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**INTERNATIONAL COMMITTEE ON THE HISTORY
OF GEOLOGICAL SCIENCES**

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IInd International Symposium on the History of Arabic Science
Section History of Earth Sciences

The IInd International Symposium on the History of Arab Science was held in Aleppo (Syria) between April 5 and 10, 1979. Papers were read in five sections with different subjects: general problems of the history of Arab Science; history of the exact sciences (mathematics, mechanics, physics, astronomy); history of medicine; history of technology; history of chemistry, earth sciences and biology.

In the section on earth sciences nine papers were read dealing with questions on the history of mineralogy, geology, geography, geodesy, alchemy, magnetism, and cosmology. The papers reflected the significant development of these sciences in the Middle East and in Middle Asia in the course of the early Middle Ages.

1. Subir Banerjee and A.H. Sabra (USA): A 13th century magnetic compass described by Sultan Al Ashraf of Yemen.

The description of this 13th century magnetic compass by Sultan Al Ashraf represents the earliest scientific work of this kind in Arabic language. The main purpose of the compass was to determine the direction to Mecca from the capitals of the Middle East. Al Ashraf's work provides the coordinates of these towns. The compass is characterized by a remarkable measuring accuracy.

2. Hans Daiber (Holland): Early cosmological theories of the Arabs.

The concepts of the Arabs of the immobility of the celestial sphere are based upon the cosmology of the Ancient Greeks. Particular attention was paid to Epicurus' idea about the Earth as a disk. Such scholars as Rasem, Al Biruni and others, however, based their works on the ideas of Aristotle and Ptolemy.

3. I.J. Al Fadli (Iraq): Information and remarks about the Earth in the Books of the Arab heritage.
Arab books contain many geological terms showing a sound knowledge of mountain rocks and minerals, the shape and surface of the Earth, underground waters, names of seas and mountain valleys, and about loose and solid sediments. The author took the data from the works of 23 Arab scholars of the Middle Ages.
4. Sami K. Hamarneh (USA): Introduction to Al Biruni's "al-Jawahir" on gems and minerals.
5. M.M. Rawi (Kuwait): The description of metals and meteorological phenomena in the works of Ibn Sina and their influence on the foundation of modern geology.
6. O.I. Islamov, V.V. Tikhomirov, I.A. Rezanov (Soviet Union): Earth sciences in Middle Asia (9th - 11th centuries).
The paper outlines the contribution made by Middle Asian scholars to the development of geodesy, geography, geology, and mineralogy. Particular attention is paid to the research results of such excellent scientists as Ibn Sina and Al Biruni and to their exceptional role in the elaboration of numerous scientific problems. They had a considerable influence on Western European scholars on a number of different issues (proof of the Earth's rotation; the concept of prolonged duration of geological processes; classification of minerals, etc.) The paper deals with the research work of Middle Asia. The paper represents the first work that analyses the achievements made by Middle Asian scholars in the field of earth sciences.
7. Farouk Sanehala Al-Omari (Iraq): Scientific tendencies in the works of Jwa Chasma Al Andoluza.
8. I.R. Selimkhanov (Soviet Union): A note upon the knowledge of metals and their transmutation in the history of Arab science.

The development of the science of metals in Arab countries

was influenced by the ideas of Greek and Syrian alchemists. Many ideas are believed to have been taken from Syrian physicists. The author thoroughly studies Al Rasi's work "Book on the secret of secrets" which provides a description of several metals and their transmutation. In conclusion, he draws attention to the fact that research on the history of Arab science would require the inclusion of results of detailed archaeological and chemical investigations into ancient metals.

9. D.T. Zulfugarly (Soviet Union): Dissemination of Arab alchemy in the Transcaucasus during the Middle Ages. The investigations carried out by the author on the territory of present-day Aserbaidshan permitted him to draw the conclusion that many chemical processes had been known there even before Christ. Apart from Islamic religion, alchemy was also introduced in Aserbaidshan after the Arab conquest. Under the influence of Arab alchemy the works of such famous scholars as Ibn Sina, M. Razi, Abu Mansur and others were reflected in the classical works of Aderbaidshanian literature. The discussion of the papers touched upon questions concerning the history of the knowledge of metals, chemical reactions and transmutations as well as upon problems of mineralogy.

V.V. Tikhomirov

IIInd GDR-USSR Symposium on the History of German-Soviet relations in the field of geological sciences held in Jerevan (Armenian SSR, Soviet Union) between October 25 and 29, 1979

Numerous fruitful contacts between German and Russian geologists and miners existed as early as in the 18th and 19th centuries. Scientific co-operation between geologists from the Soviet Union and the GDR has particularly developed during the last decades. The Ist German-Soviet Symposium in Berlin (May, 1975) had already made an essential contribution to the historical presentation of these relations. This work was continued at the IIInd GDR-USSR Symposium which had been organized by the Institute of Geology of the Armenian Academy of Sciences (president - Prof. A.T. Aslanjan).

The symposium was held in Jerevan, capital of the Armenian SSR, between October 25 and 29, 1979. 31 papers were read at the symposium which was attended by approximately 150 scholars, among them 21 guests from the GDR. The authors dealt with methodological aspects of geological sciences as well as with different problems referring to the history of particular geological disciplines. In addition, several papers were devoted to the works of individual scholars, such as the geologists H. ABICH, P. PALLAS, H. STILLE, S. v. BUBNOFF and others. In their papers the authors put a particular emphasis on the contribution of these scholars to the development of German and Soviet geological sciences and to joint research in the history of geology.

The participants of both countries discussed many questions on the history of geology and drew special attention to the knowledge gained by many generations of scholars from both countries in the course of several centuries.

The papers were read during the first two days of the symposium. After that, the participants had the opportunity of visiting places of particular prehistoric and historical interest and of becoming acquainted with the geology of Armenia. An

excursion was made to important places of the Hellenic cultural epoch; the visitors saw testimonies of early feudal architecture and interesting historical buildings of the Middle Ages. Visits were made to the Temple of Garni and to the cave cloisters of Gegard. Another special event was the visit to Ecmiadzin and to Cvartnoc. All participants will also remember the memorial places in Jerevan and Sardarapat which were built in honour of all those who gave their lives in the Armenian people's fight for liberation.

During the excursion there was the possibility of becoming acquainted with the methods of production in the Bronze and Iron Ages in the area of Mecamor. The Museum of Mecamor afforded all participants a scientifically-based cultural and historical insight into the technology of one of the oldest mining and metallurgical centres in the period between the beginning of the 3rd and the beginning of the 1st millenium B.C. The participants also visited many scientific and cultural institutions of Armenia situated in Jerevan. The visit to Matenadaran was particularly impressive. It is one of the most important collections of old handwritings existing in the world and thus represents a literary monument of great significance.

During a second excursion the participants experienced the geological, economic and social problems arising from the fact that the Armenian landscape is basically of volcanic origin. On the tour from Jerevan to Lake Sewan the guests of the symposium noticed extinct volcanoes, lava flows, layer formations, volcanic ashes and obsidian deposits in several sections.

The Armenian organizers of the symposium succeeded in combining the scientific meetings and excursions in an adequate way thus making the symposium a great scientific achievement. Co-operation in the field of the history of geology is planned to be continued in a similar way. A final decision about a suitable time for a further meeting is still to be made.

E.G. MALCHASJAN (USSR)

H. PÄTZ (GRD)

History of Geology in the GDR

Since its foundation in 1954, the Society of Geological Sciences of the GDR has been greatly concerned in the history of geological sciences: it has organized several scientific meetings and presented various publications in this field. In 1976, a division on the history and philosophy of geological sciences was founded, which now lists 101 members. Work on the history of geological sciences has also been greatly stimulated by the Mining Academy in Freiberg and the State Museum of Mineralogy and Geology in Dresden.

Throughout the past years, there have been annual ceremonies, conferences on particular topics and meetings of the division dealing with the scientific achievements of such well-known scholars as F.A. Breithaupt (1966), A.G. Werner (1967), L.v. Buch (1974), S. v. Bubnoff (1977), B. v. Cotta (1979) and others and with the relevance of their work to the present. The activities in the field of the history of geological sciences culminated in the International INHIGEO Symposium on the history of economic geology in Freiberg in 1970 and the bilateral GDR - USSR symposia on the history of German-Soviet relations in the field of geological sciences which were held in Berlin (1975) and in Jerevan (Armenia) in 1979.

The division of the Society of Geological Sciences has recently held two scientific meetings (combining papers and excursions), each of which was attended by approximately 60 scholars:

- "The Revolution in Geological Thought in the Age of Enlightenment 1720 - 1790", held in Görlitz between October 6 and 11, 1978 (directed by H. Prescher, R. Daber und M. Guntau).
- "History of Seismology, Seismics and Earth Tides Research", held in Eisenach between December 5 and 7, 1979 (directed by P. Schmidt and E. Hurtig).

At each meeting 20 papers were read followed by stimulating discussions. Special mention should be made of the growing

member of young colleagues becoming interested in the history of geological sciences. This development is obviously promoted by the fact that both the Mining Academy in Freiberg and the University of Greifswald (these are the only two institutions in the GDR where geologists are trained) offer lectures on the history of geology.

Many articles and monographs on the history of geological sciences have been published in the GDR. Most of them appeared in the periodicals "Geologie", "Zeitschrift für Geologische Wissenschaften", "Freiberger Forschungshefte, Reihe D" and "Abhandlungen des Staatlichen Museums für Mineralogie und Geologie zu Dresden". By editing original texts and facsimile reprints of important works of Georgius Agricola, Abraham Gottlob Werner and Ulrich Rülein von Calw the work of well-known scholars of the past has been made accessible to present-day historical research and to a wider circle of people interested in these subjects. The following volumes on the history of geology have been recently published in the GDR:

- "100 Jahre Glazialtheorie im Gebiet der skandinavischen Vereisungen". Schriftenreihe für Geologische Wissenschaften Heft 9, Akademie-Verlag Berlin 1978, 368 S., 72,- M.
- Biographien bedeutender Geowissenschaftler der Sowjetunion. 19 biographische Darstellungen zu bedeutenden Gelehrten der russischen und sowjetischen Geologiegeschichte". Hrsg. M. Guntau. Schriftenreihe für Geologische Wissenschaften Heft 14, Akademie-Verlag Berlin 1979, 200 S., 38,- M.
- "Geologen der Goethezeit". Hrsg. H. Prescher. Abhandlungen des Staatlichen Museums für Mineralogie und Geologie zu Dresden Bd. 29, VEB Deutscher Verlag für Grundstoffindustrie Leipzig 1979, 396 S., 40,- M.

At intervals of several years the Mining Academy in Freiberg publishes bibliographical surveys of publications on the history of geological sciences in the GDR. The last one that appeared is:

- P. Schmidt: Bibliographie der in der DDR zur Geschichte der Geologie, Mineralogie, Geophysik und Paläontologie vorgelegten Arbeiten. 1970 - 1976. Veröffentlichungen des Wissenschaftlichen Informationszentrums der Bergakademie Freiberg Nr. 71, 160 S., Freiberg 1978

More scientific meetings in the GDR are being planned for 1980. The Association of Crystallography of the GDR will hold a conference in memory of the crystallographer Christian Samuel Weiß (1780 - 1856), and the Society of Geological Sciences of the GDR will devote its annual meeting to the Remembrance of Alfred Wegener (1880 - 1930).

R. Daber

M. Guntau

History of Geology in America 1979

The United States Geological Survey (the national survey bureau as distinct from the provincial) celebrated the centenary of its founding in 1879 by publicizing the role of the earth sciences in the planning for use and conservation of our natural resources, the earth, the air, and the sea, for the common welfare. Throughout the year, there were ceremonies, symposia, and exhibits celebrating the past achievements of the Survey's geologists as well as its present activities. The celebration of the Centennial concluded in the two part G.K. Gilbert Symposium at the annual meetings of the Geological Society of America (GSA) in November at San Diego. Part I, "Gilbert's Geology Then and Now" was a six-paper retracing of Gilbert's geological career in confrontation with our present views of the subjects which he studied. Part II, "The Growth of a Scientific Community" took up the evolution of geological literature in America, the professionalization of paleontology, the centralization of geology in Washington, and the concomitant growth of opposition. In all, there were in the last year, at least 18 separate sessions of technical papers or Symposia held in the United

States which were devoted to the history of geology. At a conservative estimate more than 80 papers were presented at these sessions. These were held at the American Chemical Society's annual meeting in Miami, September 1978, the American Society of Zoologists in Richmond in December of 1978; the Smithsonian Associates U.S.G.S. Centennial Lecture Series concluded on May 16 with Clifford Nelson's study of the geologic art of William Henry Holmes who illustrated Dutton's classic memoir on the Grand Canyon. There were symposia on the Survey's century of mapping at meetings of the American Society of Photogrammetry in March; a lecture on the Survey's century of fossil collecting at the International Conference on the History of Museums and Collections in Natural History in April. Also in April, at San Jose the program of the Cordilleran Section of the G.S.A. included four papers on the history of geology.

Other Symposia were held in May at the IXth International Carboniferous Congress - "History of Carboniferous Geology and Geologists" and at the meetings of the Rocky Mountain Section of the G.S.A.; two symposia comprising 13 papers were held in June at the annual meetings of the Pacific Division of the American Association for the Advancement of Science. There was also a technical session in addition to the Gilbert Symposium at San Diego in November. Two sessions at the History of Science Society Meetings in New York in December concluded what has been the most active year by far for the history of geology in the United States.

The Survey Centennial was also marked by an Autumn exhibit at the Smithsonian Institution in Washington of the William Henry Holmes drawings. Ellis Yochelson and Clifford Nelson assembled "Images of the United States Geological Survey 1879 - 1979: a history of the U.S.G.S. in photographs which was shown or will be shown in 20 centers. "Images ..." was reproduced in a 56 page pamphlet published by the Survey. The photographs range from documentation of the Powell Grand Canyon Survey to the lunar landings. At least four other exhibits of the Survey's century of collecting of maps and photographs were prepared during the year.

For many years, Mary C. Rabbitt has been preparing the official history of the Survey. Volume I covering the years before 1879 when the Survey was established has now been published. It is a lavishly illustrated 331 page quarto which for sheer breadth of coverage is unequalled. Volume II of four, all under the title of "Minerals, Lands, and Geology for the Common Defence and General Welfare" should be published early in 1980. Volume I is obtainable through the U.S. Government Printing Office, Superintendent of Documents, Washington, D.C., 20402 (\$ 6,00). Other publications of significance include Robert M. Hazen's collection of "North American Geology, Early Writings", 31 facsimile reprints of early articles ranging from Thomas Prince's sermon on the Boston Earthquake of 1727, to the Constitution of American Geological Society (1819). The publisher is Dowden, Hutchinson & Ross, Benchmark Series in Geology. The New Hampshire Bicentennial Conference Volume "Two Hundred Years of Geology in America" edited by Cecil J. Schneer was published in the Fall by University Press of New England (Hannover, N.H., U.S.A.); also, a history of salt. "Neptune's Gift" by Robert P. Multhauf was published by Johns Hopkins University Press, 1978. The 1972 INHIGEO Symposium, "History of Concepts in Pre-Cambrian Geology", edited by W.O. Kupsch and W.A.S. Sarjeant, has just been published by the Geological Society of Canada, Special Paper 19.

For 1980, programs have already been approved for Symposia on the history of geology in the Northeast (G.S.A. Northeastern Section) William Jordan, Convenor; History of Geology in the Pacific Northwest (G.S.A. Cordilleran Section) Ellen Drake, Convenor and the Geological Sciences in the Antebellum South (G.S.A. Southeastern Section) James X. Corgan, Convenor.

The Geological Society of America will be 100 years old in 1989. Michele L. Aldrich, newly elected President of the History Division of the G.S.A. is directing plans for a decade of geological activities to culminate in the Centennial Year of 1989.

USHIGEO which includes historians as well as geologists now

numbers 160 Corresponding Members. CANHIGEO lists 91, and The History Division of the G.S.A. which is restricted to geologists but includes all of North America, listed 361 members in November.

Cecil J. Schneer

Information

- INHIGEO will hold its next meeting at the XXVith International Geological Congress (July 7 - 17, 1980) in Paris. All members and corresponding members of INHIGEO are invited to participate in the meeting. There will be a report on the work done in the field of the history of geological sciences in the period between 1976 and 1980. The activities for the period between 1980 and 1984 will also be discussed. Finally, the Bureau and corresponding members of INHIGEO are to be elected at this meeting.

The time and place of the meetings will be announced on the notice-board in the conference hall in Paris.

- The XVith International Congress of the History of Science will be held in Bucharest (Romania) between August 26 and September 3, 1981. The general topic of the Congress will be "Science and Technology, Humanism and Progress". Section 9 of the Congress will deal with questions concerning the history of earth sciences. INHIGEO, which is affiliated to the IUHPS, is going to support preparatory work of this section in particular. The first circular has just come out. Would you please return your reply by March 30, 1980 to: Academy of Socialist Republic of Romania, Congress Secretary, XVith International Congress of the History of Science, 71102 Calea Victoriei 125, Bucuresti, Romania.

- Robert Townson - English Mineralogist. Hugh S. Torrens is gathering information for a study of the life and work of Robert Townson. M.D. (Göttingen), an English mineralogist (flourished, 1792 - 1799; see Dictionary of National Biography) who traveled widely in Europe and Australia. Interested persons wishing to exchange information, especially on manuscript materials relating to Townson, are encouraged to contact Dr. Torrens, Department of Geology, University of Keele, Keele, Staffordshire, ST5 5BG, U.K.

- Christian Andreas Zipser - Slovak Mineralogist. The Slovak mineralogist Christian Andreas Zipser (1787 - 1864), who worked in Banská Bystrica (Neusohl), was a member of 64 foreign scientific bodies. Nearly 200 letters from his extensive correspondence have survived to the present. The senders were geologists from Germany, Italy, Denmark, Great Britain, Austria and other countries. We are interested in any kind of co-operation to investigate the scientific relations between Chr. A. Zipser and outstanding mineralogists from abroad. We should also like to receive information about Zipser's correspondence kept in foreign archives. Please send your correspondence to: Ing. Ivan Herčko, Slovenské banské múzeum (Slowakisches Bergbaumuseum, 96900 Banská Štravnica, Czechoslovakia.

Annotations

- W.O. Kupsch and W.A.S. Sargeant (eds.): History of Concepts in Preambrian Geology. Geological Association of Canada, Special Paper 19, pp. 280, Ontario 1979 (English).

This volume results from a symposium sponsored by the International Committee on the History of Geological Sciences (INHIGEO). It was held in Montreal in August 1972 in conjunction with the Twenty-fourth International Geological

Congress. In addition to all but three of the original presentations at that Congress, this volume contains new material: it contains a total of 18 papers dealing with the history of geological studies on Precambrian rocks in many parts of the world. Five articles deal with North America, four with Great Britain, three with Sweden, one each with Australia, the USSR and India; the remaining three are of a general nature.

The papers dealing with the North American Precambrian and in particular with that of Canada, will of course have relevance for Canadian readers. We believe that the reviews presented of the results of Precambrian studies elsewhere will also be of value in that they show how our knowledge of this System has developed and how different geologists have tackled problems similar to those confronted on this subcontinent.

M.E. Czerneda

- J.R. Moore: The Post-Darwinian Controversies, A study of the Protestant struggle to come to terms with Darwin in Great Britain and America 1870 - 1900. Cambridge Univ. Press 1979, 592 pp. (English).

This probably is the most elaborate study of the subject indicated in the title. The metaphysical views of 28 controversialists in the debate on darwinism are examined. Among them are theologians, biologists (Asa Gray) and several geologists (Lyell, Cope, J.W. Dawson, J. Le Conte, G.F. Wright). The author distinguishes between pure 'darwinism' (development by natural selection) and 'darwinisticism' (which introduced additional causes), and he argues that "Darwin's theory of evolution by natural selection could be accepted in substance only by those whose theology was distinctly orthodox; ... and that, conversely, other theories of evolution, rationalist and immechanical alike, were embraced by those whose theology was notably liberal". Without any doubt this well-written and well-documented book about a great controversy will give rise to another controversy. Yet, also those who will not be convinced by the arguments adduced in

support of this thesis, may profit from the wealth of information given by this original work on the ideas about evolution in 19th century Britain and America and on those who held them.

R. Hooykaas

- Mary C. Rabbitt: Minerals, Lands, and Geology for the Common Defence and General Welfare, Volume 1, Before 1879, A History of Public Lands, Federal Science and Mapping Policy, and Development of Mineral Resources in the United States. United States Government Printing Office: 1979, pp. 331 (English).

This book is the first part of a four-volume work to be published on the occasion of the centenary of the United States Geological Survey (1879 - 1979). This volume covers the period before the Survey was established. It presents a picture of the events in those years when geology was developing as a science in the United States and when it began to influence the economic development of the country as well as its national policy.

Starting from the first information about the winning of metals and about single geological observations in North America, the main emphasis is on geological and mineralogical knowledge, on mappings and scientific organizational measures during the 19th century. In the last chapter a detailed description is given of the foundation of the Geological Survey. The book contains numerous illustrations, detailed notes, an extensive bibliography and several indexes. M. G.

- Cecil J. Schneer (ed.): Two Hundred Years of Geology in America. Proceedings of the New Hampshire Bicentennial Conference on the History of Geology. University Press of New England, Hanover, New Hampshire 1979, pp. 385 (English, French).

In 28 articles, 32 authors give a description of the history of geology in the United States from the early beginnings to the present. The papers, which were read at a conference on the history of geology held in Durham, New Hampshire, in October 1976, deal with topics such as the geological map of North America by J.-E. Guettard (1752), problems concer-

ning a bibliography of early geological works in America (1669 - 1850), the foundation of geological surveys in the United States (1820 - 1845), the geosynclinal hypothesis as the first American geological concept, the history of the paleontology of vertebrates in North America (1776 - 1976), the influence of geology on thought and literature in America, the relationship between the continental drift theory and the Concept of Sea Floor Spreading by H. Hess, etc. Without claiming historical systematics or even completeness, this volume provides an insight into interesting details and relations of the United States history of geology. M. G.

- V.V. Tikhomirov: *Geologija v akademii nauk - ot Lomonosova do Karpinskogo*. (Geology in the Academy of Sciences - from Lomonosov up to Karpinsky). Contribution to the History of Geological Sciences Vol. 20, pp. 295, Publishing Office "Nauka", Moscow 1979 (Russian).

There is the review of geological studies that have been carried out by the Academy of Sciences in Petersburg for the first 200 years of its existing in the monography. It's shown the valuable contribution of the notable Russian scientists to the Russian and world geological science and analysed the scientific importance of individual works, the list of the used historical reviews and the name index with short bibliographical information. Author

- P. Schmidt: *Bibliographie der in der DDR zur Geschichte der Geologie, Mineralogie, Geophysik und Paläontologie vorgelegten Arbeiten 1970 - 1976*. Veröffentlichungen des Wissenschaftlichen Informationszentrums der Bergakademie Freiberg Nr. 71, pp. 160, Freiberg (DDR) 1978 (German).

Continuing the GDR collection presented at the INHIGEO-Symposium in Freiberg in 1970, P. Schmidt now offers a new bibliography comprising 1087 titles. Approximately 50 per cent of the 380 authors mentioned are scientists from the GDR (scholars of earth sciences, historians, archivists,

curators, etc. This gives evidence of the estimation towards questions concerning the history of sciences in the GDR.

Most of the works mentioned (596 titles) are biographies. They make up 55 per cent of the notations. Apart from this the bibliography contains general surveys and works on the history of particular disciplines, the history of teaching traditions, museums, archives and libraries and of the study group on the history and philosophy of earth sciences of the GDR Society of Geological Sciences.

The bibliography is not only a necessary aid for further work but also an important contribution to the recording of science history in the GDR.

H. Prescher

- Balthasar Rössler: *Speculum metallurgiae politissimum oder Hellpolierter Berg-Bau-Spiegel*. Dresden 1700. Reprint Národní Technické Muzeum Praha 1978, 222 S. (German)

In this book, which was already written in 1650, the Saxon mining officer B. Rössler (1605 - 1673) elaborates original about the surveying and description of veins of ore. The author, who was known as a mine surveyor, provides a description of the most important ores, their deposits and of the geological conditions under which they occur. Furthermore, fuller particulars are given about prospecting, mining and metallurgy. A detailed subject index and an extensive index of mining terms greatly facilitates the use of the book. This facsimile edition is extremely useful for it represents the state of geological knowledge in the Saxon-Bohemian Erzgebirge during the 17th century in an excellent way.

M. G.

- M. Büttner (Hrsg.): *Wandlungen im geographischen Denken von Aristoteles bis Kant*. - Paderborn München Wien Zürich 1979, 276 S. (German, English)

This collection contains papers on the history of geography from the antiquity to the 18th century. With the intention of tracing the relationship between theological and geogra-

phical thought, the authors describe and discuss the ideas of several scholars. A number of papers read at a conference on the history of geography in Mainz (FRG) in 1977 and some other articles deal with the geographical ideas of Aristotle, Muquaddasi, Melanchthon, Rheticus, Keckermann, Comenius, Kant and others. They have been compiled in this collection which is the first volume of a series called "Abhandlungen und Quellen zur Geschichte der Geographie und Kosmologie". M. G.

- D.B. Kitts: The Structure of Geology. SMU Press, Dallas 1977, pp. XIX + 180 (English)

Southern Methodist University Press (Dallas, Texas, U.S.A.) has compiled and published in one volume D.B. Kitts' individual studies on essential theoretical and philosophical questions of geological sciences. From the point of view of the recent history of geological knowledge the topics discussed are as follows: historical explanations in geology, certainty and uncertainty in geology, theory of geology, physical theory and geological knowledge, continental drift and scientific revolution, geological time, paleontology and the doctrine of evolution. The book is a useful contribution to the discussion of present-day basic problems of geological sciences. M. G.

- L.J. Jordanova and R.S. Porter (eds.): Images of the Earth. Essays in the History of the Environmental Sciences, pp. XX + 282, Chalfont St. Giles (England), British Society for the History of Science, 1979. (English)

This stimulating collection of essays is derived from the conference on 'New Perspectives in the History of Geology', held in Cambridge (England) in 1977. Although most of the essays deal with British science in the 18th and 19th centuries, the collection is also important for those working on the earth sciences in other countries and at other periods.

Unlike many historians of geology, the contributors recognise

that it is misleading to use the boundaries of the modern science of geology as a framework for studying earlier ideas about the earth. Superficially, some of these essays may be thought to belong to 'art history', 'history of medicine' etc., rather than to 'history of geology'; but at a deeper level they are all relevant to an understanding of the history of human perceptions or 'images' of the earth, and of human uses of those perceptions. M.J.S. Rudwick

- CCG. Newsletter of the Geological Curators Group. Keele University, Great Britain, Ed.: Brian W. Page, Geology Dept., University of Keele, Keele, Staffs. ST5 5BG. (English)

The group of curators of geological collections in Great Britain, which is affiliated to the Geological Society of London publishes its own Newsletter (three pamphlets per year). They include reports on collections in the field of earth sciences and their history, on prominent collectors, museum work, historically valuable catalogues of collections, reviews of exhibitions, brief information about collection and museum work, etc. It is worthy of note that the relation to the history of geological sciences plays an important role in most contributions. M. G.

- G.K. Georgiev: Starata [✓] železodobivna industrija v bulgarija (The old Iron Industry in Bulgaria). Publishing Office of the Academy of Science, Sofia 1978, pp. 206, (Bulgarian; abstracts in French and English).

The author has been dealing with the history of iron in Bulgaria since the 30ies. This monograph sums up the results of his research which is based on records from archives, archaeological discoveries and the description of objects. In the beginning, the author describes the extraction of iron in his country during slavery and feudalism. The major part of the monograph, however, is devoted to the iron industry in Bulgaria under Ottoman domination (1393-1878). The iron ores as well as the technologies used, but above all the historical technical constructions are described in greater detail. The

text is complemented by many illustrations, schematic drawings, maps and tables.

M. G.

- K.P. Patkanjan: *Dragocennye kamni ich nazvaniya i svojstva po ponjatijam armjan v XVII V. St. Petersburg 1873, XXXIX + 74 S. (Reprint) Jerevan 1979 (Russian)*

The Geographical Society of Armenia has republished this book by K.P. Patkanjan (1833 - 1883) to make the knowledge about precious and semi-precious stones in the late Middle Ages of Armenia known to its members and others interested. The source of Patkanjan's work is the "Book of History" which was written by the monk Arakel Davrizhetsi (born: end of the 16th century; died in 1670) and which describes 26 minerals in three chapters: their colour, hardness, deposits, value and several other characteristics. Patkanjan discusses these data from the 17th century and compares them with later knowledge. He also compiled a nomenclature of the minerals described in several languages (among others Armenian, Persian, Arabic, Russian, English). The publication represents an interesting source of the history of knowledge about minerals in Transcaucasia.

M. G.

- H. Prescher (Hrsg.): *Geologen der Goethezeit, Abhandlungen des Staatlichen Museums für Mineralogie und Geologie zu Dresden Bd. 29, 396 S. VEB Verlag für Grundstoffindustrie Leipzig 1979 (German)*

This volume presents the scientific work of the geologists L.v. Buch, J.W.C. Voigt, Ch. Keferstein, J.C. Freiesleben, and C.F. Naumann. With their works these scholars had a decisive influence on the geology, paleontology, mineralogy, and crystallography in Germany in the first half of the 19th century. The introductory part is devoted to the deposit collection of Freiberg in Johann Wolfgang von Goethe's estate.

The monograph is based on a thorough study of original works, maps, records, and documents from archives and museums, most

of which have been investigated from a scientific historical point of view for the first time. The connections between the scholars mentioned and Goethe, but also A.G. Werner, A. v. Humboldt and other contemporaries, are described in various ways. The text is complemented by many figures, facsimiles, tables and maps; it provides an excellent insight into the development of geological thought after the great neptunism - volcanism controversy. M. G.

- N. Morella: La macchina della Terra. Teorie geologiche dal Seicento all' Ottocento. - Storia della scienza collana diretta da Paolo Rossi. 231 S., Loescher editore torino 1979 (Italian)

On the basis of quotations from publications of prominent geologists, the author provides an insight into the history of geological ideas from the 17th to the 19th century. The introduction gives a brief survey of the most important geological ideas of this time. This is followed by extensive quotations of a number of scholars including texts on interpretations of fossils, on geological ideas from the point of view of the Bible and on physicotheology. Furthermore, there are quotations of geological views from the first half of the 18th century, the neptunism-volcanism controversy, and from the first decades of the 19th century. The book is complemented by a subject index and a bibliography. M. G.

II. Internationales Symposium zur Geschichte der Arabischen Wissenschaft

Sektion Geschichte der Geowissenschaften

Vom 5. - 10. April 1979 fand das II. Internationale Symposium zur Geschichte der arabischen Wissenschaft in Aleppo (Syrien) statt. Vorträge wurden in fünf sich in ihrer Thematik unterscheidenden Sektionen gehalten: Allgemeine Probleme der Geschichte der arabischen Wissenschaft; Geschichte der exakten Wissenschaften (Mathematik, Mechanik, Physik, Astronomie); Geschichte der Medizin; Geschichte der Technik; Geschichte der Chemie, Geowissenschaften und Biologie.

In der Sektion zu den Geowissenschaften wurden neun Vorträge zu Fragen der Geschichte der Mineralogie, Geologie, Geographie, Geodäsie, Alchemie, des Magnetismus und der Kosmologie gehalten. Sie belegten die bedeutsame Entwicklung dieser Wissenschaften im Nahen Osten und in Mittelasien im Verlaufe des frühen Mittelalters.

1. Subir Banerjee und A.H. Sabra (USA): Ein Magnetkompaß des 13. Jahrhunderts - beschrieben von Sultan Al Ashraf von Jemen.

Die Beschreibung dieses Magnetkompasses des 13. Jahrhunderts durch Sultan Al Ashraf stellt die früheste wissenschaftliche Arbeit dieser Art in arabischer Sprache dar. Der Kompaß war in erster Linie für die Bestimmung der Richtung nach Mekka von den Hauptstädten des Nahen Ostens vorgesehen. In der Arbeit Al Ashrafs sind die geographischen Koordinaten dieser Städte angegeben. Der Kompaß zeichnet sich durch hohe Meßgenauigkeit aus.

2. Hans Daiber (Holland): Frühe kosmologische Theorien der Araber.

Die Vorstellungen der Araber über die Unbeweglichkeit der Himmelssphäre basieren auf der Kosmologie der alten Griechen.