K. Taylor

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

INTERNATIONAL UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCES

INTERNATIONAL COMMISSION ON THE HISTORY OF GEOLOGICAL SCIENCES INHIGEO

NEWSLETTER No. 26 for 1993

Issued in 1994

Compiled and Edited by Ursula B. Marvin
INHIGEO Secretary-General

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PREFACE

This *Newsletter* reports mainly on INHIGEO activities in 1993. It also includes information on future INHIGEO symposia and other items of interest to historians of geology.

Since the INHIGEO business meeting in Brazil in July 1993, the Commission has been operating under its new bylaws, which were endorsed in principle by the IUGS Executive Committee in January 1993 and officially adopted in July by vote of the Full Members. The new bylaws are printed on pages 11-13 in *INHIGEO Newsletter 25* (with the red cover). Technically speaking, the bylaws await ratification by the full IUSG Council at its meeting in Beijing in 1996, but we were assured that we could begin applying them immediately.

This *Newsletter* includes memorials of four of our long term members. Professor Vladimir V. Tikhomirov in Russia played a leading role in the planning and founding of INHIGEO, and he served as its first president. Professor Reijer Hooykaas in The Netherlands also was a founder and president of INHIGEO. Professor Thomas George Vallance was the Full Member from Australia from the first meeting of INHIGEO and he served as a Vice-President for eleven years. Dr. Ekatarina Radkevitch in Russia was one of INHIGEO's original Corresponding Members. We also wished to include a memorial to Dr. Sh. F. Mekhtiev of Azerbaidzhan but have received no mail from that troubled area for the past two years.

INHIGEO held no election in 1993, but a ballot with the names of 22 candidates for membership was circulated in April, 1994. Results will not be final until votes are taken at the business meeting at Sydney. At present, INHIGEO has 112 members in 35 countries.

As promised last September, *Newsletter No. 26* is being issued in advance of the XIXth International INHIGEO Symposium in Sydney, Australia, July 4-8,1994. To aid in maintaining this schedule another year, **please submit your country reports and other news items by April 1,1995**. This date is chosen to give members an opportunity to report on activities that occur toward the end of 1994.

Ursula B. Marvin
INHIGEO Secretary-General
June 15, 1994

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INHIGEO Board Meeting, XVIIIth International INHIGEO Symposium, Campinas, Brazil, July 20, 1993

President Branagan opened the meeting at 6:35 p.m. Twenty-two members attended.

Remarks by President Branagan

Dr. Branagan congratulated Past-President Martin Guntau, who was present at the meeting, for his selection as the recipient of the 1993 History of Geology Award of the Geological Society of America. Branagan then announced that our Australian member,Tom Vallance, who died in March 1993, after a long struggle against cancer, was the 1993 recipient of the Geological Society of London's Sue Tyler Friedman Award. He added that the XIXth International INHIGEO Symposium in Sydney in 1994 will be dedicated to the memory of Tom Vallance.

The President noted that plans were well along for the Symposium in Sydney. Abstracts would be due on December 23rd and the completed manuscripts, to be preprinted in the Proceedings and distributed at the Symposium, would be due on March 16th.

Report of the Secretary General

Dr. Marvin stated that the main event during the months since the Board meeting in 1992 at the IGC in Kyoto (reported in *INHIGEO Newsletter* No. 25) was the adoption of new INHIGEO bylaws which abolished the distinction between Full and Corresponding members and made all INHIGEO members equally eligible to vote and to hold office. The revised draft was approved, in principle, by the IUGS Executive Committee in January, 1993, and formally adopted by the INHIGEO Full Members via mail ballot in the spring and early summer. Sixteen of the 25 Full Members voted in favor of this fundamental change in governance of INHIGEO; two of the Full Members abstained from voting; and seven never returned their ballots. The Board was gratified that a strong majority of Full Members favored the changes even though this meant giving up their special privileges. In an effort to encourage participation of all members in INHIGEO elections, the new bylaws state that any member who fails to return a ballot in two successive elections will be dropped from the membership.

In view of the proposed procedural changes, no election of new members took place in 1993. The Secretary-General recommended that INHIGEO should revert to its earlier custom of holding elections every second year rather than every year. No dissenting voices were raised and so that schedule will go into effect. She then announced plans to hold an election in 1994 and asked for nominations to be submitted before February 1st. [This request also was made in *Newsletter No. 25* and in its cover letter, which were mailed in September, 1993. As this report is being written, in June 1994, a ballot with the names of 22 candidates for membership has been sent to all INHIGEO members. The marked ballots must be received by the Secretary-General on June 20th at the latest, except from those members who plan to vote in person or by proxy in Sydney.]

Future INHIGEO Symposia.

Dr. Aníbal Martínez invited INHIGEO to meet in Caracas, Venezuela, in 1995 for a symposium on the history of petroleum geology, with excursions to sites of early oil fields and installations. The members were very pleased with the prospect of such a meeting but an informal poll showed that a majority of those present felt that 1995 was too early a date for INHIGEO to return to South America. Inasmuch as a Symposium was being held in Brazil in 1993, and future ones are scheduled for Sydney in 1994 and Beijing (with the IGC) in 1996, they favored a meeting in Europe in 1995.

Strong support was expressed for a 1995 symposium on Volcanoes in History in Italy, if an invitation issued at the Dresden meeting in 1991 remains open. The Secretary-General was asked to contact our Italian colleagues and inquire about this possibility.

A question was raised whether INHIGEO should continue to hold International Symposia every year or should return to its pre-1989 schedule of meeting once every two years and encouraging the holding of regional meetings in the intervening years. The same question had been raised at the Kyoto meeting in 1992 by the

previous Secretary-General, Endre Dudich. No enthusiam was expressed for the proposal on either occasion. However, it remains a valid alternative which may be reconsidered at any time.

Dr. Branagan then pointed out that, in all likelihood, special events would be held in Britain in 1995 to commemorate the 200th anniversary of publication of James Hutton's book *Theory of the Earth with Proofs and Illustrations.* It seemed likely that INHIGEO could cooperate with other institutions and hold its symposium at that time. He asked Vice-President Hugh Torrens to inquire into this situation. [On arriving home, Torrens learned that commemorative celebrations are planned in Britain not in 1995 but 1997, the anniversary year of the death of James Hutton and the birth of Charles Lyell. INHIGEO hopes to participate.]

In anticipation of the 1996 International Geological Congress in Beijing, the President asked Past-President Martin Guntau to contact Vice-President Wang Hongzhen to discuss plans for INHIGEO Symposia and excursions.

New Business

Dr. Torrens brought up the issue of library collections relating to the history of geology and asked whether we could encourage national libraries to build and maintain such collections. Dr. Peter Schmidt remarked that a Heritage Symposium to be held in Freiberg in September would discuss just such problems. Others pointed out that INHIGEO, founded at Yerevan in 1967, had just passed its 25th birthday, and we should be considering where we should deposit our own archives. It was specifically requested that this issue be brought up in the next *INHIGEO Newsletter* so that all members could begin thinking about possible solutions. The further observation was made that someone with a long memory should write a history of INHIGEO. No hands went up at the meeting, but we hope a volunteer may speak up at Sydney.

Finally, Dr. Torrens proposed that the *Newsletter* should include a section entitled "Notes and Queries." [Readers will observe that this issue includes such a section, opened by queries by Torrens followed by those . submitted by others. Members seeking aid with their works-in-progress are encouraged to submit notes and queries to future issues.

On behalf of INHIGEO, President Branagan expressed hearty thanks to the organizing committee, chaired by Silvia Figuerôa, for all its hard work in organizing this meeting in Brazil. As INHIGEO's first Symposium in Latin America, it attracted participants from many countries; its sessions were lively and informative, and the excursions were eagerly anticipated. [See the Country Report from Brazil].

The meeting adjourned at 8:10 p.m.

FUTURE INHIGEO SYMPOSIA

1995 INHIGEO has received an invitation to hold its XXth International Symposium in Italy in September 1995, on the theme *Volcanoes and History.* No details are available at this time. The board is very pleased with this invitation and plans to discuss it at the business meeting in Sydney in July, 1994.

1996 INHIGEO will hold its XXIst International Symposium in Beijing, China, in connection with the International Geological Congress which will meet from August 4th to 16th 1996. Further details are given in the Country Report from China.

ACTIVITIES OF THE INTERNATIONAL UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCE (IUHPS)

The XIXth Intenational Congress of History of Science was held in Zaragoza, Spain, August 22-29th 1993. More than 1,300 participants attended from 75 countries. A report on the sessions devoted to the history of the geosciences is presented in the Country Report from Spain. The current officers of the Division of History of

Science are President, R. Fox, United Kingdom; Vice-Presidents, E. Similia, Italy, and M. Nye, USA; Secretary, R. Halleux, Belgium; Treasurer, D. A. King, Germany. The next General Assembly of the Division of History of Science will be held during its XXth Congress in 1997 in Liège, Belgium.

INHIGEO NOTES AND QUERIES

In Victorian times, when today's 'publish or perish' philosophy had yet to reach the groves of academe, one of the most enthusiastically supported British journals was *Notes and Queries*. In this, readers sought answers, and gave replies for 'work in progress.' Such a feature in our I*NHIGEO Newsletter* would seem a real help in better exploring some of the more recondite aspects of scholarly research on the history of geology.

I would like to start such a column by appealing for any information on two such 'in progress' projects:

1) For anything on Mary Anning (1799-1847), junior, of Lyme Regis in Dorset, England. Mary was one of the first professional fossil collectors. She was also a truly remarkable woman: the real uncoverer of the marine Jurassic world which inspired the famous "Durior Antiquiro" drawing by Henry de la Beche in 1830. This appeared, most recently, on the jacket of Martin Rudwick's *Scenes from Deep Time* (University of Chicago Press, 1992). Despite her celebrity whilst alive, Mary has never been properly treated biographically. Indeed, there are enormous difficulties facing any biographer. She was, first of all, a woman, then working class, and finally provincial. All three of these categories have left very limited historical records by comparison with the metropolitan and more 'gentle'-men of geology. But Mary was a figure of real importance in geological science and of real curiosity to her many visitors. References to her often thus appear in letters between other parties. Any notes of such references will be gratefully received. In addition, she could write wonderful letters. These have often been treasured as curiosities in autograph collections rather than in normal MSS accumulations. Letters of hers have been found in the USA, Canada, and New Zealand. News of any further discoveries of such would also be very welcome.

2) William Smith (1769-1839) and John Farey (1766-1826), senior, thought of themselves as "Mineral Surveyors." This was a term they invented for their new profession. Such people were a vital part of the Industrial "Revolution" in Britain, since they alone could apply science to the location of mineral supplies. Yet many such people, just like the mechanics who were equally vital in that "Revolution," have since become rather 'invisible' to the historical record. They often published little and were frequently faced with bankruptcy or prison for debt, in contrast to their gentlemanly counterparts. Many of them became additionally 'invisible' by migration, all round the world. Examples are 1) Joseph Fryer (1777-1855) who went to South America in 1826-28). 2) John B. Longmire (1777-1855), a lakeland geologist who worked as a coal prospector in Russia (1817-1822). 3) James Ryan (1770-1849) who migrated back and forth between Ireland and Britain. I would be grateful to learn of any references to these or other such migrant "mineral surveyors" cum mining geologists/engineers that other readers may come across. They often appear alien to the locality in which they emerge.

Hugh Torrens

The **INHIGEO Notes and Queries** section is now officially open. The following notices of works-in-progress and available facilities were received this year. With our worldwide fellowship of historians of geology, we hope this will become a most valuable service. [*UBM*]

Geologists and the History of Geology

Attention Colleagues: I am in the closing stages of completing, for publication, a second supplement to my bibliography. I have of course searched all the principal geological journals. However, I do not have the facilities to survey all the journals of local geological and natural history societies, particularly for articles on persons or institutions involved in geology, paleobotany, and paleozoology. Nor can I hope to survey all the publications of local museums.

I would be most grateful to receive letters giving details (or, better still, copies of articles) on these themes. Such aid would be properly acknowledged. Write to me: Department of Geological Sciences, University of Saskatchewan, Saskatoon, S7N 0W0 Canada.

W. A.S. Sarjeant

Geological Survey of Alabama, Sesquicentennial, 1998

I am compiling a history of the Geological Survey of Alabama to commemorate our 150th anniversary in 1998. The aim is not to write just a history of a state geological survey in the southeastern United States, but to compile the history of our geological survey as it developed in the framework of the growth and development of the geological sciences both nationally and internationally.

Few early records of the Survey prior to 1870 exist because the University of Alabama where the Survey is located was burned by invading Federal troops in 1865. The private papers of our first State Geologist, Michael Tuomey, are lost, but it is known that he corresponded widely with distinguished geologists including Agassiz and Lyell. I am looking for primary source information on people involved with geology in Alabama in the nineteenth century as well as letters, diaries, or commentaries. Chief among these is Tuomey's chemist, John Mallett, later first president of the University of Texas and professor of chemistry at the University of Virginia. Information on these gentlemen or any others would be greatly appreciated. My address is: Geological Survey of Alabama, 420 Hackberry Lane P. O. Box O, Tuscaloosa, Alabama 35486-9780, USA. Tel: (205) 349-2852; Fax: (205) 349-2861.

Alexander Sartwell
Archivist and Historian

Progress Report on the History of the International Union of Geological Sciences

I am approaching the completion of my history of the IUGS. I finished writing Part II, *Geologists at Prague*, a year ago but still would be grateful for any pictures readers could send me of the events of 1968 when Russian tanks invaded Prague and forced an early end to the sessions of the International Geological Congress. I am essentially finished writing Part I, which begins with the formation of the IUGS in 1960 at the IGC in Copenhagen and continues to the summer of 1968. And I am working from copious notes on Part III, from 1968 to the present. I would appreciate hearing from anyone with information or pictures relating to either of these sections. I also would welcome advice on where this work might be published. The IUGS sought an author for its history but has no plans of its own for publication. Contact me at River Road, Newmarket, NH 03856, USA. Tel: 603-772-4597; Fax: 603-862-2649.

Cecil J. Schneer

Archiving INHIGEO Records

At a time when the storage of papers in properly curated archives is of great concern to historians in all fields, and Symposia on this subject are being held in Freiberg, the disposition of INHIGEO's own papers is becoming a matter of increasing urgency. Newsletters numbers 1 (1967) through 21 (1988) were copied on microfiche at the University in Rostock. We do not know how many printed sets of these Newsletters exist; a set in my possession lacks Numbers 4 and 11. Numerous printed copies of Newsletters numbers 22 (1989-1990) to 25 (1993) still are available, but not (yet) in microfiche. In addition, I have two large boxes of letters, memos, and faxes including those that were forwarded to me in 1989 by the previous Secretary-General, Endre Dudich, and those I have accumulated since then. The Board would welcome any suggestions on how and where to place these materials for permanent storage.

Ursula B. Marvin

The U. S. Geological Survey's Field Records Library
A Valuable Resource for Earth Science History

The Field Records Library of the U.S. Geological Survey (USGS), located within the USGS regional library in Denver, Colorado, is an archival depository of materials generated and/or collected by USGS scientists during research projects. The bulk of this unique collection dates from after the establishment of the USGS in 1879, although the collection includes some materials from exploration surveys of the western United States during the 1870's. Most materials in the Field Records Library relate to studies in the contiguous United States.

The collection is open to the public, and visitors are welcome. A card catalog and in-house computer catalog provide access to the collection for staff and visitors. In addition, we are entering records for Field Records Library materials into the OCLC (Online Computer Library Center, Inc.) on-line bibliographic data base; these records also appear in the USGS Library system's on-line catalog. In response to mail and telephone inquiries, the staff will search for the requested information and can provide a limited number of photocopies. If we don't have the information you are searching for, we can often refer you to another source.

The Field Records Library collection includes items such as: field notes and sketches; field maps and plane-table sheets; compilation maps; aerial photographs (many with geologic annotations); analysis reports; stratigraphic logs and columns; geologic cross-sections; drafts of published as well as unpublished reports and maps; project-related correspondence; and biographical information on USGS scientists. These materials comprise more than 20,000 notebooks or files, 4600 map groups, 75,000 aerial photographs, and more than 100 reels of microfilm. Materials are cataloged by project under the author or field party chief, with additional cross-references by geographic area, related USGS publications, subjects, and project assistants.

Researchers are encouraged to examine USGS publications in their area of interest, in order to obtain a clear idea of what material they may need to check for in the Field Records Library. These publications are available at USGS regional libraries in Reston, Virginia; Denver, Colorado; Flagstaff, Arizona; Menlo Park, California; at many public libraries and most college and university libraries.

A small percentage of Field Records Library materials contain proprietary or other restricted information and may be available for public examination only after Field Records staff has obtained approval for release. Therefore, researchers planning to visit the collection, especially those coming from out of town, should contact the Field Records Library staff ahead of time to see whether material of interest is available, and so that any necessary approval can be requested prior to their arrival.

For material relating to Alaska, contact: U.S. Geological Survey, Technical Data Unit, Branch of Alaskan Geology, 4200 University Drive, Anchorage, Alaska 99508-4667. Telephone: (907) 786-7457. For more information, including a free descriptive brochure, contact: U. S. Geological Survey, Field Records Library, Mail Stop 914, Box 25046, Federal Center, Denver, CO 80225-0046. Telephone: (303) 236-1005, FAX (303) 236-0015, TTY (303) 236-0998.

Carol A. Edwards
Head, USGS Field Records Library

CONFERENCES AND SYMPOSIA

History of Geology Poster Session at the Annual Convention of the American Association of Petroleum Geologists Denver, Colorado, June, 12-15, 1994

For this session which will be co-chaired by Hugh Torrens and John Fuller, the Geological Society of London is co-ordinating submissions illustrating the European role in the early geological sciences and the evolution of petroleum geology. It is hoped to include original material by the pioneer stratigrapher and "Father of English Geology" William Smith (1769-1839) from the archives of the GSL, and newly discovered material illustrating the

work of the Scottish geologist Sir Archibald Geikie (1835-1924), who played a key role in unraveling the structure of the Scottish Highlands. Other exhibits will illustrate:

Early days in English geology, 1549-1649
17th century borehole logging and subsurface exploration
The invention and first use of stratigraphic cross-sections, 1719
Changes in the concepts and tectonics of petroleum exploration and production, 1859-1983
Organic metamorphism in 1863--oil and gas in Pennsylvania
The search for oil from oil-shale in England, 1910-1924
Three hundred years of oil developments in the West Midlands of England, 1694-1994
Was Britain first in teaching petroleum geology at its universities - Birmingham, 1912, and London, 1913?
Bellers and Hauksbee, inventors of the subsurface density log, 1712
Early developments in geothermal, electrical and radioactive logging
Baron Lorand Eötvös (1849-1919) and the development of gravity surveys

Symposium on the History of Sedimentology, Troy, New York, July 1994

On July 7-9th, 1994, a meeting focusing on the history of sedimentology will be held at Troy, "The Home of Geologic Pioneers." The sponsors are the History of Earth Sciences Society (HESS) and the Northeastern Science Foundation, Inc. Sessions will be held at the Rensselaer Center of Applied Geology, 15 Third St. in Troy. Excursions are planned to classic localities in the nearby Catskill and Taconic regions. Abstracts were due by May 5th, but all persons interested in the topic are encouraged to attend. For information contact Dr. Gerald M. Friedman, Northeastern Science Foundation, P. O. Box 746, Troy, NY 12180-0746, USA.

International Mineralogical Association, Pisa, Italy, September 1994

The 16th General Meeting of the IMA will be held in Pisa, September 4-9th, 1994. Professor Cecil Schneer, member and former Vice-President of INHIGEO, will present the key note lecture at the opening ceremony on Sunday, September 4th. His title is *Origins of Mineralogy: the Age of Agricola*.

The IMA Commission on History and Teaching will hold the following three sessions under the general title: *The Mineral Heritage*. The first session on Monday will focus on "History and Teaching of Mineral Sciences." The second, on Tuesday, will be on "Mineralogical Museums and Science," and the third, on Thursday, will discuss "Mineral Classifications and Data Bases."

For information, write to the IMA Secretary: Professor S. S. Hafner, University of Marburg, Institute of Mineralogy, Lahnberge, 3550 Marburg, Germany.

The VIIIth Symposium on Teaching of Geology, Córdoba, Spain, September 1944

The VIII Simposio sobre Enseñanza de la Geologia will be held at Córdoba September 12-17th, 1994. Workshops, oral presentations, and posters will discuss subjects such as the past and future of geological education, geological teaching methods, geology and the earth sciences, and the geology of Andalusia. For information contact: Secretaría VIII Simposio Enseñanza Geología, ICE de la Universidad de Córdoba, Apartado 50003, 14080, Córdoba. Fax: (925) 27 26 92.

Geological Society of America - History of Geology Symposium, October, 1994

At the annual meeting of the Geological Society of America in Seattle, October 23-27, 1994, the History of Geology Division Symposium will hold its Symposium on Wednesday morning, October 26, on the theme:

Historical Investigations of Extraterrestrial Events and Causes in Earth History

The symposium will address some of the historical and philosophical underpinings of the current debate on the roles of asteroid or comet impacts in Earth history. The range of topics to be covered includes history of meteorite studies, historical investigations into the role of comets in Earth history, and debates with regard to the origin of impact craters (and "cryptovolcanic" structures) on the Earth, Moon, and elsewhere in the Solar System.

We hope that many historians of geology will plan to attend. Additional information may be obtained from the convenors:

Joanne Bourgeois, Department of Geological Sciences AJ-20, University of Washington, Seattle, WA 98195.

Mott T. Greene, University of Puget Sound, Tacoma, WA 98416

2nd Symposium on Cultural Heritage, Leoben, Austria, September, 1995

The second Symposium on "Cultural Heritage in Geosciences, Mining and Metallurgy; Libraries - Archives - Museums" will take place September 18th - 20th, 1995, at the University Library of Leoben on the general theme:

Arts and Culture in Mining and Geosciences

The first Symposium, in Freiberg in 1994 highlighted the problem as it stands. Many librarians came and exchanged their views. The meeting in Leoben aims to begin a dialogue with colleagues in archives and museums. The theme is a broad one in recognition of the fact that pictorial sources often are the first documents for new technologies. Please address inquiries to the convenors:

Dr. Lieselotte Jontes, Universitäts bibliothek der Montanuniversität, Franz-Josef-Strasse 18, A - 8700 Leoben, Austria. Tel: 43 (3842) 402/275; Fax: 43 (3842) 46 3 80.

Dr. Peter Schmidt, Universitätsbibliothek der TU Bergakademie Freiberg, Agricolastrasse 10, D - 09596 Freiberg, Saxony, Tel: 49 (3731) 51 32 35; Fax: 49 (3731) 22 195.

IV Congreso Latinoamericano de História de la Ciencia y la Tecnología, Colombia, 1995

This congress will be held in Cartagena de Indias, Colombia, January 25-27 1995, on the theme:

Nationalism and Internationalism in the history of science and technology in Latin America

During its twelve years of existence, the Sociedad Latinoamericana de História de la Ciencia y la Tecnología (SLHCT) has held three international congresses in addition to regional symposia in an effort to bring together and foster exchange of ideas between historians of science and technology from different areas of Latin America and other parts of the world. The President and Secretary-General of SLHCT are, respectively, Luis Carlos Arboleda and Emilio Quevedo, both of Colombia. The advisory council consists of eight members from Argentina, Brasil, Colombia, Spain, Mexico, Peru, and Venezuela. SLHCT issues two scholarly journals and a bulletin which carries news of publications, meetings, and other events of interest. For information on this organization and on the upcoming **IVth Congress** may be obtained by contacting:

Luis Carlos Arboleda, Presidente, Sociedad Latinoamericana de Historia de la Ciencia y la Tecnología, Vicerrectorlade Investigaciones, Universidad del Valle, Apartado Aero 25360, Cali, Colombia. Fax (57-23) 396 120; E-mail: larboled@andescol.uniandes.edu.co.

COUNTRY REPORTS

Authors or coauthors are listed at the end of each country report or section thereof. Reports with no authors listed were compiled from news items, letters, or reprints sent to the Secretary-General. All reports have been edited to achieve brevity and a common format. We always hope for complete coverage of member countries and regret that no communications have come from a number of them.

ARMENIA 1993

In 1993 the Armenian Academy of Science held a special session dedicated to the 100th anniversary of the birth of Academician K. N. Paffenholz who laid the basis of modern Armenian geology. My talk on that session was dedicated to the life and scientific activity of this scientist. The session was widely reported in the press.

Professor L. A. Avakian published biographies of two famous Armenian geologists. One of them, titled *Tigran Djrbashian,* recounted the lifetime accomplishments of the oldest professor of geology of Yerevan University. The second book, *Alexander Demekhin*, described the work of the founder of hydrogeological studies in Armenia.

Two volumes on the history of geology of Armenia are in press but their appearance is delayed for lack of funding and paper. I regret that because of the extremely bad financial situation in Armenia scientists and historians cannot attend any conferences abroad.

E. G. Malkhassian

AUSTRALIA 1993

1993 was marked by the death of Thomas George Vallance on March 7, after a long battle against cancer. Dr. Vallance was an active member of INHIGEO from its founding in 1967 to 1993. For 13 of those years he served as a Vice-President. Further information on his life and work are given in a memorial note later in this Newsletter.

The Earth Sciences History Group of the Geological Society of Australia continues to link interested members across the country, with two newsletters each year. The Group also held a weekend excursion, visiting important historical sites, and planning for the excursions to be held in July 1994, when the Group hosts the XIXth International INHIGEO Symposium in Sydney. The ESHG Committee, with several co-opted members is acting as the organizing committee for this meeting.

The Australasian Institute of Mining and Metallurgy celebrated the centenary of its formation at its annual conference in Adelaide, and interesting papers on important personalities, mining companies and mineral discoveries were published in the conference proceedings.

The Geological Society of Australia, founded in 1952, is presently preparing a history, covering the activities of the Federal Executive, State Divisions, Specialist Groups, publications, and conferences. Edited by Drs. Barry Cooper and David Branagan, with contributions from many members, it is hoped this book will be published in advance of the INHIGEO meetingin July 1994.

A field guide for a "History of Geology of the Lower Hunter Valley, New South Wales," was published by D. F. Branagan and C. F. Diessel, following an earlier one in 1992 on the adjacent Newcastle Region.

Dr. R. C. Sprigg has followed his first autobiographical work *Geology is Fun* with *A Geologist Strikes Out*, bringing the story to 1993. Carol A. Bacon has completed an historical review of the search for osmiridium in Tasmania for the Tasmanian Department of Mines. Other researchers are continuing work, much of which will be presented at the INHIGEO Symposium in Sydney.

Professor Geoffrey Blainey's important *Rush that Never Ended*, a history of mineral exploration and mining in Australia, long out of print, has been updated and re-issued. He has also published a well-illustrated book on the mining history of the Kalgoorlie Region, Western Australia.

Ann Moyal was awarded the C. H. Currey Fellowship by the Library of New South Wales, to research the correspondence of Rev. W. B. Clarke, one of the pioneers of Australian geology.

Links have continued with New Zealand historians of geology through A. P. Mason, Chairman of the Historical Studies Group, Geological Society of New Zealand. Mr. Mason has edited the Group's Newsletter since its inception 14 years ago. He has written many of the articles, in particular researching the lives of retired geologists, often through oral history.

David Branagan

BRAZIL 1993

1993 was a landmark year for the development of the history of geological sciences in Brazil because the country held the XVIIIth International INHIGEO Symposium, July 19 to 25th. The events started in Campinas, São Paulo, and finished in the famous mining town of Ouro Preto, Minas Gerais. The central subject was the "History of Geological Sciences in Latin America: scientific relations and exchanges." Thirty-one papers were presented in five sessions, four of which were held at the University in Campinas (UNICAMP) and one at the Escuela de Minas in Ouro Preto. The opening session began with a welcome by Dr. Celso Pinto Ferraz, Director of the Institue of Geosciences of UNICAMP, and short statements by Drs. David Branagan and Ursula Marvin, President and Secretary-General of INHIGEO, followed by a plenary lecture by Dr. Luis Carlos Arboleda, President of the Latin American Society on the History of Sciences in Latin American countries. He discussed the methodological questions relating to the history of sciences in Latin America. The symposium included two excursions, the first to historic places in Ouro Preto related to geology and mining, and the second to old mines in the vicinity of the city.

The 42 participants at the meeting came from Brazil (19), Germany (5), USA (3), Columbia (2), England (2), Australia (1), Argentina (1), Bolivia (1), Canada (1), Costa Rica (1), Mexico (1), and Portugal (1). For the first time since the foundation of the Commission, the number of Latin American attendees surpassed three, thanks to their personal interest and efforts to come as well as the financial support obtained by the organizing committee from five institutions including INHIGEO.

The expressive Latin American presence promoted a fruitful exchange of ideas, methodologies and comparisons as well as a confrontation, in some cases, between American and European approaches. The main purposes of the Symposium were fully realized by speakers who showed that Latin American scientists played an active role in the development of scientific activities in their countries and did not act as merely passive receivers of a science produced elsewhere. The participants also brought a series of new observations which were the results of research on unexplored or new sources in libraries and archives in their countries.

Extra copies of the abstracts volume (texts in English or Spanish) are still available from the Organizing Committee in Campinas (Drs. Silvia Figuerôa or Margaret Lopes). A book containing the complete papers is in press at UNICAMP, cosponsored by the Latin American Society on the History of Science and Technology. It will appear in 1994.

In 1993 Drs. Figueirôa and Lopes presented papers at the International Conference on Geoscience Education and Training at Southampton, UK; the International Congress on the History and Philosophy of Science at Zaragoza, Spain; the Annual Meeting of the History of Science Society in Santa Fe, USA; and the Congress of the Brazilian Society on the History of Science at Caxambú, Brazil.

Silvia Figueirôa, Margaret Lopes

CANADA 1993

William A. S. Sarjeant attended the INHIGEO Symposium of July, 1993, in Brazil where he presented a paper on the work in South America of the Irish naturalist Joseph Barclay Pentland (1797-1873): *Joseph Pentland's Early Geological and Geographical Work in Bolivia and Peru.* Sarjeant is currently completing a second supplement to his bibliography of "Geologists and the History of Geology." As noted earlier in the *Notes and Queries* section he would appreciate receiving letters or copies of articles, particularly those published in local geological or natural history society journals or museum publications.

Publications

Sarjeant, W. A. S. (1993) Alice Wilson, First Woman Geologist with the Geological Survey of Canada. *Earth Sciences History* **12**:122-128.

Alice Evelyn Wilson (1881-1964) was the first woman to be employed in a professional capacity by the Geological Survey of Canada. Though from an academically gifted family, prolonged ill-health during youth hampered her studies; yet it brought also the interest in geology that was to determine her career. Her researches into the invertebrate paleontology and stratigraphy of the Paleozoic strata of eastern Canada were distinguished. Unfortunately, in a male-dominated environment, their value was slow in gaining recognition and Alice's promotions came tardily; nor did she ever gain the professional status that was her due. Only very belatedly, with post-retirement publicity and the naming after her of Alice Wilson Hall in the Geological Survey of Canada's Ottawa headquarters, was the importance of her work to be properly recognized.

Dietz, Linda F. and Sarjeant, W. A. S. (1993) L. B. Halstead: A Bibliography of his Published Writings. *Modern Geology* **18**:61-81.

Sarjeant, W. A S. (1993) Lambert Beverly Halstead (1933-1991): His Life, His Discoveries, and His Controversies. *Modern Geology* **18**:5-59.

Halstead, L. B. and Sarjeant, W. A. S. (1993) *Scrotum Humanum Brookes*--the Earliest Name for a Dinosaur? *Modern Geology* **18**:221-224.

These three papers introduce readers to the astonishingly varied life and prolific writings of Beverly Halstead, whom Sarjeant describes as the sort of man who retains lifelong : "...the adventurous, investigative spirit of small children, inhabiting an environment that is always surprising and interesting and that causes them to be forever looking in all directions...always [finding] some fresh observation to make, some new interest to explore..." Halstead was a British paleontologist whose rebellious spirit in grammar school elicited a letter of such passionate outrage from his headmaster that the paleontology professors at the University of Sheffield decided the boy must have something to offer! Halstead specialized in research on fossil vertebrates and received his DSc. degree when he was 33 years old. He studied museum collections and fossil localities in far-flung parts of the world, always taking pains in countries such as India and South Africa to flout existing laws and customs governing race relations. His output of scientific articles was prodigious but he supported his family largely by writing popular books on dinosaurs and evolution and a series of illustrated children's books, coauthored with his wife, on extinct animals. Sarjeant met Halstead, briefly, in his student days at Sheffield and again, much later in their careers, when they became fast friends. The Halstead-Sarjeant article, issued after Halstead's death, describes the discovery and naming of one end of a dinosaur bone illustrated by Robert Plott in his *Natural History of Oxfordshire* in 1677. In 1763, Richard Brookes named it *Scrotum humanum*, for reasons that become obvious when one sees Plott's drawing. The specimen proved to be a leg bone of the creature later named *Megalosaurus.* Despite its clear priority, Plott's name fell into disuse and is scarcely remembered today.

UBM

CHINA 1993

Led by Vice-President Wang Hongzhen, INHIGEO members in China have been working on plans for symposia at the 30th International Geological Congress in Beijing in 1996. The three symposia listed below are planned. The First Circular, distributed in April 1994, lists Symposium 22-3 as "Development of disciplines and philosophy of geology since the 19th century." However, Professor Wang has written that "and philosophy" is a misprint and should be omitted.

22. History of Geosciences

22-1 History of geology and international communication of geoscience ideas
22-2 Geological concepts, thinking, and philosophy
22-3 Development of disciplines of geology since the 19th century

The IGC is scheduled for August 4 to 14, 1996. The Symposia of No. 22 are most likely to be scheduled on or close to the final day of regular sessions. Abstracts, typewritten in English, must reach the organizing committee by 1 November 1995. Professor Wang is considering the preprinting of manuscripts in a proceedings volume in advance of the Congress--as is being done this year at the INHIGEO symposium in Sydney. If this decision is made, the manuscripts will be due in Beijing before the end of 1995. More details will be given in INHIGEO Newsletter No. 27, which will be circulated in the summer of 1995, well in advance of the due date for abstracts and papers.

Field trips offer one-of-a-kind geological tours through the far reaches of China. The 1st Circular lists 139 of them: 23 pre-Congress, 22 during the Congress (Saturday and Sunday), and 94 post-Congress excursions. None are aimed specifically at history of geology, but any field stop in China is likely to entail a strong historical component. Members wishing for more information should request a copy of the First Circular from:

30th IGC
P.O. Box 823
Beijing 100037, P. R. China

COLOMBIA 1993

This year was marked by several important events: a) two books on the history of the Colombian Geological Survey, whose 75th anniversary was celebrated in l991, were submitted for publication; b) INGEOMINAS reinitiated the publication of an important journal of historical concern, *Compilación de Estudios Geológicos Oficiales en Colombia* (CEGOC); and c) some papers on the history mining appeared.

The first national geological institution of Columbia was founded in 1916 in Bogota, and although it changed its name several times (Comisión Científica Nacional, Servicio Geológico Nacional, Instituto Geológico Nacional, and finally INGEOMINAS), it has continuously played a leading role in the official geological activities of the country. A brief history and a collection of old geological maps of Columbia were published in l991. In 1992-1993 the internal and external history of the Geological Survey was written in two books:

Barrera, C., *INGEOMINAS, 75 años de labores*
Espinosa, A., editor, *Historia de INGEOMINAS*

CEGOC (Compilación de Estudios Geológicos Oficiales en Colombia) is probably the most important geologic journal in the history of Colombia. It appeared from 1933 to 1960 and contains the main geological works by the pioneers of the first half of the century. A second series, edited by R. de la Espriella, started in 1993 and under INGEOMINAS sponsorship now has completed 5 volumes.

As always in a traditional mining country, some books and papers on the history of mining were published in 1993. The most important was:

Diaz, Z. *(1993) Oro, sociedad y economia. El sistema colonial en la Gobernacion de Popayan: 1533-1733.* Banco de la Republica, Bogota, 318 pp.

A. Espinosa attended the XVIIIth International INHIGEO Symposium in Brazil and made a presentation on the geological works of Pierre Bouger, Alexander von Humboldt, and Jean-Baptiste Boussingault in South America.

Finally, we report the death on April 25 of Dr. Benjamin Alvarado (1908-1993), founder of the modern Geological Survey and commonly named the father of Geology in Colombia. A paper on his geological contributions will be published in the next issue of the *Boletin Geológico* (INGEOMINAS), Bogota).

Armando Espinosa

COSTA RICA 1993

The Costa Rican Committee on History and Philosophy of Geosciences and Geotechnologies (COHIFIGEO) participated in the 4th Costa Rican Geological Congress held in San Jose June 28-July 2. Geologist Mario Fernández Castro presented a paper in the *Memoria*, entitled (in English translation) *Historical Development of Geological Activities in Costa Rica until the Creation of the Colegio de Geólogos.* He recounted some of his personal experiences during several years in Costa Rica, focusing on institutions and geological problems. Special awards were given to him and to Eng. Fernando M. Rudin for their contributions on geological developments during the second half of this century, to Jorge Umaña for his outstanding contributions in geology, geological hazards, and as the founder of the Geology Division in the Costa Rican Institute of Electricity, and to former President of the Republic of Costa Rica, Luis Alberto Monge, for his support as President of the Asamblea Legislativa for the founding law of Colegio de Geólogos de Costa Rica in 1973.

Gerardo Soto (Costa Rican INHIGEO Member) attended the XVIII INHIGEO International Symposium in Brazil in July and presented a paper entitled *Costa Rican Geoscientific Roots: Influence from Europe in XIX Century.*

During November 29, 30 and December 1, the Vth Central American and Caribbean Congress on History of Science and Technology was held in San José. INHIGEO Member G. Soto was part of the Scientific Organizing Committee, and was chairman of the colloquium "Perspectives of the Geological Sciences in Central America." Participants included INHIGEO member L. D. Morales, S. Mora, and E. Echandi.

Guillermo Alvarado (INHIGEO Member) published the book *Costa Rica: Land of Volcanoes*, which includes a chapter about the history of volcanology in Costa Rica. This author also has in press the book (in Spanish): *Natural History: the Interamerican Biological Exchanges*, which includes a chapter on the history of verterbrate investigations in Central America.

G. Soto presented a paper about the history and volcanological approach of the Observatorio Vulcanológico del Arenal, at the 1993 WOVO Workshop: Volcano Observatories, Surveillance of Volcanoes and Prediction of Eruptions, Guadeloupe Island, French West Antilles, December 13-17.

Publications

Alvarado, G. E.: "Historia Natural Antigua: los intercambios biológicos interamericanos." *Editorial Technologica de Costa Rica* (in press).

Alvarado, G.E., 1993: *Costa Rica: Land of Volcanoes.* Gallo Pinto Press, 181 pp..

Fernandez Castro, M., 1993: (in Spanish) Historical Development of Geological Activities in Costa Rica up to the Creation of the Colegio de Geólogos]. IV Congreso Geologico de Costa Rica, June 28 - July 3, 1993, *Memoria:* v-xvi.

Soto, G. J., 1993: Costa Rican Geoscientific Roots: Influence from Europe in the XIX Century. XVIII International INHIGEO Symposium, Campinas-SP and Ouro Preto-MG, Brazil, [Abstract] 45-46.

Soto, G. J., 1993: Arenal Volcanological Observatorpry (OVA): 1988-1993 research and new volcanological knowledge. 1993 WOVO WORKSHOP: Volcano Observatories, Surveillance of Volcanoes and Prediction of Eruptions, Guadeloupe Island, French West Antilles, December 13-17. [Abstract]:109-111.

Gerardo Soto, Guillermo Alvarado

FRANCE 1993

Three scientific meetings of the French Committee on the History of Geology (COFRIGEO) were held in 1993. The following lectures were delivered during the sessions. They are printed in the *Travaux du Comité français d'Histoire de la Géologie*, 3rd series, volume 7, available in June 1994.

André Bailly: "Gaston de Saporta (1823-1895)."
Gérard Bignot: "Le déplacement des coquillages fossiles selon Jean-Tranquillain Féret, apothicaire deippois du milieu du 18ème siècle."
Goulven Laurent: "Ami Boué (1794-1881): sa vie et son oeuvre."
Claude Lorenz: "La théorie des sables et minerais éruptifs tertiaires du Sud du Bassin parisien à la fin du XIXème et au début du XXème siècles."
Gabriel Gohau: "Discussion sur le métamorphisme et le magmatisme autour de 1850."
Geneiève Termier: "Une géologue européenne dans l'Adrar N Deren (Haut-Atlas occidental, Maroc) 1944-1945."
François Ellenberger: "La méthod en géologie vue par ses premiers auteurs et ses leçons toujours actuelles."
Geneviève Bouillet: "Le vocabulaire ancien (grec et latin) concernant les séismes."
Ezio Vaccari: "Giovanni Arduino (1714-1795) - It contributo di uno scienziato veneto al dibattito settecentesco sulle Scienze della Terra.

Historians of geology may be interested in learning of the availability of Léon Aufrere's long out-of-print book on Giraud Soulavie (1752-1813) entitled:

Soulavie et son secret
Un conflit entre l'actualisme et le créationisme
Le temps gémorphologique
(Hermann, Paris, 1952)

The book was issued in French in 1952 and no longer can be found in bookshops. It is the only published volume of Aufrere's project of writing a "History of Earth Sciences" from the beginning of time. It may be purchased for 200 francs, postage included, directly from Aufrere's daughter who still has several copies. those interested should write to: Marie-François Aufrere, 21 avenue de Lattre de Tassigny, 94100 Saint-Maur, France

Before the end of the year, François Ellenberger corrected the last proofs of the second volume of his *Histoire de la Géologie, La grande éclosion et ses prémices, 1660-1810.* It will be published in 1994.

Jean Gaudant

Professor Ellenberger's 382-page book of the title given above by Dr. Gaudant was published in January, 1994, by Technique et Documentation (Lavoisier), Paris, ISBN2-85206-674-2. It presents a comprehensive

account, illustrated with historical maps and sections, of the veritable explosion of geological ideas during the period indicated in the title. A review of the book will appear next year in *INHIGEO Newsletter No. 27.*

In 1994 Professor Ellenbeger will be twice honored by the Geological Society of America. Recent announcements indicate that he has been confirmed by the GSA Council as an Honorary Fellow of the Geological Society of America and as the recipient of the 1994 History of Geology Award. This good news also appears in the USA country report.

UBM

GERMANY 1993

Meetings. On September 20-23 the symposium "Cultural Heritage Collected in Libraries of Geoscience, Mining and Metallurgy" was held in Freiberg. One hundred forty participants from 24 countries on five continents were present. Among the INHIGEO members attending were T. Cernajsek, M. Guntau, J. Haubelt, A. S. Kleczkowski, G. Mathé, H. Prescher, P. Schmidt and O. Wagenbeth. Historical excursions were held in Freiberg, the central Erzgebirge, and Dresden. A complete report of the symposium will be published in the *International Newsletter of Cultural Heritage Collected in Libraries of Geosciences, Mining and Metallurgy.*

A colloquium in honor of the 60th birthday of Professor Martin Guntau was held in Rostock by the Ernst-Alban-Gesellschaft für Mecklenburgisch-Pommersch. Wissenschafts und Technikgeschichte on November 26, l993. The encomium was read by Dr. Gyula Papay. Professor Guntau was among the founding members of INHIGEO of which he has served as both Secretary-General and President. At present he serves on the INHIGEO board as Past-President. His services to the history of geosciences were honored with the "History of Geology Award" of the Geological Society of America in October 1993.

Among the foreign conferences held in 1993 was the XVIIIth International INHIGEO symposium in Campinas and Ouro Preto, Brazil; in July, and the XIXth International Congress of History of Science in Zaragoza, Spain, in August. German participants in the INHIGEO symposium were Prof. Martin Guntau, Prof. Friedrich Naumann, and Dr. Peter Schmidt. Guntau and Schmidt presented a joint paper "On Some Past Relations of the Mining Academy of Freiberg, Saxony, to Latin America in the Field of Geological Sciences." The German participants of the XIXth International Congress included Dr. Bernard Fritscher with a contribution on "Paul Von Groth und die Entwicklung der Geochemie von 1875-1925." Bernard Fritchher has been a grantee of the Deutsch Forschungsgemeinschaft since September 1993. His research field is the extensive correspondence of the Munich mineralogist and crystallographer Paul Von Groth (1843-1927) which was collected in the Bayerische Staastsbibliothek in Munich.

Exhibitions. An unusually large number of exhibitions took place in 1993. The most important one *was Alexander Von Humboldt - Natur als Idee und Abendteuer.* Smaller but no less significant exhibitions are *Mathias Von Flurl (1756-1823) - Werk und Leben des Begründers der bayerischen Geologie* in the Gäubodenmuseum, Straubing; *125 Jahre deutsche Polarforschung* in the Navigation Museum at Bremerhaven, and *Vom Einhorn fasziniert* in the Geological Museum of Münster focused on the history of paleontology. Libraries also mounted exhibits including *Imago Mundi Moderna: Weltkarten des 2 Entdeckungszeitalters* in the Badische Landesbibliothek in Karlsruhe, *Paracelsus: Naturforscher*, Arzt und Theologe in the Württembergische Landesbibliothek at Stuttgart, and *Der rote Planet im Kartenbild - 200 Jahre Marskartographie - von Herschel, Beer und Mädler bis zur CD* in the Deutsche Staatsbibliothek in Berlin.

The exhibit *Alexander Von Humboldt: Natur als Idee und Abendteuer* was shown in the Städtisches Museum of Gelsenkirchen on April 25 - May 24 on the 10th anniversary of the joint venture of the German oil company VEBA OEL AG with Petroleos de Venezuela S.A. Both Humboldt's approach to nature and his role as communicator between America and Europe were illustrated. The scientific aspect of this exhibition was arranged by Prof. Martin Guntau, Dr. Peter Hardetert and Dr. Martin Pape. A book of 122 pages with side-by-side columns in German and Spanish and many illustrations in black-and-white and color accompanied the exhibit. This exhibition will be shown in Caracas, Venezuela, in 1994.

Anniversaries. In 1993 the Institute of Geology, Mineralogy and Paleontology of Rheinische Friedrich-Wilhelms-Universität in Bonn celebrated its 175th anniversary. At the same time, the Naturhistorischer Verein der Rheinlande und Westfalens had its 150th anniversary. Prof. Wolfhart Langer read the eulogies on both occasions. In the Paleontological Institute, an exhibition was held showing items from special collections that had not been open to the public for decades, including original pieces from the collection of Georg August Goldfuss and exhibits from the Timor expedition of Johannes Wanner. On that occasion, the museum of the Paleontological Institute was given the name "Goldfuss-Museum". In commemoration of its 150th anniversary the Naturhistorischer Verein issued a facsimile edition of the first report on Neanderthal man with a commentary by Professor Langer. Exhibitions were also held for the retiring custodians Prof. Horst Remy and Prof. Joachim Schweitzer. A "memorial corner" was installed for the micropaleontologist Prof. Klaus Jürgen Müller on the occasion of his 70th birthday.

In 1993, the Board of "Geoscientists in Berlin and Brandenburg" held celebrations of the 100th anniversary of the death of Heinrich Ernst Beyrich. In 1848, Beyrich was among the founding members of Deutsche Geologische Gesellschaft. As State Geologist of Prussia, he played a prominent role in both geological mapping and the organization of geology as a science. Beyrich introduced the term "oligocene."

In view of the 500th anniversary of Georgius Agricola on March 24, 1994, many historians have done research on the life and work of this Renaissance scholar. This was facilitated by the publication in 1992 of Vol. IX of the memorial edition of Agricola by the Staatliches Museum für Mineralogie und Geologie, Dresden, so that the much-longed-for letters and documents are now available. Even though the details of the Agricola celebrations will be included only in the 1994 National Report, we are glad to report that in honor of his services to the research on G. Agricola, former INHIGEO member Dr. Hans Prescher received an honorary doctorate from the Philosophical Faculty of the University of Basel on November 26, 1993.

Teaching Activities. Teaching activities reflected a widespread interest in history of geosciences. In Bonn, Prof. Wolfhart Langer presented a course on the history of geology of the Rhineland which included two excursions to the vicinity. The following lectures were given within the framework of general studies at the Freiberg University of Mining and Technology: Prof. Otfried Wagenbreth presented "History of geology and mineralogy" and Dr. Peter Schmidt included selected chapters of the history of geosciences in his course "History of engineering and science in the mirror of historical literature and records." In the summer term of 1993, Prof. Otfried Wagenbreth presented "History of geology, mineralogy and geophysics" and Dr. Peter Schmidt presented the "History of general and applied geophysics from antiquity to the middle of the 20th century." Selected chapters of the history of geosciences were also taught in the summer courses "Introduction to the working method of the engineering and science historian" by Dr. Peter Schmidt, "The mineralogical collection of the Freiberg University of Mining and Technology" by Dr. Fritz Hofmann, "The geological-paleontological collection of the Freiberg University of Mining and Technology" by Dr. Arndt Lehmann, "The sample collection of the Freiberg University of Mining and Technology" by Diplom-Geologin Karin Rank and "The rare book reserve in the library of the Freiberg University of Mining and Technology" by Dr. Peter Schmidt. In the winter term 1993/94, Dr. Peter Schmidt presented the chapter "Historical earthquake and volcanic catastrophes and their consequences" in the series "Technical catastrophes as a driving force of technological development" which was conducted by Prof. Wagenbreth. Dr. Herbert M. Nobis, who has held lectures and exercises on the history of geosciences at Ludwid-Maximilians-Universität in Munich since 1980, gave lectures on the "History of the problems in geosciences" and the "Development of geosciences in the period of Enlightenment and Romanticism," as well as two exercises dedicated to the reading and interpretation of Kant's and Humboldt's writings on physical geography, G. W. Leibniz' "Protogaea" and N. Stensen's "The solid in the solid".

Working Group "History of Geosciences." The annual meeting of the Working group "History of Geosciences" was held in Woltersdorf near Berlin on March 20, 1993. The meeting concluded with an excursion to the nearby limestone quarry of Rüdersdorf (Triassic and Pleistocene). It was from here that Berlin was supplied with building materials beginning in the Middle Ages. This quarry is well known both for the glacial scratches described by Otto Torell in 1875 (they have not been preserved to the present) and as a monument of technological history. Thanks to the wise and farsighted support by the Prussian ministers Friedrich Anton Von Heinitz and Friedrich Carl Otto Ludwig Von Reden, modern mining technologies, transportation techniques, and the famous Rumford and Rüdersdorf furnaces were introduced at this site. The channel system was designed by artists such as Karl Friedrich Schinkel and Christian Daniel Rauch. The excursion was guided by Prof. Karl-

Bernhard Jubitz and Diplom-Geologe Hans-Joachim Streichan. Thanks to their expertise, we received excellent insight into the geology, tectonics, stratigraphy, and technical monuments of this quarry and the practical implementation of the conception "Rüdersdorf a museum park of the building materials industry." This project is sponsored by the federal government and the Brandenburg state government as well as Deutsche Bundesstiftung Umwelt. By his photographic collection reaching back to 1952, which is arranged according to scientific principles, Prof. Jubitz has created the fundamental preconditions for future investigations of this unique geotope (and biotope) in the North German lowlands. His work has secured a data pool in eastern Brandenburg which otherwise would have been lost.

Following a proposal made in the annual meeting in Woltersdorf, the members and friends of the Working Group "History of Geosciences" prepared "Recommendations on the study of the history of geosciences at German universities." One of the proposals is that "It shall be made a requirement for the final examination of any student of geosciences that he or she has attended a course dealing with the history of geoscience." These recommendations have been published in *Berichte zur Wissenschaftsgeschichte* **17** (1994), *Nachrichten der Deutschen Geologischen Gesellschaft* **51** (1994), and *Mitteilungsblatt des Bundesverbandes Deutscher Geologen, Geophysiker und Mineralogen* **55** (1994).

Members of the Working Group "History of Geosciences" have found it to be very advantageous to belong simultaneously to other working groups and associations in the field of history of science, and vice versa. At present, the "History of geosciences" group has close contacts to the working groups "History of geophysics" of Deutsche Geophysikalische Gesellschaft, "History of meteorology" of Deutsche Meteorologische Gesellschaft, "History of German polar research" of Deutsche Gesellschaft für Polarforschung, "History of cartography" of Deutsche Gesellschaft für Kartographie, "History of geography" as well as "Geoscientists in Berlin and Brandenburg" and "Association for the Promotion of Religion and Environmental Research." In the interest of the necessary interdisciplinary cooperation it is desirable to develop these and other contacts in the future.

Preservation of Monuments. In preserving monuments of geosciences, efforts were made with respect to the Lossen memorial in Wernigerode, the Alfred-Wegener memorial in Zechlinerhütte, and the erection of a memorial to Alexander Von Humboldt in Freiberg, which was proposed in November, 1991. In cooperation with the Alfred Wegener Stiftung, GeoForschungszentrum Potsdam and Deutsche Meteorologische Gesellschaft, Dr. Peter Kühn has worked for the restoration of the Alfred Wegener memorial in Zechlinerhütte, which was badly in need of repairs after two decades. Sponsors will include the Alfred Wegener Stiftung and Deutsche Meteorologische Gesellschaft. With regard to the erection of a memorial to Alexander Von Humboldt in Freiberg, 7000 DM were collected up to the end of 1993 from both private and public sponsors. In spring 1994, we will report to the Freiberg town administration about the state of affairs in the question of the Humboldt memorial. The memorial to the famous Hartz geologist Karl August Lossen (1841-1893) was re-inaugurated on October 17, 1993. The Niedersächsische Akademie der Geowissenschaften under its President, Prof. Horst Quade, was invited for this event. The participants of the ceremony took part in an excursion in the footsteps of K. A. Lossen.

Excursions. Symposia and colloquia on the history of geosciences require accompanying excursions; this has become an established practice. In some cases, however, it makes sense to organize "only" an historical excursion. A good example was given by the Humboldt Center which organized an excursion led by Dr. Peter Kühn to the northeastern vicinity of Berlin on April 30. Participants visited the tomb of the Von Buch family on the former manor in Stolpe, which has been classified as a historical monument, the remnants of the medieval castle settlement of Stolpe, and the monastery in Chorin. In an interesting slide show, Mr. Wilke presented the project "Lower Oder Valley National Park". At the tomb of the Von Buch family, the members had a good opportunity to familiarize themselves with the life and work of Leopold Von Buch (1774-1853).

Notice. On July 11, 1993 Doz. Dr. Herbert Pätz died at Freiberg. Dr. Pätz was very interested in the history of geosciences and particularly in the history of Soviet, Russian and German oil and gas geology. Obituaries for Herbert Pätz were published in *Zeitschrift für Freunde und Förderer der Technischen Universität*, Bergakademie Freiberg 2 (1992/93) 1, Bergakademie 4 (1993), *Nachrichtenblatt zur Geschichte der Geowissenschaften* 3 (1993), and *Boletin de Historia de las Geociencias en Venezuela* 50 (1994).

Publications

Fichtel, J. E. von: "Die Mineralogen gegen das Ende des achtzehnten Jahrhunderts." - Mit einem Nachwort von H. Prescher und P. Schmidt. Leipzig und Stuttgart 1993 (Reprint).

Fuhlrott, J.C.: "Menschliche Überreste aus einer Felsengrotte des Düsselthals." Mit einer Einführung von W. Langer. Freiberg 1993 (Reprint).

Humboldt, A. von: "Briefe aus Amerika 1799 - 1804." Bearb. von U. Moheit. Berlin 1993.

Humboldt, A. von: "Berliner Vorlesungen über das Universum. Die Kosmosvorträge 1827/28 in der Singakademie." Hrsg. von J. Hamel und K. -H. Tiemann in Zusammenarbeit mit M. Pape. -Frankfurt am Main und Leipzig ,1993 .

"Alexander von Humboldt: Natur als Idee und Abendteuer." Ausstellungskatalog. Hrsg. von M. Guntau, P. Hardetert und M. Pape. Essen 1993.

Humboldt, A. von: "Kosmos. Entwurf einer physischen Weltbeschreibung." Hrsg. von H. Beck., 2 Bde. Darmstadt, 1993.

"Geschichte der Geowissenschaften in den deutschen Ländern." Hrsg. von G. Buntebarth, E. Kohler und P. Schmidt. Berlin 1993.

"Pflanzen der geologischen Vergangenheit." Festschrift für Herrn Professor Wilfried Krutzsch. Zur Vollendung des 65. Lebensjahres am 6.4. 1993 gewidmet. Hrsg. von R. Daber, L. Rüffle und B. Wendt. Berlin 1993. Schiffahrt und Meer.

"125 Jahre maritime Dienste in Deutschland." Hrsg. von P. Ehlers, G. Duensing und G. Heise. Herford, Berlin und Bonn 1993.

For further details, see *Nachrichtenblatt zur Geschichte der Geowissenschaften.* - Regensburg und Freiberg **3** (1993).

I wish to thank Messrs. Bernhard Fritscher, Martin Guntau, Karl-Bernhard Jubitz, Peter Kühn, Wolfhart Langer, Gerhard Mathe and Otfried Wagenbreth for their help in the preparation of this report. Also, I wish to express my gratitude to all those who, in one way or the other, contributed to the study of the history of geosciences in the year of 1993.

Peter Schmidt

Goethe, Die Schriften zur Naturwissenschaft *(*Goethe, The Writings in Natural Sciences). Complete edition with commentaries, on behalf of the Deutsche Akademie der Naturforscher Leopoldina, established by K. Lothr Wolf and Wilhelm Troll, edited by Dorothea Kuhn and Wolf von Engelhardt (1993).

First Section: Texts; Second Section: Supplements and Commentaries
Publisher: Hermann Böhlaus Nachfolger, Weimar

The "Leopoldina Edition" is the first critical and complete edition of Goethe's published and unpublished writings on natural science subjects. The First Section contains the "Texts," i.e. all essays, treatises, etc. which Goethe published himself and, in addition, adequate texts from his literary remains. This First Section is completed; it fills 11 volumes which appeared from 1947 to 1970. The Second Section contains "Materialien" (materials such as drafts, notes, schemes, etc. mainly from Goethe's literary remains), "Zeugnisse" (letters from and to Goethe, passages in diaries of Goethe and contemporaries, reports etc., testifying to Goethe's occupation with natural sciences) and "Erläuterungen" (commentaries of the texts in the First Section, including the critical description of manuscripts, general comments, and all necessary explanations on persons, technical wordings, scientific matters, biographic and historical background, relationships to Goethe's literary works, etc.). Seven volumes have appeared of the Second Section. About five still must be finished to complete the edition.

Apart from my responsibility for the whole edition, I have contributed to the 11th volume of the First Section and I am continuing to work on the volumes of the Second Section, dealing with Goethe's work on geology and mineralogy. I have completed volume II-7 (1989; 673 plates) which covers the years up to 1805. At present I am

occupied with the preparation of volume II-8, comprising Goethe's activities in geology and mineralogy from 1806 to 1832.

Goethe was in contact with many of the leading naturalists of his time, well-informed on the literature and progress of the earth sciences, and took part in theoretical discussions and quarrels. Commenting on Goethe's writings and thoughts means inquiring into the status and evolution of the earth sciences during the late18th and early 19th centuries. As a result, this work is more than just a contribution to a better understanding of "Goethe as naturalist or scientist."

Wolf von Engelhardt

Dürers Kupferstich 'Melencolia I' (Dürer's Copper Engraving 'Melencolia I') by Wolf von Engelhardt (1994) Städel Jahrbuch, Neue Golge Band 14, pp. 173-198, Prestel-Verlag München.

This article presents a comprehensive analysis of Dürer's famous engraving of 1514 showing a great winged figure sitting in an attitude of deep despondency amid a plethora of objects including a sun dial, an hour glass, a sphere and a rhombohedron --depicted at a time when rhombohedra were scarcely known. Above a seascape in the background is an exploding fireball, which commonly is refered to as a comet. Von Engelhardt joins a revisionist school of thought that identifies the body as the meteorite of Ensisheim, which plunged to Earth with a stupendous explosion at 11:30 on the morning of November 7, 1492. Dürer evidently saw the fireball from Basel, where he was living at that time. While examining each figure and object in turn in its actual and allegorical significance, as well as the elements of symmetry and perspective of the general scene, von Englehardt traces important aspects of the history of astronomy, mineralogy, and cristallography. This is a masterful treatment of a mysteriously engaging work of art.

UBM

HUNGARY 1993

The following five lectures were read at the regular meetings of the Historical Section of the Hungarian Geological Society:

February	"Ignaz von Born was born 250 years ago," by B. Nagy, S. Papp, and T. Weiszburg.
April	"Professor A. Koch was born 150 years ago.," by G. Csiky and B. Nagy.
May	"The impact of the Selmecbànya (Chemnitz) Mining Academy on the Development of Geology in Europe."
November	"Professor Z. Török was born 100 years ago," by V. Széky-Fux with a contribution from N. Nészàros, of Cluj, Roumania.
	"The Life and Work of Gy. Primics," by G. Csiky.
December	"M. Hantken, the first Director of the Hungarian Geological Institute and first Professor of Paleontology at the University of Budapest died 100 years ago," by T. Kecskeméti.

On 13-14 October an International Conference on "F. Nopcsa and Albania," was held in Budapest. It was organized by E. Dudich and Gy. Hàla with the cooperation of colleagues in Albania, Austria, and Hungary.

G. Csiky presented a lecture on 2 December titled "Scientifically-backed oil and gas exploration was started in Hungary 100 years ago," at a joint meeting of the Hungarian Society of Mining and Metallurgy and the Hungarian Geological Society in Szolnok.

Publications

Balogh, Kàlmàn (1993) *Brief History of Hungarian Geology*. Annals of the History of Hungarian Geology, Special Issue 5. Ed. Hungarian Geological Society and Hungarian Geological Survey, Budapest, 95 pp.

Csíky, Gàbor (1993) *Chapters from the History of the Hungarian Geological Society.* Annals of the History of Hungarian Geology, Special issue 4. Ed. Hungarian Geological society and Hungarian Geological Survey, Budapest, 51 pp.

Dudich, Endre and Hàla, Jósef (1993) Editors (1993) Abstracts of *International Conference on Ferenc Nopcsa and Albania*, 13-14 October 1993. Ed. Hungarian Geological Survey, Budapest, 54 pp.

Hàla, Jósef (1993) *Franz Baron von Nopcsa. Anmerkungen zu seiner Familie und seine Beziehungen zu Albanien. Eine Bibliographie.* Geologische Bundesanstalt Wien und Ungarische Geologische Landesanstalt. Wien, 79 pp.

Nemes, Màrta (1993) *Lechner ödön Földtani Intézet* (Hungarian Geological Survey) Budapest, 29 pp.

Szurovy, Gàza (1993) *A köolaj regénye.* (The Story of Petroleum.) In Hungarian only. Hirlapkeadó Vàllalat, Budapest 460 pp.

Gàbor Csiky

Book Reviews

G. Csiky (1993) *Chapters from the History of the Hungarian Geological Society.* - Annals of the History of Hungarian Geology, Special Issue 4, 51 pp. 12 fig. - Hungarian Geological Society - Hungarian Geological Survey, Budapest.

This first English-language overview of the history of the Hungarian Geological Society (founded in 1848) was published for the 125th Anniversary of the Society, on the occasion of MAEGS-8 (8th Meeting of the Association of European Geological Societies), which took place in Budapest, in September 1993. The paper discusses the history of the Society according to the following chapters:

-- Scientific societies in the 18th and early 19th centuries in Hungary
-- Foundation of the Hungarian Geological Society and its pioneering period (1848-1850)
-- Activity of the Society between 1850 and 1870
-- The period of prosperity (1870-1895)
-- The period of stabilization (1895-1920)
-- The period of recommencement (1920-1948)
-- References (70 titles)

The Supplement is particularly valuable, because its date extends beyond 1948 (in fact, until 1991). It contains the presidents, the organization and present-day officials of the Society, a list of those members of the Society who have been elected Members of the Hungarian Academy of Sciences, and the different publications of the Society.

Hopefully the past 25 years will also be summarized, even if without any "evaluation" or criticism, by Dr. Csíky, the infatigable doyen of the history of Hungarian geology.

K. Balogh (1993) *Brief History of Hungarian Geology.* - Annals of the History of Hungarian Geology, special issue 5, 95 p., 16 fig. - Ed. Hungarian Geological Society - Hungarian Geological Survey, Budapest, 1993 -- ISSN 0133 6045, ISBN 963 671 162 3

Professor Balogh summarized the evolution of stratigraphic and tectonic research in historical Hungary, for the first time in English. He has succeeded in producing a well-balanced, objective critical review which is easily digestible for the non-Hungarian reader. A particular value of the booklet is the 37-page bibliography (771 items). Unfortunately, the titles are given in the original language of the paper and in that of its summary, but no consequent English translation has been added.

It should be noted that Special Issue 2 dealt with the History of Mineral Exploration in Hungary, and was published for the 29th International Geological Congress, Washington, D.C., in 1989. The History of Paleontology will constitute Special issue 6, while that of Mineralogy and Petrology will constitute Special Issue 7.

The issues of this series can be ordered from the Hungarian Geological Society, H-1027, Budapest, Fo u 68, Hungary.

Endre Dudich

IRELAND 1993

Reprints of the following three publications have been received from Ireland.

Patrick N. Wyse Jackson and Ezio Vaccari (1993) "Volcanoes and straw bonnets: the Graydons of Burrishoole." *Cathair na Mart, Journal of the Westport Historical Society* No. 13: 90-101.

The authors trace the activities of the Reverend George Graydon, Vicar of Burrishoole, County Mayo, from 1793 to 1803 and his wife Elizabeth. Graydon who was elected the 100th member of the Royal Irish Academy in 1786, became interested in the problems of the Giant's Causeway in County Antrim and in the Neptunist-Vulcanist controversy in general. He journeyed to Italy to observe volcanic features and collect rock samples from Vesuvius and the extinct volcanoes around Venice. He donated a large and highly instructive collection of lavas and various other rocks and fossils to the Academy. In 1797 Elizabeth Graydon established a straw bonnet industry at Burrishoole which employed many people and brought a measure of prosperity to the area. The industry thrived until George Graydon died in 1803 leaving heavy debts that he had secured on behalf of his brother. All records are lost of Elizabeth's later life and of the fate of the straw bonnet industry at Burrishoole.

Patrick N. Wyse Jackson (1991) The cycling geologist. *Cycle Touring & Camping* June/July 27-27.

A short account of the bicycle and tricycle travels of Grenville Arthur James Cole (1859-1924), a Professor of Geology in London and, later, Dublin who caught the cycling fever of Victorian Britain and rode over much of Europe and North Africa to observe the geology and geomorphology. He published *The Gypsy road, A Journey from Krakow to Coblentz* in 1894 and numerous other articles and books between 1895 and 1919.

Paul Mohr (1994) John Birmingham of Tuam: a most unusual landlord. *Journal of the Galway Archaeological and Historical Society,* **46**:111-155.

John Birmingham, (1816-1884) lauded at the time of his death as a universal genius--geologist astronomer, mathematician, accomplished musician, cultivated linguist, German and French scholar, antiquarian--is well nigh forgotten today although he published some fine works in geology and spotted a nova in 1866 which caused enormous excitement at the time. As a landlord in the west of Ireland he was concerned to an uncommon degree with the well being of tenant farmers and he wrote a passionate protest, in verse, against summary evictions of those who resisted conversion to protestantism. He militantly opposed the customary forms of cruelty to children and animals. John Birmingham was a remarkable man but he never achieved lasting fame, possibly because he spent his life in the wild west of Ireland. We therefore welcome the fact that a crater on the Moon is named for him.

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ITALY 1992-1993

During the first part of 1992 the Department of Modern and Contemporary History and the Department of Earth Sciences of the University of Genoa, together with the Vesuvius Observatory of Naples organized an exhibition on "Instruments and Earth Sciences," which was held in May 1992, in Genoa. The instruments on display, which were made in the XIXth and in the first half of the XXth century, came from the Institutes of

Geophysics, Mineralogy, Chemistry, and Physics of the University of Genoa, and from the Vesuvius Observatory of Naples. They were arranged in five main categories: Geodesy and Topography, Magnetometry, Gravimetry, Seismometry, Mineralogy and Petrography. The catalogue of the exhibion, *Strumenti e Scienze della Terra. Geodesia, Sismologia, Petrografia* [Instruments and Earth Sciences, Geodesy, Seismology, Petrography] (Genova, Litoprint, 1992), is still available free on request (please write to Ezio Vaccari or Nicoletta Morello). It includes the following articles:

C. Maccagni: "Problemi e strumentazione della Scienze della Terra" [Questions and instruments of the Earth Sciences]
G. Boato: "Il magnetismo terrestre" [Terrestrial magnetism].
G. Giglia, P. Rivara and E. Vaccari: "Pendoli, gravimetri e campo della gravita terrestre" [Pendulums, gravimeters and the Earth's gravity field]
G. Luongo, F. Obrizzo, and A. Tortora: "L'osservatorio Vesuviano: strumenti, storia, museo" [The Vesuvian Observatory: instruments, history, museum]
M. Galli: "I microscopi e gli strumenti de mineralogia e di petrografia" [The microscopes and the instruments of mineralogy and petrography]

The catalogue includes photographs of the instruments with accompanying explanations. A new software program called Eidos (IBM compatible) was developed to complement the exhibition. It was developed by a team of historians, scientists, and computer experts including Drs. Nicoletta Morello, Ezio Vaccari, and Patrizia Rivara, Professors Gaetano Giglia and Carlo Maccagni, and Engineer Arnaldo Briola.

In July 1993 Ezio Vaccari published a book on the eighteenth century Venetian scientist Giovanni Arduino and in August he gave a talk on Arduino's litho-stratigraphical classification at the XIXth International Congress of History of Science in Zaragoza, Spain. In September he attended the 1st International Symposium Cultural Heritage collected in Libraries of Geosciences, Mining, and Metallurgy in Freiberg, Germany, where he gave a talk on some Italian collections of old books and manuscripts relating to earth sciences. In October, during the 2nd Symposium on the scientific relationship between Italy and Germany in the 18th and 19th century, held in Padua, he spoke on "Abraham Gottlob Werner and Italy".

Nicoletta Morello is presently working on the *Bermannus* by Agricola. She is the joint editor, together with professors Gaetano Giglia and Carlo Maccagni, of the Proceedings of the 1987 INHIGEO Symposium in Italy, which will be published by the end of 1994.

A Symposium on " Earth Sciences in Venice and Vicinity in the 19th Century" is planned for the end of 1994 in Venice in the Istituto Veneto di Scienze Lettere ed Arti.

In 1995 a Symposium on Giovanni Arduino commemorating the bicentenary of his death will be held in the Accademia di Agricoltura, Scienze e Lettere of Verona.

Publications

Ciancio L. (1992) "Immaginare l'invisibile - La rappresentazione visiva del tempo profondo nell'Ottocentro" [The visual representation of deep time in the nineteenth century], in C. Tugnoli (ed.*) I signi del tempo, memoria delle origini ed icone del primordiale,* Trento, Liceo Ginnasio "G.Pratii", p. 23-44.

Ciancio L. (1992) "Contributo all'inventario del carteggio di Alberto Fortis." [Contribution to the inventory of the correspondence of Alberto Fortis], *Nuncius, Annali di Storia della Scienza*, Firenze, **VII**, 2, p.141-159.

Ciancio L. (in press) "Geologia e Illuminismo." [Geology and Enlightenment], Firenze, Olschki.

Contardi S. (in press) "I princip degli antichi e le ipotesi dei moderni. Saggio sulla filosofia nuturale di Antonio Vallisneri junior." [Essay on the natural philosopy of Antonio Vallisneri, junior], Firerze, Olschki.

Morello N. (in press) "Alle origini della sistematica mineralogia." [The origins of systematic Mineralogy], *Geologica Romana*, Roma.

Morello N. (in press) "Storia della vulcanologia dal Cinquecento ai primi decenni dell'Ottocento." [The history of volcanology from the 16th century to the first decade of the 19th century], Napoli.

Morello N. (in press) "Bermannus: names and things" *Proceedings of the Symposium "Agricola-Ehrung 1994"* Chemnitz, Germany.

Morello N. (in press) "Le scienze della Terra tra Seicento e Settecento. Catastrofi ambigue." [Earth sciences between the 17th and 18th century. Ambiguous catastrophes], Proceedings of the Symposium *The actualism two centuries after James Hutton's Theory of the Earth.*" Roma, 1989.

Sarti C. (1993) "Giuseppe Monti and paleontology in the eighteenth century Bologna." *Nuncius. Annali di Storia della Scienza*, Fierenze, **VIII**, 2, p. 443-455.

Vaccari E. (1992) "Storia della Terra e tempi geologici in uno scritto inedito de Giovanni Arduino: la *Risposta Allegorico-Romanzesca* a Ferber." [History of the Earth and geological time in an unpublished work of Giovanni Arduino: the "Risposta Allegorico Romanzesca" to Ferber] *Nuncius. Annali di Storia della Scienza*, Firenze, **VI**, 2, pp. 171-212.

Vaccari E. (1993) *Giovanni Arduino (1714-1795). Il contributo di uno scienziato veneto al dibattito settecentesco sulle scienze della Terra.* [Giovanni Arduini (1714-1795). The contribution of a Venetian scientist to the eighteenth-century debate about the Earth Sciences], Firenze, L. S. Olschki, Biblioteca di Nuncius, n. 8, 408 pp. [This book will be reviewed in INHIGEO Newsletter 27. *UBM*]

Vaccari E. (1993) "Litologia e Paleontologia nella teoria stratigrafica di Giovanni Arduino, scienziato veneto del Settecento." [Lithology and paleontology in the stratigraphical theory of Giovanni Arduino, an eighteenth century Venetian scientist], *Paleocronache*, Milano, **I.** p.76-83.

Vaccari E. (in press) "The 'Giovanni Arduino' collection of manuscripts in the Public Library of Verona (Italy): a case of recovery and reorganization of unpublished important sources for the history of the earth sciences in the second half of the eighteenth century. In *Proceedings of the XVIth International INHIGEO Symposium "Museums and Collections in the History of Mineralogy, Geology and Paleontolgy*" (Dresden, 1991), Dresden-Freiberg.

Vaccari E. (in press) A review of some Italian collections of old books and manuscripts related to Earth sciences, *Proceedings of the 1st International Symposium Cultural heritage collected in Libraries of Geosciences, Mining and Metallurgy,* Freiberg, 1993, Wien.

Vaccari E. (in press) "I manoscritti di uno scienziato veneto del Settecento: notizie storiche e catalogo del fondo 'Giovanni Arduino' della Biblioteca Civica di Verone" [The catalogue and short history of the "Giovanni Arduino" manuscript collection, kept in the Public Library of Verona]. *Atti dell'Istituo Veneto di Scienze, Lettere ed Arti* - Classe di Scienze, Venezia, CLI.

Vaccari E. and Monaghan N. (in press) "I minerali di Giovanni Arduino nella collezione geomineralogica di Nathanael Gottfried Leske." [Specimens sent by Giovanni Arduino found in the Leskean geo-mineralogical collection]. *Geologica Romana*, Roma.

Wyse Jackson P. N. and Vaccari E. (1993) Volcanoes and straw bonnets: the Graydons of Burrishoole. *Journal of the Westport Historical Society*, Wesport, Ireland, **XIII**:90-101.

Nicoletta Morello, Ezio Vaccari

JAPAN 1993

A meeting to celebrate the centennial anniversary of the Geological Society of Japan was held at the Komaba Campus of the University of Tokyo on 3 April 1993. The ceremony was opened by the address of Prof. Y. Hayama, President of the Society. This was followed by congratulatory addresses by many guests in and out of Japan, including the Minister of Education, Science and Culture, the President of the Science Council of Japan, and the President of the IUGS.

After the ceremony, a series entitled "Memorial Lectures on Global Environment and Geology" was presented with the following speakers and titles:

W. S. Fyfe, President of IUGS:
"Toward the Wise Use of Planet Earth: The Challenge to World Society."
T. Hamada, The University of the Air:
"Global Environments and Man - Science, Technology, Education, and Earth-ethics.
K. Suguio, University of São Paulo:
Natural Environments of the Amazonian Region from the Quaternary Geology Viewpoint: Past, Present, and Future. "
T. Shibasaki, Geoscience Research Center:
"A Role of Quaternary Environmental Geology for Analyzing Humankind - Nature Interaction."
H. Nirei, Research Institute of Environmental Geology, Chiba:
"Geological Environments and Environmental Education - A Presentation for the 21st Century."

The Centennial Volume of the Geological Society of Japan, entitled *One Hundred Years of Progress of Geology in Japan,* was published on this occasion under the editorship of Y. Suzuki, a member of INHIGEO. This 706-page volume contains the records of the development of geological sciences in the past 100 years. Six members of INHIGEO contributed the following items:

Imai, I.	"Chronological History of the Geological Society of Japan."
Omori, M.	"History of International Exchange."
Shimizu, D.	"Geological Map of the Japanese Empire, 1898 (scale 1:1,000,000) and the Contribution of Takuji Ogawa."
Sugimura, A.	"Understanding the Japanese Island Arcs."
Suwa, K.	"Studies by Grant-in-Aide for Scientific Research of the Ministry of Education, Science and Culture."
Suzuki, Y.	"Earthquake Hazards and Development of Seismo-Tectonics."

Kenzo Yagi, .Yasumoto Suzuki

MALTA 1993

On November 22, 1993, the University of Malta conferred upon INHIGEO member George Zammit Maempel, the degree of Doctor of Science *Honoris Causa* in recognition of his research in paleontology. The citation read, in part, that he developed his research: "... with scanty institutional support, but with an unwavering loyalty and readiness on your part to contribute to your *Alma Mater* and your country." The INHIGEO Board congratulates Dr. Maempel on behalf of the Commission.

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THE NETHERLANDS 1993

In the course of the year membership of the Commission for the History of the Geological Sciences of the Royal Netherlands Academy of Science has changed owing to the departure of Dr. M. J. M. Bless and the arrival of Professor F. R. van Veen. Valuable assistance was given by Dr. D. R. de Vletter and his co-authors for the preparation of the Suriname Memoir, while Dr. M. G. Oosterom offered to present a selected set of geological data on eastern Indonesia based on the file he assembled for a mining company.

The Commission met twice during 1993, to wit on 24th March and 20th September. The Institute for the History of the Natural Sciences of the National University at Utrecht hosted the meeting, as usual.

Preparation of the memoir on the *History of the Earth Sciences in Suriname* has made good progress under the scrutiny of a Reading Committee consisting of Dr. G. J. J. Aleva and Professor J. I. S. Zonneveld. Publication of the memoir is anticipated to take place in 1994.

Final editing of the late Dr. J. H. Westermann's memoir, *History of the Geology in the Netherlands' Antilles,* has met with regrettable but unavoidable delay. An effort is being made to realize its publication next year. It was decided to leave the text in the Dutch language and to add an extensive English abstract.

The manuscripts prepared by Dr. E. W. A. Henssen on two chapters from the *History of Geology in the Netherlands* were submitted for publication by the Royal Academy, where they still are being considered after first having been rejected on the grounds of their incompatibility with the scope of any of its series of proceedings. They have since been accepted by a publishing house in Groningen.

After 20 years of existence the Commission has the intention to reconsider its tasks with an eye to surveying the remaining history of geology in the Netherlands itself and to that of the former Netherlands East-Indies.

Emile Den Tex

POLAND 1993

Research works on the history of geological sciences were concentrated mainly in the Museum of the Earth, Polish Academy of Sciences. Another important center of studies in this field is the Laboratory for the History of Geology formed in Cracow by a charter-member of INHIGEO Stanislaw Czarniecki, who has collected rich and valuable archival materials. He also cooperates with the Cracovian branch of the Society of Friends of Geosciences, editing a periodical *Kamienie* (The Stones) - Z. Grzywacs editor - where some historical papers are published. A historical group was formed in the Geological Museum of the State Geological Institute in Warsaw. Its monthly periodical *Przeglad Geologiczny* (Geological Rieview) publishes historical notes and commemorations. Three commissions are active within the Committee on the History of Science and Technics of the Polish Academy of Sciences: Naturalistic, Ecologic, and Siberian. The Earth Sciences Group of the first is lead by J. Garbowska, and the Commission by Z. Wójcik.

The 100th anniversary of the origin of applied micropaleontology, related to Jozef Grzyboski's (1869-1922) pioneering biostratigraphical and taxonomic studies of the Carpathian oilfields in the 1890's was celebrated the IVth International Workshop on Agglutinated Foraminifera, held in Cracow September 12-19, 1993. During this scientific session, which attracted micropalaeontologists from the whole world, S. Czarniecki organized and presented a very interesting memorial exhibition of J. Grzybowski. The Workshop was organized by the Palaeontological Department of the Jagellonian University, where J. Grzybowski was the first head of this Department in the years 1919-1922.

Krzysztof Jakubowski, Director of the Museum of the Earth, participated in a meeting in Tirana, Albania, devoted to the 100th anniversary of the birth of Stanislaw Zuber, an outstanding petroleum geologist who was assassinated by Hodja's communist regime.

Antoni S. Kleczkowski delivered a lecture on old geoscientific, mining and metallurgical books stored in the Main Library of the Academy of Mining and Metallurgy in Cracow, at the symposium "Cultural Heritage Collected in Libraries of Geosciences, Mining and Metallurgy - Past, Present, and Strategy for the Next Millennium" held in Freiberg, Saxony, September 20-23, 1993. He also participated in a seminar organized by the Society of Friends of Old Polish Industry and Scientific Society of Kielce, presenting two lectures: "Recently discovered songs of students of the Mining Academy in Kielce," and "The state of studies on the history of the Mining Academy in Kielce, 1816-1827".

Zbigniew Wójcik delivered a lecture on Ignacy Domeyko (1802-1889) at a symposium in Byelorussia devoted to the participation of the Piarist monastic order in the development of science and education in the 18th and 19th centuries.

Several historical problems were presented by Janusz Skoczylas, of Poznan University, at the 4th Sociological-Ecological Conference: "The problems of intake and protection of subsurface waters."

Publications

The *Proceedings of the Museum of the Earth* [Prace Museum Ziemi] Vol. **42**, (1993), edited by Wojciech Narebski and Krzysztof Jakubowski was dedicated to the history of geological sciences. It contains the following two papers in Polish with English summaries:

Garbowska J. "Geological sciences at the higher schools of Vilnius and Krzemieniec in the years 1781-1840," p. 5-112.
Wójcik Z. "Outline of Ignacy Domeyko's biography in the years 1802-1831," p.113-184.

Kaminski, M. A., Geroch S., and Kaminski, D. G., Editors: (1993), *The Origins of Applied Micropalaeontology: The School of Józef Grzybowski.* D.G. Alden Press, Oxford, 336 pp. This book contains an introductory historical paper by S. Czarniecki, "Grzybowski and his school: the beginnings of applied micropalaeontology in Poland at the turn of the 19th and 20th centuries." p.1-16.

Czarniecki S. and Grzywacs, Z. (1993) "Jan Jaskiewics and his dissertation." *Kamienie* **19-20**, p.16-20 (in Polish).

Czarniecki S. and Narebski W. (1993) "Exploration works of Polish geoscientists in Australasia." - Abstract for the 19th International INHIGEO Symposium in Sydney, 1994.

Skoczylas J. (1993) "Felsenrohstoffe in der frühmittelalterischen Architektur Grosspolens". *Archeologia Polski* **37,** 1-2, 305-314.

Protas A. and Skoczylas J. (1993) "The development of exploration works for petroleum and gas deposits in Greater Poland". *Pila-Poznan,* 51 pp. (in Polish).

Skoczylas J. (1993) "On the history of protection of inanimate nature in Poland." *Technika Poszuk. Geol., Geosynoptyka i Geotermia* **32** ,1, p. 67-70 (in Polish).

Memorial Note

"Commemoration of Gunter H. Moh (1929-1993)" by P. Wyszomirski, (1993). *Mineralogia Polonica*, **24** (1-2) 89-90.

Wojciech Narebski, Zbigniew Wójcik

During 1993, my studies of the history of geology were devoted to preparing a monograph on *The Atlas of the Kingdom of Poland*, an unknown work that remained until today as a manuscript in the Military Archive in Moscow. Hitherto, this work has not been scientifically studied. This atlas includes 22 maps illustrating different topics,

including six geologic maps among the eleven that show natural features. I presented my early results at the poster exposition during the Congress of the History and Philosophy of Science in Zaragoza in August, 1993. In the same year I elaborated them further in a paper in German that was sent to the special jubilee publication in the Institute für Geschichte der Wissenschaft in München. My manuscript also will be published in Polish in *The Polish Cartographic Reviews*. The Polish and German versions have the same title. In English it is: *The Atlas of the Kingdom of Poland as a Source of the History of Science, especially as a Source of Knowledge about Poland*." A short analysis of the maps included in these papers will serve as the beginning of a comprehensive commentary to accompany a facsimile publication of the Atlas.

Jósef Babicz

PORTUGAL 1993

Among the main events concerning the history of geological sciences in Portugal in 1993 was the long-delayed distribution of the four papers listed below about former professors of mineralogy and related fields at the University of Coimbra.

1. M. Portugal Ferriera on José Bonifácio de Andrada e Silva (1763-1838), better known as the Patriarch of the Independence of Brazil but also an outstanding mineralogist, mining expert, professor and member of the Lisbon Academy of Sciences, who may perhaps be regarded as the first Portugese geologist.

2. A. M. Amorim da Costa on Domingos Vandelli (1730-1816), Professor of Natural Philosophy, Director of the Royal Natural History Museum at Ajuda in Lisbon, and Academician and Industrialist in Ceramics.

3. M. Portugal Ferriera on the Natural History Museum (Mineralogy and Geology Section) of the Coimbra University from the University Reform in 1772 to the Proclamation of the Republic in 1910.

4. M. Portugal Ferriera on Professor Manuel José Barjona (1758-1831), the author of the first Portugese textbooks on Mineralogy.

In September, 1993, the XIIth meeting on the Geology of the Western Iberian Peninsula was held at the University of Évora. These meetings have been jointly organized by Portugese and Spanish researchers and Institutions for the last 25 years. Professor Luís Castro García Figuerola of the University of Salamanca in Spain presented a historical synthesis of these meetings and their corresponding achievements as well as on the main scientists involved. This work is to be published.

Also in 1993 L. Aires-Barros distributed a paper on the first Portugese text on mineralogy. This hitherto unknown text was a part of the *Livro dos Conselhos de El-Rey D. Duarte*, which was written sometime after 1423 by Prince Duarte (1391-1438), King of Portugal from 1433 to his death.

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Costa, A. M.: Amorim da Domingos Vandelli (1730-1816) e a Filosofia Natural na Universidade de Coimbra. *Memórias e Notícias*, University of Coimbra, **106**, 33-61,1988.

Ferreira, M. Portugal: José Bonifácio de Andrade e Silva, Mineralogista, Académico, Mineiro do início do Séc. XIX. *Memórias e Notícias*, University of Coimbra, **106**, 19-22, 1988.

Ferreira, M. Portugal: O Museo de História Natural da Universidade de Coimbra (Secção de Mineralogia e Geologia) desde a Reforma Pombalina (1772) até a República (1910). *Memórias e Notícias*, University of Coimbra, **110**, 53-76, 1990.

Ferreira, M. Portugal: Dr. Manuel José Barjona (1758-1831), autor dos primeiros Livros de Mineralogia editados em Portugal. *Memórias e Notícias* University of Coimbra, **110**, 77-102, 1990.

Miguel Telles Antunes

SLOVAKIA 1993

The Banská Štiavnica '91 Foundation

The town of Banská Štiavnica is one of the most precious historical towns in Slovakia, and its many treasures make it a part of the world's cultural heritage.

The first concrete development of silver mining in the region of Banská Štiavnica dates to the year 1217. The town got its privileges as the first mining town in the Hungarian Monarchy before the Tartar invasion in 1241. In the 13th century, Banská Štiavnica was among the most important Hungarian towns. However, in the first half of the 14th century the town suffered from a powerful earthquake and an adverse political situation.

In the second half of the 15th century development revived with new intensity. At that time, the most imposing structures at the center of the town were erected and wealthy townsmen built their own ornate stone houses. In the 16th century the riches of Banská Štiavnica were an enticement for aggressive Turkish troops. Thanks to the effective measures adopted by the citizens of Banská Štiavnica, the Turks never captured the town. In the 17th century the town avoided harm by exercising a cautious political balance between rebel and monarchist forces. The "golden age" of Banská Štiavnica began in the 18th century. It entered the consciousness of the modern world: gun powder was successfully used for peaceful purposes, in mining, for the first time anywhere. The ingenious system of water reservoirs was gradually built, and the first mining university in the world was established. The eleven buildings of the Mining Academy are now national cultural monuments. In this period, Banská Štiavnica was, with its 25,000 inhabitants, the second largest city in the Hungarian monarchy.

The rapid economic development and the political conditions of the 18th century gave rise to a special urban and town architecture and supported the foundation of a rich cultural and religious life. This material and cultural inheritance, the work of both the original inhabitants and later immigrants, reveals much about the nature of human productivity and creativity. The preserved urban structure of the town in a prominent setting is organically connected with the surrounding natural environment. The historical center of the town, nestled in a valley beneath wooded hills, is a national historical preserve with a complex of remarkable structures of genuine architectural significance. This is a rare and valuable urban landscape. Indivisible from the architectural wealth is the town's collections of museums and archival treasures.

In the 19th century the mining fame of Banská Štiavnica declined after the gold and silver veins were exhausted. The town then experienced alternate periods of rapid growth and slow decay. The four decades following World War II were the most critical and rather chaotic. The effects of this period on the town's social relationships, economy, and culture were mainly negative. The decline was manifested in the poor care and consequent distintegration of buildings, monuments and the old technical and service infrastructure as well as in an aggressive attitude towards the natural environment. Paradoxically, it was in this period that the government granted Banská Štiavnica an outstanding position by declaring the historic center as a municipal monument reserve.

The Foundation for the Preservation of the Cultural Heritage of Banská Štiavnica would like to be incorporated into the process of saving the cultural and historical values of the town. It is attempting to secure funding for various projects to restore and conserve the cultural and technical monuments. The Foundation is also concerned with the development of contacts and cooperation with foreign institutes of similar purpose. This non-profit organization already has prepared plans and projects with the goal of infusing new life into town. To anyone interested in our activities, current and future, we would be happy to send all the materials we have available. Also, we would be most happy to meet and lend assistance to anyone who would like to visit Banská Štiavnica personally. The Foundation of Banská Štiavnica is a non-profit, politically unaligned and independent organization.

Ol'ga Kuchtová
Slovenské Banské Múseum

For information write to: Nadácia Banskej Štiavnica '91, Dolná Ruzováb 7, 96900 Banská Štiavnica, Slovakia

SOUTH AFRICA 1993

During the year research continued on sites where fossils were discovered during the 19th century.

As the Geological Society of South Africa will be celebrating its centenary in 1995, a joint project to document the history of geological endeavor in southern Africa was started. A number of individuals are busy writing chapters for a book on this subject which will be published 1995.

Publications

Barnard, W. S. (1992). "Om de Ngami en Makarikari Meren op nieuw te vullen." Die Schwarzplan as dwaling. *The South African Geographer* **19**, 1/2, 59-75.

This paper, written in Afrikaans, is an evaluation of the plan by the geologist E. H. L Schwarz to turn the Kalahari desert into a lush oasis.

Johan Loock

SPAIN 1993

The XIXth International Congress of History of Science convened in Zaragoza August 22 to 29th. More than 1,300 persons attended from 75 countries. The following sessions were devoted to the history of geology, geography, and mining.

Sessions G1 and G2 on the history of geology, chaired by INHIGEO member Leandro Sequeiros and Jaime Truyols:

Theories on the origin of springs: Reception in the nordic countries, by Juha M. Kajander of Finland.
From lithology to stratigraphy: a question of chronology in geological science in the late XVIIIth century. The Italian contribution of Giovanni Arduino, by Ezio Vaccari, Italy.
El manuscrito Planos geognósticos de los Alpes y de la Suiza de Carlos de Gimbernat, Dolores Parra del Rio, Spain.
Casiano de Aprado (1797-1866), ingeniero-geólogo, y los inicios de la PreHistória española, by Octavio Puche Riart, Spain.
La influencia de E. de Verneuil en el desarrollo de la investigación de la geología espanñola de su época, by Jaime Truyols Santonja Spain.
Nitratos y fosfatos en la España del siglo XIX: la introducción de la teoría mineral, Pere Martin Sunyer, Spain.
Hugh Miller: Geologist of Cromarty, David Oldroyd, Australia.
Paul von Groth (1843-1927) and the development of geochemistry between 1875 and 1925, Bernhard Fritscher, Germany.
Wilson y la revolución de las ciencias de la Tierra al cabo de 25 años, Joan Manuel Soriano Lopez, Spain.

Poster: *The identification of the breastplate stones*, Dov Ginsburg, Israel.

Sessions G3 and G4 on the history of geography, chaired by Jordi Marti:

La geografia histórica: tres puntos de vista, by Sandra Liliana Mansilla, Argentina.
Research of historical seismicity. Methodology and problems, Fernando Rodriguez de la Torre, Spain.
Os países ibéricos e os contrastes frente à descoberta novo mundo, Raquel Fontes do Amaral, Brazil.
Descubrimento del Polo Sur por Roald Amundsen, Christian Engell, Mexico.
La educación de un geógrafo. Propuestas históricas de planes de estudio de Geografia en España, Augustín Hernando, Spain.

Session 39 on mining in Latin America and the technological exchange between Europe and Latin America, chaired by Manuel Castillo Martos and Mervyn Lang:

La História de la explotación brasileña en las crónicas de los viajeros al Nuevo Mundo (siglos XVII-XVIII), by Ana Alfonso-Goldfarb, Brazil.

Intercambio de técnicas empleadas para beneficiar plata por amalgamación (1565-1600), Manuel Castillo Martos, Spain.

Influencias recíprocas entre la mineria vasca y la americana en la Edad Moderna, Emiliano Fernandez de Pinedo, Spain.

Intercambio de technología entre Almadén y América, Luis Mansilla Plaza, Spain.

La investigación del platina en España y América durante el siglo XVIII, Francisco Aragon de la Cruz, Spain.

Formación cientifica de Fausto Elhúyar en Europa y su proyección en ciencia novohispana, Jesús Palacios Remondo, Spain.

La quimica y la metalurgia en el periodo de transición del México colonial al México independiente, by Particia Aceves, Mexico

Commemoration of Juan Vilanova y Piera (1821-1893)

Two days of panel discussions were held in Valencia on November 25-27, 1993, in recognition of the centenary of the death of Juan Vilanova y Piera, an illustrious native of Valencia and one of the most distinguished natural scientists of Spain in the second half of the XIXth century. Discussions focused on the contributions of Vilanova y Piera to advances in geology, paleontology, and studies of prehistoric man, and on the general state of natural sciences in his epoch in Valencia, Spain, and Europe. For this occasion, an appreciation of his life and work titled "Juan Vilanova y Piera: centenario de su muerte (1893-1993)" by R. Gozalo, F. Pelayo and L. Sequeiros was published in *Europal* **3**: 45-47 and in *Rev. Soc. Españ. Paleont.* **8** (2):121-124.

Boletín de la Comisión de História de la Geología España

Number 1 of this Boletín was issued in March, 1994, by the Geological Society of Spain. It includes the first circular of the Comisión de História de la Geología de España composed in 1990, a report on the purposes of the Boletín, reprinted sections from *INHIGEO Newsletter No. 25* (issued in 1993), book reviews, and a partial bibliography of works on the history of geology in Spain. The officers of the Comisión are:

President: Jaime Truyols, Fac.de Geología, Universidad de Oviedo.
Vice-President: Salvador Ordóñez, Dept. de Geología, Universidad de Alicante
Secretary: Juan José Durán Valsero, ITGME, Madrid
Editor of the Boletín: Leandro Sequieros, I. C. E. Universidad, Apartado 500, 14080, Cordoba

Anyone wishing for information on how to obtain the Boletín should write, call, or fax the editor:
Tel: 957-275000; 275186; 275650; Fax: 957-272692

Leandro Sequeiros

A meeting in commemoration of the bicentenary of Joaquin Ezquerra del Bayo (1793-1859) was held in Madrid on the afternoon of December 15, 1993. Ezquerra del Bayo was Inspector General of Mines who published the first treatise on the working of mines in 1839 and the first geological map of Spain in 1850. The first of two talks was given by Dr. Octavio Puche Riart entitled *The development of geology in Spain since 1850.* The second one by Dr. Francisco Javier Ayala Carcedo was on *The life and work of Ezquerra del Bayo.* Afterward, the company enjoyed a glass of Spanish wine.

Octavio Puche

A note received in November, 1993, from Dr. Luis Adaro in Gijón states that he was completing Volume IV of his *Data and Documents for the Mining and Industrial History of Asturias* for publication early in 1994. It includes materials on mining not only in Asturias but in Latin America and the rest of the world.

UBM

SWITZERLAND 1993

In 1993, J. Portmann finished the first part of a biography of César-Eugène Wegman (1896-1982) covering the years up to 1947 when Wegman was called to the University in Neuchâtel to succeed Emil Argand (1879-1940) as Professor of Geology. He now is preparing notes for the second part, focusing at present on the period while he served as Wegmann's assistant and during Wegman's last years when Portmann often visited him.

Portmann has written an abstract in French summarizing all of Wegmann's publications. The last ones were published in German, French, English and Norwegian. They concern the Alps, Norway, Finland, and Greenland, and general problems such as the nature of migmatites and metasomatic phenomena, and also history of earth sciences. Wegmann proposed some new concepts, including that of tectonic levels and the comparative anatomy of mountain chains.

Portmann completed his book, "Paysages de Suisse - I: Le Jura - Introduction á la Géomorphologie." It will be published in 1994 in *Geographica Bernensia* (Bern). On page 24 of the book, he cited many contributions of the last century including: the first drawing of a Jura anticline by A. von Buch (1803); the introduction of the notion of facies (1836), and the first tectonic study of the Jura (1840) by A. Gressly; and the first mention of the Cretaceous Period (1839) by A. de Montmollin.

J. P. Portman

UNITED KINGDOM 1993

The Geological Society of London, proudly aware of its great antiquity (founded 1807), has at last authorized the formation of its History of Geology Group. Membership will be open to all. The steering committee currently includes:

John Thackray, Chair, Archivist at the Natural History Museum, Londond, SW7 5BD.
Tel: 71-938-8972/9238; Fax: 71-938-9290.
Hugh Torrens, Secretary, Dept. of Geology, University, Keele, ST5 5BG. Tel: 782-58-3183;
Fax: 782-71-5261.
John Fuller, Treasurer, 2 Oak Tree Close, Bodmell Road, Tunbridge Wells, IN2 5SS. Tel: 892-53-4955;
Fax: 892-53-4644.

The main objects of the Group are to encourage an interest, knowledge, and enthusiasm for the history of geology, particularly among Fellows of the Society; to encourage existing researchers, to recruit new ones, and to provide a forum in which they can meet and discuss their work; to raise the profile of history of geology in other related societies by means of joint meetings; and, through the Committee, to give the Geological Society a voice in the history of geology. The Group also aims to raise awareness of British contributions in the history of earth sciences by holding joint meetings with European, American, and other international organizations. It is not intended to publish a journal or to compete in any way with the established societies in the fields of the history of science or natural history.

The first meeting of the Group will be held at the Geological Society in London on 4 October, 1994. The purposes and future activities of the group will be discussed, officers and a Committee elected, and papers on the past and present of the History of Geology in Britain will be given with an open discussion from the floor. Tea time will allow a viewing of the posters which were displayed at the AAPG June 12-14 meeting in Denver [see above pp. 6-7]. Two speakers will conclude with papers on "What is the point of studying the History of Geology?"

If you would like further details of this meeting, together with information about the Group, please write to J. C. Thackray, History of Geology Group, Geological Society, Burlington House, Piccadilly, London W1V 0JU.

Hugh Torrens, John Thackray

Publications by Torrens, 1993:

"The Dinosaurs and Dinomania over 150 Years." *Modern Geology* **18:**257-280.
"The Early Life and Geological Work of John Mawe (1766-1829) and a note on his Travels in Brazil." *Bulletin of the Peak District Mines Historical Society* **11**:267-271.
"The Invention of Dinosaurs." *The Linnean* **9**:(3):13-14.
"Quando o Dinossauro foi Batizado?" (Notas sobre a História dos Dinossauros). *Cadernos IG/UNICAMP, Brazil.* **3**:119-125.
"300 Years of Oil: mirrored by developments in the West Midlands [of England]." Pp. 4-8 *in The British Association Lectures*, London: The Geological Society, 1993 (ISBN 1-897799-02-0).
"Joseph Day (1855-1946) and his development of the two-stroke internal combustion engine." In A. Herléa (editor) *Science-Technology Relationships. Proceedings of the 18th ICOHTEC Congress*, Paris, 1992. San Francisco Press Inc. 1993, (ISBN 0-911302-70-0).

Sir Joseph Banks, A Global Perspective

An International 250th Anniversary Conference in Commemoration of Sir Joseph Banks (1743-1820), sponsored by the Royal Society, The Natural History Museum, The Royal Botanic Gardens at Kew, The Linnean Society of London, The Society of the History of Natural History, and the Banks Archive Project, was held in London April 22 to 23, 1993, to highlight the worldwide influence of Banks in the progress and development of science, technology, horticulture, agriculture and other fields.

Sir Joseph Banks, who probably is best known for his participation as naturalist to the first James Cook expedition (1768-1771) later became President of the Royal Society in 1778 and remained in that office until his death in 1820. He was thus at the hub of scientific and technical progress in Great Britain and Western Europe through one of the most crucial periods of geographical exploration, of war and of revolution.

The the following invited talks were scheduled:

H B Carter: *Sir Joseph Banks and the Royal Society*
Professor M Crosland: *An overview of Anglo-Continental scientific relations c. 1780-c.1820 with special reference to the correspondence of Sir Joseph Banks, P.R.S.*
Professor Bengt Jonsell: *The Swedish connection*
Dr A Agnarsdottir: *The exploration of Iceland*
Dr H S Torrens: *Patronage and problems: Banks and the earth sciences*
Professor D M Knight: *The application of enlightened philosophty: Banks and the physical sciences*
Dr R Joppien: *Banks and the world of art in Great Britain*
R G C Desmond: *The transformation of the Royal Gardens at Kew*
Dr B Elliott: The promotion of horticulture
Professor A Frost: *The planting of New South Wales: Sir Joseph Banks and the creation of an Antipodean Europe*
Professor W Stanton: *Banks and the Americas; science and exploration*
Dr G Metailie: *Sir Joseph Banks -- an Asian policy?*
Mrs D Middleton: *Banks and African exploration*
Professor G Williams: *Sir Joseph Banks -- a reassessment*

A general discussion followed the series of presentations. [From the titles listed it is impossible to judge whether or not recognition was given to Sir Joseph's important role in the founding of meteoritics as a new science. *UBM*]

***THE DYNAMIC EARTH* in Scotland**

A major new exhibition center costing over £15,000,000 is to be constructed in Edinburgh between the Palace of Holyrood and the site of James Huttons's home, set against the evocative backdrop of Salisbury Crags and the

old volcano of Arthurs's Seat. The ground and substantial funds for the erection of the building and the mounting of the displays have been provided by Scottish and Newcastle Breweries supported by British Gas.

The exhibition will build on James Hutton's concept of time and his view of the Earth as a heat machine. It will show how the Earth was formed as part of the Solar System, explain the physical and biological evolution of land, sea, and the polar regions, examine the interaction of Man with his environment and consider the future for the Earth and its inhabitants in the light of global change. *In examining things present we have data from which to reason with regard to what has been; and from what has actually been, we have data for concluding with regard to that which is to happen hereafter.* (Hutton, 1788, p. 217).

It is planned to open this exhibition in 1996, in time to commemorate in 1997 the bicentenary of Hutton's death and the birth of Charles Lyell.

Gordon Craig

UNITED STATES OF AMERICA 1993

The History of Geology Division, Geological Society of America

The Division Symposium on the theme *Historical Research as a Function of Exploration Methodology* was held on October 26 during the GSA meeting in Boston, Massachusetts, with Gerald M. Friedman and R. M. Easton presiding. After an introduction by Gerald Friedman, the retiring editor of *Earth Sciences History,* the following papers were presented:

Gerald M. Friedman: *History of Uranium Discoveries in Eastern Canada, a Personal Account.*
Larry D. Woodfork: *Ebinezer Andrews and the West Virginia "Oil Break": Early Insights concerning the Nature of, and Geological Controls on, Hydrocarbon Accumulations.*
B. R. Schneiders, R. M. Easton, and M. S. O'Brien: *Finding Future Mines via the Records of Past Exploration: The Role of Ontario's Assessment File Database.*
Robert F. Walters: *Fairport and Gorham, the Earliest Oil Fields in Central Kansas; their History and Impact on the Environment, 1920's-1990's.*
John A. Harper: *Exploration Stategies and Blind Luck—the Historical Search for Gas in the Lower Devonian Oriskany Sandstone in Pennsylvania.*
Earle F. Taylor: *Early Exploration for Hydrocarbons in the North American Arctic.*
Gayle H. McColloch, Jr. and Bascombe M. Blake, Jr.: *Development of the New River Smokeless Coal Field of Southern West Virginia.*

The following five papers were presented in a technical session and a poster session:

Peter L. Siems: J. *C. L. Schmidt--An Early German Mining Geologist.*
Reinhard A. Wobus: *T. Nelson Dale: Dimunitive Giant in New England Geology.*
Edward A. Landa: *Charles Thomas Jackson: Physician/Chemist/Geologist: a Life of Conflict and Controversy.*
Carl-Henry Geschwind: *Becoming Interested in Experiments: American Igneous Petrologists and the Geophysical Laboratory, 1905-1960.*

Léo F. Laporte: *Paper-Trail of G. G. Simpson as a Scientist-Soldier.* [Poster].

1994 GSA History of Geology Award to François Ellenberger

We are pleased to announce that Professor François Ellenberger has been elected an Honorary Fellow of the Geological Society of America and he will be the recipient of the History of Geology Award in October, 1994, at the GSA annual meeting in Seattle. *UBM*

1993 GSA HISTORY OF GEOLOGY AWARD to MARTIN GUNTAU, PAST-PRESIDENT OF INHIGEO

Citation by Ursula B. Marvin

I feel very privileged indeed to take part in this presentation of the History of Geology Award to Martin Guntau. Martin, who has earned two doctor's degrees and published more than 100 articles and 8 books on the history and philosophy of the earth sciences, deserves this Award many times over for the quality of his contributions to our field. I will discuss his writings a little later on. First, since I have had the pleasure of working closely with Martin for the past four years, I want to say something of his approach to his work and to life in general.

I first met Martin Guntau in 1989. That year he was elected president of the International Commission on the History of Geological Sciences and I was elected secretary-general. I had been a member of INHIGEO for nine years but never had served on the board, which, according to all reports, had vigorously pursued all of the East Block-West Block rivalries of the Cold War. With no first-hand experience to guide me, I felt I was about to plunge into rigorous on-the-job training in political intrigue.

Martin Guntau was an East German. Not only was he an East German, Martin was an East Prussian! For an American, such a national origin still tends to conjure up images of implacable autocrats modeled on Otto von Bismarck and all those characters played by Eric von Stroheim. How, I wondered, could the two of us, total strangers, communicate across our immense geographical and cultural distances to shape policies for INHIGEO? I had my answer as soon as I was introduced to Martin at the International Geological Congress in Washington. Obviously, here was a man with a sparkling sense of humor, and wherever there is a sense of humor everthing else will be all right.

Martin and I began laying plans for INHIGEO. The following year, 1990, INHIGEO was scheduled to hold a symposium at the China University of Geosciences in Beijing. For 1991 Martin wanted to invite INHIGEO to meet in Dresden and I seconded that idea with enthusiasm. We sorted out a number of technical details and left for home at the end of the meeting with a cordial and well-functioning working relationship.

Then, only four months later, in November, 1989, some of the people massed in West Berlin reached up and offered flowers to the guards atop the Wall. The guards accepted the flowers and handed some of them back. These gestures, performed on live television, signaled events that would change the history of Europe and of the world. On November 9th, the gates opened and the wall started crumbling, literally and figuratively. Eleven months later the two Germanies underwent formal reunification. That was on October 3, 1990, and so, when Martin and I met in Beijing on October 25th, his nation had been merged out of existence. With it had gone Martin's full membership in INHIGEO; thus, technically speaking, INHIGEO had a President from Nowhere--one who was totally disenfranchised.

Nothing in the bylaws provided for such a contingency. Indeed, the INHIGEO bylaws stipulated that presidents and all other board members must be elected from among the full members, and there could be only one full member from each country. Wolfhart Langer, of Bonn, was the full member for the Federal Republic of Germany. Now that the Federal Republic embraced the entire country, a logical argument could be made that Professor Langer should occupy the office of president--to which, however, he had not been elected. But Wolfhart Langer would have none of this. Fortunately, he, too, was at the symposium in Beijing, and together he and Martin plotted to simply finesse the situation to the end of Martin's term. In this, they succeeded.

Martin already had begun searching for funds for the Dresden symposium but, needless to say, the passing of the German Democratic Republic had removed all the old familiar sources of support. Over the next few months, one federal or private organization after another turned him down. Then, in the spring of 1991, with the Dresden Symposium scheduled for September, our communications ceased altogether. Letters were taking up to five weeks. Day after day the fax machine at Martin's university refused to accept messages. At the same time, Martin changed residences and had to wait for a new telephone number.

As the weeks went by I became more and more convinced that the Dresden Symposium would have to be canceled, and I was prepared to send that message to our members around the world. Suddenly, one day my fax spun out a message from Martin. It included his new telephone number and I could not resist calling him immediately. His first bit of news was that one more organization, upon which he had placed high hopes, had just refused its support. Next, he said that he remained hopeful that all would go very well! Such optimism astonished me. I never could have remained hopeful if my own country had vanished from the face of the Earth. But events showed that Martin was right to be optimistic, and I was wrong to be so pessimistic. In September, 1991, INHIGEO held its symposium in Dresden with three days of lively sessions and two of field excursions thoroughly enjoyed by more than 60 participants from 17 countries.

Since that time I have learned that Martin comes by his optimistic outlook through long and hard experience. Martin was, born at Gilgenau in East Prussia. When he was a boy his father was sent to the Russian front and died as a prisoner of war in the Soviet Union. In 1945, with the Russian armies sweeping toward Germany, Martin's mother gathered what they could carry and walked westward with 11-year-old Martin. The Russian front engulfed them at the little city of Grabow in Mecklenberg where they ended their flight and began a daily struggle for survival. Survive they did, by sheer grit, and after eight years of hard work and hard studying Martin was admitted to the historic Mining Academy of Freiberg, from which he emerged in 1958 with the title of Diplom-Mineralogist. For the next three years he taught mineralogy at Freiberg.

Martin then turned to what has become his true vocation--history. He entered Humboldt University in Berlin as a research fellow for history and philosophy of science. In 1964 he earned his Doctor of Philosophy degree with a dissertation on unifomitarianism and natural law in the geological sciences. Martin then returned to Freiberg where he taught history of science and served as curator of the mineralogical museum.

It was in Freiberg that Martin met his radiant future wife, Brigitte, whom he discovered working in a bookstore. The couple now have two children and one 3 year-old grandchild, and Brigitte now holds a position as assistant manager of a large company that sells and distributes books.

In 1976, Martin earned a Doctor of Philosophy of Science degree from Humboldt University with a dissertation on the emergence of geology as a natural science. Thereafter, he began his teaching career at the University at Rostock where he initiated a program on history of science. He became a full professor in 1981 and Director of the Department of History in 1986.

The many articles and books Martin published between 1963 and 1993 reflect a lifelong interest in the origins of geology, the principle of actualism, and the relationship between natural science and philosophy. His writings place special emphasis on the intellectual ferment at Freiberg in the 18th century, when mineralogy and geology were developing into new disciplines. Martin has examined the importance of mining practices in the Saxon Erzgebirge on the development of mineralogy at Freiberg and the influence of the Freiberg School on earth scientists in Germany, France, and Sweden. He also has traced a reverse flow of ideas in the 19th century when Charles Lyell's uniformitarian thought reached Germany.

In 1984 Martin published a book on the life and thought of A. G. Werner (1749-1817), and the controversies generated by his geological ideas. Among the other individual scientists whose contributions he has analyzed are Joachim Jungius (1587-1657), who influenced chemical thought at the turn of the 17th century, Niels Stensen (1638-1686), M. W. Lomonosov (1711-1765), Leopold von Buch (1774-1853), Friedrich August Breithaupt (1791-1873), and Alexander von Humboldt (1769-1859).

In addition to his publications, Martin has played leadership roles in numerous national and international organizations dedicated to the history of geology. To mention only a few, he helped to cofound the German Democratic Republic's group on the history and philosophy of geological sciences, served two terms as secretary-general and one as president of INHIGEO, served as a councilor of the History of Earth Sciences Society, and has been a member of the editorial board of the *International Journal for History and Ethics of Natural Sciences, Technology and Medicine*. With his abiding interest in the international exchange of geological ideas, Martin

arranged for an ongoing exchange of students and faculty members, engaged in research on the history of geology, between the Universities of Rostock and of Campinas in São Paulo, Brazil.

In the years between 1989 and 1992, mass meetings of students and faculty at Rostock led to a markedly unstable situation wherein the history of science program was abolished and reinstated at least once before it was definitively abolished in 1992, along with Martin's chair. Martin was able to take early retirement and the next time I heard from him he had been retained by an oil company to do research not as a geologist but as a historian! Where does one find such oil companies?

As one of his first projects Martin coedited a beautifully illustrated volume, with the text in German and Spanish, tracing the travels of Alexander von Humboldt in South America. With numerous other projects in the planning stages and his unfailingly positive outlook, Martin shows every sign of becoming more and more productive as a historian of geology.

Response by Martin Guntau

Ursula Marvin was quite friendly and generous in her citation and I would like to extend her a sincere and hearty thank you for her kind words. Yet my real thanks go to the History of Geology Division and the Council of the Geological Society of America for the great acknowledgment they have conferred upon me. I can't begin to tell you how moved I was when I first heard of this completely unexpected and high honor the Geological Society of America has bestowed upon me. Occurrences of this kind are full of special meaning. Not only do they give one great pleasure; they also give strength and self-confidence. They strengthen old contacts and open up new possibilities.

The past few years have been times of especially far-reaching changes in the world. The encrusted East-West political stalemate has been broken. This has also affected our community of geology historians. Even with all the advancement of international cooperation in this community in the past decade, I would say--and I'll take the liberty of stating this plainly--that five years ago perhaps it would have hardly been probable that the History of Geology Award of the GSA would have been awarded to a historian of science in the German Democratic Republic. And the East German recipient would have had large problems both in explaining such an award from a scientific society in the USA and in obtaining permission to receive the award.

All of this belongs to the past now, and we all are happy and thankful to be living and working under better international conditions today. I, myself, am very glad about these fundamental changes and new possibilities, without wanting to or even being able to sever myself from the past in one fell swoop. Four decades are a long time in a person's life, and one cannot treat them carelessly.

Of course, just as one needs to rethink old scientific works, so must we also critically examine earlier political ideas. And when the results prove themselves to be useful even in today's world, then we cannot abandon relevant statements or principles just because an opportunity presents itself. In any case, there is the need for a critical look back with respect to the current changing conditions in my home country. However, what counts is that these doubts become productive, that they don't paralyze us, that they flow in the direction of the slogan, "Don't worry, be active!" Such a maxim will not, of course, protect us from making mistakes or new errors, but it does make each scientific life a life worth living, an interesting, productive, and above all a hopeful one. Even defeats have a deeper moral meaning when you understand their source and stay realistic in life.

As far as I see it, 1993 is the first year that the History of Geology Award of the GSA has been awarded to a German. For the historians of geological sciences in my country this is a great honor, both in the East and in the West. Hans Prescher or Wolf von Engelhardt, Otfried Wagenbreth or Helmut Hölder, Wolfhart Langer or Peter Schmidt--just to name a few--have contributed in exciting and successful ways to various different areas of the history of geological sciences during the last few decades; work that also more and more younger colleagues have done and that has not been without growing resonance overseas. There has been an attempt to make the achievements of such German geoscientists as Georgius Agricola, Abraham Gottlob Werner, Leopold von Buch, Alexander von Humboldt, Alfred Wegener, and others more understandable for the present day.

I find it astonishing that the ideas of A. G. Werner and his Neptunism have met with marked interest, especially in the English-speaking world. Of special importance here is the Mining Academy in Freiberg (Saxony), also my scientific birthplace, as a basis for the spreading of the ideas of Neptunism, which has been widely misunderstood by the learned ever since its beginnings. In spite of an incorrect basic idea, this paradigm has played an indisputably important role in the development of geology as a science, which only goes to prove the productive function of so-called false concepts in the history of science. The obvious occurrence of this phenomenon can be found not only in geology, but also in astronomy and chemistry.

The geologist William Maclure, who was also a convinced utopian socialist, did a good job working with the fundamentals of geology in the spirit of Abraham Gottlob Werner right here on the eastern coast of North America at the beginning of the last century. Many of his academic counterparts in other countries of Europe and the Americas sparked on geology on the basis of Neptunism.

It can be seen that the history of geological thought can always be understood as an international phenomenon, as it is with historical research in our time to an increasing degree. With gratitude I think back to the first personal contacts with colleagues here in the USA almost 30 years ago to the day. At first there an exchange of ideas by post with Claude C. Albritton in connection with his book *The Fabric of Geology*, which I was allowed to review in Germany. About the same time my relationship with the Werner researcher Alexander M. Ospovat began, out of which a true personal friendship has grown over the years. Cecil J. Schneer, Albert V. and Marguerite Carozzi, Kenneth L. Taylor, and William A. S. Sarjeant have become close to me through their scientific work, but also especially through their humanity. Finally, in 1989, a time of highly fruitful and pleasant cooperation began in the INHIGEO Commission with Ursula B. Marvin, although we had never met before. I mention this here because the freely practiced tolerance and the cooperation across borders and through different points of view was of great importance and effectiveness for our work.

I have to thank V. V. Tikhomirov from Moscow for the personal links to the international community of Histórians of geology. He invited me to the founding meeting of INHIGEO in Jerevan, Armenia, in 1967 and I have him to thank for my participation in the many INHIGEO symposiums in various countries during the '70s and '80s.

The work as secretary-general of the INHIGEO Commission was not easy in the late '70s and early '80s; the political East-West opposition had eased a bit, but the Cold War was by no means over yet. All international geological-historical initiatives, if they are to succeed, must be planned, organized, and realized in a balanced climate of honest cooperation. At that time I had a wonderful and, for me, very educational working experience with the one-time INHIGEO President Reijer Hooykaas in Utrecht, the Netherlands, which I look back on with fond memories. The problem back in those days was knowing the possibilities and limits of international scientific work (especially in socialist countries) and using these to the fullest in order to give INHIGEO work productivity and stability.

Between 1976 and 1984 I went to Utrecht and Moscow yearly in order to discuss projects, to clear away reservations or prejudices, and to achieve a secure political balance. This "pendulum diplomacy" was time consuming, but worth it in the end. It was only possible because I enjoyed the trust of elected members of the INHIGEO board, which I am thankful for, even today. I was able to practice a successful scientific cooperation that met with approval from all sides.

These experiences were, without question, important and helpful for my own scientific work. Especially in those years I had the chance to initiate studies of the history of natural sciences at the university in Rostock, founded in 1419. After examining a number of biographical papers, we constructed a model of the genesis of scientific disciplines. This entailed detailed studies of the mechanisms of the formation of geology as a science at the end of the 18th century. Also the history of scientific institutions such as geological surveys, societies, or museums was the topic of many research projects. Detailed research was pursued on the exchange of geoscientiric ideas between Germany and Russia, France, Sweden, or Latin America in the past.

Of course, the heart of all scientific activities was the substantial research in the historiography of geology. And to find an international resonance a person must have a firm scientific grounding in his own country. Unfortunately, the history of science as an institution at the University of Rostock has come to a *de facto* (although certainly temporary) end since the political and structural changes in recent years. But the possibilirty of continuing research in the history of science is present wherever there is a large library nearby and scientific lines of communication are functioning. For me at present these conditions are fulfilled, so there are many possibilities for practical work in the area of the history of geologcial sciences in my home country as well as overseas.

It is in this situation that not only is the History of Geology Award of the Geological Society of America a real honor for me but, above, all this occasion is a grand encouragement and a stimulus for my further activities. For me, this recognition in an excpetional highlight of my scientific life, for which I would like to thank you again from my heart.

Reprinted from *GSA Today*
March, 1994, Pages 80-81

The United States National Committee on the History of Geology.

Kenneth L. Taylor, Chariman, opened the annual meeting of USHIGEO on October 26th during the GSA meeting in Boston. After approval of the agenda and the minutes of the previous meeting, Ursula Marvin reported on the XVIIIth International INHIGEO Symposium held in Brazil in July, 1993. She also noted changes in the INHIGEO bylaws that no longer distinguish between Full and Corresponding Members as well as removing the requirement that new members be endorsed by a national committee such as USHIGEO. She reminded those present that the next INHIGEO Symposium is scheduled for July 4-8, 1994, in Sydney, Australia, with the theme History of the Geological Sciences in the Pacific Region. Abstracts were due on December 23rd.

Léo Laporte, Kenneth Taylor, and Naomi Oriskes reported on the good progress being made toward the Penrose *Conference From the Inside and the Outside: Interdisciplinary Perspectives on the History of the Earth Sciences* to be held 19-21 March, 1994, in San Diego. Almost one-hundred people have applied, including a number of graduate students and foreign scholars.

Ken Taylor reported on the situation respecting the establishment of a Center for the History of Geology, which USHIGEO had proposed in 1992 after detailed investigations of possibilities. He has been advised by the U. S. National Committee on Geology that no funds are available to support such a center. Given the uncertainty of funding for an actual bricks-and-mortar center of institutional affiliation, the notion of an electronic "clearinghouse" is thought to be possibly more useful and realistic. Several members, including Michele Aldrich and Léo Laporte, have agreed to explore this idea further and report back at the meeting in Seattle in 1994.

Robert Ginsburg, reported on his progress with the "Rock Star" initiative, a project to write brief, three to four-page illustrated biographical sketches of GeoHeroes, aimed at interesting youthful readers in geological careers. He circulated the first two examples he had prepared--short essays on T. Wayland Vaughan and Charles Darwin. These materials are to be made available to interested parties, chiefly college professors and undergraduates. The Committee members encouraged him to pursue the idea further by soliciting more examples of such essays and seeking cooperation with the GSA History of Geology Division to act as reviewer and distributor of the work produced.

Taylor adjourned the meeting after announcing that Léo Laporte and Naomi Oreskes will immediately begin serving as chair and secretary, respectively, of USHIGEO.

Léo Laporte, Secretary

VENEZUELA 1992-1993

On February 18 the second meeting on history of geological sciences (Segundas Jornadas Venezolanas de História de las Ciencias Geológicas) was carried out with five talks and one poster. Some works discussed the contributions to Venezuelan geology of individuals: Emile Rod a Swiss geologist, Giovanni Aggamenone an Italian seismologist, R. Stainforth an English micropaleontologist, and Frances Charton de Rivero, a USA-born paleontologist. Also a work about the beginning of the iron mining industry in Venezuela and the exploration of the southern Perijá Range in the 1920's where several oil-men were killed and injured by the Indians. There was a poster about the world-famous asphalt lake of Guanoco (formerly Bermúdez Pitch Lake) and its exploitation from 1890 to 1913 by "The New York and Bermúdez Company," a subsidiary of the General Asphalt Co.

Three issues of the "Boletin de História de las Geociencias en Venezuela" (total 150 pages) were published, featuring topics such as:

Copper mining in the Aroa district in 1621 -- which deals with an early publication recently discovered.
Description and interpretation of terraces in the Mérida Cordillera by the German scientists Hermann Karsten (1851) and Wilhelm Sievers (1888).
Short articles about the contributions of José Royo y Gómez, Jose Villavicencio, and F. Prout.
Extended articles about the contribution of R. M. Stainforth to the stratigraphy and micropaleontology of Venezuela.
Early mineralogical and geochemical works of Mariano de Rivero y Ustariz (1798-1857).

The working group of the "Sociedad Venezolana de História de las Geociencias" (S.V.H.Gc.) has legalized its bylaws and in the period 1992-1994 it will be directed by: Andre Singer (President), Franco Urbani (Vice-President), Jose Antonio Rodriguez (Secretary-General), Henry Salas (Treasurer) and Miguel Lugo (Councelor).

On May 6-7, 1993, the Sociedad Venezolana de História de las Geociencias celebrated the 55th anniversary of the founding of the Escuela de Geologia, Minas y Geofisica of the Central University of Venezuela in Caracas. The following talks were given on historical earthquakes in Venezuela and the history of seismicity in general.

Three centuries of mineralogy and mining in Venezuela.
History of exploration and development of the petroleum industry in Venezuela and in the world.
Geological contributions to botanical explorations.
Events leading to the founding of the Cagigal Observatory.
The geological collections in the Museum of Natural Science in Carácas.
Geological mapping of the Paria Peninsula (1964-1968), with histories and anecdotes of 57 students and 3 professors.
Contributions of Wilhelm Sievers and Alfredo Jahn to the glacial geology of Venezuela.
Biographical notes on individual geologists, including Enrico Fossa-Mancini (1884-1950) Italian-born geologist-paleontologist who made important studies of the geology and petroleum resources of Venezuela and Argentina; Fray Francisco de Andujar, mineralogist at the end of the 18th century; Jovan Zujovic (1856-1936) and his petrographic studies of Venezuelan rocks and minerals; J. Gustav Klemm and his book of 1856, "La Mineria en Venezuela;"

Number 48 of the *Boletin de História de las Geosciencias en Venezuela*, published in August 1993, containes seven articles on the history of earthquakes and seismicity and five articles on various other subjects. Copies of the Bulletin for the past ten years (1984-1994) are available at the following rates (including postage by registered surface mail) in US dollars:

1984 - 7 issues, $20; 1985 - 12 issues, $35; 1986 - 11 issues, $40; 1987 and 1988 - 2 issues per year, $10 each year. 1989 to 1994 - 3 issues per year, $15 each year. To order, send a check for $ US payable to: Sociedad Venezolana de História de las Geosciencias, Apartado 47334, Caracas 1041-A, Venezuela.

Franco Urbani

MEMORIAL NOTES

The INHIGEO Board shares a sense of great loss and extends its deepest sympathies to the families and colleagues of five of its founding members who have participated in our activities since the initial meeting in Yerevan in 1967.

Vladimir Vladimirovich Tikhomirov (1915-1994)

Vladilmir Vladimirovich Tikhomirov was born on October 25, 1915, in St. Petersburg. In 1938 he graduated from the geological prospecting faculty of Azerbaijan Industrial Institute in Baku, and until 1942 he worked as an engineer-geologist in the Azerbaijan Geological Department. In 1942 he went to the front as a volunteer. He fought near Leningrad, had a military rank of senior lieutenant, was a navigator of an air-section, and served as assistant commander of a detached air squadron of the 13th Air Army. On April 18, I944, he was seriously wounded and lost his sight completely. In January 1945, not long before the end of the 2nd World War, he was demobilized as an invalid of the 1st group. On leaving the hospital he found the will-power to continue his scientific work. In I949 he finished a graduate course in the Moscow Geological Prospecting Institute where he obtained two degrees at the same time: Candidate of Geological-Mineralogical Sciences, and Doctor of Sciences for his dissertation on the geology of the Caucasus Minor.

From 1951 V. V. Tikhomirov at first headed the cabinet, then the section (from 1956), and from 1961 the laboratory of the history of geology in the Geological Institute of the Academy of Sciences of the USSR. In 1955 he was appointed a professor of the history of geological sciences. In I956 V. V. Tikhomirov, together with V. E. Khain, published the book *Short Essay on the History of Geology,* which was reprinted in Peking in 1959 in Chinese. In 1960 and in 1963 two parts of his monograph *Geology in Russia in the First half of the XIX Century* appeared. Tikhomirov was the founder, beginning in 1953, of the well known series *Essays in the History of Geological Knowledge.* Volume 20 out of the 28 volumes in this series is comprised of his work *Geology in the Academy of Sciences (from Lomonosov to Karpinsky).* From 1955 to 1991 V. V. Tikhomirov headed the work of the Commission on the History of Geological Knowledge and Geological Study of the USSR (COGHI), and he served as the main editor of the 52 volumes of the unique reference-information book *Geological Study of the USSR.*

V. V. Tikhomirov demonstrated his strong organizational skills as a founder and long-term officer of INHIGEO. The National Committee of Geologists of the USSR proposed the formation of this body and plans for it were initiated during the XXIIth International Geological Congress in New Delhi in I964. In June, I967, the Constituent Assembly of INHIGEO (which originally was called the International Committee on the History of Geological Sciences) met in Erevan, Armenia, and adopted statutes and bylaws for the new organization. Arriving in Armenia, 150 historians of geology from 15 countries elected a directing Bureau with I. I. Gorsky, of the National Committee of Geologists of the USSR, presiding. On August 23, 1968, at the XXIIIth IGC in Prague, INHIGEO was formally admitted as a Committee of the International Union of Geological Sciences (IUGS). The Bureau unanimously elected Vladimir Tikhomirov as president of INHIGEO, and the IUGS Council endorsed this action. Later in the same month, at a meeting in Paris on August 29, INHIGEO was enrolled as an Affiliate of the International Union of the History and Philosophy of Science (IUHPS). Interest in this field of knowledge spread rapidly over five continents due, in large part, to Tilkhomirov's efforts. He was elected to a second term as president of INHIGEO at the XXIVth IGC in Montreal in 1972, and, as past-president, he continued to serve on the INHIGEO Bureau during the IGC sessions in Sydney in 1976 and in Paris in 1980. It was at the 1980 IGC in Paris that the IUGS Council adopted new statutes and bylaws that transformed INHIGEO from a Committee to a Commission. In 1984, at the IGC in Moscow, Tikhomirov began two terms as a vice-president of INHIGEO.

In his works V. V. Tikhomirov performed historical analyses of the development of the ideas and methods of geology. After considering many principles of dividing the history of geology into periods, he concluded that division into periods is not an artificial method of investigation but one that reflects objective reality, given the irregular course of development of the sciences as a whole. He was convinced that not knowing the history of any field of knowledge and its methodological problems, makes it impossible to value its present state, to predict future development, and to carry on successful research. This was clearly shown by the collective authors headed by

Tiknomirov in the 1980 monograph *History of the Geological Institute of the Academy of Sciences of the USSR: Development of the Institute, its Scientific Schools and Bibliography of the Works.*

V. V. Tikhomirov received many honors from his government and from the international community. The USSR awarded twenty medals and orders to him for services in battle and in labor. In 1963 the International Academy of History of Sciences in Paris elected him a corresponding member, and in 1966 promoted him to a full member. In 1976 the Society of Geological Sciences in Berlin elected him an honorary member, and in 1981 V. V. Tikhomirov became a corresponding member of the Academy of Sciences of the USSR in the speciality "geology." In 1992 he was awarded the degree of Academician by the Academy of Natural Sciences of the Russian Federation. From 1989, in the Geological Institute of the Academy of Sciences of the USSR, and from 1991 in the Vernadsky State Geological Museum, Tikhomirov, using his profound knowledge and wide-ranging experience, continued to work as a councillor of the Academy of Sciences.

Vladimir V. Tikhomirov died on January 13, 1994, and was buried in Troekurovskoe Cemetery in Moscow. This eminent scientist in the field of the history of sciences of the Earth will forever remain in the memory of all who knew him.

Yu. Ya. Soloviev

Reijer Hooykaas (1906-1994)

On January 4th, l994, Reijer Hooykaas, a founding member of the International Commission on the History of Geological Sciences (INHIGEO), died in Zeist, the Netherlands. He had been present at the founding of INHIGEO in Jerevan, Armenia in 1967 and served the Commission as a dedicated and distinguished president from 1976 to 1984. He also made significant contributions to the historiography of geology and mineralogy. He both strengthened and further developed international cooperative work in these areas during complicated times.

Reijer Hookaas was born on August 1, 1906. He studied chemistry in Utrecht from l923 to 1930 and earned his doctorate there in l933. He had taught chemistry at a Lyceum since 1930, and worked in an analogous position in Zeist beginning in 1932. In 1945 he was named Professor of History of Natural Sciences at the Free University of Amsterdam, the first professorship for natural science history in the Netherlands. From 1948 to l967 he continued to serve as a full professor of natural science history in Amsterdam, yet he also taught in the fields of mineralogy and crystallography for many years. In 1967 he was appointed a professor of the history of the natural sciences at the University of Utrecht, where he remained until 1976 when he was made Professor Emeritus.

Professor Hooykaas was a member of important scientific groups and societies and was honored in many ways for his scientific achievements. He also was a visiting professor at several famous foreign universities. In 1956 he was elected a member of the Academie Internationale d'Histoire des Sciences in Paris, and in 1959 a member of the Koninklijke Nederlandse Akademie van Wetenschapen, where he was active in the Department of Humanities as well as in the Section of Geology. He belonged to the Academia Internacional da Cultura Portuguesa in Lisbon, and a senior Fellow at University College in Cambridge, England. He was named Ridder in de Orde van de Nederlanse Leeuw in 1965, Commandeur in de Orde van "Polonia restituta" in 1966, and received the degree of Doctor *Honoris Causa* at the University of Coimbra in 1969, as well as at the Open Universiy in England in 1982. As a visiting professor Reijer Hookyaas was employed more than once at the Universities of St. Andrews and Edinburgh in Scotland, and Harvard University in the United States. Professor Hooykaas was a highly respected academic internationally.

By no means did Hooykaas' scientific works restrict themselves to the fields of history of chemistry and mineralogy. He made insightful contributions to the understating of the development of science in the modern era. Some of his more important books include *Religion and the Rise of Modern Science* (1972), and *G. J. Rheticus' Treatise on Holy Scripture and the Motion of the Earth* (1984). As a result of relevant studies in Portugal he also published a biography of D. Joao de Castro, a 16th century scholar.

Reijer Hooykaas dedicated himself to the history of geological sciences with special interest and great enthusiasm. He pondered the principle of uniformity in his book *Natural Law and the Divine Miracle* in 1959, which

was reworked and appeared in a second edition in 1963 under the title *The Principle of Uniformity in Geology, Biology and Theology*. The opposing positions in the great nineteenth century controversy of geological thought were analyzed and published in *Catastrophism in Geology, its Scientific Character in relation to Actualism and Uniformitarianism* (1970). In addition to many other questions, Hooykaas dwelt on the development of geological thought in the relation between nature and history, although historical analysis was always of more importance to him. He, too, subscribed to the idea that the essence of things is not known until their coming-to-being is found therein.

A decisive point for Hooykaas was the conviction that the history of geological sciences must, first and foremost, serve geology above all other interests. In 1980 he wrote, "I believe more strongly in history of science in the service of scientists in the proper sense (in its educational usefulness for students as well as professionals, in order to make them more critical and more profound in the cultivation of their work), than in 'historiography of science for its own sake'." His knowledge of the history of geology did not rest only on the development of geological discoveries; he emphasized that history also includes the influence of religion, philosophy, politics, and economics on cognitive processes. Professor Hooykaas not only made considerable contributions to the portrayal of history of geological sciences; he also developed important insights into the way and manner in which research in this scientific field can be done. Historians of the sciences will remember Reijer Hooykaas as a scholar of the very highest distinction.

Martin Guntau

Thomas George Vallance (1928-1993)

Born in Sydney, Australia, Tom Vallance entered the University of Sydney in 1945 intending to become a chemist. Early in his student days, he took a course in geology for the fun of it and abruptly changed his career plans. He published a paper on structural geology in 1951 and then turned his attention to metamorphic petrology. Through his studies of weathering and alteration of basalts to spilites, he provided new insights on the degree to which crystalline and glassy eruptive rocks of the same composition give rise to chemically different alteration products. By the early 1960s this work already had gained him an international reputation, which grew in strength as his ideas were applied to studies of hydrothermal alteration of the ocean floors. In 1965 Tom Vallance was appointed an Associate Professor in Petrology, and he remained in the Department of Geology and Geophysics at the University of Sydney until his retirement in 1989. On several occasions he served, reluctantly, as Acting Head of the Department although he vastly preferred teaching to administration.

Tom acquired a strong interest in the history of geology in 1954 during a meeting in England with Victor and Joan Eyles, geologists who had been researching the history of geology in Europe. In the 1960s, his own research in this field commenced in earnest, and he began to gather information from a wide range of sources, building up a card index on some four thousand scientists who had contributed to geology and mining in Australasia since European interest in the region began. At the founding meeting of INHIGEO in Yerevan in 1967, Tom was elected as the Full Member from Australia. He served in this capacity for 22 years until his retirement from the University. For 13 of those 22 years he was a Vice-President of INHIGEO. Tom presented papers at numerous INHIGEO Symposia and was a leader of a particularly memorable excursion to the Orange Mountains and the historic gold fields of Ophir during the 1976 IGC in Sydney.

Tom had a long and active association with Australian scientific societies, particularly the Geological Society, of which he was the second Secretary in 1955-1956, and the Linnaean Society, to which he was elected President four times.

After his retirement, Tom planned a continuing program of research in the history of geology with a strong focus on Australasia. A splendid library-cum-study was built in the grounds of the family home at Roseville, and Tom looked forward to a productive period, free from lectures, practical work, and supervision of student research. Sadly, it was not to be so. By mid-1990 the first signs of the cancer that was to kill him had become evident. Treatment at first was positive, and Tom was able to pursue his first major task, the completion to the unraveling of the geological work of Robert Brown in Australia during the 19th century *Investigator* voyage under Matthew Flinders. Late in 1991 secondary cancer was diagnosed and a long struggle began. Tom fought the effects of the

treatment and the frustration of being unable to carry out research as he wished. We may hope that Tom was pleased to receive word shortly before he died that he was the recipient of the Geological Society of London's Sue Tyler Friedman Award for his outstanding contributions to the history of geology.

A biography of Tom Vallance and a list of his publications will be published in the Proceedings of the XIXth INHIGEO Symposium in Sydney, which is dedicated to his memory.

David Branagan

Ekaterina Alexandrovna Radkevich (1908-1994)

Ekaterina Alexandrovna Radkevich was one of the original INHIGEO corresponding members elected from the former USSR. She dealt with the history of geology and was an active participant of INHIGEO symposiums for many years while, at the same time, pursuing her main research interests on the origin of tin ores and other metal deposits.

E. A. Radkevich was born on December 12, 1908, in Kiev. In 1927-1929 she studied at the Institute of Mines in Leningrad, and from 1929 to 1932 in the Central Asian Geological Prospecting Institute in Tashkent. She completed a graduate course at the Institute of Geological Sciences of the Academy of Sciences of the USSR in Moscow. From 1956 to 1959 she worked as a senior scientific worker in the Institute of the Geology of Ore Deposits, Petrography, Mineralogy, and Geochemistry in Moscow. She received her degree of Doctor of Geological-Mineralogical Sciences in 1959 and became a professor and corresponding member of the Academy of Sciences of the USSR in 1970.

From 1959 to 1987, E. A. Radkevich was the Director of the Far East Geological Institute of the Academy of Sciences of the USSR in Vladivostock. Later, she worked as a councilor in this Institute.

She is an author and co-author of more than 200 published works, including about 20 studies analyzing the works of I. A. Shlatter on mining, G. Agricola on geology and mineralogy, K. I Bogdanovich on ore deposits, D. I Sokolov, I. M. Renovantz, and others on natural science. Profound research on the history of viewpoints on the origin of ore minerals allowed E. A. Radklevich to make predictions of stanniferious deposits in the east of Russia and to actively support searches for further deposits of tungsten, lead and zinc in different regions of the Pacific metallogenic belt. Her services were recognized by numerous high government awards and state premiums.

Ekaterina A. Radkevich died on January 10, 1994, in Moscow

Yu. Ya. Soloviev

We hoped to include a memorial to **Dr. Sh. F. Mekhtiev** of Azerbaidzhan, who also was a founding member of INHIGEO. Unfortunately, we have not received one from his colleagues although we heard indirectly that a memorial was being sent. If the mails open up again or if memorial notes arrive by other means, they will be included next year in *Newlsetter No. 27.*

UBM

BOOK REVIEWS

To A Rocky Moon, A Geologists History of Lunar Exploration
Don E. Wilhelms, University of Arizona Press, Tucson, 1993. 477 pp + plates.

Don Wilhelms, a geologist with strong interests in astronomy and history, sees the Moon as a rocky world and the Apollo missions as elaborate geological field trips. As one of the first geologists to join the new Astrogeology Branch of the U. S. Geological Survey in the early 1960s, he led efforts to apply principles of terrestrial geology to lunar mapping and to establish a relative time scale for lunar stratigraphic units. He recounts the struggles to include geology and geophysics in the Apollo program, details the advances provided by

unmanned landers, and describes the geological results of each of the six manned landings. As background to the Apollo accomplishments, Wilhelms traces the major advances in geological studies of the Moon from 1609, when Galileo sketched the craters and plains he saw through his telescope. He dates the beginnings of modern lines of inquiry to 1892 when Grove Karl Gilbert, chief geologist of the U. S. Geological Survey, concluded from his telescopic observations that virtually all lunar craters formed as a result of the impact of falling bodies. At that time most geologists and astronomers took for granted a volcanic origin of lunar features and felt that Gilbert had wasted his time. Many continued to hold that opinion into the mid-20th century. Not until the astronauts collected impact breccias instead of volcanic rocks in the lunar highlands did the last proponents of a volcanic origin of the surface features concede the importance of meteorite impact as a geological process on the Moon, and possibly even on the Earth.

Wilhelms describes the contending pre-Apollo schools of thought on the Moon's origin and its physical state--cold or hot, wet or dry, differentiated or pristine, volcanic or impact craters--and the vigorous disputes over issues such as site selection for the landings and the question of who should go to the Moon: scientists or test pilots. He appears to have gotten to know every person and every policy decision that influenced the scientific aspects of the program, and he does not hesitate to provide trenchant (and not always complimentary) profles of scientists, astronauts, and administrators, from novices to senior staff members. In the current controversy about whether scientists or historians should write the history of science, Wilhelms is an unabashed "Insider:" a geologist writing history. His effort is remarkably successful. Wilhelms' text is rigorously correct scientifically, making it a dependable source for students and teachers of geology, geophysics, and cosmochemistry. At the same time, it places Project Apollo firmly within the social and political context of its time, making it useful as a source for cultural historians. It also is fully accessible to general readers, with a clearly written narrative style that presents Project Apollo for the grand adventure story that it was.

The Moon held surprises for everybody, and the results are outlined in a final chapter called "Debriefing: 1973-1984." The Moon probably was completely molten when it formed 4.6×10^9 years ago as the result of a glancing collision between the Earth and a Mars-sized body, and it remained covered by an ocean of roiling magma for the first 200 million years of its existence. After another 200 million years the crust was sufficiently rigid to hold open enormous basins formed by impacting bodies. Basaltic lavas then began to fill the basins and lava eruptions continued at a declining rate until about 1×10^9 years ago. In terms of the Earth's history, the lunar surface is strictly Precambrian except for the continuing record of meteoritic pockmarks. Wilhelms documents the evidence for all these conclusions. In the end, Wilhelms can scarcely contain his disappointment that the program ended. He writes that the Apollo program, which was launched by politics in the late 1950s and slowed by the Vietnam War in the late 1960s, was curtailed by economics in the 1970s. "By the time of Apollo 17 [December 1972] a magnificant and sophisticated network of rocketry, flight operations, geologic and geophysical support, and geologic and laboratory analysis was functioning with smooth precision. Now it was time to shut it all down and turn out the lights." Was it worth it? "Hell yes," he says, "it was worth it, and to pass up the opportunity to land people on the Moon when the once-in-a-lifetime opportunity arose would have been unconscionable." As one enduring legacy of the project, Wilhelms points to our concept of Spaceship Earth and the urgency it instills to preserve the natural ecosystems of our planet. He has no faith in space colonization and believes that the missions showed that the Earth is the only viable abode for mankind. *To a Rocky Moon* is the definitive work on the development of geologic ideas about the first planetary body outside the Earth to be visited by man. Those who pick it up for browsing may find they cannot put it down again in a hurry.

Ursula B. Marvin

Condensed from *Science*, **261**:231-234, 1993.

Centennial History of the Geological Society of Washington, 1893-1993

Eugene C. Robertson, Ed., The Geological Society of Washington, c/o Mineralgoical Society of America, Washington, D.C., 1993, 165 pp.

Published to mark the 100th anniversary of the Geological Society of Washington (GSW), this small volume provides not only a "snapshot" of the nature of institutionalized geology as centered in the nation's capital at the turn of the century but an opportunity to observe the evolution of the social conventions within which geology and

its practitioners operate. That is, in addition to providing a record in great detail of the activities of the GSW, this book and the documentation it provides allows one to follow the inevitable change that has occurred in science and society over the past one hundred years.

Prepared by a committee of twenty-one members, headed by Eugene C. Robertson who edited the volume, this centennial history is divided into four sections: Society History, Biographies of Founders and Other Early Members, Significant Talks, and History Tables. As part of the first section, under the heading "The Founding," Ellis Yochelson provides the most overtly analytical essay. Without a journal or a research program of its own, the GSW was founded, according to Yochelson, in order to help the United States Geological Survey (USGS), then struggling with an uncertain future because of the budget cutbacks of 1892, to further establish its scientific reputation and for it to forge links with others in the intellectual communtiy. Meeting at the Cosmos Club in an atmosphere of great formality typical of the day, the GSW was successful in achieving greater stature and visibility for the USGS on the Washington social and political scene. The gradual development of increasing informality, including appreciation for and the recognition of humor as represented by its "Sleeping Bear Award" and the activities of the Pick and Hammer Club, are part of the story of the GSW that is fully chronicled.

Of the founders, Charles Walcott was a primary force and the Society's first president. John Wesley Powell and G.K. Gilbert were founding members, with S. F. Holmes and W. H. Holmes as vice-presidents, Arnold Hague as treasurer, and J. S. Diller and Whitman Cross as secretaries. William H. Holmes, as one of the two vice-presidents, was the "Hayden Survey" artist who as an employee of the USGS had illustrated Dutton's Colorado Plateau studies and Gilbert's Lake Bonneville terraces. Two women were early members, Ellen Hayes and Florence Bascom, but in only relatively recent years has the number of women increased to the current 23% of membership. Florence Bascom gave the first talk by a female, in 1901, not to be followed by other women until an Anna Jonas and Eleanora Bliss Knopf talk in 1921.

Illustrations, charts, graphs, and tables are abundant. The last section, "History Tables," contains "almost every interesting statistic that could be gathered" and covers nineteen pages. Two-page biographies are provided for forty founders and early members. Furthermore, of the 3,350 talks given at the Society in its first one hundred years, fifty-five were selected for their significance, by a panel of experts, for a brief one-paragraph synopsis. These are arranged chronologically and, like similar compilations by other organizations, serve as a "moving picture" to illustrate the o f ideas in geology and the history of the science.

This is an admirable volume, well executed, that displays the hard work and dedication of the present membership of the GSW. It is reasonably priced ($10.00), interesting, useful, and highly recommended.

William M. Jordan

The Earth, the Heavens and the Carnegie Institution of Washington
Gregory Good, Editor, History of Geophysics Volume 5, American Geophysical Union, Washington, D. C., 1994, 252 pages.

This elegantly produced volume presents a wealth of information on the scientific research carried on under the aegis of the Carnegie Institution of Washington. The Institution was founded in 1902 with a gift of ten million dollars from the steel baron, Andrew Carnegie, who hoped it soon would surpass the Smithsonian Institution. Throughout this century the Carnegie, with its Geophysical Laboratory and its Department of Terrestrial Magnetism in Washington, its Mount Wilson Observatory near Pasadena, California, and its global research expeditions, has played a leading role in advancing the geosciences and space sciences. However, Carnegie might be disappointed today to realize that public awareness of his Institution does not approach that of the Smithsonian which, along with its own far-flung research projects, supports a complex of museums and a famous zoological garden. This book is a compilation of papers presented at a meeting held at the Carnegie Institution of Washington (CIW) in the summer of 1992. It is the first book to trace the history of the CIW and the stories it tells are so fascinating that it seems long overdue.

One of Carnegie's initial instructions to his trustees was to seek out the exceptional individual and to give that person the opportunity for a life's work in research and discovery. In a foreword to the book, Maxine Singer, the current president of the CIW, points out that the Institution carried out this charge to the letter in 1918 when the it granted a full salary as a research associate to George Sarton, the historian of science who had sought refuge in America from Belgium in 1915. Sarton pursued his research among the bookstacks and archives of Harvard University's Widener Library in Cambridge, Massachusetts. For many years, he held no faculty position but paid for his library privileges by giving lecture courses on history of science at Harvard. Sarton labored mightily to establish history of science as a discipline of university rank. Toward this end he founded and edited the journal *Isis*, which he sometimes kept alive with his own money. In the 1920s and 1930s the CIW provided Sarton with stipends for several research assistants and officially designated the effort as the "Section of the History of Science." After Sarton's time, the CIW ceased its support of the historical profession but, meanwhile, Harvard University had acknowledged the value of Sarton's contributions and established its Department of the History of Science, which now occupies a leadership position in the field.

Historians of geology will find this book to be an extremely valuable source of information and references on the founding and early development of research in various disciplines. A chapter by Hatten Yoder describes the initial scientific program of the Geophysical Laboratory, which went on to excel in experimental igneous and metamorphic petrology. A later chapter by L. T. Aldrich discusses the beginnings of isotopic dating at the Geophysical Laboratory and its further development after World War II in the Department of Terrestrial Magnetism. Gregory Good discusses the first world magnetic survey, beginning in the north Pacific in 1905-1908 with cruises of the *Galilee* and continuing in 1909 in the *Carnegie*. The latter ship was custom built of wood and nonmagnetic metals at a cost of $115,000, comparable to the CIW's special appropriations for telescopes at Mt. Wilson and the building for the Geophysical Laboratory. *The Carnegie* sailed the North Atlantic, circumnavigated Antarctica, and gathered valuable data elsewhere until 1929 when it exploded and burned in Apia harbor in Samoa. For all its pioneering interest in geomagnetism, the CIW failed, after World War II, to contribute to the paleomagnetic research that helped to bring about plate tectonics. H. E. Le Grand explains the reasons in a chapter titled "Chopping and Changing at the DTM 1946-1958: M. A. Tuve, Rock Magnetism, and Isotopic Dating." On a different subject, Ralph Jewell recounts the efforts of Vilhelm Bjerknes who took it as his duty to produce "something clear and real in meteorological science" which, at the time the CIW was founded, generally was regarded as "a miserable science--not even believed in by its own folk."

A little known aspect of the CIW program was its sponsorship of scientific expeditions for which its resources exceeded those of all other sponsors combined--including the National Geographic Society and the Smithsonian Institution. Among the earliest were Raphael Pumpelly's expeditions to Turkistan in 1903 and 1904 to study archaeology and climate in an effort to determine whether or not Central Asia was the cradle of Indo-European civilization. (He found no positive evidence). A later example, described by Naomi Oreskes, was the 1928 gravity-measuring cruise of the U. S. naval submarine S-21 with F. A. Vening Meinesz as chief scientist. The results showed that major regional stresses were present in the oceanic crust and therefore the crust has more strength than was supposed by the Hayford-Bowie school. This led to a rethinking of isostatic processes and their role in geological change. All CIW research projects and expeditions were aimed at theory-testing rather than simple data collecting.

In all, there are twenty-seven chapters grouped in seven sections. Most of the authors take pains to place their subjects in context of the scientific ideas of their time and also stress the contemporary social and political pressures. A compendium such as this one inevitably leaves some important gaps in the historical record of its subject matter. One example is pointed out by Owen Gingerich in a commentary on the Mt. Wilson papers, which he found to be excellent as they stood but failing either to describe or to explain the importance of Mt. Wilson in the rapid rise to preeminence of American astronomy. The final section includes five chapters on resources for historical research--a topic to warm the heart of any historian of science. This book is highly recommended for professors and students in the earth and space sciences as well as history of science and for general readers who enjoy well-written, entertaining accounts of scientific endeavors.

Ursula B. Marvin

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