often been said (perhaps *ad nauseam*) that geology is an historical science, and some revisionists have criticized Hutton for not being enough interested in geological and paleontological history. But, as he 'read from the book of nature,' surely Hutton was as much an historian of the earth as are most of us. Each specialty approaches history differently, thus the petrologist may tell us about a complex history of an individual metamorphic mineral grain, while the geomorphologist deciphers the evolution of a landscape, and the palaeobiologist recounts the history of life. Ultimately, all of these histories must be interrelated.

Both Gordon Herries Davies and Celal Sengor have addressed our roles as historians and have reminded us that there are different styles and perspectives on history. These differences are strongly coloured by cultural circumstances, and serve to warn us that ultimate historical truth is an elusive phantom, like a hologram or Hamlet's ghost (choose your own metaphor)—you see it for a moment, but you can not permanently grasp it, for it keeps changing. As Celal noted, Hutton possessed a deep understanding of the process of scientific testing through 'removal of erroneous conceptions', in other words, Karl Popper's *falsification of hypotheses*. A sharp difference in style was illustrated by Playfair in contrasting Hutton with their friend Joseph Black. '[O]ne would say that Dr BLACK dreaded nothing so much as error, and that Dr HUTTON dreaded nothing so much as ignorance; that the one was always afraid of going beyond the truth, and the other of not reaching it' (J. Playfair, 'Biographical Account of the Late Dr James Hutton', *Transactions of the Royal Society of Edinburgh*, 1805, *5*, 95–96).

In this meeting, Ian Dalziel has plumbed the historical depths of our current global paradigm, plate tectonics, by introducing us to the vestiges of supercontinents dating much farther back than anyone dreamt possible to discern in the 1970s. And his suggestion that the history of life on earth has been linked closely with global tectonic history converges upon Andrew Watson's fascinating discussion, to which I shall return momentarily. The various wanderings of ancient plates that Ian has told us about reminds me of one of *his* wanderings when we were working together on South Georgia Island some years ago. It was a particularly foggy day, but he and a student were determined to make a traverse a few miles across a low pass from one fiord to another. All seemed to be going well enough until after an hour or so of walking, Ian realised that the lake visible through the fog on his right side was still there. That seemed odd because it was only a small lake. Just then the fog lifted in front of them for a moment, and, lo and behold, there was their boat, which they had tied on the shore less than two hours earlier! Yes, the intrepid field geologists, like certain supercontinents, had gone right around in a circle.

The student made good use of this lesson learned from his mentor, however, proving Ian's prowess as a teacher. A few weeks later, after a particularly exuberant party (a classic English piss-up?) at the British Antarctic base, he emerged in the dark of night a bit disoriented. Suddenly he realised that his right foot was wet, and his brain slowly registered that this marked the edge of the bay and if he would just walk along keeping that foot in the water, he could not miss our lodgings. This novel mode of navigation worked perfectly.

Besides the 1797 Hutton–Lyell conjunction, there have been other notable historical coincidences. For example, Mark Twain, who mercilessly satirised uniformitarianism and scientific research, both began and ended his life with Halley's Comet visible in the heavens. Ursula Marvin has looked into the heavens with us and explored another dimension of history involving unearthly objects, which geologists long ignored as of no relevance for them. Today, the 'falling sky' has taken centre stage to create—pardon the pun—the greatest splash in geology since plate tectonics! Ursula showed how difficult it was for people to believe in 'stones from the sky', and that, curiously, such acceptance dates from the very time of Hutton's *Theory*.

In the seventeen years since the Alvarez Hypothesis was first announced, the liveliest discussions in the earth sciences have focused upon the K–T boundary event and its implications for possible mass extinctions of species. The new respectability of great impacts has also helped to foster that trendy term, *Neocatastrophism*! Weathering and erosion processes as well as plate tectonics—perhaps all unique to earth—greatly obscured the fact that our planet had shared the early, great bolide showering within the solar system. Years ago, Ursula pointed out that that event challenged Lyellian uniformitarianism because it was caused by a process no longer acting, at least on any significant scale. Today we can add the apparent former presence of much liquid water on Mars as another non-uniformitarian historical phenomenon in the sense of Lyell. The study of other planetary bodies has greatly expanded our geological vistas and provided the clearest examples of the *past being a key to the present*.

To my surprise, the issue of uniformitarianism versus catastrophism was little in evidence in this conference. Do we finally understand the many meanings of these old and much mis-used terms? Most geologists had already rejected Lyell's ultra-uniformitarianism before Kelvin mounted his thermodynamic challenge to a steady state earth. Without explicitly invoking the words, Kelvin in fact had opened a window for a new *evolutionary view*

of the earth as well as of life. It was Thomas Huxley, ten years after Darwin's *Origin of Species* appeared, who put it into words, and ever since, I believe, this has been our guiding world view.

Geologically short-term fluxes were illustrated for us in Maureen Raymo's discussion of climate change, which seems to be overtaking bolide impacts on our collective agenda of major issues. She prophesied the chilling inevitability of a next ice age, whether or not humankind causes a significant greenhouse effect. While Milankovich orbital factors surely provide an on-going, truly cyclic control over climate, there are other important, but temporally irregular, factors, which include changing palaeogeography and atmospheric carbon dioxide. No geological phenomenon illustrates more clearly than glacial climate change the complexity of interacting causes with their very different time scales and degrees of predictability. And in no other realm is geology so relevant to the welfare of humankind as in exploiting the geologic record to help predict the future, as Dr Raymo so eloquently showed.

Being co-author of a book entitled *Evolution of the Earth* (first published twenty-six years ago), I was delighted to hear Andrew Watson's discussion of the co-evolution of the earth and of life with profound feed-backs and fluxes between the two. As Watson suggested, the entire motivation of Hutton's theory was to provide a teleological explanation for how an ongoing habitat for life could be maintained in the face of the obvious decay of landscapes. As was noted by both Watson and Dalziel, we are challenged today by the Gaia hypothesis to wonder if the feed-back from life is far more active and self-serving than was ever imagined before Lovelock. Here is yet another challenge for future interdisciplinary investigations. To cite one example, testing of the self-regulatory implications of Gaia is critical to the ongoing debate between punctuated equilibrium and the older progressional model of organic evolution.

Completion of the Dynamic Earth Project will be a most fitting follow-up to this Bicentennial celebration. Not only will the Centre provide an exciting, multidisciplinary view of the earth two hundred years after Hutton and Lyell, it will provide an effective stimulus for looking to the future. Most importantly it aims to make our scientific enlightenment accessible to the public—something that Stuart Munro correctly reminds us is an important professional obligation. And how fitting that the Dynamic Earth Project will be built practically upon the site of the home of the man who, more than any other, initiated the concept of a dynamic earth!

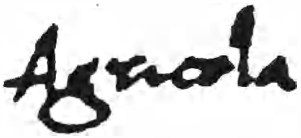
Conclusion

On a note of future-looking, I close by remembering that Scotsman Robert Louis Stevenson once wrote that 'It is better to travel than to arrive'. According to Playfair, Hutton seemingly shared this sentiment, for he 'was much more delighted with the contemplation of truth, than with the praise of having discovered it'. Implicit in any conference such as ours is the reminder that all truths and paradigms are subject to extinction and replacement through the sifting and winnowing process we call science, and a conference such us ours, which considers the historical roots—as well as present and future frontiers of study—should help us avoid narrow dogmatism.

Robert H. Dott, University of Wisconsin

FUTURE MEETINGS, AND ACTIVITIES RELATED TO THE HISTORY OF GEOLOGY

AGRICOLA-FORSCHUNGSZENTRUM CHEMNITZ



Geschäftsstelle:
Schloßbergmuseum Chemnitz, Schloßberg 22, 09113 Chemnitz Tel. 0371 / 488 4503 (Sekr. 4501)
Fax. 0371 / 488 4599

Dear Ladies and Gentlemen,

The five hundred year anniversary celebrations in 1994 for Gregorius Agricola highlighted the varied contributions of this Renaissance humanist. The occasion also increased public recognition for this great figure. Moreover the events in 1994 stimulated considerable research and furthered international cooperation.

The Board of Scholars responsible for the celebration had the full support of the President of the Chemnitz Administration. With this backing the Board was able to marshal the energies of many institutions. These participants deserve our sincere thanks. Publication in 1993 of Volume IX of the *Agricola-Memorial Edition* has directly assisted numerous special investigations. This publication, by The State Museum for Mineralogy and Geology in Dresden, was guided by the biographer of Agricola, Hans Prescher and his two collaborators at the AGA. Having all the surviving works and letters of Agricola available in a lucid translation aided us.

Also we have seen many, many ideas for further research grow out of these volumes. This became especially evident in 1994 during the International Scientific Conference held in Chemnitz-Zwickau. After the anniversary celebrations we all, and especially Hans Prescher, were confronted with a question. A high plateau had been attained. Now where should we go? Hans Prescher suggested in a letter to the Mayor of Chemnitz that his city should become the centre for Agricola research studies. He proposed this because the State Museum for Mineralogy and Geology in Dresden indicated that it planned to devote itself to other topics. Moreover, in 1994 the scientific institutions in Chemnitz had proven their interest and ability to take up this challenge.

We have been discussing this topic since June 4, 1996; i.e., an Agricola Research Institution of Chemnitz. Despite Hans Prescher's untimely death, we continued to formulate appropriate designs for an Agricola Research Center of Chemnitz. Accordingly, this planning came together on December 4, 1996 as a joint venture of the Technischer Universitaet Chemnitz-Zwickau, the City Archives Office of Chemnitz, the Schlossberg Museum of Chemnitz City Library of Chemnitz, The Historical Association e.V.

The layout and structure of the proposed centre are enclosed.* This letter is not only intended for those researchers who participated in the conferences in 1994 or who worked on the publications and exhibits and other projects concerning Georgius Agricola, but we also wish to include those of you who had no contact with Dr Prescher about Agricola.

We should like to think that all of you are interested in our progress, and may wish to know how our ideas are developing. Accordingly we should be happy to share status reports with you regularly about this project. Also we should like to know of your possible interest in any sort of cooperative venture, such as an exchanges of information, experience, advice or opinion surveys, etc. It would be of interest to us if you are engaged in any projects that may share common elements.

Would you like to receive our Newsletter to be published annually? Perhaps you could express your views on subjects of interest or suggest topics for discussion in such a publication.

We would be very grateful for your early reply. Tell us where your interests lie and please feel free to follow up with a list of research topics.

With friendly greetings,

Univ.-Prof. Dr. Dr. habil. Friedrich Naumann,
Technische Universität Chemnitz,
Philosophische Fakultät,
Prof. Wissenschafts-, Technik- und Hochschulgeschichte.
7 July, 1997.

International Symposium on the History of Mineralogy, Mineralogical Museums, Gemology, Crystal Chemistry, and Mineral Classification
St Petersburg, Russia, 23–27 June, 1998

St Petersburg University, the Institute of Earth Crust, the Faculty of Geology, and the Department of Mineralogy invite you to attend the International Symposium on the History of Mineralogy, Mineralogical Museums, Gemology, Crystal Chemistry, and Classification of Minerals, to commemorate the 200th anniversary of the famous mineral collector, Archbishop Nil. The Symposium will be held in St Petersburg University, from Tuesday 23 to Saturday 27, June, 1998.

---

* For further information, please contact Professor Naumann (Ed.).

Topics to be covered will include:
Scientific investigations in the Mineralogical Museums; Museums and the fundamental sciences; Gemological collections in the museums; History of Mineralogy, and Mineralogical Museums; Teaching of Mineralogy, Crystallography and Gemmology; Crystal chemistry, mineral classification and mineral databases.
The following activities will be organized for the participants and accompanying persons:
Sightseeing in the St Petersburg, excursion to the Hermitage, the St Isaac Cathedral, the Russian Museum, the Peterhof and Oranienbaum Palaces and Parks, the Mineralogical Museums of St Petersburg, etc.

For further information, contact:

Dr Anatoliy N. Zaitzev, Department of Mineralogy, MM-98, Faculty of Geology, St Petersburg University Emb., 7/9, St Petersburg 199034, RUSSIA. Phone: (812)-218-94-81; FAX: (812)-218-13-46. E-mail: <MM_98@mineral.geol.pu.ru>.

The Latin American Society for the History of Science and Technology. Vth Latin American Congress on the History of Science and Technology, Rio de Janeiro, Brazil, 21–24 July, 1998

The Congress will include sessions on the history of geology. For further information, contact INHIGEO Member Dr Silvia Figueirôa, Institute of Geosciences, UNICAMP, P.O. Box 6152, 13081-970 Campinas-SP, Brazil. Fax: 55 19 239 1562. Email: <figueroa@ige.unicamp.br>.

The 6th International Congress on the History of Oceanography, 15–20 August, 1998, Qingdao, China

The Congress will focus on the following topics:

1. The historical development of ocean science with emphasis on the nations and science of the Western Pacific and Indian Ocean.
2. International co-operation and exchange in marine science and economics.
3. The interaction between the development of marine economics and marine science: overviews of past, and prospects for the 21st century.
4. The sustainable development of marine resources and the environment, especially in the Western Pacific and Indian Ocean.
5. Environment protection and laws in maritime affairs and administration.
6. Scientific research on ocean science and technology.

For further information, contact Mr Gong-Ke TAN or Ms E-Mei ZOU, First Institute of Oceanography, 3A Hongdao Branch Road, Qingdao 266003, P.R. China. Fax: 86 532 2879562; Email: <fiokjc@ns.qd.sd.cn>.

XVIth Congress of the Carpathian-Balkan Geological Association, 30 August–2 September, 1998, University of Vienna. Advancing Geological Knowledge of the Carpathian-Balkan Region in the Nineteenth and Twentieth Centuries

A series of historical papers on the theme has been organised by INHIGEO Member, Dr Endre Dudich, as part of the Association's 16th Congress in Vienna. (They will be presented on September 1 and 2.) The Congress language will be English. Five pre-Congress field excursions (not historically oriented) will be available (24–29 August), and one post-Congress (3–11 September).

For further information, contact *either:*
Organising Committee, XVI Congress of the CBGA, Geological Survey of Austria, Rasumofskygasse 23, PO Box 127, A-1031, Vienna (Fax: 431 712567456; email: <wjanoschek@cc.geolba.ac.at>); *or*
Dr Endre Dudich, Geological Institute of Hungary, PO Box 106, H-1142, Budapest, Hungary (Fax: 361 2510703; email: <kiss@mafi.hu>).

INHIGEO Symposium, Neuchâtel, 7–14 September, 1998*
'From Folds to Nappes to Plates'
'The History of Ideas about Glaciation'

- Field excursion in Glarus Canton, Klausen Pass, Lake Lucerne (September 7–8).
- Neuchâtel conference (September 9–11).
- Field excursion (Vaud and Valais, Arve Valley, Chamonix, Bex salt mines, Monthey, Zermatt, Matterhorn, Monte Rosa Massif, etc.) (September 12–14).

Programme of Papers

C. Sengör (Turkey), 'Émile Argand, the Critical Rationalist, and his Ideas on the Culmination of the Old Global Tectonics"'
R. Dott (USA), 'The Geosynclinal Theory of the Origin of Mountains'
J. Brunn (France), 'Géosynlinaux, Orogène, Plaques: La Puissance des Mots'
N. Pavoni (Switzerland), 'Orogenic Belts, Markers of Fundamental, Global Tectonic Partition'
R. Trümpy (Switzerland), 'Marcel Bertrand (1847–1907): Les Nappes et le Cycle Orogénique'
E. Vaccari (Italy), 'The Study of Mountain Folds in the Early 18th Century: Luigi Ferdinando Marsili and Antonio Vallisneri'
V. Khain (Russia), 'Les Vicissitudes de l'Application de la Notion de Charriage aux Chaînes Plissées de l'ex-Union Soviétique'
M. Durand-Delga (France), 'Les Avatars de l'Explication Géologique de l'Arc de Gibraltar'
A. Coutelle (France), 'Des Plix aux Nappes: La Longue Histoire de la Reconnaissance des Nappes en Algérie du Nord'
M. Köibl-Ebert (Germany), 'Observing Orogeny: Maria Graham and her Account of the Earthquake in Chile, 1822'
K. Von Salis (Switzerland), 'Women in Earth Sciences in Zurich/Switzerland: Why did Women not Contribute Much to Earth Sciences until Recently?'
P. Burollet (France), 'Cent Vingt Ans d'Études de l'Atlas en Tunisie'
B. Hamilton (UK), 'Charles Lapworth and Fold Theory'
J.-Y. Yang (China), 'Bailey Willis (1857–1949) and his Contribution to the Development of Structural Geology in China'

* * *

W. Von Engelhardt (Germany), 'Did Goethe Discover the Ice Age?'
E. Milanovsky (Russia), 'Development of Ideas and Knowledge on the Ancient Glaciation of the Great Caucasus, Eastern Europe, and Siberia'
M. Rudwick (UK), 'Before the Glacial Theory: Diluvial Theories Reconsidered'
J. Burchfield (USA), 'John Tyndall on the Physics of Glaciers'
R. Silliman (USA), 'Uniformitarianism and the Tardy Adoption of Agassiz's Glacial Theory'
D. Branagan (Australia), 'Antipodean Ice Ages'
S. Herbert (USA), 'Charles Darwin and the Beryl Blue Glaciers of Tierra del Fuego'
D. Dean (USA), 'John Muir and the Origin of the Yosemite Valley'
C. Lüdecke (Germany), The Formation of the North German Lowland—Erich von Drygalski's Expeditions to Greenland (1891, 1892–1893) in Search of an Explanation of Ice Movement'
U. Marvin (USA), 'Iron Meteorites and Controversies over the Origin of Erratic Boulders'
B. Fritscher (Germany), 'Glaciers Between Nature and History: Hermann and Adolf Schlaginweits' Studies on the Physical Geology (Glaciers, Geology) of the Swiss Alps)'
D. Oldroyd (Australia), 'Early Ideas About Glaciation and Glacial Phenomena in the English Lake District: The Problem of Making Sense of Glaciation in a Glaciated Region'
M. Roberts (UK), 'Darwin, Buckland, and the Welsh Ice-Age (1837–1842)'

* * *

G. Godard (France), 'A Franco-Italian "School of Geology" in the Early Seventeenth Century'
G. Laurent (France), 'Lamarck et la Paléontologie'
H. Torrens (UK), 'New Light on the life of Carles de Gimbernat (1768–1834) in Britain (1791–1796)'
Ph. Wilson (USA), 'Arnold Guyot and the Pestalozzian Approach to Geology Education: A Model for 21st-Century College Science"'
L. Loretti (Italy), 'L'Origine des Dolomites'
K. Onuzi (Albania), 'Geology of the Southeastern Ophiolites of Albania (Vallamara, Voskopoja and Morava Ophiolitic Complexes'

---

* Dr David Branagan informs us that he has the parts of a song by Arnold and Albert Heim, entitled '*Wildbach und Bergsee*', which he would like to perform during the Conference. INHIGEO singers are invited to contact David at <DBranaga@mail.usyd.edu.au> or at 83 Mimimbah Rd., Northbridge, NSW, 2063, Australia (Fax 61 2 9351 0184), offering their voices for the occasion.

There will also be an historical exhibition on display in the Museum of Natural History at the University of Neuchâtel, and an afternoon field excursion in the area round Neuchâtel (viewing Neocomian type-locality, structural features, glacial phenomena, etc.), as well as the pre- and post-conference excursions.

Registration fee includes: the afternoon excursion ; lunches; coffees; conference abstracts.

Registration fee: Swiss Fr; 20 Fr for accompanying members.

Accommodation fees per night in Neuchâtel: ranging from 30 Fr (student accommodation with breakfast) to 290 Fr (luxury hotel with breakfast).

For further information, contact: Professor Jean-Paul Schaer, Université de Neuchâtel, Institut de Géologie, Émile-Argand 11, 2007 Neuchâtel, Switzerland (Fax: 41 32 7182601; email: <sabine.robert@geol.unine.ch>).

Cultural Heritage in Mining, Geology, and Metallurgy Libraries–Archives–Museums 4th Heritage Symposium Banská Stiavnica, Slovak Republic, 7–11 September, 1998

This Symposium is being held under the auspices of the Banská Stiavnica Municipality, the State Central Mining Archives, and the Slovak Mining Museum. The principal themes will be 'World Mining Education Traditions'. Papers will be in English, German or Slovak languages, with simultaneous translations. In addition, there will be a concert in the old castle, a sightseeing tour of the town, visits to the Slovak Mining Museum and the State Central Mining Archives (where documents will be put on display), and an excursion to the principal centres of the former most significant precious metal region of the Austro-Hungarian Monarchy including Kremnica's Mint. One will be able to watch the traditional 'Salamander Procession' and other associated activities following the Symposium.

For further information, contact: The Secretariat, Státny Ústredny Bansky Archiv, Radicné Nám. 16, 96901 Banská Stiavnica, Slovak Republic (Tel.: 421 859 236 95; Fax: 421 859 238 06); or INHIGEO Member Dr Ivan Hercko (see Members' list).

Geological Society of America, Toronto, 26–29 October, 1998

The Geological Society of America Annual Meeting will be held in Toronto, 26–29 October, 1998. This meeting will be attended by several thousand geologists, mainly from North America. As part of the program, the History of Geology Division of GSA has planned a symposium to mark the anniversary of the death of James Hutton, and the birth of Charles Lyell (1797)—and since William Logan was born in 1798, it has seemed appropriate to include his name also. The symposium title will thus be: 'Hutton, Lyell, Logan—and their influence in North America'.

Several other organisations held Lyell/Hutton celebrations in 1997. It seems to us that the appropriate activity in Toronto is a symposium that will draw the attention of earth scientists to recent advances in understanding of the historical role of these three pioneer geologists, with particular reference to their influence in North America. Most of the recent work has been carried out by historians of science, and has been published in journals where it is unlikely to be widely noticed by geologists. We propose to invite seven speakers to give half-hour papers (papers at GSA are generally only 15 minutes in duration), which are likely to interest earth scientists who have only a small acquaintance with the specialised literature of the history of geology.

The History of Geology Division will also be sponsoring a Theme Session for submitted papers—which may be more specialised in content, but more broadly defined in scope. Its title will be 'North American Geology in the Early to Mid Nineteenth Century'.

For further information, contact: Gerry Middleton, School of Geography and Geology, McMaster University, Canada. Tel: (905) 525-9140 ext 24187; FAX 522-3141.

Mary Anning and her Times: The Discovery of British Palaeontology 1820–1850, in Celebration of her 200th Birthday on 21 May, 1799 Lyme Regis, Dorset, UK, 2–4 June, 1999

Convenors Kevin Padian and Hugh Torrens

Promised speakers include Stephen J. Gould and Roy Porter. There will be an accompanying exhibition relating to Mary Anning's work on display at Dorchester, and later visiting various places in the United Kingdom. For further information, contact: Dr Hugh Torrens, Department of Earth Sciences, Keele University, Staffordshire, ST5 5BG, UK (<gga10@keele.ac.uk>).

INHIGEO Symposium in Association with the Freiberg Mining Academy. Technical University Bergakademie Freiberg, 19–23 September, 1999

This meeting will be held in commemoration of the 250th anniversary of the birth of Abraham Gottlob Werner, who was born on 25 September, 1749. The main focus will be on the history of geological sciences in Werner's time, rather than matters concerned with Werner's biography. The lecture programme will be supplemented by relevant excursions.

Proposed themes:

Knowledge of the earth (*ca.* 1750–1820) and the geological ideas of Werner

Developments and communication, theoretical concepts and academic controversies, research centres and influences in Werner's times

The relationship between geological knowledge and scientific, ideological and religious ideas during the Enlightenment and the early Industrial Revolution

Werner and his collections in relation to contemporary private libraries and natural history and coin collections

The history of the influence and reception of Werner's work

The official conference languages will be German and English. For further information, contact *either*:

Dr Peter Schmidt, Universitätsbibliothek Georgius Agricola, TU Bergakademie Freiberg (Tel.: 49 3731 39-3235; Fax: 49 3731 39-3289; Email: <pschmidt@ub.tu-freiberg.de>); *or*

Professor Dr Helmuth Albrecht, Institut für Wissenschafts- und Technikgeschichte, Freiberg (Tel: 49 3731 39-3406; Fax: 49 3731 39-3406; Email: <halbrecht@ vwl.tu-freiberg.de>).

Offers of papers are invited by September 30, 1998.

Barrande Symposium
Prague, 1999

We have been informed by INHIGEO member Dr Josef Haubelt that plans are being developed to hold a meeting in the Czech Republic in 1999 to commemorate the work of Joachim Barrande, but to our knowledge, at the time of going to press, details have been worked out. At Dr Haubelt's suggestion, the Secretary-General has written to Dr Milan Stloukal, Director of the National Museums in Prague, expressing the desire of the Commission to be associated with this meeting. It is to be hoped that it can be arranged at such a time that Members could conveniently attend meetings in both Freiberg and Prague. We shall keep Members informed of this matter.

31st International Geological Congress, Rio de Janeiro, Brazil
6–17 August, 2000

The INHIGEO symposia for which plans have been put forward provisionally are:

1. 'The Major Developments in Geology through the 20th Century'.
2. 'Comparisons between the Historical Development of Geology in North and South America'.
3. 'Geological Sciences and End-Millenialism'.

A field excursion is planned 'into the jungle'.

The Congress will take place at the same time as the celebrations of the 500th anniversary of the 'discovery' of Brazil.

AWARDS TO INHIGEO MEMBERS

We extend our congratulations to INHIGEO Members Kennard Bork and Martin Guntau for their respective receipts in 1997 of the History of Geology Award of the Geological Society of America and the Sue Tyler Friedman Medal of the Geological Society, London. Their citations and replies are reproduced below, by courtesy of the two Societies.

Citation for Kennard B. Bork, on the Occasion of his Receipt of the Geological Society of America's History of Geology Division Award. Wednesday, 22 October, 1997, Salt Lake City, Utah

Citation

Mr Chairman, honoured guests, especially our honouree, Ken Bork and his wife Katherine, and I extend my greeting to their son Robert Odell Bork and his family who are unable to be with their parents today, ladies and gentlemen.

Life has many pleasures which we can, when fortune smiles favourably upon us, enjoy and savour. One of the greatest of these is the pleasure of knowing and loving our families and the friends that we meet as we move through life. On rare occasions, we have an opportunity to re-pay them in a small way for the joy that they bring into our lives. For me today is one of those occasions. We are here to honour Ken Bork for his accomplishments as a scholar, as a teacher, and as a friend; not just in the personal sense, but in the professional sense as well. He is one of us, more so than just that he is a scholar of the history of geology, but he is truly one of us in the Division. But for his untiring efforts on behalf of the Division, we might not be meeting here today. He served as Division vice-chair in 1980 and Chair in 1981, at which time he convened our invited symposium at the Cincinnati meeting. Some of you may remember that Ken gathered a distinguished group of speakers, among them Stephen J. Gould, and we had a packed house. To quote one of his Division colleagues, 'He has served on a zillion committees' as well.

His professional friendship for the history of geology goes far beyond our Division and I would like to mention just a few highlights. In 1984 he was elected a Corresponding Member of the International Commission on

the History of Geological Sciences and he served as secretary for the United States Committee on the History of Geology. Over the years Ken has been very active with the History of Earth Science Society (HESS), serving as HESS secretary from 1987 to 1993, and he was the inaugural editor for the HESS journal, *Earth Sciences History*, when Gerry Friedman founded the publication in 1982-83. Ken is currently the HESS president-elect and will serve his term of office as president of HESS from January 1999 through December 2000. Congratulations, Mr President. I can think of no one better suited to lead that group into the next century.

Ken has been on the faculty of Denison University since 1966, the year he completed his PhD at Indiana University and he is highly respected and revered by students and colleagues alike. As a measure of the esteem with which he is held at Denison, Ken was the first recipient of a college-wide Teaching Excellence Award in 1993.

Ken applies the same energy, enthusiasm, and integrity to his scholarship that is manifested in his contribution to the Division and to his teaching; whether the subject was early French geologists or his eloquent expression of the life of Kirtly Mather, *Cracking Rocks and Defending Democracy* (1994, AAAS Pacific Division). His scholarly focus is broad, and his work covers several continents and a time span of three centuries. His early papers were devoted to palaeontology (bryozoa) and sedimentology, but he soon turned his attention to a different kind of ancient evidence, namely the development of geological ideas. As most of us are native English speakers, sometimes we tend to overlook the wealth of material not written in our native tongue. But as Ken's skill as a scholar has been augmented by his linguistic abilities, he has been among the researchers who could see beyond the language barriers. Like many of the individuals who grace his papers, Ken made the necessary correlations that have clearly demonstrate how wrong-headed our English chauvinism really is. And he has done this not by complaining about the pro-British bias of the late 18th and early 19th centuries, but by using quality scholarship and meticulous research to simply present the facts. A brief quote from a paper on Bertrand illustrates his approach:

> They [Bertrand's publications] were not the rash arguments . . . , nor were they paradigm-shifting insights. . . . Nonetheless, Bertrand popularised natural history and invited subsequent generations to take up the quest for deeper understanding of nature. (*Earth Sciences History*, 1991, *10*, 86)

The Mather biography was the result of many years of painstaking research that no doubt included the reading countless letters and notes written in difficult handwriting, and culminating in much soul-searching. When it came time to put pen to paper, Ken had to present the life of a person whom he greatly admired, but who was, after all, just a person, with all the flaws that come with being human. The published version clearly demonstrates that a biography can be a celebration of a person's life and at the same time it can be realistic and truthful without destroying the integrity of the writer or the reputation of the subject. Ken possessed the consummate skill to do this. I will close with a brief passage from the Mather biography:

> One lesson learned from Kirtley Mather's life is that the world includes some quietly dedicated people who seek to improve the human condition through education. (*Cracking Rocks and Defending Democracy*, p. 282).

Kennard Bork is certainly to be counted among them.

Ladies and gentleman, it is my distinct honour and pleasure to present to you our History of Geology Division Award for 1997: Dr Kennard B. Bork of Denison University.

William R. Brice, University of Pittsburgh at Johnstown

Reply

The answers to your potential questions are:

No / Yes / Yes/ and Yes.

(1) No—when I read François Ellenberger's response in Seattle, I had not the slightest suspicion that I'd have to say something pithy on my own in three short years . . .

(2) Yes, the magnitude of the contributions of past recipients of this award is abundantly clear to me.

(3) Yes, I also have a list of colleagues I would be delighted to see receiving this year's Award. And . . .

(4) Yes, despite my genuine humility at this moment, I am grateful to the Committee for recognising my mixed blend of scholarly and administrative service to our discipline. And I thank Bill Brice for his generous introduction.

My comments, pithy or not, will focus on mentoring. The generosity of colleagues was critical in shaping my entry into the profession, and I believe that it will be important to the future evolution of our discipline. When GSA's Pat Chenworth sent me a list of past recipients of the Division's award, I was dazzled by how many Awardees had directly helped me in my peregrinations through the halls of geo-science history. I have no desire to turn this into an Academy Awards name-dropping parade, but a brief account of my quarter century in the field may illustrate the merits of mentoring.

Most of us in GSA were trained solely as Geologists. Any success in doing history was akin to success in teaching—it came about largely by a sink-or-swim methodology. That is why mentoring can be so critical. After geo-immersion in graduate school, it took a sabbatical from a liberal arts college to allow my personal move toward historical topics. I will never forget the generosity and good advice extended to me in the early 1970s by George White, Claude Albritton, and Cecil Schneer. Each of them shared insights and information in a way that fuelled enthusiasm for the history of geology. With their encouragement, it was off to Paris in 1973. Paris has served many Americans as a City of Lights, in ways that transcend clichés. For me it was the dual contacts of (1) the

amazing *Bibliothèque* at the *Muséum d'histoire naturelle* and (2) interactions with Joseph Schiller, the renowned physiologist and historian of biology.

Above and beyond its richness of information, the Bibliothèque shed its own historical glow, as the staff delivered books that had been the personal copies of Georges Cuvier, Napoleon III, or the very person you were studying.

Mentoring is a subtle art. We are well advised to take lessons from people such as Joseph Schiller. While working across the table from me, he saw that I was pursuing topics in 18th-century geology. He struck up conversations and was soon conducting me on casual strolls through his neighbourhood—past the homes of Gertrude Stein and Pablo Picasso. We discussed a wide range of topics and he occasionally feigned forget-fullness, seeking my input. It soon dawned that his technique was Socratic and his memory was in fact phenomenal. But I learned many a lesson through the quiet but potent medium of conversation.

Almost exactly that same serendipitous experience repeated itself during Sabbatical II, in 1980. The Bibliothèque was the same, but the new key contact was François Ellenberger, who has helped many Anglophones appreciate French contributions to geology's development. Interactions with other members of the *Comité Français d'Histoire de la Géologie* (COFRHIGEO) have also been enriching and rewarding over the years.

My 1973 and '80 research focused on 18th-century topics that intersected with the work of Albert and Marguerite Carozzi. The Carozzis have been very supportive over the years, offering valuable insights about Francophone geology during the Enlightenment period.

I should also note that my wife, room-mate, and best friend, Kay, and our son, Rob, graciously accepted the dislocations involved. Although not 'mentors' regarding esoterica within geohistory, their support and interest has been invaluable over the years.

On occasion, our own research subjects can serve as mentors. Kirtley Mather is a case in point. He taught me things as I worked to tell his story. My academic home, and Kirtley's alma mater, Denison University, is not old by European or Ivy League standards, but it was founded the same month (December 1831) in which Charles Darwin set sail on the Beagle. When we celebrated the college's Sesquicentennial, in 1981, I was asked to give a capsule commentary on Mather, as a respected scientist who championed liberal arts education. Fear not, I will not use this forum to lecture about Kirtley, nor will I attempt to drum up book sales for Alan Leviton's publishing arm of AAAS.

Here is where it gets weird, and a bit of 'Twilight Zone' theme music might be in order. If you are into the arcana of connections and contingencies (*à la* Steve Gould), please note that Kirtley Mather was on the Harvard faculty from 1924 through 1954. He thus taught generations of Harvard students to appreciate the history of geology. Claude Albritton, Ursula Marvin, Mary Rabbitt, Cecil Schneer, and many others, all profited from Mather's dedication to historical threads in the tapestry of modern science. In turn, Kirtley's students and colleagues shared with me illuminating stories about Mather as a professor and a person. It's Multi-Cycled Mentoring.

As a book-length treatment of Mather's life in science and society evolved, I was introduced to the power of editing as mentoring. Alan Leviton and Michele Aldrich were superb editors and taskmasters. I should perhaps note that anyone working with Michele should be prepared for a stream of humorous but sharply barbed cartoons about the trials of writing and publishing.

Bob Dott and many Awardees have called attention to the need for dialogue among 'pure' historians and 'pure' geologists. A new day may dawn in which nicely welded Geo-Historians arise fully fused from sophisticated programs that actively link scientific and historical training. For the nonce, we are fortunate in the Geological Society of America to have human resources such as Michele Aldrich, Ken Taylor, and a generation of younger persons with strong formal training in history, willing to share ideas, methodologies, and standards.

Speaking of dawning new ages leads to my concluding remarks. In our own attempts to mentor young historians of geology, we need to continue building on the groundwork laid by Gerry Friedman, with *Earth Sciences History*, and Bob Ginsburg, with the 'Rock Star' profiles in *GSA Today*. But note that even those innovations are on paper! The use of the Internet and its GeoClio web-site, as proposed by Léo Laporte and brought to reality by Dean Dunn, may be another way to engage future generations. Cruising the Web is not the same as an enlightening stroll through the streets of Paris, but it may be a viable example of electronic mentoring for the coming Millennium.

Thanks again for conferring an exceptional award on a very surprised person.

Kennard Baker Bork, Denison University

Citation to, and Reply by, Martin Guntau, On the Occasion of his Receipt of the Sue Tyler Friedman Medal of the Geological Society Burlington House, Piccadilly, 5 June, 1997,

Citation by the President of the Geological Society

Martin Guntau has played a most important part in the recognition of the value of the history of science to an understanding of the development of western civilisation. In this respect he is an important pioneer. His doctorate in 1964 was on uniformitarianism and natural law in the geological sciences, and was followed in 1976 by the award of Doctor of Science for his study on the history of the emergence of geology as a natural science.

Martin has published over one hundred articles and books on historical and philosophical problems connected with the natural sciences; not restricted purely to the history of geology, but encompassing a wide-ranging view of the position of geology in the development of modern scientific thought.

Martin is one of the world's leading authorities on the history of geology; a position recognised by the Geological Society of America in 1993 when it honoured him with the History of Geology Award. The Geological Society too wishes to recognise his achievements in drawing our attention to the richness of our cultural ancestry and the importance of lessons that can be derived from its study.

Martin Guntau, we see the award of the Sue Tyler Friedman Medal as a fitting tribute for a lifetime of achievement in the history of geology. Thank you for opening our eyes to the possibility that the past is the key to the future.

Reply

Mr President, Fellows and Guests of the Geological Society, Ladies and Gentlemen: I am delighted and honoured to accept the 1997 Sue Tyler Friedman Medal here in London. I am moved and grateful from the bottom of my heart. I am driven at this moment by various thoughts, only three of which I wish to touch upon.

When I received the message from Professor Hardman about awarding this medal to me I was very struck by the fact that I was to be favoured with this honour in 1997, the year of the bicentennial conference celebrating the lives of Hutton and Lyell and their influences on modern geology.

I, very personally speaking, not only studied mineralogy at the Mining Academy of Freiberg; but where for many years the ideas of Abraham Gottlob Werner—the classical adversary especially of Hutton—inspired the topics of much of my historical work. Work on the emergence of geology as a modern science and the role of the enormous controversy between the Vulcanists and Neptunists has shown how important a role that Werner played in Freiberg in the establishment of this, our, discipline—geology. So to have given the award for the history of geology to a 'Wernerian' like me, and in the year of the commemoration of Hutton and Lyell appears to me a nicely symbolic gesture of English tolerance and cooperation and touches me deeply.

You English would, I think, call it 'fair play' and compare it with cricket! To speak frankly, I was very much in doubt about my choice of study at the beginning of the fifties, as to whether or not I should make up my mind to study mineralogy or history. I started with mineralogy and, eventually, ended up as an historian of science, without having been aware of having wandered between different worlds for so many years.

Today I have the feeling that I chose a good and meaningful route to wander along, even if it is impossible without certain cul-de-sac experiences. The history of geological sciences has certainly given me fulfilment and pleasure. Friends, opponents and critics—whether at home in our German team for the history of geology or my numerous colleagues elsewhere in many other countries—have accompanied me. I think of—among others—Vladimir Tikhomirov and Reijer Hooykaas, Victor Eyles and Cecil Schneer, Gordon Craig and Endre Dudich, David Branagan and Ursula Marvin, Hugh Torrens and Alex Ospovat. All of them I want to thank very much, because they gave me the chance to learn a lot, from and with them.

Today's award of the Sue Tyler Friedman Medal to me by the oldest and most illustrious Geological Society in the world is an unexpected acknowledgment of my efforts, which is both an honour and is flattering at the same time.

For me as a German, the name Friedman stands in a particularly special historical context, since on the one hand it keeps alive all that manifold suffering of millions of people in our own century, while on the other it confirms my optimism that in our challenging world much is taking a turn for the better.

For about three decades I have had some marvellous experiences in a special field. This has been the work in the International Commission on the History of Geological Sciences (INHIGEO). I attended the foundation congress of INHIGEO in June 1967 in Yerevan (Armenia) and a lot of other meetings on the history of earth science. The work of this commission has provided a great chance for a really successful cooperation between geologists and historians of different countries, scientific rank, different political systems as well as religious beliefs.

The main and most significant point has been the extraordinary successful work of the INHIGEO group of people despite doubts or suspicions, especially in the Cold War time, because there has always been a very honest and victory awareness kind of intention, too, for respect and tolerance in terms of human relations, for mutual benefit.

I am very happy about the great variety of chances I have been given to participate in the essential and at the same time exciting developments of those years in question.

Concluding, I gratefully wish to say what an enormous encouragement today's honour is to my further scientific and historical work—not always so easily done in the conditions in the East of Germany today.

Thus, today's event is not only a pleasant appreciation of the past—it is a great stimulation too for the future.

Thank you very much indeed.

(Reproduced from *Geoscientist* by permission of The Geological Society) Martin Guntau, Rostock

ARTICLES

Geology in the Land of the Dulcimer

Paul Mohr, Department of Earth Sciences, University of Asmara, Asmara, Eritrea

The rifted highlands of the Ethiopian region look down on a geological crux, one that is both ancient and modern. Here the Arabo-Nubian massif, a Neoproterozoic collage of accreted island arcs, translates southwards into the annealed passive margins of the Mozambique Belt in eastern Africa. And, since not-so-long-ago Oligocene times, a persistent mantle plume has been feeding flood-basalts that now both cap the high plateaux and floor the awesome depression of Afar. Additionally, this young igneous hearth is being taken advantage of by sea-floor spreading in a progressive northwestward unzipping of the African continent.

Human awareness of this stupendous geological show, notably over the last two centuries, has inevitably come slowly. But what makes the efforts of the geologists who pioneered this remote natural fortress all the more fascinating has been its unique cultural milieu: the turbulent empires of the Coptic Christian highlands and the fluid Islamic domains of the Red Sea and Afar lowlands.

Agatharchides of Cnidas, in the 3rd century BC, describing the lands around the Red Sea, made mention of the Psebean mountains (Eritrean/Ethiopian plateau) and its great rivers 'flowing from darkness'—Astaboras (Tekeze-Atbara) and Astapous (Abai-Blue Nile). In the 4th century AD, Eusebios Hieronymos (St Jerome) wrote to his friend Rusticus (later, bishop of Narbonne), remarking:

> Those who navigate the Red Sea have to encounter many difficulties and dangers before they reach the city of Auxuma [Axum: the ancient capital high on the Ethiopian plateau]. Nomad savages and ferocious wild beasts haunt the shores on either side. Thus travellers must be always armed and on the alert, and they must carry with them a whole year's provisions. [They then face] mountains of gold which, however, men cannot approach by reason of the griffins, dragons, and huge monsters which haunt them; for such are the guardians which avarice needs for its treasures.

Today, the gold is in the dawning sky, but the mountains and attendant difficulties still frown high over the Red Sea and Afar plains.

For nigh on two centuries, a panoply of explorers, naturalists, and geologists amateur and professional has marked the gradual unveiling of the structure and lithologies of the Ethiopian rift valleys and plateaux. The severity of this task cost the health, youth, and even the lives of many of the pioneers. To survey their efforts and achievements in a cursory review is close to detraction—the mere listing that follows is only justified in that it might lead the reader to seek further. It can be claimed on behalf of those early geologists, that a most apt ascription is preserved emblazoned on the colonial Italian bridge arching the Dogali river in Eritrea: *'Ca Custa Lon Ca Custa'*—Whatever it Takes!

In the earlier part of the nineteenth century, several remarkably tough, talented and lucky men provided hints of what the geology of Ethiopia might be. Eduard Rüppel, after notable exploration of the Sudan, traversed the northern sector of the Ethiopian plateau during 1822–1823, and penned the region's first specifically geological paper. Antoine d'Abbadie, inveterate diplomat, geodetic observer, and prolific writer spent ten years, between 1837 and 1847, in northern and central Ethiopia, resulting in a much improved description of the geography that included geologic comments. A meticulous multi-disciplinary survey by two French army captains, P.V. Ferret and J.-G. Galinier, during 1839 and 1842 revealed the basic stratigraphy of the plateau in Tigrai province (immediately south of Eritrea). This major work resulted in a substantial publication accompanied by geographic, geologic, zoologic and climatological maps. Later in the same decade, two English travellers, Charles Johnston and Cornwallis Harris, independently crossed southern Afar from east to west, in 1844 and 1845 respectively. Each described aspects of the volcanic and sedimentary rocks of that volcanotectonically active and humanly hostile region. Indeed, Johnston was the first to propose a mechanism for Ethiopian, and therefore African rifting.

Concomitant with the initial exploration of the Tanzanian and Kenyan rift valleys, the Swiss naturalist-explorer, Werner Münzinger, made extensive journeys across the Eritrean plateau and northern Dancalia (Afar) between 1860 and 1875. He gave special attention to the basement (Neoproterozoic) rock-types, but his life ended in the stark new graben of central Afar when his expedition was annihilated, the first of a sombre succession of such disasters in this forbidding desert furnace. The establishment of a comprehensive basic stratigraphy for north-central Ethiopia was the lasting achievement of William Blanford of the Geological Survey of India. He accompanied Robert Napier's elephant-aided expedition in 1867 to free European captives held by Emperor Tewodros at Magdala, on a flood-basalt peak dominating the central Ethiopian plateau. Blanford's ambitious scheme was to persist, not without controversy, through a century of subsequent stratigraphic researches, up until the 1970s. Following Blanford's focus on lithologies, the observations of A. Aubry and H. Douville during the 1880s led to an understanding that the plateau-Afar escarpment marked a major structural dislocation.

Italian acquisition of the ports of Assab (in 1869) and Massaua (in 1885) led to the formal establishment of the colony of Eritrea in 1890. Scientific investigation rapidly ensued, and in the field of geology a fine reconnaissance geological survey of highland Eritrea by engineer Luigi Baldacci resulted in a 1:400,000 geological map published in 1891. He also sent a suite of representative rock samples to Professor Leonardo Bucca in Italy for

petrographic examination. This policy of colonial surveyors shipping rocks to the home country for expert petrographic study persisted for more than half-a-century. One thinks also of Reginald Koettlitz's samples analysed by Catherine Raisin, and Wilhelm Schimper's by George Prior, in England; for Italy, Gino Bartolommei-Gioli's collected samples were analysed by Antonio d'Achiardi, Giotto Dainelli's samples by Ernesto Manasse, Vinassa de Regny's by Maria de Angelis and Probo Comucci, Michele Gortani and Angelo Bianchi's by Oplinia Hieke-Merlin, etc., etc. Sadly, with hindsight, some first-rate petrographic and geochemical descriptions were to be devalued by inadequately established field relationships.

The year 1891, of course, witnessed the publication in Austria of Eduard Suess' classic paper 'Die Brüche des östlichen Afrika'. All available knowledge of the rift valleys between Mozambique and Palestine was brilliantly reviewed therein, and gave great impetus to further explorations. Notable among these in Kenya were John Walter Gregory's vigorous peregrinations and perceptions, leading his Australian students at a later date to complain:

Here's to Prof. Greg'ry who walks at his ease
While all his pore students go bung at the knees.

During the early decades of the twentieth century, the professionalism of geological investigation in Eritrea–Ethiopia–Somalia strengthened. Many new insights stemmed from the intensive 1905–1906 survey of central Eritrea and northern Afar by Giotto Dainelli and Olinto Marinelli. Following the First World War, in 1919–1920, naval surgeon Paolo Vinassa de Regny investigated the unexpected geology of the Red Sea coastal zone of Afar, revealing not only basement and Mesozoic marine strata, but post-Mesozoic granites! At the same time, Aldo Bibolini was making a geologic foray into northern Eritrea, tentatively identifying a tillite capping the mountains there. Far to the south, Giuseppe Stefanini was investigating the stratigraphy of Somalia. His 1913 and 1924 expeditions led to a new synthesis of the geology of the Horn of Africa, and publication of his renowned 1:2 million map of the region in 1933.

The brief Italian occupation of virtually the entire Horn during the period 1935–1941 fostered vigorous investigations of virtually all aspects of its geology. Outstanding in quality was a combined ground and photogeological survey of the plateau in Tigrai province performed by Giovanni Merla and Enzo Minucci in 1936–37. Significant observations made during this work remain unexplained to this day. During the same period, a survey of the Lake Tana basin was being led by Giotto Dainelli, while AGIP-supported teams led by Michele Gortani and Angelo Bianchi were mapping parts of central and southern Afar, and the adjacent Harar plateau.

The southern half of Ethiopia, embracing and including the Ethiopian rift valley, was, during the first half of the twentieth century, left to individual explorers whose geological whims were usually subsumed under matters of more immediate or general geographical interest. For this and other reasons, the Ethiopian rift valley itself remained virtual *terra incognita* up to the 1960s, a fact deplored by Dainelli when reviewing Ethiopian geology in the early 1940s. The lacuna persisted notwithstanding the pioneering observations made by Maurizio Sacchi during Vittorio Bòttego's second expedition in 1897, before it was annihilated.* There were also those of explorers and rock-collectors Robert du Bourg de Bozas and Oscar Neumann in 1902–1903, Reginald Koettlitz in 1902, Carl von Erlanger in 1903, and Luigi Savoia, Duke of Abruzzi, in 1930. Also in 1930, Pierre Lamare and Pierre Teilhard de Chardin published accounts of the geology of sectors of southern Afar, while Herbert Rohleder and Charles Stansfield Hitchen examined the geology of that region from the relative comfort of the Djibouti-Addis Ababa railway.

What might be called the classic period of Ethiopian geological investigation culminated in 1943 in a monumental synthesis, amounting to three thick volumes of text and one volume of maps, a life-time's reflection by Giotto Dainelli. Alas that this astonishingly thorough, scrupulously objective and critical work, *Geologia dell'Africa Orientale*, was lost to the contemporary scientific world in the wartime collapse of Italy. Yet, fifty years on, it remains a prime source for the historian investigating the remarkable geology and even more remarkable geologists of a corner of the world from where the human race itself likely originated.

Note: the author has compiled a bibliography of all articles published before 1950 that are relevant to the geology of the African rift system. This bibliography is available from the author to anyone wishing to peruse and make use of it, on the condition that he or she will notify the author of any errors and omissions so that it can be constantly improved as a document in the service of the history of geology. [INHIGEO may circulate the document to Members later in the year. (Ed.)]

Professor Mohr retired from University College, Galway, Ireland, two years ago and is currently a part-time professor at the University of Asmara, Eritrea.

The Creation of the Mining Colleges under the Habsburg Monarchy

Josef Haubelt, Prague

---

* The expedition was exploring in southern Ethiopia while Emperor Memelik's army was defeating the Italian Eritrean army at Adua in northern Ethiopia in 1897. Menelik's lieutenants in the south were taking no chances and asked no questions. Maurizio Sacchi was killed in the southern rift valley, while other members of the expedition, including Vittorio Bòttego himself, were killed further north, trying to escape to Addis Ababa.

Technical high schools for mining were created during the Habsburg Monarchy in Jáchymov (Bohemia) in 1716; in Banska Stiavnica (Lower Hungary or present Slovakia) in 1737; and in Smolník (Upper Hungary or present Slovakia), Oravica (Banat in present Romania), and in Idria (Krajina-Krain in present Slovenia) after 1745. University studies in mining were inaugurated by Johann Thaddeus Peithner (1727–1792) in Prague on November 1, 1763 (Haubelt, 1972), by Giovanni Antonio Scopoli (1723–88) in Idria on November 4, 1763, and by Nicolas-Joseph Jacquin (1727–1817) in Stiavnica on September 18, 1764 (Vlachovic, 1964). Peithner taught a three-year course on mining science at the Karel-Ferdinand University in Prague and was one of the only three mining science professors at what was essentially a school for the humanities. On February 19, 1763, a decree naming him to this post was issued by the Habsburg ruler Maria Theresia. Preithner was one of the few who knew something about mining and smelting. Jacquin and Scopoli were physicians, pharmacists, and botanists and their nomination decrees were signed merely by the Court Chamberlain—for the former on June 13, 1763, and for the latter on September 27, 1763. Scopoli had the advantage of having worked as a pharmacist and physician for a long period in the mining town, Idria. Jacquin was a complete beginner, and needed most time to establish himself, but was nevertheless able to exert a significant influence.

A memorial volume commemorating Empress Maria Theresia's decision to found the Central Mining Academy in Stiavnica, issued in 1992, may be regarded as part of the on-going tradition of the Technical College in Kosice, Slovakia. In the Czech Republic, the tradition of technical college mining is exemplified by The Technical College in Ostrava (see Majer, 1984). In 1995, it issued a memorial volume on the former Technical College of Mining in Pribram, which was transferred to Ostrava in 1945 (Halásek *et al.*, 1995); and in 1996 a volume was published commemorating the anniversary of the foundation of the School of Mining in Jáchymov (Schejbal *et al.*, 1996). In addition, a study of the development of the mining schools has been published by Jindra Biolková. A discussion of some of the questions concerning the founding of the mining colleges would be welcome.

Every author who has worked on the origins of mining colleges agrees that the initial impetus to their creation was provided by the proposal of Peithner on May 3, 1762, and by the decisions of Maria Theresia to create both the university mining programme at Prague and the Chair at Banská Stiavnica on December 13 the same year. However, Jozef Vozár (1988, 1996) has maintained that Peithner's success was minimal, whereas other authors judge that it was complete. Conforming to Peithner's proposal, a university programme of mining science was established in Prague. Under the monarchy, the Central Mining Academy was established in Banská Stiavnica upon his transfer there in 1772. I endeavoured to provide a comprehensive review of these historiographical problems at a conference on the history of metallurgy organised by the Friends of the National Technical Museum Club in November 1997, and a study of the problems associated with the creation of mining colleges in Central Europe is currently in press.

Halásek, Dusan *et al.* (1995): Vysoká skola bánská—Technická univerzita, Ostrava, kap. III.: Biolková, Jindra, Vysoka skola bánská v historckém vyvoji, 47–116.

Haubelt, Josef (1972): Montanista Peithner v osvícensko-obrozenském vyovoji, in: Studie z obecnych dejin. Sbornik historickych praci k sedesátym narozeninám prof. dr. Oldricha Říhy, DrSc, Univerzita Karlova, Praha, 23–46.

Majer, Jirí (1984): Z dejin Vysoké skoly banské v Príbrami, Príbram.

Schejbal, Ctirad *et al.* (1996): Historie a soucasnost bánského skolstvív ceskych zemích, Ostrava, kap. I.: Biolková, Jindra, Tradice montánního skolství v ceskych zemich 1716–1849, 7–12.

Vlachovic, Josef (1964): Dejiny banského skolstva na Slovensku v 18. storocí, in: Z dejn vied a techniky na Slovensku III., Bratislava, 33–96.

Vozár, Josef (1996): Banícka akadémia v Banskej Stiavnici a jej vzt'ah k trnavskej univerzite, in: Trnavská univerzita 1635–1773, zostavil Jozef Simonicic, Trnava, 69–80.

Vozár, Josef (1988): Zaciatky baníckeho vysokého skolstva na územi Ceskoslovenska, in: Historicky casopis, 1988, 36, 706–732.

Vozár, Josef (1992): 230 rokov Banícke akadémie v Banskej Stiavnici, Kosice.

Kaspar Maria, Count of Sternberg (1761–1838)

Josef Haubelt, Prague

The palaeontologist Kaspar Sternberg was born in Prague on February 6, 1761, and as the youngest son of a Czech nobleman was destined for the Church. Thus, from 1779 to 1782 he studied theology at the Collegium Germanicum in Rome, and then worked for many years in Bavaria, where he served as a deacon, first in Regensburg from 1785 to 1809 and also in Freising from 1788 to 1809. From 1795 he devoted himself to botanical researches, developing a special interest in saxifrages (1810–1831). But from 1804 his attention was focused on the fossil plants from the anthracite basin of Radnice-Brasy in western Bohemia. Following the death of his two elder brothers, he returned to Bohemia on March 24 1809, to take over the management of the family estates, and played an outstanding role in the economic and cultural life of the Czech nation (Palacky, 1868). It was Sternberg's initiative—with a call on April 15, 1818, 'To Patriotic Friends of Science'—that led to the creation of the 'Society of the patriotic Museum of the

Kingdom of Bohemia', for which he led the inauguration ceremonies on December 23, 1823. He was the first President until his death on December 20, 1838.

As palaeontologist, Sternberg was author of the first systematic work done on the trilobites of central Bohemia (1825). He was also the author of a survey of the history of Czech mining (1836–38). However, his most important work was *Versuch einer geologisch botanischer Darstellung der Flora der Vorwelt* (1820–1838), through which he was, with Ernst Friedrich Schlotheim (1764–1832), one of the founders of scientific palaeobotany. The type and figured material described by Sternberg and his collaborators Karel Borivoj Presl (1794–1852) and August Carl Joseph Corda (1809–49) belong to most precious part of the palaeobotanical collections of the National Museum in Prague. The importance of this collection has increased since 1957, when the 8th Botanical Congress in Paris declared the formal date of issue of the first part of Sternberg's *Flora der Vorwelt* (December 31, 1820) as the starting-point of palaeobotanical nomenclature.

Sternberg's catalogue of plant names has received widespread acclaim not only in phytopalaeontology but in the history of the field, through a recently published volume by Jirí Kvacek and Markéta Straková (1997). Their catalogue begins with a brief biography of Sternberg and his collaborators Presl and Corda. In brief, it contains: 1. generic and sub-generic names (the nomenclature of each generic name having been revised with synonymy and type, along with stratigraphy and type, along with stratigraphy and localities); 2. the names of species and infraspecific taxa published by Sternberg (in alphabetical order according to epithets); 3. other specimens figured in Sternberg's *Flora der Vorwelt* that are housed in the National Museum in Prague; 4. a list of names and species and infraspecific taxa proposed in Sternberg's works, as well as a list of the types of specimens that are missing; and 5. a list of articles and books about Sternberg and his work, an index of taxa, and a locality index. The catalogue comprises the 623 names (82 genera, 3 subgenera, 519 species, and 19 varieties) described by Sternberg and his collaborators. All the listed taxa, with the most important synonymy included, have been revised in terms of nomenclature. All the cases where the names used by Sternberg may conflict with modern usage have been noted. Specimens that are still available for study are briefly described with stratigraphic and taxonomical information included. Seventy-seven taxa have been revised.

It should also be remarked that 1998 marks the 180th anniversary of the founding of the National Museum and the 160th anniversary of Sternberg's death. Many commemorative events will be held. At the end of 1997, the National Museum Society was founded at the initiative of Professor RNDr Milan Stloukl, the Museum's Executive Director. The Ignacy Born Society, with PhDr Lubos Antonin as Secretary, has begun its lectures on the history of palaeontology. In the pantheon of the Museum there is currently an exhibition on the life of Count Sternberg. During the last ten years, much progress has been made, and rendered accessible, concerning the work of the Museum's founders. (See particularly: Obrhel, 1981; Haubelt, 1988; Tywoniak, 1993; and Majer, 1997.) The Symposium that will be held at the end of 1998 will surely lead to a widening and deepening of the knowledge of the works of the Museum's founding fathers.

Haubelt, J., *Kaspar M. Sternberk, Prírodovedec a Geolog: Ústredni ústav Geologicky*, Prague, 1988.

Kvacek, J. and Straková, M., *Catalogue of Fossil Plants Described in Works of Kasper M. Sternberg*, National Museum, Prague, 1997.

Majer, J., *Kaspar Sternberk—Academia*, Prague, 1997.

Obrhel, J., 'Vznik a vyvoj paleobotaniky v Cechách (od nejrannejsich pocátku do roku 1870', *Acta Universitatis Carolinae Geologica*, 1981, *1–2*, 107–134.

Tywoniak, J. *et al.*, 'K spolupráci Kaspara Sternberka s nemeckymi prírodovedci', *Minulosti Západoceského Kraje*, 1993, *29*, 191–243.

Sternberg, K.M., 'Notice sur les Analogues des Plantes Fossiles', *Annales du Muséum Nationale d'Histoire Naturelle'*, 1804, *5*, 462–470.

Sternberg, K.M., 'Übersicht der in Böhmen dermalen bekannten Trilobiten', *Verhandlungen der Gesellschaft des vaterländischen Museums in Böhmen*, Prague, 1825.

Sternberg, K.M., *Revisio Saxifagarum*, Ratisbon. First and Second Supplements, Prague, 1810–1831.

Sternberg, K.M. (with C.B. Presl and A.J. Corda), *Vesuch einer geognostisch botanisher Darstellung der Flora der Vorwelt*, 2 vols, Prague, Leipzig and Regensburg, 1820–1838.

Sternberg, K.M., *Umrisse einer Geschichte der böhmischen Merwerke*, 2 vols, Prague, 1836–1838.

Schlotheim, E.F., *Die Petrefacten auf ihrem jetzigen Standpuncte durch die Beschreibung seiner Sammlung versteierter und fossiler Überreste des Thier- und Pflanzenreichs der Vorwel erläuten*, 2 vols, Gotha, 1820–1822.

Report from the International Society of Soil Science (ISSS) Standing Committee on the History, Philosophy, and Sociology of Soil Science

Dan Yaalon, The Hebrew University, Jerusalem

A History, Philosophy and Sociology of Soil Science group was organised within the ISSS as a Working Group in 1982, at the suggestion of D.H. Yaalon, Jerusalem, to promote activity in these topics, to collect biographical and archival material on eminent soil scientists and to establish relevant archives (*Bulletin ISSS*, No. 61, 1982, p. 41

and No. 66, 1994, p. 38). Though ISRIC in Wageningen agreed to receive relevant documents, the response for archival material was rather meagre.

Subsequent to initial reports on various activities (*Bulletin ISSS*, No. 67, 1985, p. 31) we have issued a Newsletter, usually before the ISSS Congresses. In 1985, our first Newsletter was produced with the assistance of E.J.B. Cutler of Lincoln College, Canterbury, New Zealand. All subsequent ones were issued at irregular intervals with the assistance of J. Douglas Helms. of the USDA Soil Conservation Service (now the Natural Resources Conservation Service), Washington, D.C. These can be obtained from Douglas Helms, senior historian, Resource Economics and Social Science Division, NRCS-USDA, Washington, D.C., 20013. The sixth and most recent one, from December 1996, was issued as a joint Newsletter with the renamed SSSA Council on the History, Philosophy, and Sociology of Soil Science. Its past Chairman, Dr Donald Sparks, of the University of Delaware, arranged for its appearance on the Internet, and it may now be viewed on the following web-site: <http://www.cirad.fr/isss/newslet6.html>. The Soil Society of America has added a link from its homepage to the ISSS site. The Newsletters inform us of various activities in the topics of interest, on recent publications, and include also occasional articles submitted by members.

The activities of the ISSS-CHP Standing Committee (previously Working Group) now include arranging symposia during the ISSS Congresses. The first, in 1990, in Kyoto, Japan, was entitled 'Historical, Philosophical, and Sociological Aspects of Development in Soil Science' and included five papers. The next in 1994 at the 15th World Congress of Soil Science, Acupulco, Mexico, entitled ;Origin and Transmission of Ideas in Soil Science', comprised some ten presentations (oral and posters). It attracted an overflow audience and generated animated discussion. For the 16th WCSS in 1998 in Montpellier, France, the topic 'Attitudes to Soil Care and Land Use through Human History' was chosen, which so far has resulted in some twenty-six submissions of abstracts. A special journal publication is planned.

Besides the active Council of the Soil Science Society of America, there is a group in Russia supported by the Russian Foundation for Basic Research, under Igor V. Ivanov at Pushchino, Moscow Region, which is actively studying questions related to the history of soil science. Hopefully other countries will establish similar groups. A proposal to organise a joint Commission with the International Union of History and Philosophy of Sciences was approved by the General Assembly of its Division of History of Science in July, 1997. Sponsoring international symposia, joint publications, and participation at its congresses are the main activities envisaged.

Members are encouraged to contact me with offers of co-operation, contributions to newsletters, reports and news on activities, publication announcements, short articles, or suggestions and offers for future projects, such as the Center for Soil and Society, being established at by Bruce R. James, College Park, Maryland. Your contribution would be appreciated.

July, 1997

BOOK REVIEWS*

A Russian View of the History and Philosophy of Geology

Viktor E. Khain and Anatoly G. Rabukhin, *History and Methodology of Geological Sciences*, Moscow University Press, Moscow, 1997, 224 pp. (in Russian).

The authors—both members of INHIGEO—have many years of experience in giving lectures on this topic to students at Moscow State University. Their book is thus written for students of geological sciences and other persons interested in the history of geology. It gives an informative and systematic general view of the development of knowledge about the nature of the earth, and some fundamental philosophical ideas on geology as a natural science. More than forty years ago, Professor Khain, in collaboration with the late V.V. Tikhomirov, published a *Survey of the History of Geology* (1956, 240 pp.), and subsequently a great number of articles on this theme. Professor Rabukhin is Professor in the 'Laboratorium' of History and Methodology of Geology at Moscow State University.

The authors begin with a chapter on the history of geological sciences as an 'independent discipline'. They explain the object, aims, and tasks of historiography, and the fundamental principles for the per iodisation of the history of geology. There follows a chapter-by-chapter chronological representation of the history of geology: Early geological knowledge from the antiquity to the end of the 17th century; The formation of scientific geology during the second half of the 18th century; The 'heroic' period of geology in the first half of the 19th century; The period of 'classical' geology during the second half of the last century; The 'critical' period of geology at the beginning of the 20th century; and The modern development of geo-sciences from the sixties to the nineties. Three-quarters of the

---

* Please note that the review by Hugh Torrens of M. Craven's volume, *John Whitehurst of Derby: Clockmaker and Scientist 1713-88*, Mayfield Books, Ashbourne, 1997, published last year in *Newsletter* No. 29, also appeared in *Notes and Records of the Royal Society of London*, 1997, *51*, 341–342 and was published by INHIGEO by permission (Ed.).

historical part of the text is written on geological sciences during the last two centuries, and will be particularly useful for students, helping them to understand the roots or sources of modern geological thinking.

The authors show how scientific geology emerged in relation to the great debate between Neptunists and Plutonists in the late 18th century, concerning the operation of internal and external forces in the geological system of the earth. For the 19th and 20th centuries, there are two main foci for the discussion. The first is the history of fundamental geological ideas, particularly those concerned with tectonics. Instructive descriptions are given about the major ideas on the dynamics and structure of the earth's crust, from Leopold von Buch's theory of craters of elevation to modern plate-tectonics. The authors do not, of course, restrict themselves to Russian scientists, but as may be expected they properly emphasise Russian work. This makes the book particularly interesting and important for historians outside Russia, given that the great Russian geological tradition is often neglected in West European and American publications.

The authors' second focus of attention is the explanation of the formation and development of the different geological disciplines during the last two hundred years—such as palaeontology, bio- and litho-stratigraphy, petrography, palaeogeography, economic geology, hydrogeology, mineralogy, etc. Finally, the authors discuss the results of the 'three sisters' in the family of geosciences today: geology, geophysics and geochemistry. This part of the book concludes with a chapter (pp. 164–170) on the present situation of geological sciences, and consideration of future perspectives. This is unusual for a textbook on the history of a discipline, but is both interesting and useful, in that it provides an 'orientation' or 'vision' for the future thinking of students and other interested persons.

The second part of the book (pp. 174–211) considers some general questions on the methodology of geological sciences, and there is discussion of the elements of philosophy, epistemology, and theory of science, as applied to geology in general. There are explanations of the object, scope, and task of scientific research, the characteristics of theory-change, 'scientific revolutions', the inter-relationships of the several sciences, and a number of terms like 'fact', 'hypothesis', 'law', 'theory', and 'model'. Here the authors consider the character of geological evolution in nature, geological laws, the understanding of time in geology, and the special methods of geological research.

The text is written in a balanced and objective manner. The reader will learn much about the 'internal' development of the geological sciences, but there is not much discussion of social or other 'external' conditions. There are some exceptions, as for example the description of the relation between mining and geology during the Industrial Revolution. In the second part, one finds a great number of names, including those of the Russian Marxist philosopher, B.M. Kedrov, or the historian of science, S.R. Mikulinsky. This is entirely appropriate, for they all developed useful or interesting ideas relevant to the history of geological ideas.

Regrettably, the text is printed without notes or declaration of sources, and the bibliography is very brief.

The book is a valuable contribution to the historiography of geological sciences, like other general works such as those of François Ellenberger (1988/94), Helmut Hölder (1989), Gabriel Gohau (1991), or David Oldroyd (1996). Because of the book's importance and the small number of 'Western' historians of science able to read Russian, an English translation would be most welcome.

Martin Guntau, Rostock

Essays on the History of Soil Science

Dan H. Yaalon and S. Berkowicz (eds), *History of Soil Science: International Perspectives*(Advances in Geoecology, 29), Catena Verlag GMBH, Reiskirchen. 438 pp.

With the exception of a few well-developed 'industries' centred on key figures such as Darwin and Lyell (and to a much lesser extent Hutton, Agassiz, Murchison, Geikie and a few others), or topics like evolution, uniformitarianism, glaciation, mountain building, and continental drift, the geosciences have seen very limited explorations by professional historians of science. Facing this neglect, the human intellectual need for an historical perspective on bodies of work has caused scientists themselves to undertake the work. This collection is such a work, and as we learn from the preface, it grew out of a Working Group of the International Society for Soil Science, initiated in 1982.

As an international undertaking the volume provides a rich wealth of information and outstanding bibliographic sources for further exploration in most of the main language groups. Although I found rather limited resources on French work at home or abroad, this may be in part a reflection of the active literature. At the same time it acts as a bracing primer on soil science for any historian of science adventuresome enough to step into the field. The book has five parts: an introduction to soils as objects as study; classification and mapping of soils; selected topics in chemical and physical soil sciences; some regional perspectives and concepts; and some outstanding personalities. In all, the coverage is quite broad, although relatively light on the tropics.

Internal histories of disciplines are often stereotyped as presentist, self-serving and whiggish, but my sense of this book is that the authors write with enthusiasm and professional insight and in the essays I read closely, seemed at pains to evaluate their topics within prevailing cultural, social and scientific norms. None of the essays are cursory and glancing, all provide invaluable guides to their topics, many implicitly suggest fruitful topics for investigation. I learnt with surprise that a soil microbiologist (Selman Waksman) won a Nobel Prize for Physiology or Medicine in 1952 for his work in antibiotics. Especially instructive (and amusing towards the end) is

the essay on the impact of totalitarian ideology in Central and Eastern Europe on the development of soil physics, although the authors point out that Eastern Europe was not the only place where innovation was stifled and retarded in the same period.

Soil Science has had a slow development and a relatively uncontroversial history. In his introduction Yaalon identifies only three major paradigm-shifts in a century and a half: Liebig's mineral theory of plant nutrition (1840s); Dokuchaev, Hilgard, and later Jenny's recognition of the soil profile (from the 1880s); and the acceptance in the 1970s and 1980s of a deterministic process-response model for soil reconstruction. Whether all his contributors would agree with this remains to be seen. Certainly with an estimated 50,000 active soil scientists in the world, producing 5,000 papers a year, life cannot remain so uncomplicated!

While that issue remains to be discussed, let me welcome and commend this substantial and scholarly volume, it will remain essential reading for many years to come.

Keith Tinkler, St Catharines, Canada

Of Minerals and History

D.D. Hogarth, P.W. Boreham and J.G. Mitchell, *Martin Frobisher's Northwest Venture 1576-1581: Mines, Minerals & Metallurgy*, Mercury Series, Directorate Paper No. 7, Canadian Museum of Civilization. 200 pp. US$21.95.

Sometimes a book appears that challenges our ideas of the nature of history by reminding us of the infinite wealth of human experience and the limitations of our academic disciplines. This monograph from the Meta Incognita (Baffin Land) Project of the Canadian Museum of Civilization is just such a book, escaping categorisation any narrower than that of history of civilisation. Although nominally a history of Martin Frobisher's 16th-century mining venture, it touches on geology, mineralogy, industrial archaeology, metallurgy, ethnology, and the histories of geography and Elizabethan England. It is an account of the foundering of the earliest English effort in the Renaissance conquest of America—three successive expeditions to the North American Arctic region that Queen Elizabeth named the Meta Incognita (unknown limits). The venture had all of the elements of the Spanish expeditions of the first half of the century—the search by European venturers to find a new route to the Indies, the gold fever, even conflict with the native people. Michael Lok, a seaman who became a wealthy London merchant, was the principal motivator of the expeditions. Lok was the creator and treasurer of the Cathay Company formed to dispatch them. Frobisher, their General, was one of Elizabeth's Sea-Dogs, a pirate become privateer and later knighted, a Captain who died in battle as an Admiral. In 1576 Frobisher led 37 men in two small ships on the first expedition in search of a Northwest Passage. Forced to return due to the lateness of the season, he had reached not much further west than the bay in Baffin Island that bears his name. On his return to England, a single piece of black rock struck a spark that persuaded Lok, Frobisher and his venturer partners including the Lord High Treasurer, the Lord High Admiral, Lord Leicester, Secretary Walsingham—Queen Elizabeth was the largest investor of all—to think themselves on the verge of another Mexico. It seemed to be another chance at Peru half a century after Pizarro.

Frobisher led two more expeditions to the Meta Incognita, each substantially larger than the last. The second expedition of 145 men and 3 vessels and the third of nearly 400 men and 15 vessels were intended to prove and exploit the rich deposits of gold they believed they had discovered there. The latter expedition was also the first serious British attempt to establish a permanent colony in the New World. How did it happen that the wealthiest and most powerful people in England expended such energy and treasure in pursuit of a chimera, or did they in fact, overcome by difficulties and bad luck, lose an historic opportunity? Such questions required the authors to pursue not only the historical analysis of contemporary records, but a modern technical study of the situation that faced the Elizabethan venturers. The black rock that Frobisher had brought back for a token, was only 'about the size of a penny-loaf'. When it was analysed it was reported rich in gold and although all but one of eight subsequent assayers pronounced the rock to be worthless, Frobisher and his venturer-partners gave no further thought to the Northwest Passage. They were in the grip of gold fever. Before the collapse of their Cathay Company after less than four years, they had opened seven mines in the harsh barrens of Baffin Land; they had begun building a settlement, but then retreated on the loss of some supplies. Even so, they had mined and shipped back across the North Atlantic more than 1400 tons of ore, and to process it they had constructed a mill and smelter complex on an industrial scale (the first in Britain) at Dartford, Kent. In pilot runs, some gold and silver were apparently recovered. By 1581 though, all was lost. Lok went to prison for the Company's debt.

Interest in the region that became the Canadian Arctic intensified during and after the Second World War with the post-war development of intercontinental air transport. It increased with the Cold War construction of the Defense Early Warning line of radar stations and continues today with resource development, most obviously in the search for petroleum. Donald Hogarth, Professor of Mineralogy at the University of Ottawa, has been studying the geology of the area for many years and his long-standing involvement developed into an ever-widening study of the Frobisher country and the Frobisher expeditions. This monograph is based largely on his field studies at the Baffin Island sites with Smithsonian Field Parties in 1990, 1991 and 1992, and field studies of the metallurgical sites in England. Hogarth co-operated with among others, the co-authors of the

monograph—P.W. Boreham, Curator of the Dartford Borough Museum at Kent, and Professor J.G. Mitchell, geochronologist at the University of Newcastle-upon-Tyne. They have amongst them, combed the surviving records and manuscripts as well as the contemporary and the modern literature. Between the records and the fieldwork, they have located most of the traces of the mining endeavours in Baffin Land and the metallurgical sites back in England. They have even found, for purposes of modern analysis, substantial remnants of the ore that reached Britain, including remnants from a shipwreck on the Irish Coast that were built into a wall. Their monograph includes all the results of their modern geological, mineralogical, petrographic and metallurgical analysis. They compared modern assays of the ores with the records of the 16th century assays. They have identified many if not all of the names that appear in the records and supply biographical notes.

Voluminous tables are a rich source of suggestive details. There are tables of the vessels of the three expeditions, their captains, masters, boatswains, etc., as well as such items as tonnages, complements, and owners; (some of the vessels in the third expedition were hired transports, others were vessels on shares belonging to other venturers outside the Company). We learn from the tables that the armaments for the planned colony of 100 men to winter over included 60 longbows with 4,320 arrows, as well as bowstrings, pikes, and 2,400 pounds of powder for 60 calivers. (firearms), lead etc. Everything for the colony had to be brought with them—not only timber for the fort that was to house the colony but 5,000 billets of firewood and 13 cartloads of elm roofing; every bit of food, the tools for the mining—details that directly complement the authors' careful reconstructions of 16th-century mining and assaying technology.

The review of a monograph is not the place for a detailed account of the geologic surveys and the modern assays, or the authors' investigation of the disparities among the contemporary assays. The Frobisher Expeditions were a great geopolitical stroke aimed at changing the course of world history. The route to the Indies Frobisher wrote was, 'the onely thing in things of the Worlde that was left yet undone'.

We already know the outcome. The history—any meaningful understanding of the escalation and ultimate collapse of the venture—is in the details. Gold had not been on the minds of the Cathay Company in 1576 when they dispatched Frobisher on that first expedition in search of the Northwest Passage because it was believed that gold could not occur that far to the North. Hermetic astrology taught that metals were engendered by the influence of the planets, i.e. gold by the sun—and the sun, of course, was very weak in the far North. The obstacles encountered with the first expedition (1576) had seemed to preclude an early breakthrough to Asia by way of the Northwest. There would be no outflanking of the Turks, the Spanish and the Portuguese, the Dutch and the French by this means. But the stakes were too great; the venturers including Elizabeth herself were too prideful to acknowledge defeat. What if the starting-point for the next push to the Northwest could be a base on Frobisher's coast—a fort with troops and arms, a settlement with labourers and artisans, a busy port with ore for trade? They grasped at the token specimen of black rock, casting aside the majority of the assays as easily as they ignored astrological theory.

The cover reproduction of a contemporary painting of Frobisher standing in front of a small globe is worthy of mention. He wears a ruff collar and a boatswain's whistle on a lanyard. His left hand is open as if he is about to grasp his sword. The right hand holds a pistol with finger on the trigger. He meant to do 'the onely thing in things of the Worlde that was left yet undone'.

Cecil J. Schneer, Newfields, New Hampshire
(republished by permission from *The Journal of Geoscience Education*)

Studying the Earth: Research, Reasoning, and Riddles

Wang Hongzhen, David F. Branagan, Ouyang Ziyuan, and Wang Xulian (eds),*Comparative Planetology, Geological Education, History of Geology: Proceedings of the 30th International Geological Congress, Beijing, China, 4–14 August, 1996*, Volume 26, VSP, Utrecht and Tokyo, 1997. ix + 306 pp. US $80.00; £50.00

When one is required to review a volume containing twenty-six papers, many with multiple authorship, one is faced with two alternatives. The first is to list all titles and authorships in full and quote enough sentences from the abstracts to give an impression that one has read all the papers. That procedure requires only minimal effort and very quickly adds an impressive bulk to the review. Moreover, it will certainly acquaint readers with the volume's contents, if nothing more. However, the review will be as intrinsically boring as a contents list. The second procedure is to select particular papers and to make critical or positive comments on these, while giving only summary treatment (or none at all) to the others. Since such an approach is likely to make more stimulating reading, it is the one I am adopting. By doing so, I imply no criticism of the papers that are not treated; though not attracting my own attention, they may well be of great interest to other readers.

First, then, to the 'Comparative Planetology' section and to the first paper in the volume. In this, three Japanese geophysicists (Masanao Abe, Hitoshi Mizutani and Masatsugu Oue) present the intriguing thesis that the progressive displacement of the continental masses by plate tectonics may have caused variation in the Earth's rate of rotation upon its axis. Their theory is based on calculations of the ocean tide patterns that would be produced by different continental configurations. It may explain the variations in length of days and months during the late Precambrian and Phanerozoic—variations that have been revealed by carbonate depositional patterns in invertebrate shells and stromatolites.

That paper, then, hypothesises a connection between geophysics and palaeontology. The next boldly—and, in my view, quite erroneously—proclaims such a connection. Sankar Chatterjee is a starry-eyed believer in the dramatic theory that meteorite impacts at the end of the Mesozoic wiped out the dinosaurs. Moreover, he claims that:

> Along with dinosaurs, pterosaurs, plesiosaurs, mosasaurs as well as several families of birds and marsupial mammals, and hundreds of other plants [*sic*] were also suddenly wiped out at that time. Two-thirds of all marine animal species including calcareous planktons [*sic*], ammonites and rudists also vanished, collapsing the oceanic food chain. The biosphere of the earth was devastated.

The evidence for meteorite impact in Yucatan at the end of the Cretaceous is indeed convincing. Chatterjee believes that there were multiple impacts and, in this, he may well be right. However, as with many other 'impact-extinction' enthusiasts, his knowledge of palaeontology appears to be geared to fit with his preconceptions. The review of extinction patterns he presents on p. 46 is based essentially upon the writings of other enthusiasts. No consideration is given to works critical of the hypothesis he favours, such as those by Sloan (1976, 1985); Van Valen and Sloan, ed. (1977); Sloan *et al.* (1986); Bryant (1989); Hoffman (1989); Sarjeant (1990); and Taquet (1993).

In consequence, his assessment is sadly out of balance. First of all, the late Cretaceous extinctions were by no means simultaneous, as Dr Chatterjee states they were. Instead, the various groups he lists faded out during a time span of many millions of years—not overnight nor even over a few decades, as would have been the case if impact had been the cause. Moreover, he makes claims quite unsupported by palaeontological evidence. The rudists were fading, because out-competed by the scleractinid corals that had now invaded their refuge, the Sea of Tethys; *that* was the cause of their extinction, not impact. Similarly, the ammonites were being ousted by the coleoid cephalopods; they did not last till the end of the Cretaceous. The plesiosaurs had mostly faded out much earlier in the Cretaceous; the few that were left had only a restricted geographic range and were a prime target for extinction. The mosasaurs had been losing their prime food supply, with the dwindling of the ammonites, and were suffering strong competition from the sharks (a group which passed the KT boundary without any flicker): they also did not require slaying by extraterrestrial causes. Long before the Cretaceous ended, the pterosaurs had almost gone: the vanishing of the last survivors—the condor-like *Quetzalcoatlus* and the albatross-like *Pteranodon*—is hardly a surprise.

As for the dinosaurs, we have convincing evidence for the time of their extinction only from one restricted area—the continental interior of North America. In that region, their last remains are found well beneath the iridium layer now taken to mark the boundary. When did they become extinct elsewhere? We don't know. (The date of their extinction in India, mentioned by Dr Chatterjee has not yet been accurately dated by palynological or other means).

Whether the 'calcareous nanoplankton' suffered a major extinction at this time is questionable: but if so there is, as Hoffman (1989) has noted, good reason to doubt whether their extinction was synchronous with that of the planktonic foraminifera. Certainly the other major Late Cretaceous groups of micro-organisms—the radiolaria, the diatoms and (despite Dr Chatterjee's claim, p. 46) the dinoflagellates—present no evidences of major extinctions at that time. Maybe hundreds of individual plants *were* wiped out in Yucatán and thereabouts, but no major plant extinctions occurred world-wide.

The marsupials did indeed become extinct in North America at the end of the Cretaceous, but they survived vigorously in South America and Australia; this was scarcely a universal extinction! Moreover, what about the groups that were wholly unaffected: the crocodiles, busily diversifying across the boundary; the archaic champsosaurs still hanging on; the lizards, the snakes, the placental mammals, and the birds, none of which show any abnormal extinctions? Indeed, as the recent paper by Buffetaut (1998) shows, there were even giant running birds in the late Cretaceous, as well as in the Paleocene. If big dinosaurs were wiped out by an extraterrestrial impact, why not big birds?

Yes, the impacts might have caused extinctions in Central America—though there are no Late Cretaceous continental sediments from that region to prove it—and perhaps in the south and central regions of North America. However, to claim that there was a 'devastation' of the biosphere is absurd. Undoubtedly there were ecosystem changes; but, as Charig (1993) put it:

> [T]he extinctions at the Cretaceous-Tertiary boundary are no different in kind from the countless other extinctions that have been taking place on the planet since the beginnings of life and throughout evolutionary history.

The catastrophic terminal Cretaceous extinction, then, is in my view, a mere chimera. Moreover, I am not alone in viewing with incredulity the hypothesis that an extraterrestrial impact wiped out the dinosaurs. Since Chatterjee's paper was presented, it has come under increasing assault. Interested readers should consult Archibald (1996); Jablonski and Raup (1995); Sarjeant (1996); and, in particular, MacLeod *et al.* (1997).

A much more mysterious happening was the explosion at Tunguska, Siberia in 1908. The careful geochemical study by Hou Quinlin and Ma Peixue may facilitate our understanding of it, by their concurrence with the concept of extraterrestrial impact and their presentation of further evidence that the explosion body was of low density. However, much remains to be learned about that strange event.

The 'Geological Education' section contains only three papers. The first two are of a sort to appeal only to education theorists; they do not give any guidelines for outreach. The third, by Takeshi Tanaka of Japan, in contrast,

does present useful ideas for the teaching of earth sciences to engineers. It may be read with profit by all who have to tackle that difficult task.

The first three papers in the 'History of Geology' section are devoted to the US geologist Amadeus William Grabau, who spent more than a quarter-century in China, dying there in 1946. Since he contributed enormously to the development of geological research and education in that immense country, it was fitting that such extended tributes should be paid to his work during the Beijing meeting—by Wang Hongzhen (who furnishes a useful list of Grabau's writings on China), Gerald Friedman, and Ursula Marvin. Marvin's paper focuses on Grabau's global concepts and shows that, while some are unacceptable nowadays, others still have relevance.

Many years ago, I was fortunate to secure a copy of Robert Logan Jack's fascinating account of his travels in *The Back Blocks of China* (1904). Though Jack's earlier work in Queensland has been commemorated in several histories, his geological work in China has hitherto escaped the attention of historians and I was unusual in being even aware of it. David Branagan's article usefully reviews it and puts it into a proper contemporary perspective. A study of the work of the German geologist Peter Misch, by Joseph A. Vance and Li Wenda, likewise rescues from obscurity an almost forgotten contributor to Chinese geology, while Patricia Komarower usefully summarises the work done during the American Museum of Natural History's five Central Asiatic Expeditions, setting these for the first time into a Chinese, rather than a North American, context.

A minor episode in the geological life of a much more famous scientist, Adam Sedgwick, is similarly brought into perspective by David Oldroyd, who demonstrates that Sedgwick's initial interpretation of English Lake District geology in the 1820s was to a considerable extent founded upon the help of local amateurs.

While Sedgwick's geological work has in general been highly regarded, that of Sidney Savory Buckman has attracted much severe criticism. His early researches on ammonites and Jurassic stratigraphy were of outstanding quality and the stratigraphical concepts that he formulated have proved of lasting importance. Unfortunately, a combination of ill-health, financial problems and isolation from the scientific community reduced the quality of Buckman's later studies and tarnished his posthumous reputation. Hugh Torrens's study of Buckman is sympathetic and might suitable serve as prelude to an extended biography, of which Hugh would be the ideal author.

The account by Wang Hongzhen and Wan Xunlian of the history of studies of early life on earth is especially useful, in that it reminds readers of the recent discoveries of pre-Ediacaran faunas in Chinese Precambrian strata. However, it was marred for me by their too-ready acceptance of the idea that extraterrestrial causes have significantly influenced the development of life on Earth. This is a theory dubiously grounded and in highest degree questionable, not only in the case of the dinosaurs but also at earlier geological levels (see Sarjeant, 1990, for discussion).

The volume concludes with three brief studies of the development of various branches of geology in China—useful enough, but not profound.

Reading such volumes as this is like ordering a *rijstaffel* in an Indonesian restaurant. There will be a variety of dishes, some flavourful, some rather uninspired and some quite without appeal. There is enough of the good in this literary *rijstaffel* to make this volume worthy of selective reading and, as in an Indonesian restaurant, the presentation is attractive. Whether it is worth the high purchase price must be a question decided by the appetite of the reader.

References

Archibald, D., *Dinosaur Extinction and the End of an Era. What the Fossils Say*, in: *Critical Moments in Paleobiology & Earth History Series*, Columbia University Press, New York, 1996.

Bryant, L.J., 'Non–dinosaurian Lower Vertebrates across the Cretaceous–Tertiary Boundary in Northeastern Montana', *University of California Publications in Geological Sciences, 134*, University of California Press, Berkeley, Los Angeles and Oxford, 1989.

Buffetaut, E. and Le Loeuff, J., 'A New Giant Ground Bird from the Upper Cretaceous of Southern France', *Journal of the Geological Society*, 1998, *155*, 1–4.

Charig, A.J., 'Disaster Theories of Dinosaur Extinction', *Modern Geology*, 1993, *18*, 299–318.

Hoffman, A., 'Mass Extinctions: The View of a Sceptic', *Journal of the Geological Society of London*, 1989, *146*, 21–36.

Hurlburt S.H. and Archibald, J.D., 'No Statistical Support for Sudden (or Gradual) Extinction of Dinosaurs', *Geology*, 1995, *23*, 881–884.

Jablonski, D. and Raup, D.M., 'Selectivity of End-of-Cretaceous Marine Bivalve Extinctions', *Science*, 1995, *268*, 389–391.

MacLeod, N *et al.*, 'The Cretaceous–Tertiary Biotic Transition', *Journal of the Geological Society of London*, 1997, *154*, 256–292.

Sarjeant, W.A.S., 'Astrogeological Events and Mass Extinctions: Global Crises or Geological Chimaerae?', *Modern Geology*, 1990, *15*, 101–112.

Sarjeant, W.A.S., 'Dinosaur Extinction: Sudden or Slow, Cataclysmic or Climatic?', *Geoscience Canada*, 1996, *23*, 161–164.

Sloan, R.E., 'The Ecology of Dinosaur Extinction', *Athlon: Royal Ontario Museum Life Sciences Miscellaneous Publications*, 1976, 134–154.

Sloan, R.E., *Gradual Extinction of Latest Cretaceous Dinosaurs in the Hell Creek Formation, McCone County, Montana*, Geological Society of America, Rocky Mountain Section, Boise, Idaho, 1985, Paper No. 72269, 2 pp.

Sloan, R.E. *et al.*, 'Gradual Dinosaur Extinction and Simultaneous Ungulate Radiation in the Hell Creek Formation', *Science*, 1986, *232*, 629–633.

Taquet, P., 'Les Dinosaures, Grandeur et Décadence', *La Vie des Sciences, Comptes Rendus de l'Académie des Sciences, Paris, Séries Genérales*, 1993, *10*, 265–284.

Van Valen, L. and Sloan, R.E. (eds), 'Ecology and the Extinction of the Dinosaurs', *Evolutionary Theory*, 1977, *2*, 37–64.

William Sarjeant, Saskatoon

(The preceding review is reproduced with the Editor's permission from *Episodes* [1998].)

Geology at an Élite University

E.A. Vincent, *Geology and Mineralogy at Oxford 1860–1986: History and Reminiscence*, Department of Earth Sciences, Oxford, 1994. vii + 245 pp. £8.50

We have here a most interesting institutional history, written by a man who spent the greater part of his working life as a staff member of that institution and served as its professor and departmental head from 1967 to 1986.

Vincent's principal predecessors were: William Buckland (reader); Hugh Strickland (reader); John Phillips (professor, geology); Nevil Story Maskelyne (mineralogy); Joseph Prestwich (geology); Alexander Green (geology); Henry Miers (mineralogy); William Sollas (geology); Herbert Bowman (mineralogy and crystallography); James Douglas (geology); and Lawrence Wager (geology). Some of these men, such as Buckland and Sollas, are well known to historians of science; others such as Douglas much less so.

The Oxford department has never had quite the cachet of its counterpart at Cambridge, either amongst its students or staff (as Vincent himself acknowledges). At Cambridge, there has for long been the splendid undergraduate 'Sedgwick Club', and a long line of photographs of its many presidents can be seen along the wall of one of its corridors. There one sees the eager youthful faces of men (and only very recently women) who were all to become leaders of the next generation of geologists—including one renegade, Martin Rudwick, who chose to become an historian of geology rather than a geologist pure and simple. Cambridge established itself as a major department through the heroic efforts of its illustrious professor Adam Sedgwick, and was provided with spacious and appropriate physical amenities from early in the twentieth century, in its celebrated 'Sedgwick Museum'. Oxford has never been quite so fortunate in its physical facilities, and much of Vincent's book is devoted to recounting struggles to obtain adequate accommodation.

The early Oxford geology teachers had to run their units almost as one-man bands, and it was not until the post-War period, and when Wager became professor, that geology became a fully-fledged department in the modern style. In Buckland's day, geology lectures were given to enthusiastic audiences, but until the 1850s science was not part of the degree curriculum; and geology took longer to make its way into the mainstream than (say) physics and chemistry. This was largely because no Oxford college took up geology in a big way, as St John's did at Cambridge. Yet some of the nineteenth-century professors, particularly Phillips, Prestwich, and Sollas, were men of high distinction.

The Oxbridge 'system' had both strengths and weaknesses. On the one hand it gave free rein to men of great ability and industry. On the other, the collegiate system, with the old, rich, and powerful colleges overstocked with classicists and theologians—reluctant to appoint scientists as fellows—made it difficult to operate the hallowed tutorial system if there were no scientists (or specifically geologists) available to teach in the colleges. A more particular difficulty so far as Oxford was concerned was the fact that the notable geologist, Sollas, seems to have become a little mad in his old age and allowed his department to get into a state of serious decline before he eventually departed in 1936, not by retirement but decease at the age of eighty-seven!

Sollas's place was taken by Douglas, but he had been waiting in the wings too long, and his efforts to revitalise the department were seriously hampered by the War. It was Lawrence Wager, who held the chair from 1950 to 1965, that eventually succeeded in building up the department as a modern teaching and research institution, particularly developing its strength in petrology, which was his own specialty. In time, he was succeeded by Vincent (also a mineralogist and petrologist). A former colleague of Wager at Durham, Vincent was one of his early appointees; and after a short spell as professor at Manchester, he succeeded to the Oxford chair, heading the department from 1967 until his retirement in 1986. (K.S. Sandford was temporary head in the brief interregnum.) Vincent thus knows every detail of the recent history of the department.

Wager is undoubtedly the hero of Vincent's very personal account of the Oxford department, and it is interesting to see, from his successor's extremely well-informed account, how Wager *functioned* as professor. He arrived with a clear intention of pulling the place together, building a research team round his own specialty, working to gather up students, collections, buildings, equipment, and technical and academic staff. He was a leader—a man who could lead by example and by accomplishment; not a mere administrator or academic politician. Wager might appear selfish—commandeering, for example, the very limited secretarial services available in the department, while other staff had to get by with two fingers on their typewriters. He seems also to have been a somewhat distant man.

But what he did evidently worked, and gradually Oxford began to catch up with geology at the 'other place', though never, I think, outpacing it.

The task of a professor in a department such as Wager's was immense. He had to deal with the unit's money matters, organise research, see to building projects, make appointments, run field-trips, oversee the department's curriculum, and carry out his own research, which he did with great success, becoming *the* authority on layered igneous rocks. He had to see that new fields of geology, such as the developing branches of geophysics or radiometric dating, were added to the departmental offerings while ensuring that older fields such as palaeontology and stratigraphy were suitably maintained. By Vincent's account, he succeeded admirably in all this; and Vincent too, it appears, was no less successful.

Of course, Oxford—just by being Oxford—can attract students and staff of great ability. It is one of the world's élite universities. Even if geology is not one of its most illustrious fields, it would be a surprise if Oxford's geology department did not excel. As one of the book's appendices, there is a list of all academic staff from 1860 to 1986, and one can do a little interesting head counting. Out of the 92 listed staff members, 12 were professors, 9 readers, 26 lecturers, 40 demonstrators, assistant curators, or research assistants, 2 were college fellows, and 3 research fellows. Of the 92 members, 56.5% obtained medals or named funds of learned societies; 20% obtained chairs at other institutions; 12% became fellows of the Royal Societies of London or Edinburgh; 12% joined the staff of the British Museum, the Geological Survey, or went into industry; 4.5% obtained knighthoods; and 4.5% became senior university administrators. Virtually *all* the staff prior to 1986 were men. Despite the limited linkage with industry, Oxford played quite a significant role in the development of petroleum geology.

It is instructive to compare the department's success with what Australia can and does offer, while acknowledging that the comparisons cannot be entirely valid since it is now more than ten years since Vincent retired, and things have changed in Britain as well as down under.

The thing I would emphasise, even if it might seem trite and obvious, is that none of the Oxford staff department ever treated their positions as sinecures, or as a comfortable base from which they might conduct their own little private business ventures: 'consulting'. (Yet such is almost encouraged in Australia in some fields.) Their department was their life, and they could not have imagined it otherwise. The men may not necessarily have been more able than their counterparts in Australian universities, but the 'system' was infinitely more conducive to the establishment of a successful research and teaching culture, particularly as a result of the high degree of social interaction operating and encouraged within the geology department (as at others in Oxbridge). One could get on with one's work too, not spending half one's time filling in forms for bureaucrats, writing research proposals, or squabbling over thin pickings at committee meetings. And one didn't have the absurdity of relatively junior staff having to be 'heads' of departments with jurisdiction over more senior persons. (I know of a department at a university in Sydney where the 'head' is being supervised in his PhD by one of the senior lecturers in 'his' unit—the one over which he is supposed to be chief! How can such a system function properly, if any snags crop up, as they surely will?)

Of course, things are changing in Britain too (and they were not always so in Australia, in the days of the likes of Edgeworth David or Griffith Taylor). Indeed, the confusion and Thatcherite mess that now afflicts Australian higher education is in no small measure imported from Britain, while also being a product of the globalization of academia. No matter, it is pretty obvious that Oxford could and can sail a better ship than the clumsy vessels—the mega-universities—now being built everywhere. In Australian universities, the majority of the students, and a good many of the staff, don't really want to be there, and show it in the way they comport themselves, particularly in the simple matter of physical attendance. However, Oxford students do not, for the most part, have the grievous financial problems that beset many Australian students, not to mention their huge problems of daily transportation. And obviously there can be, and are, excellent teaching units in Britain outside the Oxford, Cambridge, London triangle.

Anyway, my curmudgeonly grumbles take me away from Vincent's book. I'm not in a position to query the loving detail of his account, which extends from descriptions of the vagaries of Sollas to the details of the plumbing, size, and location of the departmental toilets, and the virtues and foibles of the technicians or even the cleaners. The book says nothing about the technicalities of the department's research, but from the account it would appear that *everyone* was very good, excellent, outstanding, or something even better. (By Australian standards, very possibly most of them were.)

There is one feature of the history over which a bit of a veil is drawn: the loss of government funding for the semi-autonomous 'Geological Age and Isotope Research Group' (though apparently it soon recouped with the help of private money—as perhaps the Tory government thought proper). A greater peculiarity, and one that was central to the Oxbridge system, is illustrated by the situation of William Arkell, perhaps the most distinguished Oxford geologist of the first half of the twentieth century, and *the* authority on Jurassic geology. Arkell was a research fellow of New College, and, with the help of private money from his brewing family, devoted himself almost entirely to his private researches, making little contribution to the departmental teaching. And then he took himself off to Trinity College, Cambridge, and did much the same there. This was undoubtedly a great boon to Jurassic studies, but the circumstances surely revealed a weakness in a system in that such a man might do so little for the departmental units of the universities that he ornamented. That such a state of affairs could exist is perhaps the less beautifully polished side of the Oxbridge golden coin.

On the other hand, rich and powerful institutions such as Oxbridge can offer the world of scholarship something special in the way of a few first-rate scholars who devote themselves almost exclusively to research. Arkell's *Jurassic Geology of the World* is arguably a greater contribution than a dozen first-rate PhD (DPhil) successes, or hundreds of well-taught undergraduates. Or *is* it?

David Oldroyd, Sydney

(The foregoing review has previously been published in *Metascience* and *Episodes*, and is republished here with the permission of the editors of these journals.)

A Rose by Any Other Name

R.A. Batchelor, *Geology at St Andrews*, Department of Geology, University of St Andrews, St Andrews, 1995. 64 pp.

This is an affectionate and engaging short account of the evolution of the teaching of geology at St Andrews University. Like the three other ancient Scottish Universities (Aberdeen, Edinburgh and Glasgow), geology was first taught under the general umbrella of Natural History—indeed at St Andrews in 1861 it was under the control of the Professor of Civil History and Natural History. In 1903, Dr Thomas Jehu (later to become Regius Professor of Geology at Edinburgh) was appointed to the first Lectureship in Geology. The first holder of the Chair in Geology was Donald Innes (1936–53) who published only one geological paper in his life. To make matters worse he had the thesis of his one PhD student rejected due to problems with supervision. A palace revolution in 1953 led to the resignation of Innes. Yet in spite of all this the department continued to attract outstanding scientists, including P. Wyllie, H. Drever, C. Davidson, J.B. Dawson, C. Donaldson, P. Brown, and E.K. Walton.

At this stage I had better come clean. I *knew* many of these characters, like my namesake R. Craig, who had been appointed Assistant in St Andrews way back in 1907, for heaven's sake! Indeed I taught one of his classes for him in Edinburgh in 1948. Professor Innes and most of the others were also well known to me. I reckon that one of the few advantages of maturity is that one can comment on the history of science because so many of *the* characters were friends or colleagues!

Just over a decade ago the University Grants Committee (which then controlled University funding in the UK) thought that there might be too many small departments of Geology in British Universities. The subsequent draconian report resulted in the closure or merger of whole departments, and staff affected were offered retirement or moved elsewhere. In the case of St Andrews, the Department of Geology disappeared to be replaced in 1988 by a new combined Department of Geography and Geology, which was elevated (?) in 1993 to a School of Geography and Geology, and in 1997 to the School of Geography and Geosciences. From all this I have to assume from that Geography is not a Geoscience and that four changes of title in ten years have been good for the School—and the local printer!

Geology as a subject has been taught for almost 140 years at St Andrews and is alive and kicking in its new team strip today.

(*Note*: For readers interested in the broader view, James Ritchie provided an excellent account of the emergence of academic geology in Scotland: Ritchie, J.E., 'Natural History and the Emergence of Geology in the Scottish Universities', *Transactions of the Edinburgh Geological Society*, 1952, *15*, 297–316.)

Gordon Craig, Edinburgh

COUNTRY REPORTS

Albania

The foundation of the Non-government Society: 'The Albanian Union of Geologists for the Geological Science Heritage'

On December 16, 1997 (Decision No. 6307, Act No. 7741) the request by eleven geoscience specialists for the foundation of a non-governmental society, to be called the 'Albanian Union of Geologists for the Geological Sciences Heritage' (AUGGHS), was accepted by the Tribunal of Tirana.

The Union of Albanian Geologists is founded on a voluntary basis, as a national society of specialists in geology, hydrogeology, mineralogy, palaeontology, petrography, geophysics, topography, engineering geology, etc.

The main aims of the Union of Albanian Geologists are the collection and preservation the geological heritage of Albania:

* Knowledge, collection, and preservation of all geological works, studies, and other data compiled in the past by foreign naturalists and geologists and foreign geological expeditions in Albania.
* The collection and preservation of the works of the Geological Survey of Albania since its foundation on August 25, 1952.

* Collation of information about the achievements of Albanian geologists in Albania and at international meetings, and the presentation and publication of such information.
* Preparing an inventory of important geological sites in Albania, and their protection.
* Carrying out studies on environmental geology and on geotops of local, national, and regional importance in Albania.
* Gathering and popularly disseminating information about geologists, and other natural scientists, for the education of the younger generation and to enhance the geological tradition of Albania.

The AUGGSH wishes to establish regular contacts with the IUGS, the IUHPS, and INHIGEO. It also plans to establish contacts of mutual interest with the European Association of Geological Science Heritage Conservation, with Albanian and foreign non-government societies and organisations, with the Albanian Academy of Sciences, Museum Centres, and with the Albanian Forum of Non-governmental Organisations.

At the first meeting of the 'Initiative Group' on November 4, 1997, Academician Teki Bicoku was elected Chairman of AUGGSH; Prof. Dr Afat Serjani was elected Vice-Chairman; and Mirela Pinari (Saraci) was elected General Secretary. The Chairman is located at the Geological Research Institute, Tirana.

Resolution of the 'Initiative Group' for the Foundation of the Non-Governmental Society: 'Albanian Union Geologists for the Geological Sciences Heritage'

The Albanian Union Geologists for the Geological Sciences Heritage (AUGGSH) is founded on a voluntary basis and is a non-governmental organization of geologists, hydrogeologists, mineralogists, palaeontologists, geophysicists, topographers, engineering geologists, etc.

Our main aims are the collection and protection of the heritage of geological values for future generations:

* Many foreign and Albanian geologists have contributed to the decipherment of Albania's geology. Many of them have devoted their whole careers to the task, and some have sacrificed their lives during the course of their geological work. We must always remember them!
* Many books, reports, and other publications have been compiled on the geology of Albania, creating a national tradition in this field. These works must be preserved and the tradition continued!
* The Geological Survey of Albania has discovered many ore deposits, different types of magmatic, metamorphic and sedimentary rocks, and many rare geological phenomena. These discoveries must be known, protected, and increased in the future!
* Many aspects of Albanian geology have been presented at national and international meetings, in postgraduate theses in different universities in Europe and round the world, and in foreign languages. Younger generations of geologists must work with passion to advance these achievements of Albanian geology, moving forward to new specialties!
* There are many rare or unique geological phenomena in Albania, and many type sections and outcrops of scientific and didactic value. There are geomorphological landscapes of outstanding beauty, sites of historical importance, etc. All these must be made known, described, and protected by appropriate laws and traditions!
* Some of the aforementioned phenomena are in danger from human activities, and the elimination or disappearance is an elimination of the geological history of the region, the country, and indeed the planet. They cannot be restored or renewed: by protecting them we protect ourselves!
* If someone has compiled a report, a project, or published a paper or book or has presented a good sample to a museum . . . Everyone has his or her copyright, and we shall protect it!

The 'Initiative Group', through its good will, has taken this first step. It will do all it can for preservation, without fear or favour, to uphold the tradition of the past, and to assist new discoveries and ideas, and new achievements of future generations. It believes that coming generations will do the same for new geological discoveries in Albania, and their presentation to the world.

Signed:

Afat Serjani, Teki Bicoku, Vehap Bezhani, Skender Dede, Feti Arkaxhi, Mirela Pinari (Saraci), Nevila Jozja, Mehmet Spaho, Halil Hallaci, Theodhoro Zota, Skender Myftari.

Armenia

Professor E. Malkhassien has written to inform us that his book on the history of geology in Armenia is to be published in Russian, not in English as originally planned. He is currently working on a book about the geologist L. Spendiarov, an Armenian by birth and brother of the famous Armenian composer Al. Spendiarov. The prize named after the great geologist was founded in 1937. Professor Malkhassien has collected information about all the laureates for the award, except for a Chinese recipient. He would be glad to receive information on this person from any INHIGEO member who may be able to assist. **[Chinese Members please note! (Ed.)]**

Australia

The Earth Science History Group (ESHG) of the Geological Society of Australia has continued to provide links between Australian researchers, with an average of two newsletters each year being circulated to members. The Group is chaired by Carol Bacon.

In April 1997 the ESGH held a one-day symposium in Melbourne entitled 'The Quest for Geological Status', at which ten varied papers were presented. The symposium was held to coincide with the visit of Professor Martin Rudwick, who attended the symposium and acted as commentator. The abstracts have been printed in the ESHG newsletter for those members unable to attend in person.

Carol Bacon, continuing her research on various aspects of historical Tasmanian geology, presented a paper at the ESGH symposium entitled 'Tasmanian Coal: The Explorers'.

David Branagan presented a paper on the enigmatic Russian Eugene de Hautpick, who visited Australia in the 1920s and was involved in exploration for petroleum and uranium.

At the symposium a presentation was made to Mr Lech Paszkowski, who recently published a book on the life of Sir Paul Edmund de Strzelecki. The book, which he has worked on for many years, is the culmination of Paszkowski's work on the pioneering geologist and social reformer. [For further information, see the Report for Poland (ed.).]

Thomas Darragh has edited a series of letters between Adam Sedgwick in Cambridge and Robert Brough Smyth in Melbourne, from 1854 to 1858 and an introduction to the correspondence is now being compiled prior to their publication. Darragh is also proceeding with transcription and translation of the Australian portion of one of Ferdinand Hochstetter's notebooks. The notebook of the *Novara* expedition scientist was provided by Michael Organ of Wollongong University who has a special interest in Hochstetter. Hochstetter visited Victoria in October and November 1859, spending two weeks in Melbourne and two weeks touring the central Victorian goldfields. His observations on the people he met and the geology of the areas visited make interesting reading and are an important record of ideas on the geology of Victoria at that time.

Darragh has also published a paper dealing with the correspondence of the German/Australian artist and naturalist, Ludwig Becker (1808-1816), which includes translations of his correspondence with Johann Jakob Kaup (1803–1873) as well as summaries of other letters published in Germany, not previously available in English. Becker's life and means of earning his living in Melbourne are discussed.

Barry Cooper continues his historical interests with specific emphasis on South Australian geology. He was recently elected a Fellow of the Geological Society of Australia. Together with historian Bernard O'Neil he has been collecting information on the historical use of building stones in South Australia.

David Corbett is continuing his researches on the work of Sir Douglas Mawson, and has recently (1998) published a paper, which will be listed in *Newsletter*, No. 31.

In February, 1998, Dr Max Banks conducted a course in Hobart entitled 'In the Steps of Darwin'. The aim was to make the participants aware of Charles Darwin's background prior to his arrival in Hobart Town in February 1836, considering not only his life prior to joining the *Beagle* and his activities while associated with the vessel, but also the background of the geology and zoology with which he may have been familiar.

At the invitation of the Professional Historians Group, and as part of a symposium on 'Changing Perceptions', Dr Banks delivered a lecture in December on the ways in which perceptions of the geological history of the Hobart area have changed over the last 200 years or so. He subsequently submitted a short paper on 'Changing perceptions of our Mountain', in which the history of geological thought on the origin of Mt Wellington and of the Tasmanian dolerite have changed since Péron wrote of the basaltic rampart, the 'Organ Pipes', early in 1802.

David Branagan has now finished compilation of the card index of the late Professor T.G. Vallance (records of more than 3700 miners, geologists, and surveyors, mainly of the 19th century who contributed to the history of Australian geology) on a computer database, with the assistance of Chris Branagan. The database is now being offered for sale to individuals and to archives on behalf of ESHG.

David Oldroyd and David Branagan were involved in organising the visit of Martin Rudwick to Australia in April 1997. Besides the Melbourne symposium, Rudwick participated in meetings in Sydney, Canberra, presented papers of interest to historians and geologists, and visited important 'history of geology sites' in New South Wales and Victoria.

David Branagan co-operated with Professor Wang Hongzhen in editing the proceedings of the INHIGEO (and associated) sessions at the Beijing IGC meeting (1996). The volume (Volume 26 of the *Proceedings* of the 30th IGC) *Comparative Planetology, Geological Education, History of Geology* was published by VSP Press, Utrecht and Tokyo, in 1997.

David Branagan presented a paper at the INHIGEO sessions held at the XXth International Congress of History of Science in July 1997 in Liège, on the topic 'Multicultural influences in 19th-Century Australasian Mining Geology'. He also chaired sessions, and carried out fieldwork in Europe in relation to a proposed biography of Sir T.W.E. David. David Oldroyd read a paper on the use of non-written sources in the study of the history of geology.

At Sydney University, John Wennerbom is completing his PhD thesis, focusing on the factors that led to the achievement of élite geological status in the first half of the 19th century in England. To this end the contrasting backgrounds and geological careers of Charles Lyell and Gideon Mantell are used as illustrative case-histories. Much

of the manuscript material used by Wennerbom is from the Mantell papers at the Alexander Turnbull Library, Wellington, New Zealand, which includes Lyell's letters to Mantell. The transcribed and annotated correspondence between Lyell and Mantell (277 letters) will be submitted as supplementary volumes to the thesis.

A small Australian contingent attended the celebratory Lyell/Hutton meetings and associated field trips held in London and Edinburgh. Those who attended (Carol Bacon, David Branagan, John Wennerbom, and David Oldroyd) greatly enjoyed the proceedings.

The Strzelecki International Symposium, on the theme 'Permian of Eastern Tethys: Biostratigraphy, Palaeogeography and Resources', was held at the Rusden Campus of Deakin University, Clayton, Melbourne, from 30 November to 3 December, 1997. Excursions were made to the classic Permian glacial sequences of the Bacchus Marsh District west of Melbourne and to the superb Permian and Triassic marine and non-marine sequences of the southern Sydney Basin. The latter was a four-day post-conference excursion that terminated in Wollongong. The Southern Sydney Basin was one of the field areas of investigation of Sir Paul Edmund de Strzelecki, whose birth year was celebrated at the Symposium. David Branagan opened the formal proceedings of the meeting with a well-illustrated and comprehensive review of Strzelecki's contributions to the geology of New South Wales, Victoria, and Tasmania, with emphasis on his contributions to the Permian geology and palaeontology of the Sydney and Tasmanian Basins. One day of the proceedings was held at the historical hall of The Royal Society of Victoria in Melbourne. The Society was a sponsor, and will be publishing the proceedings of the meeting, including David Branagan's presentation and a paper by Neil Archbold on 19th-century work on the Permian sediments and palaeontology of the Bacchus Marsh District.. Some sixteen countries were represented by the sixty-five delegates to the meeting. The chief organisers were Guang Shi and Neil Archbold.

Publications

Branagan, D.F., 'R.L. Jack, Geologist in China', in: Wang Hongzhen, D.F. Branagan, Ouyang Ziyuan and Wang Xunlian (eds), *Proceedings of the 30th International Geological Congress: Comparative Planetology, Geological Education, History of Geology*, VSP, Utrecht and Tokyo, 1997, 177–186.

Branagan, D.F. (ed.), *Science in a Sea of Commerce. The Journal of a South Seas Trading Venture (1825-27) by Samuel Stutchbury. Introduction and Commentary by David Branagan*, The Editor, Sydney, 1997.

Branagan, D.F., 'J.A. Watt, Geologist to the Horn Expedition', in: S. Morton and D.J. Mulvaney (eds), *Central Australia. Social, and the Horn Expedition*, Surrey, Beatty and Son, 1997.

Darragh, T.A., 'Ludwig Becker, A Scientific Dilettante: His Correspondence with J.J. Kaup and Others', *Historical Records of Australian Science*, 1997, *11*, 501-522.

Oldroyd, D.R. 'Some Youthful Beliefs of Sir Archibald Geikie, PRS, and the First Publication of his "On the Study of the Sciences"', *Annals of Science*, 1997, *54*, 69–86.

Oldroyd, D.R. and Hamilton, B.M., 'Geikie and Judd, and Controversies about the Igneous Rocks of the Hebrides: Theory, Practice, and Power in the Geological Community', *Annals of Science*, 1997, *54*, 221–268.

Oldroyd, D.R., 'Adam Sedgwick and Lakeland Geology (1822–24)', in: Wang Hongzhen, David F. Branagan, Ouyang Ziyuan, and Wang Xunlian (eds), *Comparative Planetology, Geological Exploration, History of Geology: Proceedings of the 30th International Geological Congress*, VSP, Utrecht and Tokyo, 1997, 197–204.

Oldroyd, D.R., 'Peripheral Darwinism'. Review of: R. MacLeod and P.F. Rehbock (eds), *Darwin's Laboratory: Evolutionary Theory and the Natural History of the South Pacific*, The University of Hawaii Press, Honolulu, 1994. x + 540 pp. US45.00. In: *History of Science*, 1997, *35*, 107–110.

Oldroyd, D.R. Review of: G.L. Herries Davies, *North from the Hook: 150 Years of the Geological Survey of Ireland*, Geological Survey of Ireland, Dublin, 1995. xi + 342 pp. £34.00/US$57.00. In: *The British Journal for the History of Science*, 1997, *30*, 113–116.

Oldroyd, D.R. Review of: P.M. Dryburgh, A.R. MacGregor, S.M. Ross, and C.L. Thompson, *Assynt: The Geologists' Mecca*, Edinburgh Geological Society, Edinburgh, 1995. 33 pp. £2.00. In: *Scottish Journal of Geology*, 1997, *33*, 95–96.

Oldroyd, D.R. Review of: P.J. Bowler, *Life's Splendid Drama: Evolutionary Biology and the Reconstruction of Life's Ancestry*, The University of Chicago Press, Chicago and London, 1996. xiv + 347 pp. £40.00/US$48.00 (hard-back); £13.95/US$17.95 (paper-back). In: *Medical History*, 1997, *41*, 389–390.

Oldroyd, D.R. 'A Geological Frontiersperson'. Review of: M. Foster, *Strange Genius: The Life of Ferdinand Vandeveer Hayden*, Roberts Rinehart Publishers, Niwar (Colorado) and Cork, 1994. xv + 443 pp. US$29.95. In: *Metascience*, 1997, No. 11, 179–184.

Oldroyd, D.R. Review of: M. Collie and S. Bennett, *George Gordon: An Annotated Catalogue of his Scientific Correspondence*, Scolar Press, Aldershot, 1996. xlviii + 271 pp. £60.00. In: *Metascience*, 1997, No. 11, 238–239.

Oldroyd, D.R. 'The Gordon Industry'. Review of: I. Keillar and J.S. Smith (eds), *George Gordon: Man of Science*, Centre for Scottish Studies, University of Aberdeen, Aberdeen, 1995. x + 183 pp. £4.50. In: *Metascience*, 1997, No. 12, 126–129.

Oldroyd, D.R. 'Geology at an Élite University'. Review of: E.A. Vincent, *Geology and Mineralogy at Oxford 1860–1986: History and Reminiscence*, Department of Earth Sciences, Oxford, 1994. vii + 245 pp. £8.50. In *Metascience*, 1997, No. 12, 168–171.

Oldroyd, D.R. Review of: E.A. Vincent, *Geology and Mineralogy at Oxford 1860–1986: History and Reminiscence*, Department of Earth Sciences, Oxford, 1994. vii + 245 pp. £8.50. In: *Episodes*, 1997, *20*, 276–277.

Belgium

Professor Eric Groessens has written to inform us of the tragic death of his colleague France Ladeuze who died of cancer in 1997 at the age of 32. She specialised in the history of mining and the mines of the lead-zinc deposits of eastern Belgium and had just started a new career in the cement industry when illness took her. Ms Ladeuze was not a Member of INHIGEO but no doubt might have become one in time. We extend our sympathies to those in Belgium who knew her and have lost a valued colleague.

Bolivia

INHIGEO member, Carlos Serrano attended the 49th International Congress of Americanists, held in Quito, Equador, 7–11 July 1997, and presented a paper entitled 'Religion in mining' in the Symposium 'Creencias religiosas y cultura tecnológica latinoamericano (siglos 16–19)'. He has also presented a paper 'Religión, religiosidad e iglesia en las actividades productivas potosinas', published in the *Yearbook of the National Archives and Library of Bolivia* under the editorship of Rene Arze.

Another meeting, on 'Arqueología industrial de la ribera de la Vera Cruz de Potosí' was included in the symposium—'Arquelogía industrial: Conservación y recuperatión del patrimonio minero-metalúrgico en el mundo hispánico'—in the Congress mentioned above.

The 20th International Congress of the History of Science was held in Liège, Belgium, 20–26 July, and included a symposium organised by INHIGEO members Kenneth Taylor, Silvia Figueirôa, and Hugh Torrens on 'Geology and Mining in the Old and New Worlds'. Carlos Serrano contributed a paper entitled 'Mining at the Cerro Rico: some technological considerations'. The theme of this conference was most interesting, with experts from different countries gathered under the direction of distinguished colleagues. The event was admirably organised and was a great success.

Finally, the University Tomas Frias, Potosi has published their *Revista de Investigaciones Historicas*, which included an article dedicated to the memory of Julio Pelaéz, entitled 'Potosí y sus lagunas'. This is a revised version of the text presented to the Vice-President of Bolivia in 1990.

Carlos Serrano, Potosi

Brazil

An important item to be reported for 1997 is the establishment of a post-graduate course in the Department of Geosciences Applied to Education (Institute of Geosciences, State University of Campinas—UNICAMP). It will allow research devoted to the history of geosciences, with some of it being specifically connected to educational aspects. This program started in March and three students (Clarete Paranhos da Silva, Giovana Galvão Tavares and Vivian Branco Newerla) are currently engaged in this line of investigation . Drs Silvia Figueirôa and Margaret Lopes are responsible for the initiative.

In 1997, Margaret Lopes had a sabbatical year at the University of Southwestern Louisiana, working with Professor Lewis Pyenson on a large-scale project on the role played by Latin American Natural History museums in the development of geological sciences.

Silvia Figueirôa participated in the organization of some of the activities of the 20th International Congress of History of Science, held in Liège from 20 to 26 July, 1997. She collaborated with Dr Hugh Torrens and Professor Kenneth Taylor in the organization of the Symposium SU16: 'Development and Cultural Influence of Geological Sciences in an Age of Technological and Industrial Expansion', sponsored by INHIGEO. Also, as President of the Latin American Society on the History of Sciences and Technology, she assisted Drs Patrick Petitjean and Deepak Kumar in the organization of the Symposium SM23 'Globalization of Science: Between Colonial Enterprise and National Project (1870-1960)', a joint initiative of the SLHCT and the 'Sciences and Empires' network. Margaret Lopes presented a paper in this meeting.

The Brazilian publications for 1997 are listed below, quoted according the language of publication.

Books

Figueirôa, Silvia, *A Formação das Ciências Geológicas no Brasil: Una História Social e Institucional*, Hucitec, São Paulo, 1997. 270 pp.

Lopes, Margaret, *O Brasil Descobre a Pesquisa Científica: Os Museus e as Ciências Naturais no Século XIX*, Hucitec, São Paulo, 1997. 369 pp.

Journal articles

Lopes, Margaret, ' "Aventureiras nas Ciências": Refletindo sobre Gênero e História das Ciências no Brasil', *Cadernos Pagu*, 1997, *10*, pp. 82-93.

Scientific meetings (abstracts and proceedings)

Figueirôa, Silvia; Guntau, Martin, 'Zu einigen Resultaten des Wirkens von W. L. von Eschwege auf dem Gebiet des Montanwesens in Brasilien', in: *Borkener Montanhistorisches Kolloquium*, No. 2, Borken, 1996. *Proceedings*, Borken, Magistrat der Stadt Borken, 1997, pp. 52-64.

Figueirôa, Silvia; Lopes, Margaret, 'A Difusão da Ciência e da Tecnologia Através da Imprensa e dos Periódicos Especializados (São Paulo, 1890-1930)', in: *Seminário Nacional de História da Ciência e da Tecnologia*, No. 6, Rio de Janeiro-RJ, 1997. *Resumos*, Sociedade Brasileira de História da Ciência, 1997, p. 61.

Lopes, Margaret, 'Latin American Museums: Comparative studies and Links', in: 20th International Congress of History of Science, Liège, 1997. *Abstracts*, Liège, ICHS, 1997, p. 273.

Lopes, Margaret and Figueirôa, Silvia, 'North and South American Connections in Museum Sciences', in: History of Science Society Annual Meeting, 1997, San Diego. *Abstracts*, San Diego, HSS, 1997.

Monteiro, Rosana, Velho, Lea, and Figueirôa, Silvia, '1833: Photography was Invented by Hercules Florence. Was he a Genius?', in: Annual Meeting of the Society for Social Studies of science, 1997, Tucson. *Abstracts*, Tucson, 1997, p. 19.

Monteiro, Rosana, Velho, Lea, and Figueirôa, Silvia, 'Brazil, 1833: the Discovery of Photography Revisited', in: 20th International Congress of History of Science, Liège, 1997. *Abstracts*, Liège, 1997, p. 270.

Newerla, Vívian Branco, 'As Expedições Paulistas no Perfodo 1886-1931 e seu Uso Educativo', in: Seminário Nacional de História da Ciência e da Tecnologia, No. 6. 1997, Rio de Janeiro. *Anais*, Rio de Janeiro, Sociedade Brasileira de História da Ciência, 1997, pp. 443-447.

Santana, José Carlos Barreto de, 'República, Socialismo e Cientificismo numa Leitura de Excertos de Euclides da Cunha', in: Seminário Nacional de História da Ciência e da Tecnologia, No. 6, Rio de Janeiro, 1997. *Resumos*, Rio de Janeiro, Sociedade Brasileira de História da Ciência, 1997, p. 27.

Silva, Clarete Paranhos da, 'A Ciência que se Realizava na Colônia: Um Estudo dos Textos Mineralógicos de José Vieira do Couto, na Transição do Século XVIII para o Século XIX', in: Seminário Nacional de História da Ciência e da Tecnologia, No. 6, Rio de Janeiro, 1997. *Anais*, Rio de Janeiro, Sociedade Brasileira de História da Ciência, 1997, pp. 439-443.

Tavares, Giovana Galvão, 'As Produções Científicas Geográficas do Instituto Histórico e Geográfico de Goiás (IHGG)', in: Seminário Nacional de História da Ciência e da Tecnologia, No. 6, Rio de Janeiro, 1997. *Resumos*, Rio de Janeiro, Sociedade Brasileira de História da Ciência, 1997, p. 23.

Chapters in books

Alfonso-Goldfarb, Ana Maria, Ferraz, Márcia Helena, and Figueirôa, Silvia, 'Diffuser les Sciences "Dans un Océan d'Analphabetisme": Singularités Brésiliennes', in: Bernadette Bensaude-Vincent and Anne Rasmussen (eds), *La Science Populaire dans la Presse et l'Édition—XIXe et XXe siècles*, CNRS Ed., Paris, 1997, pp. 225-236.

Figueirôa, Silvia, 'Algumas Considerações Sobre a Obra', in: Danúsio G.B. da Silva (ed.), *Os Diários de Langsdorff*, Assoc. Intern. de Estudos Langsdorff and Fiocruz, Campinas and Rio de Janeiro, *1*, 1997, pp. 37-39.

Book review

Figueirôa, Silvia, Review of: *Boris Komissarov, Expedição Langsdorff: Acervo e Fontes Históricas*, Ed. Unesp and, Langsdorff, São Paulo and Brasília, 1994. In: *Revista Manguinhos*, 1997, *4*, 385-387.

China

The XIth Annual Meeting of the Committee on History of Geology, Geological Society of China (HGGSC) was held in October 14–16, 1997, in the China University of Geosciences Beijing, and was attended by more than seventy specialists and other scholars. Among them were four members of the Chinese Academy of Sciences and Chinese Academy of Engineering: Professors Yang Zunyi, Wang Hongzhen, Chen Mengxiong, and Han Dexin. Vice-President Shi Baoheng chaired the meetings. President Wang Hongzhen gave a talk at the opening session on the HGGSC research plans, and General Secretary Yang Guangrong summarised the activities of the HGGSC since 1992. Altogether thirty speakers presented papers, among which were eight on personages, four on the history of geological undertakings, sixteen on the history and development of geoscience disciplines, and two on ancient Chinese geosciences. Some of the leading topics were:

Yu Guang: 'Professor H. C. Chang and Dr V.K. Ting in Peking University'.

Li Yang: 'Dr V.K. Ting—Founder of palaeontological science in China'.

Chen Mengxiong: 'Dr T.K. Huang's proposal on the prospecting of petroleum resources in the Xinjiang Autonomous Region, China, in his later years'.

Wu Fengming: 'A retrospect of the progress of geoscience research in the 20th century and future prospects'.

It was specially encouraging that among the attendants were twenty-five young scholars from China University of Geosciences, Peking University, The Chinese Academy of Geological Sciences, and other institutes, most having PhD degrees. Eleven persons gave talks on the development and present situation of geoscience research, such as STM study of mineral surfaces, non-marine sequence-stratigraphy, minerageny and exploration mineralogy. Professors Wang Hongzhen and Zhai Yusheng participated in their discussions with great interest and appreciation.

Books Published, 1995-1997

Wang Hongzhen (ed.), *Retrospect on the Development of Geoscience Disciplines in China: Centenary Memorial Volume for Professor Sun Yunzhu (Y.C. Sun)*, China University of Geoscience Press, Beijing, 1995, 127 pp. (in Chinese).

Wang Hongzhen, Zhai Yusheng, Shi Baoheng, and Wang Cansheng (eds), *Development of Geoscience Disciplines in China*, China University of Geosciences Press, Beijing, 1996, 154 pp. (in English).

Wang Hongzhen, D.F. Branagan, Ouyang Ziyuan and Wang Xunlian (eds), *Comparative Planetology, Geological Education and History of Geology: .Proceedings of the 30th International Geological Congress*, Vol. 26, VSP International Scientific Publications Netherlands, 1997, 304 pp. (in English).

Wang Hongzhen, Yu Guang, Beijing

Colombia

Professor Espinosa-Baquero reports that he continues his work on the history of geology in Colombia and is in contact with colleagues in South America and Europe, especially Switzerland, France, Spain, and Italy. He has a new address, etc., reported in the list of Members at the end of the *Newsletter*.

Costa Rica

The following paper has been published:

Soto, G.J. and Denyer, P., 'La Increíble Historia Policontinental de nos Mil Milliones de Años de los Neises de la Isla de Chira [The Incredible Polycontinental Story of the Two Billion Years Old Gneisses of Chira Island]', *Reflexiones*, 1997, *56*, 3–13.

The paper deals with the discovery of blocks of gneiss on an island of the Nicoya Gulf, Costa Rica. We lack any old continental crust, and search pointed to the blocks having been transported to the island by ships during the sixteenth century, from the Arequipa Massif, Peru.

Gerardo Soto, San José

Czech Republic

In 1996–1997, historical work continued on Alexander von Humboldt's activities, the results of which complement the information already published in the *Proceedings* of the Humboldt Society of the Czech Republic: *Alexander von Humboldt and the Czech Countries*, Prague, 1996, 136 pp. (in Czech). In this volume, von Humboldt's work was analysed by Hanne Beck (Bonn–Bad Godesb.), Jirí Blucha, Josef Haubelt, Jirí Koralka, Norbert Krutsky, Ulrika Leitna (Berlin), and Ingo Schwartz (Berlin). Particular attention was paid to von Humboldt's research, co-authored with Johann Karl Freiesleben (1771–1846): *Geognostische Beobachtungen auf eine Reise durch einem Theil des boemischen Mittelgebirges* (1791). Norbert Krutsky and Jirí Blucha retraced the steps of the two students from Freiberg, through the western part of the hills of Middle Bohemia, and showed that the German researchers were comparing their theoretical geological knowledge with what could be observed in the field.

The main results of the study have been written up by Jirí Blucha in his paper 'On the Track of von Humboldt's and Freiesleben's Journey in the Mid-Bohemian Hills' (in Czech, and currently in press with the Humboldt Society in Prague). The paper is accompanied by Kurt Reinhard Biermann's biographical essay on von Humboldt, previously published by G.B. Teubner in Leipzig in four editions, and now translated into Czech by Blucha from the fourth German edition. The translation, published with financial assistance from Alexander von Humboldt Foundation (Germany), is complemented by the contribution of Josef Haubelt: 'Alexander von Humboldt's Sojourns in Czech Countries'. In addition there is a pictorial section accompanying the text, documenting—by contemporary iconographical tools—the geological formations observed and commented on by von Humboldt. The research on the subject as a whole is expected to be completed by 1999, in which year the 230th anniversary of von Humboldt's birth and the 140th anniversary of his death will be remembered.

In 1996–97, as in previous years, work has been undertaken at the National Technical Museum in Prague on the history of mining. A seminar was held on the theme in December 1996 and a series of original contributions presented. Special attention was given to the papers dealing with the periodisation of the Czech mining industry, as proposed by the leading specialist J. Korán as early as 1947. At the meeting, two sets of *Proceedings* of previous Seminars were distributed to the participants, including papers presented at the international meeting of mining historians, entitled 'Followers of Agicola'.

The second meeting in 1996 on the history of mining was held in Poland at the Zabrze Museum of Coal-Mining. Papers were presented on the international relations of miners, on miners' ethnography, and on mining memorials. There were accompanying excursions to places of note discussed in the papers.

At the National Technical Museum in Prague a main aim has been the collection of historical tools used in past mining techniques, having regard also to the loss or decay of mines, all too apparent in today's Czech Republic. One particularly attractive collection should be mentioned, namely a series steam-powered hoisting engines, collected for the Museum by V. Jirásek, a specialist from the East-Bohemian mining basin.

A diary (edited by the Museum's Mining Department) listed and introduced the chief activities such as meetings, lectures, seminars, excursions, etc., planned for 1997. These included mining processes and techniques, powered engines, the problems of water-powered engineering, power-industry activities, and water-equilibrium protection. It was planned that such matters would be discussed in October 1997 at Wroclaw, Silesia-Poland, but ironically the meeting had to be postponed to 1998 because of the floods in Silesia.

The study of global historical seismicity has been continued, and a paper by J. Kozák and R. Musson has been published: 'European Earthquakes in the 18th Century through Contemporary Pictorial Representation' (*Pure and Applied Geophysics*, 1977, *150*, 305–327). The paper demonstrates that the strong earthquakes that occurred in Europe in the 18th century, notably the Lisbon (1755) and Calabrian (1783) earthquakes, stimulated European scholars to undertake the systematic study of 'geo-manifestations', such as earthquakes and volcanic eruptions. Indeed, such work can be regarded as marking the birth of macroseismic studies of earthquakes. The paper also discusses the idea of utilising historical pictorial materials as new, not yet evaluated, macroseismic date are presented and demonstrated.

A paper by J. Kozák, S. Tobriner, and T. Toppozada, 'Californian Earthquake Damage in Prints', was completed in 1997 and is prepared for publication in a specialist American journal. More detailed analysis of pictures of the mid-19th-century Californian earthquakes revealed that these depictions can be used not only for studying macroseismic quake effects but also for the classification of wooden and brick constructions in seismically dangerous areas, according to their resistance to earthquakes.

In January 1997, Jan Kozák was awarded financial support for his project 'Special Earthquake Data Base' (No. 96018), sponsored by the grant agency of the US-Czechoslovak Science and Technology Program. The aim is to transfer the extensive Prague collection of pre-photographic earthquake depictions to the INTERNET and thereby make it readily accessible. During 1997, the first part of the project was carried out by the Czech participant, in collaboration with a colleague from the University of California (Berkeley). The 945 pre-photographic depictions deposited at Prague were classified, catalogued and photographed. For each slide, a special 'passport-sheet' was created, which carries seismological, technological, and bibliographical information. The complete series of slides and their 'passports' are currently being digitised in the USA. The programme is expected to be completed by the end of 1998, by which time the Prague collection will be accessible world-wide.

In Brno, Professor Rudolf Musil has published a book on the staff of the Faculty of Science at Masaryk University: *Personalities of the Faculty of Science, Masaryk University*, Brno 1997, 328 pp. The publication does not present a history of the Faculty of Science in the true sense of the word. It is, rather, the history of its most significant workers, documenting what they brought to science, and thus to their institution. Following the introduction, words from previous and recent deans bring the structure of the Faculty from the year of its establishment (1918) through to recent times. The next (and principal) chapter presents sixty-seven personalities, describing their ideas, their outlooks, and their general activities. The publication is not, however, simply an account of the histories of individual persons. For better understanding of the past, the structures of the Faculty and staff are also shown, at the time of its establishment and also at the present. The recent situation is then completed by a brief description of the pedagogical and scientific character of the individual departments and of the opportunities for study that they provide. A creative approach, linking the present with the future, characterises most natural scientists. We should like to see the full sense of the book revealed from this point of view. As Plinius said: 'Our memory will live, if we have deserved it by our life' (*Epistulae*, IX, 19, 6).

The Czech Republic also wishes to promote, as one of the topics of INHIGEO's concern, the oldest 'history of geology', i.e. petroarchaeology or geoarchaeology: the study of prehistoric mining and the distribution of lithic raw materials. This field was defined as a new discipline in the Faculty at Brno some twenty years ago, and Antonín Prichystal [currently nominated for election to the Commission (Ed.)] is the leading representative of the field in the Republic.

The first known traces of quarrying are found in the Middle Palaeolithic, and an Upper Palaeolithic (30,000–35,000 years B.P.) mining system with bell pits and underground galleries has been described from the Egyptian Nile valley by Professor M. Vermeersch *et al.* (1984). A few tens of Neolithic–Eneolithic mine complexes have been found in Europe. In the Czech Republic, we know sites from that period for the exploitation of cherts, quartzites, siliceous weathering products of serpentinite, marbles, volcanoclastics, green schists, and graywackes. In 1997, we participated in the Moravian Museum's investigation of such a mining district (for cherts) in the area of Krumlovsky les Upland (Southwest Moravia). We also presented petrographic analyses of raw materials from a Mesolithic site at Horin near the town of Melnik (at the confluence of the Labe and Vltava rivers, central Bohemia). It revealed the transportation of flints, cherts and porcelanites from distances of about 70-80 km. We are convinced that this is part of the history of geological sciences.

Rudolf Musil, Josef Haubelt, Jan Kozák, Milos Zárybnicky

France

The *Comité français d'Histoire de la Géologie* is pleased to inform Members that the book *De la Géologie à son Histoire*, edited under the leadership of our President, Dr Gabriel Gohau, was published in December, 1997, by the *Comité des Travaux historiques et scientifiques*, a publishing house of the French Ministry for Education and Research. The contents of the volume include:

Helmut Hölder: 'Préface'.
Jean-Claude Plaziat: 'L'importance des coquilles fossiles du Tertiaire parisien dans l'oeuvre scientifique et artistique de Bernard Palissy à la fin du seizième siècle'.
Nicoletta Morello: 'Aux débuts de la volcanologie moderne: Giovanni Alfonso Borelli et son *Historia et meteorologia incendi Aetnaei anni 1669* (Reggio Calabria, 1670)'.
Jean Gaudant and Geneviève Bouillet: 'Aux sources de la Paléoichthyologie: les *Doléances et revendications des poissons* de J.-J. Scheuchzer (1708)'.
Kenneth L. Taylor: 'La genèse d'un naturaliste: Desmarest, la lecture et la nature'.
Albert V. Carozzi: 'Symboles et codes pour la simplification et la standardisation des observations géologiques de terrain: un projet inédit du dix-huitième siècle par Horace-Bénédict de Saussure (1795–1797)'.
Wolfhart Langer: 'L'exploration géologique de l'Eifel (1780–1814) par des géologues francophones'.
Hugh S. Torrens: 'Le "*nouvel art de prospection minière*" de William Smith et le "*projet de houillère de Brewham*"': un essai malencontreux de recherche de charbon dans le sud-ouest de l'Angleterre, entre 1803 et 1810'.
Martin J.S. Rudwick: 'Smith, Cuvier et Brongniart et la reconstitution de la géohistoire'.
Kennard B. Bork: 'La relation entre Brongniart et Cleaveland, mise en évidence par un exemplaire dédicacé du *Mémoire sur les terrains de sédiment supérieurs calcaréo-trappéens du Vicentin* de Brongniart (1823)'.
Gabriel Gohau: 'La naissance de la méthode "*actualiste*" en géologie'.
Philippe Grandchamp: 'Les origines de l'affaire de Petit-Coeur, ou la découverte du célèbre gisement de végétaux fossiles et de bélemnites replacée dans son véritable contexte'.
Henri Tintant: 'Alcide d'Orbigny (1802–1857) ou la progression des faunes'.
Goulven Laurent: 'Paléontologie et évolution: état de la question en 1850 d'après l'oeuvre de Heinrich-Georg Bronn (1800–1862)'.
Cecil J. Schneer: 'La dernière "*théorie de la terre*": James Hall et le concept de géosynclinal'.
Michel Durand-Delga: 'Des premières cartes géologiques du Globe par Ami Boué (1843) et Jules Marcou (1861) à l'atlas géologique du Monde de 1984'.
B. Gèze: 'La ruée vers le phosphate dans les cavernes du Midi de la France'.
François Ellenberger: 'Histoire d'un cheminement.
The book may be ordered directly from:

Editions du CTHS, 1, rue Descartes,
75231 PARIS Cedex 05,
France.

For countries of the European Union, the price is FF. 300 + postage (FF. 20 for one copy and FF. 5 for each additional copy). An additional charge of FF. 28 is requested for payments by Eurocheck. In North America, the distributor is:

D.P.L.U., Bureau/Office, 112–5165 Sherbrooke West,
MONTREAL,
Canada

Additional information may be obtained from Editions du CTHS, Paris (E-mail: <ventes.cths@mesr.fr>)

The Committee held three meetings in 1997, and the annual volume of the *Travaux* for 1997 (3rd Series, Vol. 11) will soon go to the press. It includes nine contributions:
S. Willefert: 'Découverte des terrains à graptolites du Maroc (1847–1958)'
J. Boulaine and J. Trichet: 'Achille Delesse (1817–1881) et ses cartes thématiques'
M. Durand-Delga: 'A travers Bernard Gèze (1913–1996): aspects de la géologie parisienne au milieu du vingtième siècle'
A.V. Carozzi: 'Horace-Bénédict de Saussure, pionnier en 1784 du concept de "*refoulements horizontaux en sens contraires*" en géologie structurale'
G. Gohau: 'Hommage à James Hutton, à l'occasion du bicentenaire de sa mort'
L. Touret: 'Jean-Baptiste Louis de Romé de L'Isle (1736–1790): des geôles britanniques aux salons parisiens'
F. Legré-Zaidline: 'Alcide d'Orbigny: un talentueux dessinateur naturaliste révélé par le legs Bedel-d'Orbigny'
J. Gaudant: 'La querelle des trois abbés (1793–1795): un débat entre Domenico Testa, Alberto Fortis et Giovanni Serafino Volta sur la signification des poissons pétrifiés du Monte Bolca (Italie)'
P. L. Maubeuge: 'Les débuts de la recherche du pétrole en France et l'action des indépendants'

P.S. We warmly congratulate our Honorary President, François Ellenberger, who has just received the quadrennial award for the History of Science from the French Academy of Sciences.

Jean Gaudant, Paris

Germany

Meetings

Meetings on the history of the mineral sciences took place in Königswinter, Göttingen, and Waren. In Königswinter, the working-group 'History of the Geosciences' organised the Colloquium 'History of Geological

Investigation of the Siebengebirges' from 13 to 15 June. In Göttingen, the working group 'History of the Geosciences' along with the Lower Saxon State and University Library, organised the Colloquium 'History of the Geosciences and Research Possibilities in German Libraries' from 11 to 13 September. In Waren, the Müritz-Museum offered a Colloquium, 'Geological Research in Mecklenburg-Vorpommern from its Beginnings to the Present', on November 22, 1997. All three meetings were well attended. At the close of the Colloquium in Königswinter the Annual meeting of the working-group 'History of the Geosciences' was held. The presentations given at the Colloquium in Königswinter will appear in Volume 7 of *Nachrichtenblatt zur Geschichte der Geowissenschaften*. The Göttingen Colloquium will appear in a separate volume of proceedings in 1998. The presentations given in Waren should appear in the journal *Fundgrube* and should be ready in 1998.

Excursions

Excursions, which thematical cultural history us well us questions of the geosciences, were part of the meetings in Königswinter and in Göttingen. The excursion offered in Königswinter led into the Central Siebengebirge and included a visit to the Mineralogical-Petrological Museum of the University of Bonn. It was led by Oskar Burghardt. The Göttingen excursion went to the geology and geophysics department of Hainberg near Göttingen and was led by Thomas Löffler, Norbert Pfurr, Hans Schreiber and Hans Völkel.

Exhibitions

There was a book exhibition in Königswinter, arranged by Oskar Burghardt, that focused on the history of the geological investigation of the Siebengebirge. Another exhibition, entitled 'Charles Lyell in Germany', was arranged by Bernhard Fritscher at the library of the Deutsches Museum in Munich. The exhibition displayed some of Lyell's books, letters, and other personal effects, being items usually housed in the Museum's library and archive. As part of the Colloquium on 'History of the Geosciences and Research Possibilities in German Libraries', a representative selection of geological, mineralogical, palaeontological, and geophysical secondary literature from 1991 to 1996 was presented by Norbert Pfurr and Peter Schmidt. In addition, a selection of important 'old' geological and mineralogical books and manuscripts was presented by Norbert Pfurr and Helmut Rohlfing.

Lecture Courses

Bernhard Fritscher gave a course of lectures on the 'History of earth sciences from Agricola to Werner', which included a course on source materials for the history of earth sciences at the Department of Earth Sciences, University of Munich. These lectures are a part of a two-year course on the history of earth sciences from Antiquity to 19th century which Dr Fritscher has been presenting since 1994. In addition, Cornelia Lüdecke gave a course of lectures on the 'Introduction to the History of Instrumental Meteorology'. Ottfried Wagenbreth delivered lectures on the 'History of Geosciences' at the Technical University Bergakademie, Freiberg.

Lectures

Fritscher, B., 'The German Geographers and Geologists Hermann and Adolf Schlaginweit: Their Panoramas and Views from India and the Himalayan Region', XXth International Congress of History of Science, Liège, 26 July, 1997.

Guntau, M., 'Zu den Auffassungen über die Entstehungsgeschichte der Erde und ihrer Kenntnis im Wandel der Zeiten', Deutscher Freidenker Verband, Kreisverband Rostock, Rostock, 25 February. 1997.

Guntau, M., 'Naturerkenntnis und religiöser Glaube in der Geschichte. Zur Physikotheologie im 18. Jahrhundert', Ernst-Alban-Gesellschaft für Mecklenburgisch-Pommersache Wissenschafts- und Technikgeschichte, 26. Rostocker Wissenschaftshistorisches Kolloquium, Rostock, 25 March, 1997.

Guntau, M., ‚Geological and Mineralogical Knowledge and Mining before the Industrial Revolution', XXth International Congress of History of Science, Liège, 23 July, 1997.

Guntau, M., 'Zur staatlichen Organisation der Geologie im 19. Jahrhundert — Geological Surveys', 6. Jahrestagung der Gesellschaft für Geowissenschaften, '125 Jahre amtliche Geologie in Sachsen', Freiberg, 5 October, 1997.

Guntau, M., Rostocker Beiträge zur Geschichte der Geowissenschaften, Kolloquium: 'Die geologische Forschung in Mecklenburg-Vorpommern von den Anfängen bis zur Gegenwart', Müritz-Museum, Waren, 22 November, 1997.

Lüdecke, C., 'Ferdinand von Wrangell und seine Expedition ins nördliche Eismeer', Veranstaltungsreihe im Haus des Deutschen Ostens, München, 27 February, 1997.

Lüdecke, C., 'Kloster Andechs als Station in frühen meteorologischen Messnetzen', Workshop über 'Entwicklungslinien heute aktueller Forschungsthemen durch das 20. Jahrhundert', Andechs, 3 March, 1997.

Lüdecke, C., 'Johannes Georgi's Documentary Movies about Alfred Wegener's Expedition to Greenland (1929, 1930–31): Reality and Fiction', XXth International Congress of History of Science, Liège, 26 July, 1997.

Lüdecke, C., 'Potential for International Co-operation in the History of Science of the Polar Regions', Symposium at UNIS, The Norwegian University Course on 'A Hundred Years since the fatal North Pole Expedition of Salomon August Andrée, Swedish Balloonist and Pioneer of Arctic Aviation', Longyearben, 17 August, 1997.

Lüdecke, C., 'Alfred Wegener's Death on the Geenland Ice-cap: A Tragedy', Norsk Folkemuseum, Symposium on Collective Memory and Heroic Science in Nordic Arctic Experience, Oslo, 29 August, 1997.

Lüdecke, C., 'Vom Barometerexperiment auf dem Puy de Dome (1648) zur Rekordfahrt des Freiballons "Preussen" (1901): Meilensteine in der Erforschung der Atmosphäre', Kolloquium der Meteorologischen Gesellschaft, Zweigverein Hamburg, Hamburg, 28 October, 1997.

Schmidt, P., 'Geschichte der Geowissenschaften und Recherchen im deutschen Bibliothekswesen: Wünsche, Möglichkeiten, Grenzen, Zukünftiges', Kolloquium Geschichte der Geowissenschaften und Recherchemöglichkeiten im deutschen Bibliothekswesen, Göttingen, 12 September, 1997.

Schmidt, P., 'Über den Nutzen der Geognosie nach Abraham Gottlob Werner', 6. Jahrestagung der Gesellschaft für Geowissenschaften '125 Jahre amtliche Geologie in Sachsen', Freiberg, 5 October, 1997.

Seibold, E., Seibold, I., and Fritscher, B., Poster on 'Charles Lyell's relations to Germany', The Lyell/Hutton-Bicentennial Conference, London, June/July, 1997.

Wagenbreth, O. 'Die geologische Kartierung in der Geschichte der Wissenschaften', 6. Jahrestagung der Gesellschaft für Geowissenschaften, '125 Jahre amtliche Geologie in Sachsen', Freiberg, 5 October, 1997.

Publications

Daber, R., 'Tafeltexte zu August von Gutbiers paläbotanischer Arbeit 1835/1836 (Index of plates and figures in August von Gutbier's paläobotanical work 1835/1836), in: *Hallesches Jahrbuch Geowissenschaften*, 1997, *19*, 49–58.

Engelhardt, W. von, 'G.C. Lichtenbergs Gedanken über die Entstehung und die Bildung unserer Erde zu ihrer gegenwärtigen Gestalt', *Lichtenberg-Jahrbuch 1996*, Saarbrücker Verlag, Saarbrücken, 1996, 26–50 (appeared, 1997).

Engelhardt, W. von and Kuhn, D., 'Zur Geologie und Mineralogie von 1806 bis 1820: Ergänzungen und Erläuterungen', *Goethes Schriften zur Naturwissenschaft*, Vol. 2, 8A, Verlag Herman Böhlaus Nachf., Weimar, 1997, 748 pp.

Fritscher, B., 'Geowissenschaften und Moderne: Studien zur Kulturgeschichte der Mineralogie und Chemischen Geologie (1848–1926)', München, 1997, 456 pp. (Habilitationsschrift).

Guntau, M. 'Leo zur Mühlen', in: *Neue Deutsche Biographie. Hrsg. von der Historischen Kommission der Bayerischen Akademie der Wissenschaften*, Berlin, 1997, *18*, 278.

Guntau, M., 'Geological and Mineralogical Knowledge and Mining before the Industrial Revolution', in: XXth International Congress of History of Science, Liège, 20–26 July, 1997, *Abstracts: Scientific Sections*, Liège, 1997, 153 (German) and 620 (English).

Guntau, M., and Figueirôa, S.F. de, 'Zum Wirken des Barons Wilhelm Ludwig von Eschwege (1777–1855) auf dem Gebiet des Montanwesens in Brasilien', in: *Die hessisch-lateinamerikanischen montanhistorischen Beziehungen vom 16. bis 20. Jahrhundert. 2. Montanhistorisches Kolloquium Borken*, Borken, 1997, 52–64 and Abstracts 97–100.

Guntau, M. and Schmidt, P., 'Hans Prescher (1926–1996)' in: International Commission on the History of Geological Sciences (INHIGEO) *Newsletter* No 29 for 1996, Sydney, 1997, 56.

Langer, W., 'History of Paläontographica: Portraits of Editors', in: K. Goth, W. Haas and D. Mai (eds), *150 years of Paläontographica*, Stuttgart 1997, 1–26 (Special volume of *Paläontographica*)

Langer, W., 'Le Rôle des Géoloques Francophones dans l'Exploration Géologique du Massif de l'Eifel (1780–1814)', in: G. Gohau (ed.), *De la Géologie à son Histoire*, Paris, 1997, 91–99.

Langer, W, 'Neues Archivmaterial zur frühen Erforschung der Höhlen in Hemer-Sundwig', in: *Speläologisches Jahrbuch (1995/96)*, Iserlohn, 1997, 87–89.

Lüdecke, C., 'Erich von Drygalski und der Aufbau des Instituts und Museums für Meereskunde', in: *Historisch-meereskundliches Jahrbuch*, 1997, *4*, 19–36.

Lüdecke, C., 'Frauen in der Meteorologie = Meteorologinnen?', in: *HSPatschwork. Festschrift für Hadumod Bussmann aus dem Kreis der Stipendiatinnen, zum 5. Mai 1997*, 1997, 131–135.

Lüdecke, C., 'Die geophysikalischen Ergebnisse der Expedition des Baron Ferdinand von Wrangell in das nördliche Eismeer (1820–1824)', in: *Beiträge aus Anlass des 200. Geburtstages des Admirals Ferdinand Baron von Wrangel 1796–1870*, Vol. 3.1, 1997, 79–98.

Lüdecke, C., 'The History of Polar Research Specialist Group of the German Society of Polar Research' in: *Proceedings of the 16th Polar Libraries Colloquium, June 17–22*, 1996, Anchorage, 1997, 52–58.

Lüdecke, C., 'The Monastery of Andechs as Station in Early Meteorological Observational Networks', *Meteorologische Zeitschrift*, 1997, 242–248.

Lüdecke, C., 'Zum 100. Geburtstag von Max Grotewahl (1894–1958), Gründer des Archivs für Polarforschung', *Polarforschung*, 1997, *65*, 93–105.

Lüdecke, C., 'Entwicklungslinien heute aktueller Forschungslinien durch das 20. Jahrhundert', *Meteorologische Zeitschrift. Neue Folge*, 1997, *6*, 239–307.

Schmidt, P., 'Adam August Krantz—Briefpartner Alexander von Humboldts. Neues zur Geschichte des Studiums an der Bergakademie Freiberg 1832/34 sowie zur Geschichte der Mineralienhandlung Dr. Krantz (Bonn) und der geophysikalischen Erforschung Spitzbergens', *Acta historica Leopoldina*, 1997, *27*, 75–88.

Schmidt, P., 'Universitätsbibliothek "Georgius Agricola" der Technischen Universität Bergakademie Freiberg', in: F. Krause (ed.), *Handbuch der historischen Buchbestände in Deutschland*, Vol. 17, Hildesheim, Zürich, and New York 1997, 239–248.

Schmidt, P., 'Zur Kenntnis der Wernerschen Stiftungen und der Wernerschen Stipendien im 19. Jahrhundert, *Mitteilungen des Freiberger Altertumsvereins*, 1997, *78*, 56–67.

Reviews

Guntau, M. Review of: I.I. Shafranovskii, *Kristallografija v SSSR 1917–1991*, Nauka, St. Petersburg, 1996. 191 pp. In: *INHIGEO Newsletter*, No 29, 1997, 31.

Lüdecke, C. Review of: H. Eesalu and H. Tooming, *Meteorology in Estonia in Johannes Letzmann's times and today*, Estonian Academy Publishers, Tallinn, 1995. 192 pp. In: *Meteorologische Zeitschrift*, 1997, *6* (new series), 315.

Lüdecke, C. Review of: Ulrich Wutzke, *Durch die Weiße Wüste. Leben und Leistungen des Grönlandforschers und Entdeckers der Kontinentaldrift Alfred Wegener*, Justus Perthes, Gotha, 1997. 240 pp. *Meteorologische Zeitschrift*, 1997, *6* (new series), 315-316.

Lüdecke, C. Review of: Reinhard A. Krause, *Zweihundert Tage im Packeis. Die authentischen Berichte der "Hansa"-Männer der deutschen Ostgrönland-Expedition 1869–1870*, Ernst Kabel, Hamburg, 1997. 348 pp. In: *Historisch-meereskundliches Jahrbuch, Deutsches Museum für Meereskunde und Fischerei*, 1997, *4*, 125-127.

Other matters

A Hans Prescher Memorial volume was prepared on the occasion of his death on 29 September, 1996. The volume includes contributed articles from Wolfhard Langer, Peter Schmidt, and Otfried Wagenbreth. A *Festschrift* for Otfried Wagenbreth was prepared on the occasion of his 70th birthday. The resulting volume, *Contributions to the History of Mining, Geology and Monument Protection*, includes contributions by Bernhard Fritscher, Martin Guntau, Helmut Hölder, and Peter Schmidt. Both volumes will appear in 1998.

In addition to the activities sketched above, there were many other activities preparations have been started for the International Symposium 'Abraham Gottlob Werner and his Times' (see p. 17); the preparation of a workshop on 'Actualism' at Erlangen (organised by Gottfried Hofbauer); the Annual Meeting of the German working-group 'History of Geosciences' at Erlangen (organised by Peter Schmidt); and work toward the foundation of a Berlin-Brandenburg Working Group of Geological Sciences, named 'Leopold von Buch' (organised by Peter Krüger and Peter Kühn).

In the 'Leopold von Buch' Working Group, Rudolf Daber remembered the 200 birthday of Friedrich Hoffmann (1797–1836), the same year that Charles Lyell was born. In 1830, Hoffmann published in Berlin a remarkable geological map of North Western Germany on a scale of 1: 800 000 1830, mentioned in Adam Sedgwick's Presidential Address to the Geological Society of London in 1830.

On 17 and 24 November, and 1 December, 1997, the German MDR-TV telecast a programme showing Rudolf Daber and two fossil hunters from Zwickau (Saxony), entitled 'The Professor and his Collectors'. It showed Professor Daber in his home with Carboniferous fossil plants, on the dump of a coal mine in the Ruhr coal district collecting fossil plants, and underground in the Bergkamen coal mine at a depth of 1,400 m collecting fossil calamites, a fossil seed and a root-bed of the Röttgers Bank coal seam.

INHIGEO members Daber, Fritscher, Guntau, Langer, Lüdecke and Wagenbreth helped with the compilation of this annual report and their assistance is gratefully acknowledged.

Peter Schmidt, Freiberg

In addition to Peter Schmidt's report, we have also received the following notice from Cornelia Lüdecke and Hans Volkert (Ed.).

'Development of Current Research Topics During the 20th Century'—Workshop of the History of Meteorology Specialist Group of the German Society of Meteorology (held at 3–4 March, 1997, Kloster Andechs, Bavaria)

The first meeting of the newly established specialist group for the history of meteorology of the German Meteorological Society was organized by Cornelia Lüdecke (Munich) and Hans Volkert (Oberpfaffenhofen) in the fine historical setting of Andechs Monastery, south of Munich. Renowned scholars were invited to sketch the various lines of development of current research topics during the 20th century. Emphasis was placed on an international perspective, but with special emphasis on European meteorology.

Dr Lüdecke (Munich) set the scene by recalling the Andechs Monastery as having been one of the observation stations at the end of the 18th century, in the early meteorological networks of the *Societas Meteorologica Palatina* and the Bavarian Academy of Science. She provided background information and presented examples of results from the period 1781–92.

Reinhold Steinacker (Vienna) described the establishment of the Vienna Meteorological Service (*Zentralanstalt*) and the development of the Viennese meteorology at the turn of the last century, describing the work of Julius Hann and Max Margueles.

Karl-Heinz Bernhardt (Berlin) documented the development of concepts, over some hundred years, regarding the atmospheric boundary-layer to about the middle of the 20th century. He provided a detailed bibliography of German, English, and Russian sources.

Ulrich Schumann (Oberpfaffenhofen) discussed aircraft contrails (condensation vapour trails) as a prototype for cirrus cloud studies, from the early days of aviation.

Klaus-Peter Hoinka (Oberpfaffenhofen) presented the discovery of the tropopause about a century ago and related the early findings to current research. He sketched early 'vertical expeditions', described various technological developments, and referred to international co-operative investigations. He also alluded to various problem areas, such as the discontinuity in scientific progress, competition between nations, and rivalries between individual scientists.

Huw Davies (Zurich) provided an overview of, and reflected on, the study of extratropical cyclogenesis in the period up to about 1970, tracing the development of two contrasting theories of cyclogenesis. Consideration was also given to the international and personal interactions accompanying the scientific developments.

Melvyn Shapiro (Boulder) gave a spirited talk on the origin of models of the life-cycles of extratropical cyclones. He described research in this field and showed operational weather-charts from the meteorological institutes of Leipzig and Bergen for the period 1911-22. He presented the actual mesoscale cyclone that occurred over Denmark in September 30th 1918 as the prototype of Bjerknes's 'ideal cyclone'.

Alan Thorpe (Reading) reported on the several roots of the now widely used concept of potential vorticity. Various forms of this quantity, and their interrelations, were described. Brief biographical information about the protagonists and their contacts showed how a complicated but powerful concept slowly made its way from exploratory application to wide-spread acceptance.

In conclusion, Klaus-Peter Hoinka briefly recalled August Schmauss's researches concerning the tropopause region by at the beginning of this century. Furthermore, he presented a recording of Schmauss's personal remarks at the end of a lecture, held in 1952, about the discovery of the tropopause fifty years before.

Most of the papers have been published (in English) in *Meteorologische Zeitschrift*, new series, 1997, *6*, pp. 242–307.

Also, Professor Dr Wolf von Engelhardt has written from Tübingen to inform us of a meeting organised at Jena on 6 June, 1997 by Professor Klaus Heide, on the occasion of the 200th anniversary of the foundation of the first mineralogical society—*Societät für die gesammte Mineralogie zu Jena*. Amongst the several presentations on the history of the Society, and on topics relating to the history of mineralogy, Professor von Engelhardt gave a talk on Johann Georg Lenz (1748–1832), the Jena Mineralogical Society, and Johann Wolfgang von Goethe. Lenz was Professor of Mineralogy at the University of Jena.

Hungary

Elections were held on 24 March, 1998, for the Historical Section of the Hungarian Geological Society. Gábor Csiky was promoted to lifelong Honorary Chairman, while Endre Dudich was appointed the new Chairman of the Section. Jósef Hála was re-elected Secretary.

Seven regular meetings have been held, with the following topics being discussed:
20 January—Irma Dobos: Budapest as a balneological centre.
24 February—Terézia Póka: Development trends in geology from 1896 to the present
24 March—György Bárdossy: Berthier, Les Baux, and the story of bauxite
26 May—
György Bárdossy: Commemoration of István Mihálţz on the hundredth anniversary of his birth
István Zoltán Nagy: The Hungarian Union of Collections was created 75 years ago
Endre Dudich: The third 50 years of the Hungarian Geological Society. Part I: 1949–1970
13 October—
Gusztáv Morvai: History of the Carpathian–Balkan Geological Association
Palaeoentomology and Professor Sándor Pongrácz
Endre Dudich and Vilma Széky-Fux: The third 50 years of the Hungarian Geological Society. Part II:
10 November—Joint Session with the Section of Mineralogy and Geochemistry, at The University of Budapest
Gábor Bidló: Hungarian implications of the treatise *Kristallographie de Mineralreiches* by Bekkerheim-Kramp, published in Vienna, 1793
Orsolya Kákay-Szabó and István Viczián: Report on the festive session of the 200th anniversary of the Jena Mineralogical Society (Germany)
Anikó Déé Nagy: Contributions to the history of the Teleki family's mineral collection at Marosvásárhely (Tirgu Mures, Romania)
István Viczián: D. Teleki's presidency of the Jena Mineralogical Society, as reflected by contemporaneous correspondence
József Hála, Tibor Németh, and Attila Terbócs, Life and oeuvre of Samuel Zay
15 December—Special Session in the Hungarian National Museum
István Zoltán Nagy: The Hungarian National Museum was built 150 years ago
Vilma Széky-Fux: The third 50 years of the Hungarian Geological Society. Part III
Tibor Kecskeméti: From the history of Hungarian micropalaeontology
Endre Dudich: Chairman's Report for 1997
In 1997, the Section organized two full-day thematic sessions

15 April

In the Geological Institute of Hungary, on:
The Institute's Geological Mapping Expeditions in Mongolia, 1966–1990 (12 lectures)
The Bauxite Exploration Party in Vietnam, 1985–1987 (1 lecture)

This meeting was most successful and attracted 101 participants.

26 September

At the North-east Hungarian Branch of the Hungarian Academy of Sciences, in the town of Debrecenon the bicentenary of the publication in London of Robert Townson's *Travels in Hungary*
The keynote speaker was INHIGEO President, Dr Hugh Torrens of Keele University, U.K., who spoke about Townson's scientific work outside Hungary. The other twelve speakers (including Polish co-authors) presented the historical background (Péter Rózsa), the cartographic base (Katalin Plihál), Townson's visit to the Wieliczka salt mine (Kinga Székely and Zbigniew Wójcik), the speleological aspects of Townson's book (Sándor Hadobás), Townson's ethnographic observations (József Hála), some 'geochemical' data (Gyula Szóör), Townson's excursions in the high Tátra Mountains (Zoltán Pinczés and Tadeusz Dyga), Townson's botanical descriptions (Miklós Nagy), Townson's entomology (Ottó Merkl), Townson's mineralogical excursion in the Tokaj Hills)Sándor Szakáll and Péter Rózsa), and a hitherto unknown letter written by Domokos Teleki about Townson's book (István Viczián).
The meeting was attended by 33 people.

* * *

The Section has been concentrating its efforts on the celebration of the 150th anniversary of the Hungarian Geological Society (18 March, 1848), preceded only by the Geological Society of London (1807), the *Société Géologique de France* (1835). (The German Geological Society was founded later in 1848.) A report on the meeting will be given in the 1999 *Newsletter*.

* * *

Selected Publications

Csiky, Gábor, *From the History of Earth Sciences in Hungary, with Special Reference to Transylvanian Science*, Piliscaba, Budapest, 1997 (in Hungarian).

Dobos Irma, 'Commemoration of Gyula Weszelsky on the 125th Anniversary of his Birth', *Hidrológiai Tájékoztató*, April 1997, 4–5 (in Hungarian).

Dobos Irma and Nándor Pataki, 'Budapest as the City of Spas at the Turn of the Millenium', *Proceedings of the 33rd Conference of SITH, Hakano, Kanagawa, Japan*, December 1–6, 1997, Kanagawa Prefecture Museum of Natural History, 1997, 110–116.

Hála, József, 'Kálmán Lambrecht, the Palaeontologist of Hungarian Ethnography', *Magyar Múzeomok*, 1997, *3*, 24 (in Hungarian).

Hála, József *et al.*, 'The Legends of Baradla Cave at Aggtelek', *Ann. Mus. Miskolc. de Herman Ottó nom.*, 1997, *35–36*, 703–740 (in Hungarian).

Nagy, Ferenc (ed.), 'Commemoration of L. Telegdi-Róth, J. Szabó, I. Mihăltz, S. Gesell and I. Vitális', in several numbers of *Földtani Közlöny* and *Hidrológiai Tájékoztató*, 1997 (in Hungarian).

Endre Dudich, Budapest

India

Professor K.S. Murty reports that his paper 'Development of Geological Sciences in India in the 18th–19th Centuries' will be published in the *Proceedings* of the 20th International Congress of the History of Science, held at Liège, though he was regrettably unable to be present to deliver the paper. He contributed a paper entitled 'Learning about the Earth as a System: The Indian Considerations' to the 1997 Geoscience Conference at the University of Hawaii (28 July–1 August, 1997); and one entitled 'Metallurgy in Ancient India, as Gleaned from Works' at the 3rd International Symposium ('Cultural Heritage in Geology, Mining and Metallurgy: Libraries, Archives, and Museums') held at St Petersburg, Russia (23–27 June, 1997). Professor Murty has been elected to the History Commission of the German Geophysical Society, Bremen, with membership effective from the beginning of 1998.

Ireland

On 25th May 1997 a commemorative plaque was unveiled in All Saints' Church, Antrim, Northern Ireland, to the memory of George Victor Du Noyer (1817-1869) a geologist with the Geological Survey of Ireland who was buried in an unmarked grave in the graveyard that surrounds the church. Du Noyer was an excellent field geologist, a watercolourist of exceptional merit and a recorder of Irish antiquities. The plaque, which is carved in pale grey limestone from the Irish midlands, carries his name, dates, interests, and a Huguenot Cross. The unveiling was attended by a number of his descendants, geologists, and local dignitaries, and is described more fully in Coffey and Wyse Jackson (1997) (see below).

Patrick Wyse Jackson participated at a meeting to celebrate the 75th anniversary of the Institute of Chemistry of Ireland, where he gave a paper on 'Richard Kirwan (1733-1812): Chemist and Geologist'. In November, he delivered the annual public lecture of the National Committee for the History and Philosophy of

Science at the Royal Irish Academy. This paper on the eighteenth-century Irish cleric George Graydon was co-authored with Ezio Vaccari (see publications below).

Publications

Andrews, J.H., 'Paper Landscapes: Mapping Ireland's Physical Geography', in: Wilson Foster, J. and Chesney, H. (eds), *Nature in Ireland*, Lilliput Press, Dublin, 1997, 199–218.

Anglesea, M., 'The Art of Nature Illustration', in: Wilson Foster, J. and Chesney, H. (eds), *Nature in Ireland*, Lilliput Press, Dublin, 1997, 497–523.

Coffey, P. and Wyse Jackson, P.N., 'Irish Geologist Commemorated', *Geology Today*, 1997, *8*, 205.

Parkes, M.A. and Sleeman, A.G., *Catalogue of Type, Figured and Cited fossils in the Geological Survey of Ireland*, Geological Survey of Ireland, Dublin, 1997, 124 pp. [The volume contains a short history of the collections.]

Hackney, P., 'Francis Leopold McClintock', in: Wilson Foster, J. and Chesney, H. (eds), *Nature in Ireland*, Lilliput Press, Dublin, 1997, 342–348.

Wilson Foster, J. and Chesney, H. (eds), *Nature in Ireland*, Lilliput Press, Dublin. xii + 658 pp.

Wyse Jackson, P.N., 'Alexander Nimmo's On the Application of the Science of Geology to the Purposes of Practical Navigation (1825): An Early Investigation on the Nature of Offshore Geology', *Earth Sciences History*, 1996, *15*, 167–171.

Wyse Jackson, P.N., 'John W. Pringle (c. 1793–1861) and Ordnance Survey geological mapping in Ireland', *Proceedings of the Geologists' Association*, 1997, *108*, 153–156.

Wyse Jackson, P.N. 1997 'Fluctuations in Fortune: Three Hundred Years of Irish Geology', in: Wilson Foster, J. and Chesney, H. (eds), *Nature in Ireland*, Lilliput Press, Dublin, 91–114.

Wyse Jackson, P.N. and Vaccari, E., *The Reverend George Graydon (c. 1753–1803): Cleric and Geological Traveller*, Royal Irish Academy, Dublin, 1997, 14 pp..

Patrick N. Wyse Jackson, Dublin

Italy

The following papers relating to the history of geology were read at the International Symposium, 'Scientific Instructions for Travellers in the 18th and 19th Centuries', held in Florence, 24–27 September, 1997:

F. Walter, 'Les Dispositifs Intellectuels des Instructions pour la Découverte de la Montagne Alpine' ['The intellectual 'tools' of the directions for Alpine discovery'].

S. Briffaud, 'Des Instructions à l'Observation de Terrain: l'Exploration des Montagnes' ['From instructions to field observations: the exploration of mountains'].

E. Vaccari, 'Le Istruzioni per i Geologi Viaggiatoriin Toscana e in Europa tra Sette ed Ottocento' ['Instructions for travelling geologists in Tuscany and Europe during the 18th and 19th centuries'].

(Further details about publication of the *Proceedings* may be obtained from the Centro Romantico del Gabinetto G.P. Vieusseux, Piazza e Palazzo Strozzi, 50123 Firenze, Italy (fax +39 55 2396743).)

On 25 October, 1997, the Venetian Society of Natural Sciences and the Lyceum 'Marco Foscarini', in collaboration with the Centro Studi Ricerche Ligabue, organized a symposium in Venice on 'The Earth Sciences in Venice from the fall of the Venetian Republic to the Unification of Italy [1797-1870]'. Seven papers (in Italian) were presented:

C. Lazzari: 'Geology and palaeontology in the 18th and 19th centuries'.

D. Magnanini: 'Geological studies in the Lyceum "Santa Caterina", Venice'.

E. Vaccari: 'Giuseppe Marzari Pencati and his Contributions to Venetian Geology during the 19th Century.

N. Morello: 'Tommaso Antonio Catullo's *Saggio di Zoologia Fossile*'.

C. Lazzari: 'Tommaso Antonio Catullo and the Castellini Collection'.

C. Gibin: 'Natural History according to Three Professors of the University of Padua (Renier, Catullo and Molin)'.

F. Bizzarini: 'The First Paleontological Studies in the Ladine Valleys (Badia, Gardena and Fassa), from von Buch to Mojsisovics'.

The *Proceedings* will be published in Italian by the Venetian Society of Natural Sciences. For further information,, write to Corrado Lazzari, Società Veneziana di Scienze Naturali, c/o Museo Civico di Storia Naturale, S. Croce 1730, 30125 Venezia, Italy (tel/fax +39 41 5227375).

Publications

Carusone, Angela, Emi Morroni, Emi and Zanfrà Silvana (eds.), *La 'Carta Geologica d'Italia': Un Itinerario Bibliografico* [*The 'Geological Map of Italy': A Bibliographical Itinerary*], Istituto Poligrafico e Zecca dello Stato, Roma, 1996, 149 pp.

Nazzaro, Antonio, *Il Vesuvio: Storia e Teorie Vulcanologiche*, Liguori Editore, Napoli, 1997.

Sperandio, Sergio and Silvana Zanfrà, 'Primi programmi per la Carta Geologica d'Italia. Verbali delle adunanze del Regio Comitato Geologico d'Italia negli anni 1868–1877. Documentazione originale storica, tecnica ed iconografica' [First plans for the Geological Map of Italy. Minutes of the meetings of the Royal Geological Survey during the years 1868–1877. Historical, Technical and Iconographical Original Documents], *Bollettino del Servizio Geologico d'Italia*, Supplement to Vol. 114, 1995, Instituto Poligrafico e Zecca dello Stato, Roma, 1997. The volume contains an introduction (pp. 3–13), a 'Brief consideration of the first difficulties faced during the creation of the Geological Map of Italy' (pp. 13–15), and complete photographic reproduction of the minutes of the meetings from January 27, 1868 to January 29, 1877 (pages not numbered).

Vaccari, Ezio, 'Lazzaro Spallanzani: une naturaliste italien de dix-huitième siècle et sa contribution aux sciences de la terre', *Travaux du Comité Français d'Histoire de la Géologie*, 1996 [published 1997], *11*, 72–89.

Vecchiet, Romano (ed.), *Giulio Andrea Pirona (1822–1895)*, Atti del Convegno di Studi su Giulio Andrea Pirona nel centenario della morte [Proceedings of the Meeting in honour of G.A. Pirona on the centennial of his death], Tip. Graphis, Udine, 1997, 181 pp. This volume contains eleven papers, including the following: Franco Vaia, 'Giulio Andrea Pirona: il primo geologo applicato friulano' ['Giulio Andrea Pirona: the first applied geologists from Friuli'], pp. 92–98; and Luca Simonetto, 'Giulio Andrea Pirona geologo e paleontologo' ['Giulio Andrea Pirona, geologist and paleontologist'], pp. 99–112.

Wyse Jackson, Patrick and Ezio Vaccari, *The Reverend George Graydon (c. 1753-1803): Cleric and Geological Traveller* (4th Annual Lecture, National Committee for the History and Philosophy of Science), Royal Irish Academy, Dublin, 16 pp.

Ezio Vaccari, Genoa

In addition, Professor Giorgio Vittorio Dal Piaz, from the Department of Geology, Palaeontology and Geophysics, University of Padua, reports that he has published an article entitled 'Alpine Geology and Historical Evolution of Orogenic Concepts' (*Accademia delle Scienze di Torino—Memorie di Scienze Fisiche*, 1997, *21*, 49-83). It deals with the major advances in geological thinking over the last two centuries regarding the earth's dynamics. The evolution of modern and now lost oceans, and the orogenic development of mountain chains are 'relived', focusing on the Alps and their Tethyan cradle. This historical journey begins with the origins and fixist tenets that long supported the occurrence of vertical movements only, continues through the mobilist theories of overthrusting and continental drift—which conversely favoured extensive horizontal displacements—and ends with the birth of plate tectonics and its first application to the Alps.

From the same department, Giuliano Piccoli has reviewed (in Italian) the latest supplement of William A.S. Sarjeant's *Geologists and the History of Geology* (1985–93), particular reference being made to the Paduan scientists mentioned in these volumes:

Piccoli, Giuliano, Review of: William A.S. Sarjeant, *Geologists and the History of Geology. An International Bibliography. Supplement 2 (from 1985 to 1993)*, 3 vols, Krieger Publishing Company, Malabar (Florida, USA), 1996. In: *Quaderni per la Storia dell'Università di Padova*, 1997, *30*, 257-60.

Japan

The Japanese Association for the History of Geological Science (JAHIGEO) was founded in March, 1994, by a group of geologists who compiled the history of geology for the 100th anniversary of the Geological Society of Japan in May, 1993. Since then it has had two ordinary meetings, and an evening, one at the annual meeting of the Society, and Newsletters are published twice a year. A report on the General assembly and symposium of INHIGEO was given at the ordinary meeting of JAHIGEO. Candidates for the membership of INHIGEO were recommended by the JAHIGEO secretariat. The Association had 64 members at the beginning of 1998.

Some research scientists on the history of geological science joined the Society of History of Natural Sciences of Japan before the foundation of this Association. Now they belong to both organisations. The Association will hold a joint meeting at the General Assembly of the Society in May, 1998.

General Activities

The editorial committee of history of geosciences in Japan was organized under the chairmanship of Imai of the Tokyo Geographical Society in 1990. It published six review papers on the history of geosciences from 1860s to 1920s in the *Journal of Geography*.

Kurabayashi reviewed the history of education of geosciences since the early Meiji era. He read several papers at the ordinary meetings of JAHIGEO and published papers in the Education and Democratisation for Geoscientists.

Modern geosciences were introduced by foreign geoscientists employed by the Japanese Government in the early Meiji era. The American, Benjamin Smith Lyman, was one such geologist and completed a geological map of Hokkaido in 1876, which was the first geological map published in Japan. He also contributed to coal and petroleum exploration in Japan. Fukumi in Massachusetts, USA, and Iwasa, a petroleum geologist, were engaged in collecting and describing materials.

The German geologist and paleontologist, Edmund Naumann, was the first professor of geology of the University of Tokyo and his collected papers were translated into Japanese by Yamashita.

The German paleontologist, Franz Hilgendorf, was respected as a founder of fishery science and was the first to introduce the theory of evolution to Japan. His contributions were clarified by Yajima in an exhibition and symposium on Hilgendorf, organized in 1997.

Sugaya translated Gabriel Gohau's *Histoire de la Geologie* (1987) into Japanese in 1997. This provides an opportunity to learn about the French school of geology, previously little known to many Japanese geologists.

Activities of JAHIGEO

JAHIGEO held two ordinary meetings, in April and December, and an evening one at the annual meeting of the Geological Society of Japan at Kyushu University, October, 1997.

The ordinary meeting was held at the Kanagawa Prefectural Museum of the Earth, on April 6, on problems of museums. Although many museums of natural history were established by local governments and private organisations from 1970s to 1990s, but the founders' ideas were diversified and many of them have had financial problems. The museums' difficulties were discussed at the meeting.

Y. Matsushima: 'Future plans of the museum of natural history'

M. Shiba: 'The role of the museum of natural history as the data-base centre for management, research and education of nature'

Y. Sakamaki: 'Natural history researches in Mongolia, as viewed by a foreign geologist'

S. Ishigaki: 'The historical development of exhibition methods and the present state of museums of natural history'

The evening meeting at Kyushu University, October 12, 1997, had the following presentations:

T. Matsumoto: 'Historical review of study of geology in the Geology Department, Kyushu University'

H. Yamamoto and Y. Matsumoto: 'Memorial of Professor T. Tomita'

M. Yamaguchi: 'The petrological work of Professor K. Sugi in the early Showa Era'

At the ordinary meeting at Hokutopia, Tokyo, December 23, 1997, the following papers were read:

I. Imai: 'Critical review of Gabriel Gohau's *Historie de la Geologie*, translated by S.Sugaya'

T. Yamada: 'Report on the Bicentenial Conference: James Hutton-Charles Lyell'

D. Shimizu: 'On the Pacific movement, by S. Ehara'

M. Yajima: 'The exhibition and symposium on F. Hilgendorf'

The JAHIGEO *Newsletter* No. 8 was published on June 15, and No. 9 on November 15, 1997.

Y. Suzuki and K. Yagi

[The JAHIGEO *Newsletter* is edited by Dr Michiko Yajima, who is a candidate for membership of INHIGEO in this year's ballot. She has been sending us copies of the *Newsletter* with English translations of the general headings. This is much appreciated. We understand that the production of an English version is under consideration. (Ed.)]

New Zealand

In 1997, as in previous years, the main activity has been the production of our newsletter, the *Geological Society of New Zealand Historical Studies Group Newsletter*. Two numbers, each of forty pages, were issued during the year: No. 14, March 1997, and No. 15, September 1997. Most of the articles are of the note type, but the following more significant articles were published during the year:

Keyes, Ian, 'The New Zealand Institute of Geological & Nuclear Sciences (ex Geological Survey) Collection of Gideon and Walter Mantell', No. 14, 3–9.

Mason, Alan 'Ernest Johnstone Searle: 28 August 1909–21 December 1996', No. 14, 22–30.

Walters, Bill, 'Patrick Marshall: 1969–1950', No. 15, 4–16.

Research into the Gideon Mantell material in New Zealand has continued and in addition to the account mentioned above there have been other short notes in our *Newsletter*. The following was also published:

Yaldwyn, John, Tee, Garry, and Mason, Alan, 'The Status of Gideon Mantell's "First" *Iguanodon* Tooth in the Museum of New Zealand Te Papa Tongarewa', *Archives of Natural History*, 1997, 24, 397-421.

Two members gave talks on historical subjects at the Annual Conference of the Geological Society of New Zealand:

Mason, Alan 'James Mackintosh Bell: Some New Information and a New Appraisal'.

Nicholson, Heather, 'How Greywacke Got its Name'.

Members of the Historical Studies Group continue to write short biographical accounts for the ongoing *Dictionary of New Zealand Biography*.

Alan Mason, Auckland

Norway

Geir Hestmark reports that he is close to finishing his book on the Norwegian geologist Waldemar Brøgger, on which he has been working for some fourteen years—a volume of some nine hundred pages, in Norwegian, and covering the period 1851 to 1905. It will deal with Brøgger's campaign for Norwegian science, as, for example, the establishment of the Nansen Foundation for the Advancement of Science, the Academy of Science, the popularisation of science, and so forth. About two hundred pages are devoted to Brøgger's geology.

Dr Hestmark also participated in the seminar on the history of mineralogy and geochemistry in Munich in 1997, reading a paper on the origins of the Norwegian school of geochemistry.

[It is to be hoped that funds may be found to make possible an English translation of the Brøgger book. Dr Hestmark notes the similarity of Brøgger's career to that of C.D. Walcott, and that the two geologists were personal friends. Ed.]

Poland

As in previous years, studies on the history of geosciences have been carried out chiefly in academic institutions in Warsaw, Cracow, Poznan and Wroclaw. However, the most important event in the field, both for Australia and Poland, has been Lech Paszkowski's publication of an extensive biography of the eminent explorer and scientist Paul Edmund de Strzelecki, for the 200th anniversary of his birth. This interesting and valuable book of 360 pages, based partly on unique archival materials from Stanislaw Czarniecki's Laboratory of the History of Polish Geology in Cracow, is the result of extended researches on Strzelecki. It is entitled *Sir Paul Edmund de Strzelecki: Reflections on his Life*, and was published in Australia by the Australian Scholarly Publishing Company in 1997.

The author has been domiciled in Australia for many years, where Strzelecki did much geological work and published a major geological book: *Physical Description of New South Wales and Van Dieman's Land [Tasmania]. Accompanied by a Geological Map, Sections, and Diagrams of the Organic Remains* (London, 1845). We are pleased that Lech Paszkowski maintains his contacts with Polish historians of geology. In Poland, Strzelecki's anniversary was honoured by the minting of a special 2 zloty coin and the distribution of a 1.5 zloty postage-stamp.

Among research works of international importance worthy of mention is an exhaustive account of the history of development of palaeontology in east-European countries, prepared by Dr Czarniecki for the *Paleontologic Encyclopedia*, published in the USA. Dr Zbigniew Wójcik has published a book of 211 pages, entitled *Studies on the History of Exploration of Mineral Resources in the Holy Cross Mountains Region*. Several historical papers are contained in memorial books edited to celebrate the Post-War period of geological studies at Warsaw University (1952–97) and 45 years of research and teaching activity by the petrologist Professor Alfred Majerowicz (Wroclaw University). In the former book there are articles on the history of geology at Warsaw University before 1952 by Professor Piotr Roniewicz and Dr Wójcik, whilst in the latter there is a paper on the history of mineralogical sciences at the Wroclaw University by Professor Michal Sachanbinski and Zbigniew Wierzbicki.

Several scientific sessions were organized to celebrate the jubilees of INHIGEO members, Andrzej Bolewski, Antoni Kleczkowski and Wojciech Narebski, as well as of Alfred Majerowicz and Katarzyna Pawlowska, recognised for their collection of geological source materials of historical importance and the popularisation of geosciences.

The annual scientific conference was held in Pila—birth place of Stanislaw Staszic, the 'father of Polish geology', with the following lectures being presented:

Stanislaw Czarniecki: 'The Geological Ideas of Hugo Kollataj'
Andrzej Abramowicz: 'Staszic–Cuvier'
Jozef Olejniczak: 'An Unknown Fragment of Staszic's Italian Diary'
Janusz Skoczylas: 'The Staszic Journal'
Zbigniew Wójcik: 'Staszic's Geological Collections'

Drs Czarniecki and Wójcik participated in the conference of historians of cartography, delivering lectures on the manuscript of Ludwik Zejszner's map, and on cartographic syntheses of the Polish Kingdom (within the Russian empire) in the years 1815-1915. The history of exploration of karst and caves was expounded by Jan Urban at a special speleological symposium.

Kinga Szekely and Dr Wójcik delivered a lecture on the researches of Robert Townson in Hungary and Poland at the scientific symposium in Debrecen (Hungary). [See Hungarian Report (ed).]

Jadwiga Garbowska and Dr Wójcik, in co-operation with Lithuanian geologists, have continued their archival studies on the history of geology in Lithuania. Jadwiga Garbowska has prepared a paper on the MSc and PhD theses presented at Vilna University prior to 1831. Janusz Skoczylas has continued his petroarcheological studies on the exploitation of rock raw-materials in Mediaeval times.

Memorial notices of several geoscientists who contributed to the history of Earth sciences in Poland have been published: for example, on Zbigniew Rubinowski (1929-1997), noted for his studies of ore mining in the Holy Cross Mountains region (by Zbigniew Kowalczewski and Tymoteusz Wróblewski); and Waclaw Ryka (1931–1996), petrologist and collector of early geological books, maps, and post-cards (by Wojciech Narebski).

Wojciech Narebski, Stanislaw Czarniecki, Zbigniew Wójcik

Portugal

1. In No. 6 (1997) of *Cahiers du Musée d'Histoire Naturelle de La-Chaux-de-Fonds*, Switzerland, reference is made to two Swiss geologists who worked in Portugal and made important contributions to the geology of the country: L. Thetaon-Paul Choffat (1849-1919), geologist and paleontologist of the Geological Survey for 40 years, and Ernest-Joseph-Xavier Fleury (1878-1958), geologist, who for 35 years was a university professor in Instituto Superior Tecnico (Lisbon).
2. A new history of science and technology publication has been established in Portugal: *Episteme*, published by the Grupo de Historia e Filosofia da Ciencia e da Tecnica, Aveiro University. Though not specifically devoted to the history of the earth sciences, it provides an outlet for the publication of papers and news in this field. For further information please contact Prof. M. Pinto (e-mail: <mpinto@geo.ua.pt>; fax: + 351 34 370 605).
3. Prof. Manuel Pinto attended the Lyell meeting in London, July, 1997, where he presented a poster on 'Charles Lyell and the Geology of the Madeira Archipelago'. Lyell visited Madeira in 1854 and made an important contribution to the geology and to the study of the fossil and living shells of the islands.
4. The 5th Portuguese Geological Congress, to be held in Lisbon in 1998, is included in the commemorations of the 150th anniversary of the creation of the Geological Commission of Portugal. Congress themes include 'The History of Geology in Portugal'.
5. In Zalathna, Brazil, in March, 1796, Manoel Ferreira da Camara wrote an interesting memoir on mining in Transylvania. A Brazilian-born naturalist, when Brazil was a Portuguese colony, Camara, a former student of Coimbra University and one of Werner's students in Freiberg, is considered to have been the first Brazilian mining engineer.

We regret to report the sad death of INHIGEO member, Professor Francisco Alvara Gonçalves of Évora University, in 1997. An obituary appears on p. 59.

Manuel Carlos Serrano Pinto, Aveiro

Russia

Professor N.P. Yushkin has written as follows:

After I was elected an INHIGEO member in 1996, and have continued my work as Head of the Commission on the History of Mineralogy in the All-Russia Mineralogical Society.

I took part in organising scientific sessions devoted to the 150th anniversary of Academician A.P. Karpinsky in Moscow (January 22, 1997) and Yekaterinburg (January 28, 1997), where I also presented reports 'Mineralogy on the Threshold of a New Millennium' and 'The Last Expedition of A.P. Karpinsky', as well as an international symposium devoted to the 100th anniversary of Academician A.G. Betekhtin (Moscow, April 9, 1997).

I collated, edited and published the last book, written by the outstanding Russian crystallographer and active INHIGEO member I.I. Shafranovsky, who died in 1994, entitled *Crystallography in the USSR: 1917–1991*, Saint-Petersburg, Nauka, 1996. (See review by M.Guntau in *Newsletter* No. 29, p. 31.)

Another book has been published, based on archive materials on the early years of the well-known Soviet mineralogist A.G. Betekhtin: Yushkin, N.P. and Parshukov, V.F., *Ust-Sysolsk Sources of A.G.Betekhtin's Biography*, Geoprint, Syktyvkar, 1997.

I have also published short essays about a number of scientists, mainly geologists, in different periodicals—A.P. Karpinsky, A.G. Betekhtin, Yu.A. Osipov, G.A. Mesyats, V.N. Kalikov, V.A. Zharikov, Ya.E. Yudovich, M.P. Sokolov, Ye.P. Kalinin, V.M. Senyukov, etc.

Sincerely yours, N.P.Yushkin

Director of the Institute of Geology of the Komi Science Centre of the Uralian Division of RAS, Head of Geology, Syktyvkar State University

Professor Anatoly G. Ryabukhin has written informing us of the following publications:

Khain, V. and Ryabukhin, A.G., *History and Methodology of Geological Sciences*, Moscow State University, Moscow, 1997. 224 pp. [See the review by Martin Guntau, p. 26. Ed.]

Ryabukhin, A.G., 'Ideas on Catastrophism in Geology: Yesterday, Today, Tomorrow', in: *Annual Scientific Conference: 'Lomonosov Memorial'*, Moscow State University, Moscow, 1997, 64–65.

Professor E.E. Milanovsky has written the following account of his recent activities to the middle of 1997.

In September 1995 I participated in the INHIGEO Symposium 'Volcanoes and History' in Naples, the Aeolian Islands, and Catania, with the excursions to Vesuvius, Pompei, Pozzuoli, etc.; the Aeolian volcanic archipelago (Stromboli, Lipari, Volcano); and Etna in Sicily. I presented two papers: 1. 'The Main Development Stages of Volcanoes: Russian Researches'; and 2. 'Problems of Atlantis in the Light of the Geological and Archaeological Researches on the Santorini Volcanic Archipelago in the Aegean Sea'. I also exhibited my drawings, 'Volcanoes of the World', including about 60 sketches made in different regions of Europe, Asia, Africa and North America. The papers, with their numerous illustrations, are currently being published in the Symposium's

Proceedings. In August, 1996, I participated in the INHIGEO Symposium in Beijing, which was included as part of the 30th International Geological Congress, and attended the Business Meeting of the Commission where new Members and Office Bearers were elected. My nominee Professor A.G. Ryabukhin was elected a new Member of INHIGEO, and the outstanding Russian geologist and academician V.E. Khain was 'rehabilitated' as a Member.

Now, in June-July 1997, I shall participate in the International Conference of the Geological Society, London, on the occasion of the bicentenary of Charles Lyell's birth and the associated field excursions, for which meeting I have prepared a poster presentation entitled 'The Distribution of Charles Lyell's Scientific Ideas in Russia and their Influence on the Development of Russian Geology'. The Russian version of the paper will be published in the *Bulletin of the Moscow Naturalist Society (Geological Section)* in 1997.

Further, during the years 1995–97, I have presented a series of papers on the history of geology in Russia and abroad at several sessions and conferences at Moscow State University and the Moscow Naturalist Society, etc. In 1998, I plan to attend the INHIGEO Congress in Switzerland and present papers devoted to the history of ideas about ancient glaciation in the Caucasus and on the continental plains of northern Eurasia.

Publications

Milanovsky, E.E., 'Main Development Stages of Volcanological Researches in Russia' 20th INHIGEO Symposium, Naples–Catania, 1995, Abstracts, 41–42.

Milanovsky, E.E., 'The Problem of Atlantis in the Light of Geological and Archaeological Researches on the Santorini Volcanic Archipelago in the Aegean Sea', 20th INHIGEO Symposium, Naples–Catania, 1995, Abstracts, 43.

Milanovsky, E.E., 'The Role of N.S. Shatsky's Researches in the Cognition of Structure and Development Regularities of the Ancient Platforms', *Moscow University Herald, Geology Series*, 1995, 14–32 (in Russian and English).

Milanovsky, E.E., 'Atlantis: How Long will the Mystery Persist?', *Science in Russia*, 1996, *3*, 43–50 (in Russian and English).

Milanovsky, E.E., Janshin, A.L., and Laverov, N.P., 'P.N. Kropotkin (1910–1996)', *Geotectonics*, 1996, *4*, 95–96 (in Russian and English).

Milanovsky, E.E., 'The Phenomenon of Ancient Greek Civilisation and its Importance for the Modern World', *Proceedings of the Meeting of the 'Amfictiones of Ecoumenic Hellenisme'* (25 May, 1996), Athens, 1996, 34–45.

Milanovsky, E.E., 'The Importance of Investigations Accomplished by N.S. Shatsky and his Collaborators for the Knowledge of the Geology of Central Kazakhstan (1936–1949)', in: *Moscow Geological School in Kazakhstan*, Faculty of Geology, Moscow University, 1996, 4–12.

Milanovsky, E.E., Borissenok, V.I., Zhakarov, V.A., Sokolov, B.A., Rjabchikov, J.D., and Khain, V.E., On the 30th Session of the International Geological Congress in Beijing', *Moscow University Herald, Geology Series*, 1997, 57–65.

Milanovsky, E.E., 'The "Prehistory" and Early Stages of the History of the Field Geological Training Centre of Moscow University in the Bakhchisaraj Region of the Crimean Mountains', *Moscow University Herald, Geology Series*, 1997, No. 3, 3–4 (in Russian).

Milanovsky, E.E., 'Alexej Alexeevich Bogdanov (On the Occasion of his Ninetieth Birthday)', *Moscow University Herald, Geology Series*, 1997, No. 4, 3–4 (in Russian).

Milanovsky, E.E., 'Development of Ideas on the Origin and Geological History of Oceanic Basins', in: V.N. Sholpo (ed.), *Problems of Tectonosphere Evolution: Scientific Papers Presented on the Occasion of V.V. Beloussov's Ninetieth Birthday*, Moscow, 1997, 9–23 (in Russian).

Milanovsky, E.E., 'The Dissemination of Charles Lyell's Scientific Ideas in Russia and their Influence on the Development of Russian Geology (on the Occasion of the 200th Anniversary of Lyell's Birth)', *Bulletin of Moscow Naturalists Society, Geological Section*, 1997, 53–58 (in Russian).

Spain

Activities this year have been dominated by the 200th anniversary of Casiano de Prado (1797–1866), a mining engineer who worked for the Commission for the Geological Map of Spain, which was the forerunner of the *Instituto Tecnológicó Geominera de España*, the Spanish Geological and Mining Survey. Prado made key contributions to the geology of Spain, preparing maps of several provinces. He wrote a classic work entitled *Physical and Geological Description of the Province of Madrid* (1864), did work on the concept of the Copper Age (independently of the Swiss, Adolphe Morlot), and studied the 'primordial' Cambrian trilobite fauna.

The anniversary prompted several events, notably a meeting organised on November 5 by The School of Mines (Madrid) and The National Association of Mining Engineers (Madrid), for which lectures were presented by Dr Octavio Puche and Dr Mariano Ayarzaguena; and a meeting of the Spanish Geological Society on 28 November, for which a lecture was presented by Dr Francisco Ayala-Carcedo.

INHIGEO member Dr Octavio Puche attended the 20th Congress of Americanists in Equador, with contributions on the history of geology and mining.

Publications and Conference Presentations

Amare, M.P., Orche, E. and Puche, O., 'Minería y Metalurgia de la Plata y del Azogue: Un Puente entre España y América', Meeting of the Asociación Iberoamericane de Escuela de Mines, Catamarca (Argentina), 1997.

Ayala-Carcedo, F.J., 'Casiano de Prado (1797–1866): A Classic of Spanish Naturalism and Archaeology', *Industria y Minería: Consejo Superior de Colegios de Ingenieros de Minas, Madrid*, 1997, No. 331, 42–48.

Ayala-Carcedo, F.J., 'Physical Environments and Development in Spain: An Historical Approach', *Boletín Geológico y Minero, Instituto Tecnológicó Geominera de España*, 1997, *108*, 81–98 (in Spanish).

Mazadiego, L.F. and Puche, O., 'Mitología Minera Iberoamericano', International Congress of Americanists, Quito, 1997.

Orche, E. and Puche, O., 'Joyería y Minería: Una Historia Común Vinculada al Conocimiento y Atracción por los Metales y Gemas', Meeting of the Asociación Iberoamericane de Escuela de Mines, Catamarca (Argentina), 1997.

Puche, O. and Ayarzaguena, M., 'Ingenieros de Minas Arquéologos en el Siglo XIX. La Huella de Prado. Homenaje a Casiano de Prado (1797–1866) en la Bicentario de su Naciemento', *Boletín Geológico y Minero*, 1997, *108*, 79–99.

Puche, O. and Mazadiego, L.F., 'Actuaciones Europeas en la Conservación del Patrimonio Minero-Metalúrgico', International Congress of Americanists, Quito, 1997.

Puche, O. and Mezadiego, L.F., 'Conservación del Patrimonio Minero-Metalúrgico Español: Actuación y Propuestas', *Tecnoambiente*, *69*, 17 February, 1997.

Puche, O. and Rabano, I., 'Museos y Parques', *Boletín Especial de la Sociedad Española para la Depensa del Patrimonio Geológica y Minera*, 1997, *7*, 42 pp.

Puche, O., 'Apuntes Biográficos de un Gran Geólogo, D. Casiano de Prado y Valle', *El Correo Gallego (Dominical)*, *38*, 1997. Santiago de Compostela.

Puche, O., 'Conservación del Patrimonio Minero Europeo', II Seminario sobre Ingeniería Geologico-Mineria. Escuela Técnica Superior. Ingenieros Industriales y Minas, Vigo, 2 December, 1997.

Puche, O., 'El Oro Como Patrimonio', *Boletín Sociedad Española para la Depensa del Patrimonio Geológica y Minera*, 1997, *9*, 3–14 December, Madrid.

Puche, O., 'El Patrimonio Geológico-Minero de la Comarca de Almadén', II Sesión Científica de la Sociedad Española para la Depensa del Patrimonio Geológica y Minera: 'Evaluación y Gestión del Patrimonio Geológico', Camarasa (Lérida), 14–16 March, 1997.

Puche, O., 'Linares Necesita un Museo de la Minería', II Jornadas de Desarrollo Integral de Una Comarca en Transformación. Universidad Nacional de Educación a Distancia, Linares, 17–18 October, 1997.

Puche, O., 'Patrimonio Geológico-Minero y Turismo en España, *Boletín Sociedad Española para la Depensa del Patrimonio Geológica y Minera*, 1997, *6*, 2–3.

Puche, O., 'Soria en la Terremoto de Lisboa de 1755', *Revista "Soria"*, 1997, *18* (2nd series), 49–56. Diputación Provincial, Soria.

Francisco Ayala-Cardedo, Madrid

Dr Luis Mansilla Plaza has also provided the following information concerning his activities:

Coordinador del libro resumen de las Actas de la Primera Sesión Científica de la Sociedad Española para la Defensa del Patrimonio Geológico y Minero. Octubre 1977.

Comunicación: 'Ruta Didáctica de Pozos y registros mineros de Almadén a Almadenejos', presentada a la Primera Sesión Científica de la Sociedad Española para la Defensa del Patrimonio Geológico y Minero. Octubre de 1998.

Artículo en la revista Minería y Siderurgia cuyo título es: 'El Patrimonio Minero metalúrgico de la Comarca de Almadén'. Septiembre de 1997.

Comunicación: 'El fondo antíguo de la Biblioteca de la Escuela de Ingenieros de Minas de Almadén (1777)', presentado al VI Congreso Nacional de la Sociedad Española de Historia de la Ciencia y de la Técnica. Septiembre de 1966.

Comunicación: 'El Patrimonio minero-metalúrgico de Almadén, un ejemplo de actuación inmediata', presentado al 49 Congreso Internacional de Americanistas en Quito (Ecuador) Julio de 1997.

Nota—Todas las comunicaciones han sido publicadas en las diferentes actas de los congresos.

[We should also mention the substantial *Bulletin* or *Newsletter* published three times a year by the Commission for the History of Geology of the Geological Society of Spain and edited by INHIGEO Member, Professor Leandros Sequeiros of Cordoba. Professor Sequeiros will, we are sure, be pleased to send Members copies on request, and we are grateful to him for sending copies to INHIGEO. (Ed.)]

The Netherlands

The Commission for the History of the Earth Sciences met twice in 1997. At the April meeting, the final fund-raising for the publication of *History of Earth Sciences in Suriname* was discussed, editing of the manuscript being virtually complete. A member's review of Dr Emile den Tex's manuscript, 'Een Voorspel van de moderne vulkaankunde in West-Europa. Met nadruk op de Republiek der Verenigde Nederlanden', was recorded and the author

was given permission to submit his text to the Royal Netherlands Academy of Arts and Sciences (KNAW)'s publication editor, who gave the submission a 'green light' in August. It is now in press and is due to appear in May or June 1998 as part of the Academy's recently established series of publications on the history of science.

At its September meeting, the Commission discussed the possibility of having its Suriname book published as a combined venture of the Netherlands Institute of Applied Geosciences (NITG/TNO) and the KNAW, thus economising on printing costs and increasing the book's access to various markets. It was further agreed that Professors N.A. Rupke, J.L.R. Touret, and F.R. van Veen should be nominated for membership of INHIGEO in 1998.

The conservation and storage of geological archives remains a matter of grave concern to the Commission.

Among the papers on the history of geological sciences published in 1997 were:

W.A. Visser and J.I.S. Zonneveld, 'Simon Stevins "Stofroersel des Eercloots" en de aardwetenschappen', *Grondboor en Hamer*, 1997, *51*, 51–56.

F.R. van Veen, 'Gustaaf Molengraaff en de expeditie naar Borneo in 1894', *Jaarboek Mijnbouwkundige Vereiniging*, Technische Universiteit Delft, 1997, 264–279.

Emile den Tex, Zoeterwoude

United Kingdom

The main event of 1997 was the celebration of the bicentennials of the birth of Charles Lyell and of the death of James Hutton. Two linked conferences were held to mark this important event. The Charles Lyell Bicentennial Conference was held in London from 30th July to 3rd August under the auspices of the Geological Society of London. It included four sessions of lectures held in Burlington House, London, field trips to Hampshire and the Western Weald, a reception and exhibition in Burlington House, and a conference dinner at Royal Holloway College. The conference was well attended and was judged by all to be a great success. Conference papers will be published by the Geological Society in a volume entitled *Lyell: the Past is the Key to the Present.*

The James Hutton meeting was held in Edinburgh from 5th to 9th August under the auspices of the Royal Society of Edinburgh. The focus here was more firmly on Hutton's legacy in modern geology, but there were a number of historical papers in the programme, and delegates visited classic sites in Edinburgh, Siccar Point, and Glen Tilt, as well as Lyell's home at Kinnordy. The Geological Society republished Archibald Geikie's 1899 publication of the text of volume three of Hutton's *Theory of the Earth* to mark the bicentenary.

The History of Geology Group of the Geological Society organised two very successful meetings in 1997. The first, on 19th March, was entitled 'Publishing and the World of Print in Geology', and was held in Burlington House, London. It was organised by Dr James Secord, and included papers on the publication of Lyell's works (Stuart Baldwin), on William Buckland's 'Bridgewater Treatise' (Jonathan Topham), on the problems of tracing publications on 'practical geology' (Hugh Torrens), and on the Justus Perthes Verlag in Gotha (Nicolaas Rupke). Forty people attended the meeting. The second meeting was held jointly with the Palaeontographical Society and marked its 150th anniversary. The meeting, organised by Stuart Baldwin, was on the history of palaeontology in Britain, and was held in Cambridge. It was the largest meeting organised by the group, with eighty people attending. Membership of the Group, which is open to all, now stands at 100. Plans for 1998 include a historical field trip to the Welsh Borders, following in the footsteps of Roderick Murchison, and a meeting on the conservation of historic sites, collections and archives.

The Geological Society awarded its 1997 Sue Tyler Friedman Medal to Professor Martin Guntau in recognition of his outstanding researches into the history of geology and for his work with INHIGEO in promoting international collaboration.

The Society for the History of Natural History held its annual conference in Charlottesville, USA, in April. The title was 'The Natural Bridge, the Transatlantic Exchange' and many aspects of the links between Europe and the Americas in natural history, including geology, were discussed. Clifford Nelson spoke on Charles Lyell's travels in North America.

We are delighted to draw attention to the award of the OBE in the 1997 Birthday Honours list to INHIGEO member Trevor Ford, for his services to geology and cave science.

Publications

Ford, T.D., 'The Inlaid Black Marble of Ashford-in-the-Water, Derbyshire', *Geology Today*, 1997, *13*, 144–148.

Hamilton, B.M. and Oldroyd, D.R., 1997. 'Geikie and Judd, and Controversies about the Igneous Rocks of the Scottish Hebrides: Theory, Practice, and Power in the Geological Community', *Annals of Science*, 1997, *54*, 221–268.

McIntyre, D.B. and McKirdy, A., *James Hutton: The Founder of Modern Geology*, The Stationery Office, Edinburgh, 1997.

Rudwick, M.J.S., 'Cuvier and Brongniart, William Smith, and the Construction of Geohistory', *Earth Sciences History*, 1996, *15*, 25–36* (English version of the paper in the volume edited by G. Gohau, listed below).

---

* Not reported for 1996.

Rudwick, M.J.S., 'Geological Travel and Theoretical Innovation: The Role of the "Liminal" Experience', *Social Studies of Science*, 1996, *26*, 143–159.*

Rudwick, M.J.S., 'Minerals, Strata, Fossils', in: N. Jardine, J. Secord, and E. Sparry (eds), *Cultures of Natural History*, Cambridge University Press, Cambridge, 1996, 266–286.*

Rudwick, M.J.S., 'Smith, Cuvier et Brongniart, et la Construction de la Géohistoire', in: G. Gohau (ed.), *De la Géologie à son Histoire*, Ministère de l'Éducation Nationale de la Recherche et de la Technologie: Comité des Travaux Historiques et Scientifiques (Section des Sciences), Paris, 1997, 119–128.

Rudwick, M.J.S., *George Cuvier, Fossil Bones and Geological Catastrophes: New Translations and Interpretations of the Primary Texts*. University of Chicago Press, Chicago and London, 1997.

Rudwick, M.J.S, 'Recherches sur les Ossemens Fossiles: Georges Cuvier et la Collecte des Allies Internationaux', in Claude Blanckaert *et al.* (eds), *Le Muséum au Premier Siècle de son Histoire*, Muséum National d'Histoire Naturelle, Paris, 1997, 591-606.

Taylor, M.A., 1997. 'Before the Dinosaur: The Historical Significance of the Fossil Marine Reptiles', in J.M. Callaway and E.L. Nicholls (eds), *Ancient Marine Reptiles*, Academic Press, xix-xlvi.

Torrens, H.S., 'Some Thoughts on the Complex and Forgotten History of Mineral Exploration', *Journal of the Open University Geological Society*, 1997, *17*, 1-12.

Torrens, H.S., 'Early collecting in the field of geology', in: O. Impey and A. MacGregor (eds), *The Origins of Museums. The Cabinet of Curiosities in Sixteenth and Seventeenth Century Europe*, 2nd edn, Ursus Press, New York, 1997, 204–213.

Torrens, H.S., 'James Ryan (c. 1770-1847) and the Problems of Introducing Irish "New Technology" to British Mines in the Early Nineteenth Century', in: P.J. Bowler and N. Whyte (eds), *Science and Society in Ireland: The Social Context of Science and Technology in Ireland, 1800-1950*, Institute of Irish Studies, Queen's University of Belfast, Belfast, 1997, 67–83.

Torrens, H.S., 'S.S. Buckman (1860-1929), his World-wide Jurassic Biochronology and Work on Chinese Ammonites (1926)', in: Wang Hongzhen *et al.* (eds), *Comparative Planetology, Geological Education, History of Geology: Proceedings of the 30th International Geological Congress, Beijing*, Vol. 26, VSP International Sciences Publishers, Utrecht and Tokyo, 1997, 205–215.

Torrens, H.S., 'Politics and Paleontology: Richard Owen and the Invention of Dinosaurs', in: J.O. Farlow and M.K. Brett-Surman (eds), *The Complete Dinosaur*, Indiana University Press, Bloomington 1997, 175–190.

Torrens, H.S., 'Geological Communication in the Bath Area in the Last Half of the Eighteenth Century', in: L.J. Jordanova and R.S. Porter (eds), *Images of the Earth: Essays in the History of the Environmental Sciences*, 2nd edn, British Society for the History of Science, Faringdon, 1997, 217–246.

Torrens, H.S., 'Le "Nouvel Art de Prospection Minière" de William Smith et le "Projet de Houillère de Brewham": Un Essai Malcontreux de Recherche de Charbon dans le Sud-Ouest de l'Angleterre, entre 1803 et 1810', in: G. Gohau (ed.), *De la Géologie à son Histoire*, Ministère de l'Éducation Nationale de la Recherche et de la Technologie: Comité des Travaux Historiques et Scientifiques (Section des Sciences), Paris, 1997, 101–118.

Torrens, H.S., 'Pour Prendre Congé', in: G. Gohau (ed.), *Hommage à François Ellenberger*, Société Géologique de France, Paris, 1997, 69–70.

Torrens, H.S. and Taylor, M.A., 'Fossils by the Sea and the Sea-Monster of Dorset', *Annual Editions: Geology*, Dushkin/McGraw-Hill, 1997.

Tresise, G. and Sarjeant, W.A.S., *The Tracks of Triassic Vertebrates: Fossil Evidence from North-West England*, The Stationery Office, London, 1997.

John Thackray, The Natural History Museum, London

United States

The Geological Society of America

The History of Geology Division held its annual luncheon and business meeting on October 23rd during the Geological Society of America's meeting in Salt Lake City. The Division presented its History of Geology Award to INHIGEO member Kennard B. Bork (see citation and acceptance, pp. 18–20).

The Division's symposium, theme session, and poster sessions, co-sponsored by Association of American State Geologists, addressed the topic 'History of Geologic Mapping: Past, Present, and Future'. The symposium opened with a talk on the need and use of geologic maps followed by presentations on such topics as the history of mapping by state geological surveys, the US Geological Survey, and the Geological Survey of Canada, the history of the North American Commission on Stratigraphic Nomenclature, the presentation of three-dimensional geologic data, digital geologic mapping, and geologic mapping in the global marketplace.

The theme and poster sessions focused mainly on techniques and special problems relating to geologic mapping. In addition, a short discipline session on the history of geology addressed broader issues: 'Foretelling the Discovery of Geologic time with Renaissance Art', by Gary D. Rosenberg; 'The Man who Really made the Origin of Species Possible—Captain Robert Fitzroy, Commander of H.M.S. Beagle', by William R. Brice; 'How do you Measure: Hot'?' by Sally Newcomb; and 'Preserving the Past: Archiving the Memorabilia of Walter A. Ver Wiebe', by Patricia L. Daniel.

The Rock Stars Project

In its July issue *GSA Today* published 'A Life of Firsts: Florence Bascom' by Jill S. Schneiderman, a contribution to the Rock Stars series aimed at interesting youthful readers in careers in geology. Florence Bascom (1862–1945) was the first woman in America to be hired by the US Geological Survey (1896), the first woman elected to the Council of the Geological Society of America (1924), and the first woman officer (Vice President) of the GSA (1930). In 1906, she was listed as a four-star geologist in the first edition of *American Men of Science* (renamed *American Men and Women of Science* in the 1960s). This signified that her colleagues regarded her as among the country's top 100 geologists.

USA Members at the Hutton–Lyell Bicentennial in Britain

Three INHIGEO members from the USA presented invited papers at the Bicentennial Conference in the UK honouring Charles Lyell and James Hutton. At the London sessions, Robert H. Dott Jr. spoke on 'Lyell's Travels in North America', and Kenneth L. Taylor, on a 'Historical Perspective: Volcanoes and Their Products'. In Edinburgh, Ursula B. Marvin presented a talk titled 'Geology: the Impact of the Space Age', and Robert Dott summed up the sessions (see pp. 11–13). Three non-members who are regular participants of INHIGEO meetings also attended. Leonard Wilson presented an invited talk on 'Lyell the Man and His Times', and arranged an exhibit of Lyell's papers and memorabilia for the Saturday excursion to Kinnordy House, Lyell's birthplace. Gerald Friedman, chaired a session on 'Surface Processes and Climate', and led a walking tour in the heart of London to sites of special interest to the historians of geology. Dennis Dean chaired at session titled 'Hutton, Lyell and Our Dynamic Earth'.

The American Geophysical Union

The History of Geophysics Committee (HGC) of the American Geophysical Union continues its extraordinary rate of activity in sponsoring meetings and publications, organising a project to assemble autobiographies of outstanding geophysicists, conducting video interviews with leading geophysicists at national meetings, collecting biosketches and pictures for the AGU homepage of the Union's medallists and awardees, and organising 78 years worth of their archives. It might be worthwhile for INHIGEO to keep in closer touch with the HGC in the future.

At the AGU meeting in November, 1997, the HGC held a session titled: 'Geophysical Retrospectives: The Hutton–Lyell Bicentennial'. In his on-line report, Edward Cliver remarks that the session was well-attended, no mean feat for a Friday afternoon! There were six talks of which five were invited. Robert Dott posed the question, 'Hutton–Lyell Bicentenary: Should Geophysics Care?' Homer Le Grand spoke on the essential tension between the local perspective of the field geologist and the global view of the geophysicist, and Naomi Oreskes discussed the role that Hutton–Lyell uniformitarianism played in the rejection of the continental drift hypothesis earlier in this century. Other talks included some spectacular slides of the effects of the huge earthquake in Wellington, New Zealand, in 1855 and a discussion of inductive *vs* deductive science peppered with such phrases as 'overstanding' (*vs* understanding) and 'explanatory surprise'. All in all, a most enjoyable conclusion to the AGU meeting.

History of Earth Sciences Society

We welcome the news that Gregory Good, of West Virginia University, has agreed to serve as the editor of *Earth Sciences History* when Mott T. Greene leaves office in 1998.

Oil and Gas History

A symposium on the 'History of Oil and Gas Exploration in North America' was held in July, 1996, at the Drake Well Museum in Titusville, Pennsylvania, site of the first oil strike on the continent. The meeting was dedicated to Parke A. Dickey (1909–1994), pioneer petroleum geologist of Pennsylvania. Eighteen papers from the symposium were published in 'Northeastern Geology and Environmental Sciences', 1997, *19*, Nos 1 and 2.

Communications from Members

Professor Albert V. Carozzi published for the first time the following manuscript by Horace-Bénédict de Saussure: 'Symboles et codes pour la simplification et la standardisation des observations géologiques de terrain: un projet manuscrit inédit du dix-huitième siècle par Horace-Bénédict de Saussure (1795–1797)' in *De la Géologie à son Histoire. Ouvrage édité en Hommage à François Ellenberger* (Gabriel Gohau et Jean Gaudant, eds), Comité des travaux historiques et scientifiques, Section des Sciences, Paris, Mémoire No. 13, pp. 75–89.

Professor Carozzi also was involved in the organisation of the following public events to occur in 1998 on the occasion of the bicentennial of the death of Horace-Bénédict de Saussure in Geneva:

1. An exhibit at the Museum of Ethnography of Geneva dealing with H.-B. de Saussure's previously unknown fundamental contribution to the geology of the Alps derived from the study of his manuscripts, and the related writing of a part of the catalogue of the exhibit. The latter exhibit is to open October 15, 1998 and will subsequently travel to several major cities of the Alpine region.
2. Preparation of several public talks in Geneva and in France for 1998, and a major address to a symposium on 'Scientists and the Alps' at the University of Geneva inaugurating the exhibit.
3. The writing of a popular book on H.-B. de Saussure to be published in spring 1998 and the writing of a large bilingual book (English–French) on H.-B. de Saussure and the origin of basalt which is based on hitherto unpublished manuscripts de Saussure wrote throughout his life. The book is scheduled for publication at the end 1998 or the beginning of 1999.

Clifford M. Nelson reports on the progress of the following short- and long-term history-related operations of the U.S. Geological Survey (USGS). The inventory of the USGS's Record Group 57 at the National Archives

and Records Administration's (NARA) Archives II facility in College Park, MD, prepared by NARA's Renée Jaussaud, should be completed and published on CD-ROM as a numbered disk in the USGS Digital Data Series before the end of 1998. Mary Rabbitt (USGS emeritus since 1978) continues to prepare, for publication by the Government Printing Office (GPO), the fourth volume (1939–1979) of her *Minerals, Lands, and Geology for the Common Defence and General Welfare*. Volumes 1–3, covering the years to 1939, appeared as GPO books between 1979 and 1986. She is also writing for the National Academy of Sciences (NAS) a biographical memoir of the USGS's seventh Director, Thomas Nolan (1901–92). Nelson (USGS full-time since 1976), having completed personal on-site searches of collections in more than seventy manuscript archives in North America and the United Kingdom, is preparing for publication by an outside press a book-length new look at the USGS's origin and early years. Four articles by Nelson were published in 1997 in Greenwood Press's *Biographical Dictionary of American and Canadian Naturalists and Environmentalists*, edited by Keir Sterling and others; revised versions will be in the second printing.

Nelson's six articles about federally sponsored geologists, including three USGS Directors and two others co-authored with Jaussaud and Carol Edwards (USGS, Denver), should appear in 1998 in Oxford University Press's new *American National Biography*, as will his 'Toward a Reliable Geologic Map of the United States, 1803–1893' in the proceedings of the American Philosophical Society's 1997 conference on the scientific exploration of North America in the nineteenth century.

Nelson also has completed an analysis of the scientific health of the USGS, as measured by election of its members to the National Academy of Sciences; he hopes to present the results at the Geological Society of America's Annual Meeting in Toronto in October 1998 before submitting the paper to *Earth Sciences History*. Additional information is available from Nelson's web page at <http://www.usgs.gov/library/history.html#Begin>; or by e-mail at <cnelson@usgs.gov.us>.

Ursula Marvin, Cambridge (Mass)

Note: The *GeoClio Home Page* continues to play a strong role in communicating information on meetings, publications, and research and teaching projects to historically-minded members of the earth sciences communities at home and abroad. Log on to: http://www.geoclio.st.usm.edu.

Venezuela

The Venezuelan Society for the History of Geosciences has published three issues of its Newsletter, with the following contents:

No. 60, April 1997

Geological Activities of Dr Carl Wiedenmayer (1897-1951) in Falcón State: Biography and bibliography of this Swiss-born oil geologist, who made major contributions to the development of oil-fields in Falcón State, Western Venezuela.

Francisco de Paula Álamo (1866-1943) and his Contributions to Venezuelan Speleology. Álamo wrote several articles about Venezuelan caves and introduced the term *speleology* into Venezuela.

The Rio Guaire Cave, El Encantado. The Guaire River crosses Caracas. Before the 1880s it ran underground for several hundred metres, but its cave disappeared due to sedimentation during the large 1882 flood.

Venezuelan geological samples and bibliography in the world museums.

No. 61, August 1997:

Materials for the History of Venezuelan Mining and Oil Industry in the Archives of the Ministry of Public Works: Selected documents are transcribed, dealing with the exploitation of several asphalt (seeps) mines, copper mines, and bat guano deposits. Most documents are from the nineteenth century.

Edmundo Luongo Cabello. A brief biography of this important person for the oil industry and Ministry of Mines and Hydrocarbons during the '50s.

Short accounts of the Guanoco Asphalt Lake, gold mining near Caracas in the seventeenth century, and the doctoral dissertation of the German geologist Albert Schotty (1877) about the Aroa copper mines.

No. 62, December 1997.

Luis Ugueto (1870-1936): Biography and bibliography of this astronomer that made important contributions to earth sciences as Director for many years of the Cagigal National Observatory.

Correspondence between Dr Wilhelm Sievers, Francisco de Paula Álamo and Henry L. Boulton in 1888-1912: An unpublished set of letters written by the famous German geographer Wilhelm Sievers and the Venezuelans Álamo and Boulton are transcribed and analysed showing the interest in the three major earthquakes that occurred in Venezuela between 1812 and 1900.

Treasure in the Trash. Comments on the Branty Field Notebook: An account of an interesting field notebook from the '20s, found in the trash can of an oil company thrown away by some unconscious employee.

For information about the Society please write to: Sociedad Venezolana de Historia de las Geociencias, Apartado 47334, Caracas 1041A, Venezuela. Fax: (58)-2-242.90.01. Email: <urbani@cantv.net>.

Franco Urbani, Caracas

Yugoslavia

The most important activities have been:

1. A special exhibition (from 17 May 1996 to 28 February 1997) of the mineralogical and petrological collection of Sigismund August Wolfgang, Baron von Herder (of Freiberg, Germany), organised by the Mineralogical Museum of the Faculty of Mining and Geology. This collection was donated by Baron Herder 150 years ago, to Milos Obrenovíc, Duke of Serbia. It served as the basis for all other mineralogical/petrological collections in Serbia.
2. Contributions to Volume 2 of *The Lives and Works of Serbian Scientists*, edited by M. Saric of the Serbian Academy of Sciences and Arts:
   A. Grubic, 'Svetolik Radovanovic (1863–1928)', pp. 105–150.
   N. Pantic and V. Vasik, 'Petar S. Pavlovic (1864–1938)', pp. 151–208.
   M. Vasovic, 'Jovan Cvijic (1865–1927)', pp. 235–324.

Aleksandar Grubic, Belgrade

ÉLOGES

Professor Francisco Gonçalves

Francisco Alvaro Gonçalves was born in Lisbon on 22 July, 1926, and died in Évora on 23 August, 1997. He leaves an important legacy of work, and left his mark on the University of Évora, where he worked for the last twenty years.

Graduating in Geology at the University of Lisbon in 1957, Gonçalves obtained his PhD (1972) in Palaeontology and Stratigraphy at the same University, where he was Curator at the Mineralogical and Geological Museum, Researcher, and Senior Researcher. Besides his work on collections, he dealt with research in palaeontology, mostly on Echinoids (which he studied in part at the *Muséum National d'Histoire Naturelle*, Paris), Portuguese geological literature, mapping, and other field work.

Most of Gonçalves' work was carried out in Portugal, although he took part in a geological mission to Goa (formerly Portuguese India) and also studied material from Angola and Mozambique. During his long career he developed close links with the Alentejo (Southern Portugal) region. He was involved in the geological mapping of extensive areas in Alentejo, as well as in the Ribatejo and Inner Beira regions. He also led economic geology and mining prospecting studies, especially in the Estremoz marble belt and on other ornamental rocks from Alentejo. He took part in research projects on 'Coastal and Marine Environment Types of the Alentejo', 'Management and Control of the Underground Water Resources of the Alentejo', and on 'Roman Marble in Portugal'.

Latterly, Gonçalves became deeply interested in the history of geosciences, especially in Portugal. He thus became an INHIGEO Member. He was elected a Member of the Lisbon Academy of Sciences and was author or co-author of over a hundred papers.

In 1985 Gonçalves was appointed Senior Lecturer and, later that year, Professor at the University of Évora. His contributions to academic life at the University—an institution most dear to him—were most important. He served as President of the General Academic Committee; President of the Natural Sciences and Environment Department Council; President of the Geosciences Department (for eleven years); President of the Publications Committee; President of the General Library Committee; and Director of the Industrial Stone Laboratory at the Estremoz Campus. In all these roles his performance was typically that of a man with a mission, always enthusiastic, and committed to whatever task he undertook. He was also responsible for setting up the geosciences laboratories, which provided a new impulse for undergraduate studies.

As a man, Francisco Gonçalves was a generous and faithful friend, always ready to help others and to discuss ideas. He will be sadly missed as a man, as a friend and as professor.

Miguel Telles Antunes and Ausenda Cáceres Balbino

Professor Dr Helmuth Zapfe

1996 verstarb einer der letzten vielseitigen und universal gebildeten österreichischen Paläontologen: Univ.-Prof. Dr. Helmuth Zapfe. Er war ein Wissenschafter, für welchen Beruf wahrlich Berufung war. Sein Vater Bruno Zapfe hat in seinem einzigen Kind schon frueh das wissenschaftliche Interesse erweckt. Vater Zapfe sammele prähistorische Gegenstände, verschiedene Fossilien wie Evertebraten aus den Zlambachschichten der Nördlichen Kalkalpen und Vertebrata aus den miozaenen Spaltenfüllungen von Theben—Neudorf / March (Devinska Nová Ves, Slowakei). Bei diesen Grabungen seines Vaters nahm Helmuth Zapfe schon als Schüler teil. Hier in Neudorf an der March fand er die ersten neogenen Überreste eines Primaten im Wiener Becken. Nach Abschluß des humanistischen Gymnasiums im 6. Wiener Gemeindebezirk (Amerlinggymnasium) studierte er Paläontologie, Geologie und Zoologie an der Universität Wien. Seine wichtigsten Lehrer waren Othenio Abel, Kurt Ehrenberg, Hans Leitmeier und Jan Versluys. Hier promovierte er 1936 zum Dr. phil. und begann seine

Hochschullaufbahn als Assistent. Der zweite Weltkrieg unterbrach diese Laufbahn ungewollt und Zapfe mußte als Wehrgeologe bei der Deutschen Wehrmacht bis 1945 dienen. In dieser Zeit stellt er Baugrundkarten von Küstengebieten des Eismeeres und von Norwegen her. Am Kriegsende geriet er 1945 in englische Kriegsgefangenschaft, aus welcher er 1946 entlassen worden war. Danach brachte er sich durch private Anstellungen durch. Bis 1952 war er im staatlichen Kohlebergbau tätig. In dieser Zeit gelang es ihm gute Einblicke in die Stratigraphie der oesterreichischen Kohlebergbaue zu gewinnen. Von 1951–1965 war Zapfe als wissenschaftlicher Beamter am Naturhistorischen Museum in Wien taetig. 1959 verehelichte er sich mit Frau Ruth Clair. 1965 kehrte er als a.o. Univ.-Professor an das Paläontologische Institut der Universität Wien zurück, wo er seine bekannten viersemestrigen Vorlesungen ueber Biostratigraphie hielt, die von hunderten Lehramtskandidaten (Naturgeschichte) und Fachgeowissenschaftern gerne besucht wurden. Sein in der Praxis erworbene Fachwissen als Ingenieur—und Lagerstättengeologe erwies sich als wesentliche Grundlage seiner Vorlesungen. Immer wieder wies er auf die historische Entwicklung der Erkenntnisgewinnung von stratigraphischen Einstufungen hin. Schon hier legte ZAPFE in seine Schueler das Fundament für das Interesse an der Geschichte der Geowissenschaften in Österreich. Weit über 200 Lehramtskadidaten haben ihre Lehramtsprüfung bei ihm abgelegt. Er fungierte oft als zweiter Prüfer für Hauptfachpaläontologen und hat selbst viele heute bekannte Paläontologen ausgebildet. H. Zapfe war absolut kein Schreibtischwissenschaftler und vorallem kein Papiertiger. Er arbeitete vorwiegend ueber neogene und pleistozäne Wirbetierfaunen und triadische Wirbellose. Seine große Vorliebe galt der Arbeit im Felde. Seine erste grosse Grabungskampagne fuehrte er zusammen mit Friedrich Bachmayer (Naturhistorisches Museum in Wien) von 1956 bis 1983 in den jungpleistozaenen Karstspaltenfüllungen von Kohfidisch im Burgenland, Österreich durch. Sein zweites Hauptaufgabengebiet war die Erforschung der Trias der nördlichen Kalkalpen. Von 1959 bis 1967 sammelte H. Zapfe mit einer Reihe Kollegen im Gebiet der obertriassischen Riffe des Gosaukammes Fossilien auf. Im Ausland war er mit Prof. Symeonidis (Universität Athen) auf der griechischen Insel Tilos (Dodekanes) von 1972 bis 1983 bei Ausgrabungen von Zwergelefanten tätig. Mit Friedrich Bachmayer grub er mit Unterbrechungen in Pikermi. Zuletzt regte Zapfe eine Grabung nach fossilen Primaten bei Götzendorf, Niederösterreich, an die von 1987 bis 1990 dauerte.

Seine vielen Studienreisen führten ihn durch fast ganz Europa, in die USA, Türkei, Iran, Nepal, China und Ostafrika.

H. Zapfe legte seine wissenschaftlichen Forschungen in über 250 Publikationen nieder. Sie lassen seinen nicht unermüdlichen Forscherdrang und seine beachtliche Vielseitigkeit erkennen. Er veröffentlichte auch viele Beiträge zur Geschichte der Paläontologie. Würdigungen und Nachrufe auf Fachkollegen sind heute wertvolle biographische Dokumentationen . Sein wohl wichtigstes biographische Werk ist der, *Index Palaeontologicorum Austriae*, der 1972 erschien und 1987 mit einem Nachtrag hierzu ergaenzt worden war. In diesem wohl heute sehr viel und gerne benutzten Nachschlagewerk hat er versucht, sämtliche Paläontologen, Personen die paläontologische Arbeiten veröffentlicht haben und Sammler von Fossilien zu erfassen. Beide Teile sind bis heute für viele in Österreich paläontologisch tätig gewesenen Personen das einzige Nachschlagewerk geblieben. Im 1987 erschienenen Nachtrag veröffentlichte er auch einen Abriß über die Geschichte der Paläontologie in Österreich.

Daneben verfaßte H. Zapfe eine unbekannte Zahl von Rezensionen und hielt unzaehlige Vortraege ueber seine Forschungen. Er war Schriftleiter des *Catalogus Fossilium Austriae* und der Schriftenreihe der Erdwissenschaftlichen Kommission der Österreichischen Akademie der Wissenschaften.

Als Vorsitzender des Internationalen Geologischen Korrelationsprogrammes (IGCP) leitete er das Projekt, 'Triassic of the Tethys Realm'. In dieser Funktion ermoeglichte er vielen Studenten und Fachkollegen an diesem Projekt mitzuarbeiten. H. Zapfe wurden im Laufe seines arbeitsreichen Lebens zahlreiche Ehrungen zu Teil. Er wurde Ehrenmitglied verschieden wissenschaftlicher Gesellschaften, er erhielt sichtbare Ehrenzeichen und Ehrenmedaillen, er war korrespondierendes Mitglied der Bayerischen, Österreichischen und Kroatischen Akademie der Wissenschaften. Zuletzt wurde er wirkliches Mitglieder der Österreichischen Akademie der Wissenschaften.

1982 trat H. Zapfe als Univ.-Professor in den wohlverdienten Ruhestand. Selbst als ruheloser emeritierter Professor hatte er einen geregelten Arbeitsablauf. Montag, Mittwoch und Freitag war H. Zapfe an der Österreichischen Akademie der Wissenschaften. Dienstag und Donnerstag arbeitete er am Naturhistorischen Museum in Wien. Hin und wieder besuchte er die Geologische Bundesanstalt, wo er in der Bibliothek nach biographischen Daten von Paläontologen eifrigst suchte. Seine Sammlung von Biographien und Nekrologen übergab er Anfang der 90-Jahr T. Cernajsek mit leisen Hinweis, seine biographisch—dokumentarische Arbeit weiter zu führen.

Zapfe diente Fachkollegen als Namengeber ihrer Neubeschreibungen: Lückisporites zapfei Klaus und das Spurenfossil Zapfella.

Trotz der in den letzten Jahren sich abzeichnenden schweren Krankheit gab H. Zapfe nie auf, seine Arbeiten bis zu letzt wissenschaftlich zu arbeiten. Am 5. Juli 1996 wurde unser verehrter Lehrer von seinem Leiden erlöst. Am 18. Juli 1996 wurde Univ.-Prof. Helmuth Zapfe zur letzten Ruhe auf dem Döblinger Friedhof in Wien beigesetzt. In seinen Taten und Werken aber lebt er weiter, in Dankbarkeit bei allen jenen, die ihn gekannt hatten.

Literatur

Kollmann, H.A., 'Univ.-Prof. Dr. Dr. h.c. Helmuth Zapfe (1913–1996) in memoriam', *Ann. Naturhist. Mus. Wien*, 1997, *98A*, 179–183, 1 Portr. (with list of publications).

Kollmann, H.A. & F. Bachmayer, 'Univ.-Prof. Dr. Helmuth Zapfe zum 65. Geburtstag', *Ann. Naturhist. Mus. Wien*, 1980, *83*, 1–12, 1 Portr. (with list of publications).

Plöchinger, B., 'Univ.-Prof. Dr.Dr. h.c. Helmuth Zapfe (1913–1996)', *Jahrb. Geol. Bundesanst*, 1996, *140*, 5–7, 1 Portr.

Poggendorff VIIa, *4*, Berlin, 1962, S. 1106–1107.

Thenius, E., 'Helmuth Zapfe. 16.9.1913–5.7.1996', *Mitt. Österr. Geol. Ges.*, 1997, *88*, S. 123–127, 1 fig.

Tichy, G., 'In Memoriam o. Univ.- Prof. Dr. Dr. h.c. Helmuth Zapfe, 6. September 1913–5. Juli 1996', Salzburg, 1997. 20 pp. (type-written manuscript, which contains the most complete list of Zapfe's publications)—Bibliothek der Geologischen Bundesanstalt / Wissenschaftliches. Archiv Nr. A R

Tichy, G., 'In Memoriam o. Univ.-Prof. Dr. Dr. h.c. Helmuth Zapfe, 6 September 1913–5 Juli 1996, *O. Österr. Geonachr.*, 1988.

Who's Who in Austria, 7th edn, Wien 1969/70, S. 824.

Zapfe, H., *Index Palaeontologicorum Austriae: Catalogus Fossilium Austriae. Ein Verzeichnis aller auf österreichischem Gebietfestgestellten Fossilien*, Heft 15, 140 S., *Verl. d. Österr. Akad. Wiss.*, 1971.

Tillfried Cernajsek, Geological Survey of Austria
Gottfried Tichy, University of Salzburg, Austria

BACK ISSUES OF INHIGEO NEWSLETTERS ON MICROFICHE

Member and friends of INHIGEO, libraries, societies, archives, etc. are informed that past issues of INHIGEO Newsletters may be purchased in microform for a small sum. Please address requests to:

Universität Rostock, Universitätsbibliothek, Tauschstelle, Universitätsplatz 4, D-18051 Rostock, Germany.

Set I: INHIGEO Newsletters, Nos 1-10 (7 cards microfiches: 11.00 Dmark per set)

Newsletter 1, Moscow 1967, pp. 40 (Russian, English)
Newsletter 2, Moscow 1968, pp. 17 (Russian, English)
Newsletter 3, Moscow 1969, pp. 36 (Russian, English)
Newsletter 4, Moscow 1970, pp. 32 (Russian, English)
Newsletter 5, Moscow 1971, pp. 23 (Russian, English)
Newsletter 6, Moscow 1972, pp. 46 (Russian, English)
Newsletter 7, Moscow 1973, pp. 30 (Russian, English)
Newsletter 8, Moscow 1974, pp. 28 (Russian, English)
Newsletter 9, Moscow 1975, pp. 32 (Russian, English)
Newsletter 10, Moscow 1976, pp. 56 (Russian, English)

Set II: INHIGEO Newsletters, Nos No 11-18 (9 cards microfiches: 15 Dmark per set)

Newsletter 11, Rostock 1977, pp. 32 (English, German)
Newsletter 12, Rostock 1978, pp. 54 (English, German)
Newsletter 13, Rostock 1979, pp. 46 (English, German)
Newsletter 14, Rostock 1980, pp. 92 (English, German)
Newsletter 15, Rostock 1981, pp. 96 (English, German)
Newsletter 16, Rostock 1982, pp. 62 (English)
Newsletter 17, Rostock 1983, pp. 48 (English)
Newsletter 18, Rostock 1984, pp. 24 (English)
Newsletter No 19, Budapest 1985, pp. 51 (English) Unavailable
Newsletter No 20, Budapest 1987, pp. 52 (English) Unavailable
Newsletter No 21, Moscow 1988, pp. 44 (English) Unavailable

NEW ELECTRONIC SITES FOR MINING HISTORY

Description: A forum for the discussion of all aspects of the history of mining and associated activities in Britain and Ireland, including ore preparation, on-site smelting, transport systems, social conditions, etc. Members are encouraged to make full use of the list to disseminate information—conferences, field meetings, newspaper cuttings, book reviews, etc.—to post queries, or question accepted views on anything relating to mining, be it coal, iron, non-ferrous metals or stone. To join the list, send the following email message to <mailbase@mailbase.ac.uk>:

join mining-history FIRST-NAME LAST-NAME

See also: http:www.exeter.ac.uk/~pfclaugh/mhinf/

Another new site in the United States carries news, calendars of events, and the Arizona Mining and Mineral Museum home page: <http://www.miningrendezvous.com>. It is organised by Paul Kouts: <plkouts@primenet.com> (602-789-8215).

ADVERTISEMENTS OF BOOKS

The following volumes have been sent to the editor by the authors or publishers and are likely to be of special interest to INHIGEO Members.

Goulven Laurent, *Paléontologie et Évolution en France 1800–1860: De Cuvier-Lamarck à Darwin*, Éditions du Comité des Travaux Historiques et Scientifiques, Paris, 1987. 553 pp.

Jan Kozák and Marie-Claude Thompson, *Historical Earthquakes in Europe*, Swiss Reinsurance Company, Zurich, 1991 (also available in German, French and Italian).

Albert V. Carozzi and Gerda Bouvier, *The Scientific Library of Horace-Bénédict de Saussure (1797): Annotated Catalog of an 18th-Century Bibliographic and Historic Treasure*, Société de Physique et d'Histoire Naturelle, Geneva, 1994. 201 pp.

David Branagan (ed.), *Science in a Sea of Commerce: The Journal of a South Seas Trading Venture (1825–27) by Samuel Stutchbury*, The Editor, Sydney, 1996.

Ilaria Cerbai and Claudia Principe (eds), *Bibliography of Historic Activity on Italian Volcanoes*, Istituto di Geocronologia e Geochimica Isotopica, Pisa, Internal Report No. 6/96, 1996. 687 pp.

Bernhard Fritscher, *Tabellarische Übersicht der Geschichte der Geowissenschaften von Plinius bis auf Charles Lyell, nach Jahren geordnet: Ein Leitfaden zum der Geschichte der Geowissenschaften*, The Author, Munich, 1996. 276 pp.

Francisco Pelayo, *Del Diluvio al Megaterio: Los Orígenes de la Paleontología en España*, Consejo Superior de Investigaciones Científicas, Madrid, 1996. 310 pp.

Dennis R. Dean (ed.), *James Hutton in the Field and in the Study: Being an Augmented Reprinting of Vol. III of Hutton's* Theory of the Earth *(I, II, 1795) as First Published by Sir Archibald Geikie (1899). A Bicentenary Tribute to the Father of Modern Geology*, Scholars' Facsimiles and Reprints, Delmar, New York, 1997.

Gabriel Gohau (ed.), *De la Géologie à son Histoire: Ouvrage édité en Hommage à François Ellenberger*, Ministère de l'Éducation Nationale de la Recherche et de la Technologie: Comité des Travaux Historiques et Scientifiques (Section des Sciences), Paris, 1997 (on colophon; issued 1998). 224 pp.

Gabriel Gohau (ed.), *Hommage à François Ellenberger: Fondateur du Comité Français d'Histoire de la Géologie (COFRHIGEO)*, Société Géologique de France, Paris, 1997. 70 pp.

Viktor Khain and Anatoly Ryabukhin, *History and Methodology of Geological Sciences*, Moscow State University, Moscow, 1997. 224 pp. (in Russian).

Donald B. McIntyre and Alan McKirdy, *James Hutton: The Founder of Modern Geology*, The Stationery Office, Edinburgh, 1997. 51 pp.

Rudolf Musil (ed.), *Personalities of the Faculty of Science Masaryk University*, Masaryk University, Brno, 1997.

Antonio Nazzaro, *Il Vesuvio: Storia Eruttiva e Teorie Vulcanologiche*, Liguori Editori, Napoli, 1997.

James Secord (ed.), *Charles Lyell: Principles of Geology* [abridged edition], Penguin Books, London, 1997. 472 pp.

Also noteworthy is:

Gregory A. Good, *Sciences of the Earth: An Encyclopedia of Events, People, and Phenomena*, Garland Publishing, Encyclopedias on the History of Science, New York and London, 1998, 2 vols. US$ 168.75.

This massive historical encyclopedia of the earth sciences has finally appeared. Its broad range of 240 articles includes a number that will be of direct interest to historians of geology and the geosciences. It covers the broad range of sciences of the Earth, from those treating the deep core outward to the magnetosphere. (At two volumes and 901 pages, the price works out to about five cents a page.)

ATHLONE PRESS, LONDON: STUDIES IN THE HISTORY AND PHILOSOPHY OF THE EARTH SCIENCES

If any Members are interested in publishing books in this Series, they are invited to contact David Oldroyd, the Series Editor, for further information.

* * *

VOLUME 26

COMPARATIVE PLANETOLOGY, GEOLOGICAL EDUCATION, HISTORY OF GEOSCIENCES

EDITORS: *WANG HONGZHEN, D.F. BRANAGAN, OUYANG ZIYUAN AND WANG XUNLIAN*

1997; X+306 PAGES
ISBN 90-6764-254-1
PRICE: DM 127/US$ 80/GB£ 50

SET: VOLUMES 1 - 26
ISBN 90-6764-276-2
PRICE: DM 2470 / US$ 1561 / GB£ 972

CONTENTS

COMPARATIVE PLANETOLOGY

Influence of continental drift on the tidal evolution of the Earth-Moon system - *Masanao Abe, Hitoshi Mizutani and Masatsugu Ooe*

Multiple impacts at the KT boundary and the death of the dinosaurs - *S. Chatterjee*

Hugoniot data for Jilin ordinary chondrite and Nandan iron meteorite - *Dai Chengda, Wang Daode, Fu Shiqin, Shi Shangchun and Jin Xiaogang*

The 1908 Tunguska explosion: Discovery of iridium and other element anomalies
Hou Quanlin and Ma Peixue

High-frequency carbonate cycles of the Middle Cambrian oolitic shoal sequence set on the North China platform: Evidence and significance of Milankovitch controlled events - *Meng Xianghua, Ge Ming, Liu Yongqing and Deng Chenglong*

On the extraterrestrial impact and plate tectonic dynamics: A possible interpretation
Wan Tianfeng, Yin Yanhong and Zhang Changhou

An unique terrestrial occurrence of extraterrestrial microspherules - *Wang Erkang, Wan Yuqiu, Hu Zhongwei and Bi Dong*

Yamato - 793605: A newly identified Martian meteorite from Antarctica - *Keizo Yanai*

GEOLOGICAL EDUCATION

Stimulation of awareness of geoscience knowledge among the mass population of the society
A. Akhtar

The influence of geology teaching on the image of geosciences - *A. Bezzi*

Earth science education and engineering education from the standpoint of practical experiences
Takeshi Tanaka

HISTORY OF GEOLOGY

PERSONS AND INSTITUTES

Professor Amadeus William Grabau (1870-1946) - Respected teacher and beloved friend of Chinese geologists - *Wang Hongzhen*

In memory of Professor Amadeus William Grabau (1870-1946) on the semi-centennial of his death
G.M. Friedman

The global theories of Amadeus W. Grabau (1870-1946): A retrospective view - *U.B. Marvin*

Robert Logan Jack, geologist in China
D.F. Branagan

The changing mission of the Geological Survey of Japan in a changing world
Hirokazu Hase and Kisaburo Kodama

Adam Sedgwick and Lakeland Geology (1822-24)
D. Oldroyd

S.S. Buckman (1860-1929), his world-wide Jurassic biochronology and work on Chinese ammonites (1926) - *H.S. Torrens*

In memory of Professor Peter Misch
J.A. Vance and Li Wenda

HISTORY OF GEOLOGY:

GEOSCIENCE DISCIPLINES

The methodology of the researches of geological science - Petrology as an example - *Dong Shenbao*

The role and future of geology in modern integrated environmental research and decision support
G. Jordán and A. Szûcs

Science across cultures: The case of vertebrate palaeontology in China - *P. Komarower*

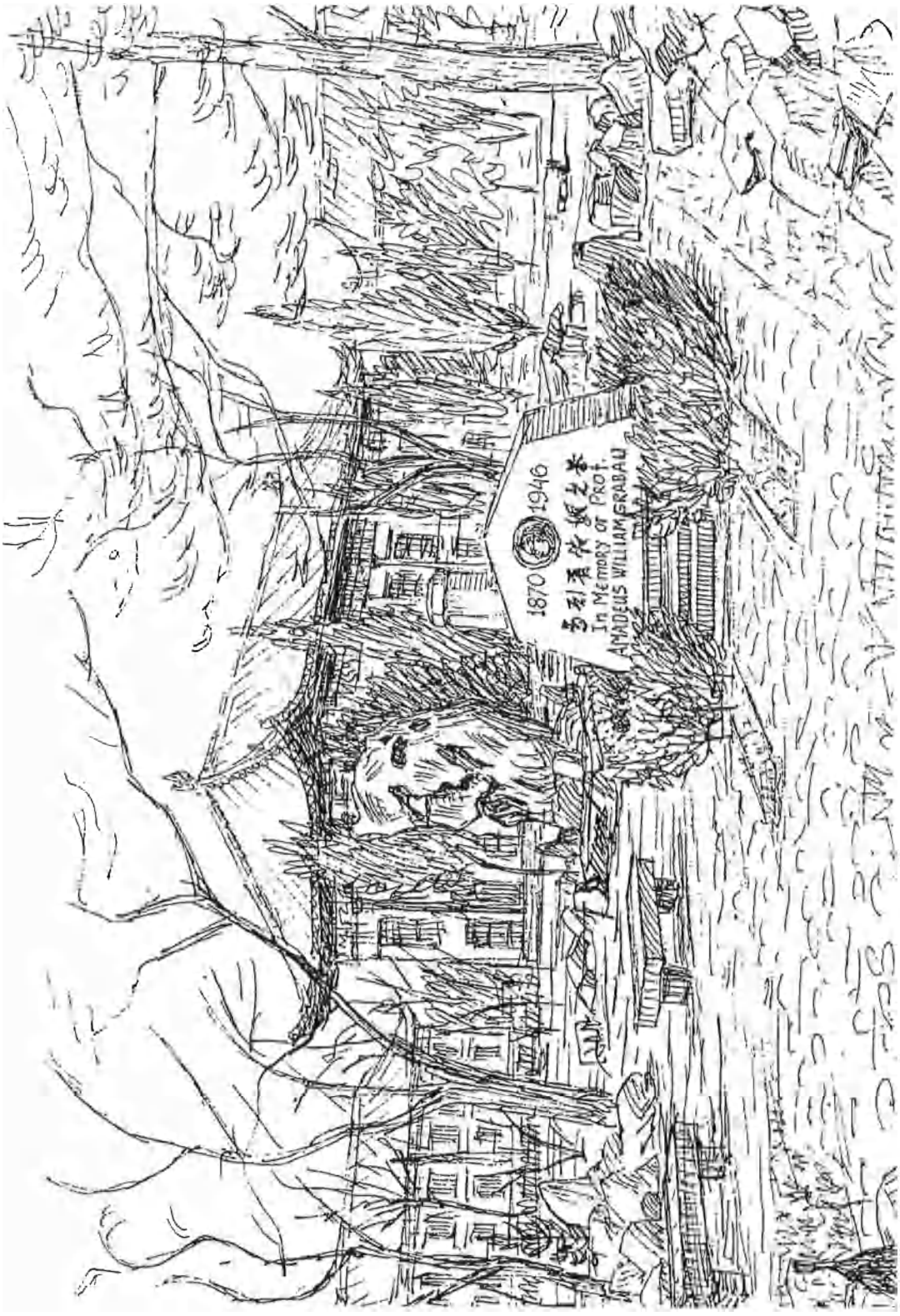
Modern concepts in palaeontology and early life on earth - *Wang Hongzhen and Wang Xunlian*

The development of metamorphic geology in China
You Zhengdong

Theoretical systematics and methodology of contemporary geochemistry - *Yu Chongwen*

A brief development history of hydrogeology in China - *Zhang Zonghu*

Sketch of the Memorial to Amadeus W. Grabau by Efgenji Milanovsky, Beijing University, 1996



MEMBERS OF INHIGEO

Professor T. G. Castellanos
Academia Nacional de Ciencias de Córdoba
Casilla de Correo 36
Córdoba
ARGENTINA

Dr. Daniel G. Rubiolo
Secretaria de Mineria de la Nacion
Avenida Julio à Roca #651, 10 Piso
Buenos Aires
ARGENTINA
Fax: (54-1) 349-3160
Tel: (54-1) 349-3166

Professor E. G. Malkhassian
ul. Ter-Gabrielyana 4 kv. 31
375 010 Yerevan
ARMENIA

Dr Neil Archbold
School of Ecology and Environment
Rusden Campus Deakin University
662 Blackburn Road
Clayton, Victoria 3168
AUSTRALIA
email: narchie@deakin.edu.au

Ms Carol Bacon
Mineral Resources Tasmania
PO Box 56
Rosny Park
Tasmania 7018
AUSTRALIA
email: cbacon@mrt.tas.gov.au

Dr Maxwell R. Banks
38 View Street
Sandy Bay
Tasmania 7005
AUSTRALIA

Dr D. F. Branagan
Department of Geology and Geophysics
University of Sydney
Sydney
New South Wales 2006
AUSTRALIA
Fax: (61) 2- 9692-0184
Tel: (61) 2- 9958-7127
email: DBranaga@mail.usyd.edu.au

Dr Barry Cooper
Department of Industry Trade and Technology
GPO Box 1264
Adelaide
South Australia 5001
AUSTRALIA
Fax: (61) 82743503
Tel: (61) 8272 3503
email: bcooper@msgate.mesa.sa.gov.au

Dr. David W. P. Corbett
41 Hawthorndene Drive
Glenalta
South Australia 5052
AUSTRALIA

Dr. Thomas A. Darragh
Division of Natural History
Museum of Victoria
P.O. Box 666E
Melbourne, Victoria 3001
AUSTRALIA
Fax: (61) 3-9663-3669
Tel: (61) 3-9669-9889
email: tdarragh@mov.vic.gov.au

Professor David R. Oldroyd
28 Cassandra Avenue
St Ives
Sydney NSW 2075
AUSTRALIA
Fax: (61) 2-9144-4529
Tel: (61) 2-9449-5559
email: D.Oldroyd@unsw.edu.au

Dr Tillfried Cernajsek
Geologische Bundesanstalt F.A. Bibliothek und
Verlag
Geodatenzentrale u. Viss. Archiv
Postfach 127 Rasumofskygasse 23
A-1031, Wien
AUSTRIA
Fax: 431 71256747490
Tel: 43 1712567465
email: tcernajzek@c/c.geolba.ac.at

Professor A. Tollmann
Geologisches Institut der Univ. Wien
Universitätstrasse 7
A-1031 Wien
AUSTRIA

Professor Eric Groessens
Rue Louis Marcelis 98
B-1970 Wezembeek-Oppem
BELGIUM

Dr-Ing. Carlos Serrano
Universidad "Tomas Frias"
Casilla 115
Potosí
BOLIVIA
Fax: (591) 62-28248
Tel: (591) 62-28248
email: Postgrad@uatf.nrp.edu.bo

Dr. Silvia F. de M. Figueirôa
Instituto de Geociências
Universidade de Campinas C.P. 6152
13081 Campinas
São Paulo
BRAZIL
Fax: (55) 289 1562
Tel: (55) 289 1097
email: Figueroa@IGE.unicamp.br

Dr. Maria Margaret Lopes
Instituto de Geosciênces
UNICAMP
Caixa Postal 6152 13081 Campinas
São Paulo
BRAZIL
Fax: (55) 289 1562
Tel: (55) 289 1097

Professor Walter O. Kupsch
Department of Geoscience
University of Saskatchewan 114 University Place
Saskatoon
Saskatchewan S7N 5E2
CANADA
Fax: (1) 306- 966- 8593
Tel: (1) 306- 966- 5696
email: walter.kupsch@sask.usask.ca

Professor William A. S. Sarjeant
Department of Geological Sciences
University of Saskatchewan 114 University Place
Saskatoon
Saskatchewan S7N 5E2
CANADA
Fax: (1) 306-966-8593
Tel: (1) 306-966-5722/5706
email: ldietz@arts.usask.ca

Dr Keith Tinkler
Department of Geography
Brock University
St. Catharines
Ontario L2S 3A1
CANADA
email: ktinkler@spartan.ac.brocku.ca

Professor Armando Espinosa-Baquero
Universidad del Quindio
Faculted de Ingenieria
COLOMBIA
Fax: 67462563
Tel: 67452708
email: espinosa@eccel.com

Sr. Guillermo E. Alvarado
Section of Seismology and Seismic Engineering
Costa Rica Institute of Electricity
San José
COSTA RICA

Dr. Gerardo J. Soto
Oficina de Sismología y Vulcanología, ICE
Apdo. 10032-1000
San José
COSTA RICA
Fax: (506) 221 8212
Tel: (506) 220-7795
email: gesoto@msmail.ice.go.cr

Dr. J. Haubelt
Svojsovickà 10/2834
Sporilov II
Tschechien
14100 Praha 4
CZECH REPUBLIC

Dr. Jan Kozák
Kubelíkova 7
13000 Prague 3
CZECH REPUBLIC
Fax: 4202 6880105/649
Tel: 4202 66009246/9318

Professor Rudolf Musil
Dept. of Geology and Palaeontology
Masaryk-University
Kotlárská Street 2
611 37 Brno
CZECH REPUBLIC
Fax: (0042) 6412 112 14
Tel: 411 29255
email: Rudolf@gap.muni.cz

Dr. Jan Urban
28401 Kutná Hora
Masary kova 580
CZECH REPUBLIC

Dr. Miloš Zárybnický
National Technical Museum
Kostelni 42
170 00 Prague 7
CZECH REPUBLIC

Professor Michel Durand-Delga
8 Rue Charles-Lefebvre
F77210 Avon
FRANCE
Fax: (33) 1 6422 5559
Tel: (33) 1 6422 5559

Professor François Ellenberger
7 rue du Font Garant
91440 Bures-sur-Yvette
FRANCE
Tel: (33) 1 6907 6865

Dr. Jean Gaudant
Sciences de la Terre
Université Paris 7
2 Place Jussieu
Paris, Cedex 05
FRANCE
Fax: 33 1 44 27 8148
email: ricou@igpg.jussieu.fr

Dr Gabriel Gohau
2 av. Bernard Palissy
92 210 Saint Cloud
FRANCE

Professor Goulven Laurent
5 rue Jean-Paul Sartre
29200 Brest
FRANCE
Fax: 298054367
Tel: 298054367
email: goulven@hol.fr

Professor Rudolf Daber
Humboldt-Universität
Naturkundemuseum
Invalidenstrasse 43
10115 Berlin
GERMANY
Fax: (49-30) 2093-8561
Tel: (49-30) 2093-8576

Professor Wolf von Engelhardt
Institut für Mineralogie, Petrologie und Geochemie
Universität Tübingen
Wilhelmstrasse 56
D-72074 Tübingen
GERMANY

Dr. E. Fabian
Helfennen Weg 24
Bad Rothenfeld
D-49214
GERMANY
Tel: (49) 5424- 69249

Dr. Bernhard Fritscher
Diteramszellerplatz 7
D-81371 München
GERMANY
Fax: (49) 89- 2180-3162
Tel: (49) 89-723-4081
email: ug301aa@sunmail.lrz.muenchen.de

Professor Martin Guntau
Thomas-Müntzer-Platz 30
D-18 057 Rostock
GERMANY
Fax: 49 381 4934604
Tel: (49) 381- 2018810
email: guntau@metronet.de

Dr. Peter Kühn
Landsberger Alee 130/3.06
D-10369 Berlin
GERMANY

Professor Wolfhart Langer
Institut für Paläontologie
Rhein. Friedrich-Wilhelm-Universität
Nussallee 8
D-53115 Bonn
GERMANY
email: une301@ibm.rhrz.uni-bonn.de

Dr Cornelia Lüdecke
Valleystrasse 40
81371 München
GERMANY
Fax: (49-89) 725 6725
Tel: (49-89) 725 6725
email: bm323472@muenchen.org

Dr. Peter Schmidt
Johann-Sebastian-Bach-Strasse 5
D-09599 Freiberg Sachsen
GERMANY
Fax: 49 3731 393 289
Tel: (49) 3731-248272
email: pschmidt@hrz.tu-freiberg.de

Dr Otfried Wagenbreth
Pfarrgasse 11
D-9200 Freiberg
GERMANY

Professor Gabriel Dengo
Inst. Centroamericano de Investigacion y
Technologia Industrial
Avenida La Reforma 4-47
Aptdo. Postal 1552-01901
Zona 10-01010, Guatamala City
GUATEMALA
Fax: (502-2) 317-470
Tel: (502-2) 310-631

Dr. Gábor Csíky
Honvéd u. 40
H-1055 Budapest
HUNGARY

Dr. Endre Dudich
Karolyi M.u. 14/B iv.5
H 1053 Budapest
HUNGARY
Fax: 3612510703
Tel: 3612510109
email: kiss@mafi.hu

Dr Jósef Hála
Hungarian Geological Survey
Népstadion ut 14
Pf. 106
H 1442 Budapest XIV
HUNGARY

Dr Gy Vitàlis
Hungarian Geological Survey
Népstadion ut 14
Pf. 106
H 1442 Budapest XIV
HUNGARY

Ms Teresa Póka
Laboratory for Geochemical Research
Hungarian Academy of Science
Budaörsi ót 45
H-1112 Budapest
HUNGARY

D. S. K. Mukerjee
Geological Survey of India
27 Jawaharlal Nehru Road
Calcutta 700016
INDIA

Professor Kotapalli S. Murty
E-3 Vishnukamal Apts.
160 Shivajinagar
Nagpur 440-010
INDIA
Fax: 91712 547141
Tel: 91071 2557984

Professor Gordon L. Herries Davies
Ballinaclough House
Ballinaclough
Nenagh, County Tipperary
IRELAND
Fax: (353) 673-2742
Tel: 067 32742

Dr. Patrick N. Wyse Jackson,
Geological Museum
Department of Geology
Trinity College
Dublin 2
IRELAND
Fax: (353-1) 671-1199
Tel: (353-1) 608-1477
email: wysjcknp@tcd.ie

Professor Paul Mohr
83 Bothar na Mine
Salthill
IRELAND
Fax: (353-91) 524- 850
Tel: (353-91) 5 24-411 2126
email: pmohr@ucg.ie pmohr@earth.uoa.edu.er

Dr. Dov Ginzburg
Geological Survey of Israel
30 Malchei Yisrael St.
95 501 Jerusalem
ISRAEL
Fax: (972-2) 380-668
Tel: (972-2) 14-251

Dr. Nir Orion
Department of Science Teaching
Weizmann Institute of Science
76100 Rehovot
ISRAEL

Professor Dan Yaalon
Inst. of Earth Sciences
The Hebrew University
Jerusalem 91 904
ISRAEL
Fax: 972 2 566 2581
Tel: 972 2 581 8523
email: Yaalon@Netvision.Net.Il

Professor Giovanni Frazzetta
Inst. Internazionalle di Vulcanologia, CNR
P.za Roma 2
95123 Catania
ITALY
Fax: (39) 95-551 582

Professor Nicoletta Morello
Instituto di Storia Moderna e Contemp.
University of Genoa
Via Balbi 6
16126 Genova
ITALY
Fax: (39) 10-209-9826
Tel: (39) 353-8317
email: Nicmor@linux.lettere.unige.it

Dr. Antonio Nazzaro
Osservatorio Vesuviano
Centro di Sorveglianza
Via Manzoni 249
80123 Napoli
ITALY
Fax: (39) 817390644
Tel: (39) 81-777-7149

Professor G Giuliano Piccoli
Dipartimento di Geologia Paleontol. e Geofisica
Via Giotto 1
Padova University
I-35137 Padova
ITALY
Fax: (39) 49-827-2070
Tel: (39) 49- 827-2050
email: Piccoli@epidote.dmp.unipd.it

Dr. Claudia Principe
Instituto di Geochronologia e Geochimica Isotopica
CNR Pisa
Via Cardinale Pietro Maffi 36
56127 Pisa
ITALY
Fax: (39) 50 560 110
Tel: (39) 50 900 270
email: C.Principe@iggi.pi.cnr.it

Dr. Ezio Vaccari
via Marsala 18
12126 Genoa
ITALY
Fax: (39) 102099 826
Tel: (39) 102465 459
email: vcri97@iol.it

Professor Isao Imai
9-5-905 Sakana-cho
Morioko 020 870
JAPAN
Fax: (81) 196 25-8327
Tel: (81) 196-25-8327

Professor Toshio Kutsukake
Laboratory of Geological Sciences
College of General Education
Aichi University
Toyohashi 441
JAPAN
Tel: (81) 0532-47-4111
email: kutakake@vega.aichi-u.ac.jp

Professor Hideo Kobayashi
Department of Geology
Shimane University
Shimane 690
JAPAN
Tel: (81)1-644-5527

Professor Masae Omori
3-32-5 Nerina-ku
177-0045 Tokyo
JAPAN
Fax: (03) 3996 2341
Tel: (03) 3996 2341

Dr Daikichiro Shimizu
Department of Geology and Mineralogy
Kyoto University
Kyoto 606
JAPAN
Fax: (81) 75-753-4189
Tel: (81) 75 753 4166

Dr. Arata Sugimura
1-18-9 Sakura-Josui
Setagaya-ku
Tokyo 156
JAPAN
Fax: (81) 52 782 7091
Tel: (81) 52 781-5111 Ext. 2530

Professor Kanenori Suwa
Laboratory of Earth Sciences
Nihon Fukushi University
Higashi-haemi 26-2
Handa 475
JAPAN
email: Suwa@handy.n-fukushi.ac.jp

Professor Yasumoto Suzuki
Geothermal Energy Research & Dev. Co. Ltd.
Kyodo Building, 11-7
Kabuto-cho. Nihonbashi
Chuo-ku Tokyo 103
JAPAN
Fax: (81) 3-3666-5289
Tel: (81) 3-3666-5822
email: suzuki@gerd.co.jp

Professor Kenzo Yagi
2-5-10 Moiwashita
Minamiku
Sapporo 005
JAPAN

Dr George Zammit Maempel
53 Main Street
Birkirkara
BKB 05
MALTA
Tel: (356) 442-204

Mr Alan Mason
75-A Argyle St.
Herne Bay
Auckland 1002
NEW ZEALAND

Professor J. B. Waterhouse
25 Avon Street
Oamaru
NEW ZEALAND

Professor Geir Hestmark
University of Oslo
Department of Biology
Blindern Postboks 1066
N-0315 Oslo
NORWAY
Fax: 47 2 285 4664
Tel: (47) 2-45-5050

Dr. Shi Baoheng
Science and Technology Development
Department CNCP
Liu Pu Kang
Beijing 100724
CHINA
Fax: (86-10) 620-94983
Tel: (86-10) 620-94131

Professor Wang Gen Yuan
Room 601-602
Bode Jewellery Co Ltd
Lijing Building Hangling Road
Shenzhen 518 028
CHINA
Fax: 755 3317530
Tel: 755 542 5774

Dr. Wen Guang
Institute of Geology
Chinese Academy of Geological Sciences
Baiwanzhuzang Fuchenomenwai Road 26
Beijing
CHINA
Tel: (86) 1089-2876

Dr. Yu Guang
Geology Department
Peking University
Beijing 100871
CHINA
email: Yu.hb@ws2.bimp.pku.edu.cn

Professor Wang Hongzhen
China University of Geosciences
Xueyuan Road 29
Beijing 100083
CHINA
Fax: (86-10) 6231 0897
Tel: (86-10) 62313652
email: wanghz@cugb.edu.cn

Associate Professor Yang Jing-yi
Institute for the History of Natural Science
Academica Sinica
137 Chao Nei Avenue
Beijing 10010
CHINA
Tel: 86 10 62753887
email: chuangye@pubms.pku.edu.cn

Professor Zhai Yusheng
China University of Geosciences
29 Xueyuan Road
Beijing 100083
CHINA
Fax: (86) 10-1620-14874
Tel: (86) 10-1620-22244

Dr. Mario Samamé Boggio
Delepiani 327
San Isidro
P. O. Box 1302
Lima 100
PERU

Professor Andrzej Bolewski
ul. Radwanskiego 5
30-073 Kraków
POLAND

Dr. S. S. Czarniecki
Zespöl Pracowni ZNG PAN
ul. Senacka 3
Kracow
POLAND

Dr. Jadwiga Garbowska
Museum of the Earth PAN
A. Na Skarpie 20/26
00-488 Warszawa
POLAND

Professor A. S. Kleczkowski
Akademia Gorniczo-Hutnicza
Inst. Hydogeologii i Geol. Inzynierskej
Aleja Mickiewicza 30
30-059 Kracow
POLAND

Professor Wojciech Narebski
Muzeum Ziemi PAN
Collegium Geologicum UJ
ul. Oleandry 2a
30-063 Krakow
POLAND
email: NAREBSKI@ing.uj.edu.pl

Dr. Jan Rzymelka
Kaszubska 10/2
40-731 Katowice
POLAND

Professor Janusz Skoczylas
Inst. of Geology, U.A.M.
ul. Maków Polynych 16
60-606 Poznan
POLAND

Dr. Zibigniew Wójcik
Muzeum Ziemi Polska
Akademia Nauk al na Skarpie 20/26
Warszawa
POLAND

Professor Martim Portugal e Vasconcelos Ferreira
Departamento de Ciências da Terra
Apartado 3014
Universidade de Coimbra
3049 Coimbra
PORTUGAL
Fax: (351) 3-77-11
Tel: (351) 2-30-22

Professor Manuel C. S. Pinto
Deptamento de Geosciências
Universidade de Aveiro
3810 Aveiro
PORTUGAL
Fax: (351) 34 370 605
Tel: (351) 34 370 744
email: MPINTO@geo.ua.pt

Miguel C. F. Telles Antunes
Departamento de Ciências de Terra
Centro de Estudos Geologitas
Universidade Nova de Lisboa
P-2825 Monte de Caparica
PORTUGAL
email: mta@mail.fct.unl.pt

Professor Victor Efimovich Khain
Institute of the Lithosphere
Russian Academy of Sciences
22 Staromonetny per.
Moscow 109180
RUSSIA
Fax: 095 233 5590
Tel: 095 939 1109
email: Khain@ilsan.msk.ru

Professor Efgenji E. Milanovsky
Department of Geology
Moscow State University
119899 Moscow
RUSSIA
Fax: 095 932 8889
Tel: 095 939 2750
email: milan@shg.geol.msu.su

Dr S I Romanovsky
All-Union Geological Research Institute
(VSEGEI)
74 Sredny Prospekt
199 026 St. Petersburg
RUSSIA

Professor Anatoly G. Ryabukhin
Faculty of Geology
Moscow State University
119899 Moscow
RUSSIA
Fax: (7-095) 939 1154
Tel: (7-095) 939 2081
email: USER@dynamo.geol.msu.ru

Dr. Yu. Ya. Soloviev
Vernadsky State Geological Museum
Mokhovaya 11
Building 2
103009 Moscow
RUSSIA
Fax: (7-095) 203-9000
Tel: (7-095) 203-5287

Professor Nikolai Pavlovich Yushkin
Russian Academy of Science
54 Pervomaiskaya St.
107610 Syktyvkar
Komi Republic
RUSSIA
Fax: (095) 82- 1242-5346
Tel: (095) 82- 1242-0037
email: yushkin@geo.komi.ru

Dr Ivan Hercko
Slovenské Banské Muzeum
Kammerhofská 2
969 000 Banská Štiavnica
SLOVAKIA
Fax: 421 85922764
Tel: 42185921541

Dr. Jósef Labuda
Slovak Mining Museum
Banská Štiavnica
SLOVAKIA

Dr. Johan C. Loock
University of the Orange Free State
Bloemfontein
SOUTH AFRICA
Fax: (27) 51-47-4152
Tel: (27) 51-40-2374

Professor Francisco J. Ayala-Cardedo
Instituto Technológico GeoMinero de España
C/Rios Rosas 23
28003 Madrid
SPAIN
Fax: (34) 442-62 16
Tel: (34) 349 57 00

Dr. Juan José Durán Valsero
Instituto Technologico GeoMinero de España
C/Rios Rosas 23
28003 Madrid
SPAIN
Fax: (34) 349 5834
Tel: (34) 349- 5700

Dr. A. del Valle Menéndez
Jorge Juan 28, 2nd dcha.
Madrid 1
SPAIN

Dr. Emilio Pedrinaci
Loma Verde no 11
Gelves. 41120
Sevilla
SPAIN
email: pedrinas@arrakis.es

Dr. Franci sco Pelayo
History of Science Department
Historical Studies Centre
Duque de Medinaceli No. 6
28014 Madrid
SPAIN
email: pelayo1@pinar1.csic.es

Dr. Luis Mansilla Plaza
Pablo Iglesias 59-20B
134400 Almaden
Ciudad Real
SPAIN
email: lmansi@pol-al.uclm.es

Dr. Octavio Puche
San Telesforo 8
28017 Madrid
SPAIN

Dr. Luis Adaro Ruiz
Marques de San Esteban 15
33206 Gijón
SPAIN

Professor Leandros Sequeiros
Pintor El Greco 8-5 -3
E-14004 Cordoba
SPAIN
Fax: 345 7921864
Tel: 957 295369

Professor Tore Frängsmyr
Dept. of the History of Science
Box 256
Uppsala University
S-751 05 Uppsala
SWEDEN

Professor G. Regnéll
Department of Geology
University of Lund
Sölvegatan 13
SWEDEN

Professor Henri Masson
Institut de Géologie
BFSH2 Université de Lausanne
CH-1015 Lausanne
SWITZERLAND
Fax: 41216924305
email: henri.masson@igp.unil.ch

Professor J. P. Portmann
Landeyeux
CH-2046 Fontaines
SWITZERLAND
Tel: (41) 38-53-72-49

Professor R. Trümpy
Allmendboden 19
CH-8700 Küsnacht
SWITZERLAND
Tel: 41556123705

Dr. Emile den Tex
Rhijnvreugd 9
2382 BG
Zoeterwoude
THE NETHERLANDS
Fax: 31715687666
Tel: 071 5410110

Professor A. M. C. Sengör
I.T.U. Maden Fakultasi
Jeoloji Muhendisligi Bolumu
Ayazaga 80 626 Istanbul
TURKEY
Fax: 90242285 6210
Tel: 90212 2856 209 (W)

Dr. John A. Cooper
Booth Museum of Natural History
Brighton and Hove
BN1 5AA
UNITED KINGDOM
Fax: (44) 1 273-292778
Tel: (44) 1273-292780
email: boothmus@pavilion.co.uk

Professor Gordon Y. Craig
Grant Institute of Geology
University of Edinburgh
West Mains Road
Edinburgh EH9 3JW
UNITED KINGDOM
Fax: 0131 6638275
Tel: (44-1) 31-663-8275
email: gcraig@torph.demon.co.uk

Dr Trevor D. Ford
21 Elizabeth Drive
Oadby
Leicester LE2 4RD
UNITED KINGDOM
Tel: (44-1) 116 27 15265

Dr. John Fuller
2 Oak Tree Close
Rodmell Road
Tunbridge Wells
Kent TN2 5SS
UNITED KINGDOM
Fax: 019892 534 644

Dr. Andrew Grout
30 Lutton Place
Edinburgh EH8 9PG
UNITED KINGDOM
email: agg@geo.ed.ac.uk

Dr. Beryl M. Hamilton
Olrig
Kirk Road
New Galloway
Dumfries and Galloway DG7 3RS
UNITED KINGDOM
Fax: 01 644420200
Tel: 01 6444 20200
email: 101767.1033@compuserve.com

Professor Martin J. S. Rudwick
Department of History and Philosophy of Science
University of Cambridge
Free School Lane
Cambridge CB2 3RH
UK
Tel: 171 8379283
email: mjsr100@cus.cam.ac.uk

Mr. J. C. Thackray
Department of Library Services
The Natural History Museum
Cromwell Road
London SW7 5BD
UNITED KINGDOM
Fax: (441) 71-938-9290
Tel: (441) 71-938-9123
email: J.Thackray@nhm.ac.uk

Dr. Hugh S. Torrens
Department of Earth Sciences
Keele University
Staffordshire
ST5 5BG
UNITED KINGDOM
Fax: (44) 1- 782-71-5261
Tel: (44) 1- 782-58-3183
email: gga10@.Keele.ac.uk

Professor Kennard B. Bork
Department of Geology and Geography
Denison University
Granville, OH 43023
U.S.A.
Fax: (1) 740-587-6417
Tel: (1) 740-587-6486
email: bork@cc.denison.edu

Professor Albert V. Carozzi
Department of Geology
University of Illinois
NHB 245 301 W. Green Street
Urbana, IL 61801-2999
U.S.A.
Fax: (1) 217-244-4996
Tel: (1) 217-333-3540
email: acarozzi@uiuc.edu

Professor Robert H. Dott Jr.
Department of Geology and Geophysics
University of Wisconsin
121 West Dayton St.
Madison, WI 53706
U.S.A.
Fax: (1) 608-262-0693
Tel: (1) 608-262-8960
email: RDott@geology.wisc.edu

Professor Henry R. Frankel
Department of Philosophy
University of Missouri
Kansas City, MO 64110
U.S.A.

Emeritus Professor Léo F Laporte
43 Nimitz Avenue
Redwood City
Santa Cruz CA 94061 4226
U.S.A.
Tel: 650 364 3386
email: laporte@cats.ucsc.edu

Dr. Ursula B. Marvin
Harvard-Smithsonian Center for Astrophysics
60 Garden Street
Cambridge, MA 02138
U.S.A.
Fax: (1) 617-495-7001
Tel: (1) 617-495-7270
email: umarvin@cfa.harvard.edu

Dr. Clifford M. Nelson
U.S. Geological Survey
950 National Center
Reston, VA 20192-0001
U.S.A.
Fax: (1) 703-648-6373
Tel: (1) 703-648-6080
email: cnelson@usgs.gov

Professor Alexander M. Ospovat
2131 Arrowhead Drive
Stillwater OK 74074
U.S.A.
Fax:
Tel: (1) 405-377-8448
email: ospovat-osu@ionet.net

Professor Cecil J. Schneer
River Road
Newfields, NH 03856-0181
U.S.A.
Fax: (1) 603 862-2649
Tel: (1) 603-772-4597
email: cjs1@hopper.unh.edu

Professor Kenneth L. Taylor
Department of the History of Science
University of Oklahoma
Norman, OK 73019-0315
U.S.A.
Fax: (1) 405-325-2363
Tel: (1) 405-325-5416
email: KTaylor@uoknor.edu

Dr. Aníbal R. Martínez
Petroleos de Venezuela
ED. Pequiven 13-13
AV. Francisco de Miranda, Chacao
Caracas 1060-A
VENEZUELA
Fax: (58-2) 201 4852
Tel: 582-201 3550
email: pwpc@pdvsaint.pdvsa.pdv.com

Professor Franco A. Urbani
Universidad Central de Venezuela
Apartado 47028
Caracas 1041/A
VENEZUELA
Fax: (58) 2- 693 0927
Tel: (58) 2- 693-0927
email: urbani@cantv.net

Professor Aleksandar Grubic
Rudarsko-Geoloski Fakultet
Djusina 7
11001 Beograd
YUGOSLAVIA
Fax: (38) 11-632-166
Tel: (38) 11-335-539

INHIGEO NEWSLETTER No. 30
ADDENDA

Congratulations!

INHIGEO is delighted to congratulate its President, Dr Hugh Torrens, on the news of his recent promotion to a full professorship at Keele University. Congratulations, Hugh!

Episodes

As a result of the meeting of representatives of INHIGEO with members of the Board of the IUGS in Vienna in January, and subsequent communications with the editorial staff of the IUGS journal, *Episodes*, INHIGEO Members are encouraged to submit articles of an historical nature, or reviews of books pertaining to the history of geology, to the journal. It has been suggested that items of a commemorative nature would be particularly acceptable. Or one could contemplate articles dealing with the work on the history of geology in particular countries or regions.

This kind of work would be one way to increase the 'visibility' of INHIGEO's activities amongst the geological community, as was recommended by the IUGS Board in Vienna. The matter will be further discussed at our Business Meeting in Neuchâtel.

Thinking of items for 1998 may be a little difficult at this late stage, but it may be recalled that Sir James Hall's work on 'whinstone' was published in 1798, as was Robert Townson's *Philosophy of Mineralogy*. (However, for Hall, there is a detailed article in the latest issue of *Episodes* by Peter Wyllie: 'Hutton and Hall on Theory and Experiments: The View after 2 Centuries'.) 1799 is an excellent year for centenaries, with the work of Abraham Werner being commemorated by a conference—co-sponsored by INHIGEO—in Freiberg; Joachim Barrande's work being celebrated in Prague; and Mary Anning's in Britain. John Joly published his work on attempting to estimate the age of the oceans by determining their salinity in 1899.

Will any Members who have ideas or suggestions, or feel moved to contribute a piece to *Episodes*, please communicate with Hugh Torrens? (Department of Earth Sciences, Keele University, Staffordshire ST5 5BG, UK) The editorial address for *Episodes* is P.O. Box 823, 26 Baiwanzhuang Road, 100037, Beijing, China (episodes@public.east.cn.net).

David Oldroyd
Secretary-General, 20 May, 1998

It is requested that contributors to the INHIGEO *Newsletter* kindly use the following conventions for references.

For books:
Author(s) or editor(s), *Full Title and Subtitle [Capitalized and Italicized]*, Publisher(s), Place(s) of publication, date. Number of pages.
Please place a colon between the title and the sub-title.
E.g.
Foster, Mike, *Strange Genius: The Life of Ferdinand Vandeveer Hayden*, Roberts Rinehart Publishers, Niwor (Colorado) and Schull (West Cork), 1994. xv + 443 pp.

For journal articles:
Author(s), 'Title [Capitalized]', *Journal Title [Not Abbreviated, Capitalized, Italicized]*, date, *Volume number [italicized]*, page numbers.
E.g.
Rudwick, Martin, 'Cuvier and Brongniart, William Smith, and the Construction of Geohistory', *Earth Sciences History*, 1996, *15*, 25–36.
(Note that volume numbers only, not issue numbers, are needed.)

For chapters in books:
Author(s), 'Title [Capitalized]', in: Book editor(s), *Full Title and Subtitle [Capitalized and Italicized]*, Publisher, Place, date, page numbers.
E.g.
Briggs, John C., 'Mass Extinctions: Fact or Fallacy?', in: William Glen (ed.), *The Mass-Extinction Debates: How Science Works in a Crisis*, Stanford, Stanford University Press, 1994, 230–236.

For book reviews:
Author of review. Review of: Author of Book, *Title of Book*, Publisher, Place of publication, date. Number of pages. Price (if known). In: *Title of Journal*, date, *Volume number*, pages.
E.g.
Sarjeant, William A.S. Review of: Jerry MacDonald, *Earth's First Steps: Tracking Life Before the Dinosaurs*, Johnson Books, Boulder (Colorado), 1994. xiv + 290 pp. US$ 22.95. In: *Earth Sciences History*, 1996, *15*, 84–85.

Please use single inverted commas.

Please do NOT make ANY abbreviations; and do NOT capitalise the names of persons (except in the case of Chinese or Japanese names, where capitalisation of family names is helpful). Please supply 'given' ('Christian') names where possible, and (as a general guideline) use them in the main body of a text for their first mention only. Thereafter, just give the family name, without the given name(s) or initial(s).