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BOOK REVIEWS

THE EARTH'S CRUST AND UPPER MANTLE - Structure, Dynamic Processes, and Their Relation to Deep-Seated Geological Phenomena, edited by Pembroke J. Hart, 735 pages, illus., tables. Amer. Geophys. Union Geophys. Mon. 13, (Nat'l. Acad. Sci. - Nat'l. Research Council Pub. 1708) Upper Mantle Project: Sci. Report 21, 1969. \$18.00; \$10.00 to students; \$5.00 paperback.

This volume, a review of accomplishments during the eight years of the Upper Mantle Project, portends to be a 'reference and tutorial text' and source of 'excitement and enthusiasm' to the reader. It does not always meet these goals. Its 92 authors writing in 84 separate articles cover the range of geophysical, geochemical, and geological inquiry. One-third of the book deals with seismological topics -- a reflection of the physical remoteness of the subject. There are, however, 18 articles dealing with geochemistry, petrology, and petrological models of the upper mantle. Other subjects covered include gravity, magnetics, heat flow, and electrical conductivity studies of the crust and upper mantle.

If one could point out a single conclusion shared by all of the contributors it would be the existence of lateral inhomogeneities in the earth down to depths of hundreds of kilometers. Many of the authors also find evidence of lateral motion, i.e., continental drift or sea floor spreading, conclusions not shared by some of the 25 Russian contributors. This difference of opinion makes for interesting reading, especially V.V. Belousov's 'Interrelations Between the Earth's Crust and Upper Mantle'.

The book's strength lies in its being a source of first order information on geophysical phenomena, e.g., 'Heat Flow Map of Eurasia' (Lubimova and Polyak), 'Surface Waves and Crustal Structure' (Brune) and 'Phase Transitions' (Ringwood and Green). The relatively heavy representation of Russian scientists yields a wealth of information on Eurasia, an area often neglected by American earth scientists. One would wish, however, that there would be more discussion of South America and Africa.

The biggest disappointments occur in the transitions from some impressive titles in the Table of Contents to short unimpressive discussions of the stated topics. These two or three page reviews read more like reports to non-scientific committees rather than parts of a geophysical monograph. The prospective purchaser would be wise to go beyond the Table of Contents in deter-

mining whether he will add this book to his library or not.

It is, however, an important volume in that it summarizes our present knowledge and lack of knowledge on the composition and dynamics of the crust and upper mantle.

Leon Reiter
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THE AMERICAN MINERALOGICAL JOURNAL, conducted by Archibald Bruce, M.D., Vol. 1. (Facsimile of the 1814 edition). Introduction by John C. Greene; Foreword by George W. White. Contributions to the History of Geology, Vol. 1. Hafner Publishing Company, Inc., New York and London, 1968. \$18.00.

THE MONTHLY AMERICAN JOURNAL OF GEOLOGY AND NATURAL SCIENCE, conducted by G. W. Fetherstonhaugh, Vol. 1, (Facsimile of the 1831-32 edition). Introduction by George W. White. Contributions to the History of Geology, Vol. 3. Hafner Publishing Company, Inc., New York and London, 1968. \$25.00.

The present volumes are reprinted by the Hafner Publishing Company as Volumes 1 and 3 of their series Contributions to the History of Geology, under the editorship of George W. White. Each is printed in the facsimile of the original edition, and together they provide a valuable insight into the state of North American geology in the early years of the 19th Century.

The short-lived American Mineralogical Journal (1810-1814) was, as John C. Greene remarks in his introduction, a milestone in the history of American science, for it was the first non-medical specialized scientific journal to be published in North America. The object of the journal was wide -- "to Elucidate the Mineralogy and Geology of the United States of America" and to describe minerals, mines, and mineral waters including "their use in the arts and in the care of diseases, etc." This first volume contains a wealth of descriptive mineralogy, including some chemical analyses, a series of geological queries, regional geological papers, and descriptions of mining and experimental techniques. In spite of an enthusiastic reception for the journal within the United States and Europe, Archibald Bruce, the original editor, faced formidable problems in maintaining the journal and only four volumes appeared. Not the least significant aspect of its decline, however, was its replacement by the American Journal of Science, edited by one closely connected with the American Mineralogical Journal, Benjamin Silliman.

THE MONTHLY AMERICAN JOURNAL OF GEOLOGY AND NATURAL SCIENCE was represented by only a single volume, but its 576 pages provide a remarkably representative sample of the state of geologic thought amongst an informed Philadelphia group in the early 1830's. The volume was edited by G. W. Fetherstonhaugh, whose vigorous style and catholic interests make a pleasing feature of the Journal. It contains his "Essay on Geology," a large number of reviews of contemporary studies (some of them crushing), and a variety of approved original papers from correspondents, "bearing the stamp of good sense." Fossil discoveries, drainage problems, diary of a naturalist, cave tours, new metals (one "provisionally called Vanadium"), use of anthracite, experiments with flowers, and many more jostle on the unindexed pages. Some articles are a remarkable jumble of scientific observation and moralistic admonitions, "The Absence of Deserts in the United States" being a prime example. Not the least stimulating feature of the volume is the intense debate and personal dispute which marked the early rise of geology.

Both these volumes are handsomely produced, and will be of interest to all concerned with the development of earth science.

Frank H. T. Rhodes
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ORE DEPOSITS AS RELATED TO STRUCTURAL FEATURES, edited by W. H. Newhouse, xi + 280 pages, figures, tables. Princeton University Press, reprinted by Hafner Publishing Company, Inc., New York and London, reprinted in 1969. \$14.50.

This reprint of the 1942 edition will surely be welcomed by instructors of economic geology as a valuable reference, which is once more available. Although many of the mines used as examples in this text are no longer operating or have small production, the structural principles are as valuable as ever. Many of the districts are producing equal or greater tonnages as at the time of publication of the original volume and are thus still of current interest. It is, of course, somewhat regrettable that the increased structural knowledge of these districts could not be included in revised contributions or in appendices to the reprinted edition.

In spite of these deficiencies, the book should serve as well for the present generation of students of ore deposits as it did for the last and provide a worthwhile source of detailed information and discussion of structural principles for beginning economic geologists.

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MECHANISMS OF INORGANIC REACTIONS IN SOLUTION, by Denis Benson, xii + 218 pages, 22 figures, 33 tables. McGraw-Hill Book Co., New York, 1968. \$14.00.

This short book provides an excellent introduction to the kinetics of inorganic reactions in solution. The introduction provides a general outline of the theoretical background needed for subsequent chapters. Later chapters deal with specific kinds of reactions and further development of the theory. These include substitution reactions of metal complexes of octahedral square-planar, and tetrahedral types; oxidation-reduction reactions of metal ions; reactions of oxoanions; free radical reactions; and protolytic reactions. The book gives a good insight to the present state of knowledge by use of the principles of ligand field theory, isotope exchange studies, and numerous examples of previous kinetic studies. Bibliographies at the end of each chapter refer the reader to appropriate sources for further study.

Whereas most of the examples are not applicable to geologic systems, the principles are well explained, and at least parts of the book appear suitable for readings in elementary to intermediate courses in geochemistry. Teachers of geochemistry might well use this text for their own information in preparing themselves to introduce kinetic topics into their courses. In this respect it seems worthwhile to quote from the Preface: "Since the inclusion of inorganic mechanism in the teaching curricula of universities and colleges is a fairly recent development, I hope also that the book may be of some use to professional chemists." Because coverage is restricted to homogeneous solutions, the applications to geochemistry relate best to hydrothermal solutions, sea water, ground water, and other aqueous systems, even though none of these geologic systems is homogeneous.

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PHYSICAL METHODS IN DETERMINATIVE MINERALOGY, edited by J. Zussman, xi + 514 pages, 173 figures, 45 tables, Academic Press Inc., London, 1967. \$22.00.

This volume includes contributions from 11 authors on a variety of techniques useful in mineral determination. These include mineral separation, microscopy--both transmitted and reflected, x-ray fluorescence spectrography, electron probe microanalysis, x-ray diffraction, electron microscopy and diffraction, infrared absorption spectroscopy, thermal techniques, emission spectrography, densitometry, autoradiography, and atomic absorption spectroscopy. These were chosen because it was thought that most geological research laboratories are, or reasonably could be equipped to perform these analyses and procedures at the present time. Other techniques mentioned in the preface which do not meet this criterion are neutron diffraction, nuclear magnetic resonance, electron spin resonance, mass spectrometry, and Mössbauer spectroscopy.

Because of the diverse authorship and familiarity of mineralogists with the various techniques, the treatment of the topics varies greatly. For a number of the chapters, sufficient detail is given for a novice to understand and perform the operations described. Whereas this is not sufficient to give the student a full understanding of the subject, it is certainly adequate to get him started. For these topics, therefore, the book is valuable to upper level undergraduate and beginning graduate students. In this category the chapters on mineral separation, microscopy, x-ray fluorescence spectroscopy and possibly electron probe microanalysis belong--with the proviso that the student must still inform himself from other sources concerning proper operating and safety procedures, especially in respect to the last two techniques.

For a number of other methods, e.g., electron microscopy, and x-ray diffraction, the reader is given primarily a description of what can be done, but little detailed knowledge of how this is accomplished. The information provided is still useful as a general background knowledge, and perhaps as an incentive to further study in the specific disciplines involved.

For a few methods, however, the student is given little more than a note to the effect that the method exists. This applies, for example, to the chapters on autoradiography and atomic absorption spectroscopy.

In general the book provides a brief survey of the existing methods that a student in mineralogy might normally expect to encounter or use during his career. Sophisticated use of these methods, however, requires further study. Thus, the book seems useful to beginning students, and as a reference for additional reading in connection with studies in other subjects or research work. A potential purchaser would be well advised to ascertain first whether the volume satisfies his needs before buying the book.

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JOURNALS OF INTEREST TO GEOCHEMISTS

Journal of Chemical Thermodynamics

The Journal of Chemical Thermodynamics publishes papers dealing with thermochemical and equilibrium studies on chemical reactions, and with the measurement of thermodynamic properties of single and multi-component systems by calorimetric, PVT, spectroscopic, and other methods. It will include topics currently treated in the Bulletin of Thermodynamics and Thermochemistry and papers of thermodynamic content on systems of interest to biochemists, metallurgists, and physicists. A particular concern of the Journal is to present the complete results of accurate measurements. To facilitate rapid publication of new experimental results, the Journal may occasionally publish papers containing exclusively or mainly results of a particular study, followed at a later date by the discussion of these results. It includes reviews of monographs on thermodynamic topics, of textbooks on thermodynamics and statistical thermodynamics and of tables of thermodynamic properties. As a result of the response with which it has been received and the volume of papers being offered, the Journal has been expanded in 1970 by one-third its former size. The Journal is published bi-monthly, 900 pages per volume of six issues.

Editors and Advisory Board are appointed by a Task Group set up by members of the Commission on Thermodynamics and Thermochemistry of the International Union of Pure and Applied Chemistry.

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Fluid Inclusion Research - Proceedings of COFFI

A new annual journal, Fluid Inclusion Research - Proceedings of COFFI, has recently achieved publication of its first volume. The main activities of COFFI (Commission on Ore-Forming Fluids in Inclusions--under the International Association of the Genesis of Ore Deposits) have been to establish contacts among fluid inclusion workers and to organize fluid inclusion symposia. The new publication is in keeping with these accomplishments in that it includes abstracts and titles of several such conferences as well as notices of future meetings. It should prove very useful in establishing and maintaining communications in this field.

The first volume comprises 78 pages; charter subscription price is \$3.00 U.S. per year. Checks should be made payable to COFFI; all subscription correspondence is handled by Dr. Edwin Roedder, U. S. Geological Survey, Washington, D. C., 20242, U. S. A.

NOTICE TO ALL MEMBERS OF THE GEOCHEMICAL SOCIETY

SLATE OF OFFICERS FOR NOVEMBER, 1971

By-Law III, as voted into effect by the membership last year, is as follows: Nominations for office shall be made by the Council, one nomination for each office, with due consideration of the recommendations of the Nominating Committee. The nominations shall be made known to the members at least eight months prior to the next annual meeting, at which time the new officers are to take office. Other nominations may be made in writing by any ten members; these nominations, and the nominees' acceptance, must be in the hands of the Secretary at least five months before the annual meeting. If no other nominations are received by that date, the Council slate shall be considered elected and no ballots will be sent. If other nominations are received, ballots carrying all nominations, in alphabetical order and without distinction between those of the Council and any others, shall be distributed to the members. Election shall be on the basis of a plurality of the votes cast. The elected officers shall enter on duty at the adjournment of the next annual meeting.

The Executive Council has approved the following slate of officers, as submitted by the Nomination Committee, for the terms indicated:

President:	Francis R. Boyd, Jr.	November 1971-November 1972
Vice President:	B. J. Skinner	November 1971-November 1972
Councillors:	Raymond Siever	November 1971-November 1974
	S. Epstein	November 1971-November 1974
	R. O. Fournier	November 1971-November 1972
	(to fill unexpired term of B. J. Skinner)	

It is possible that owing to difficulties beyond our control (mailing delays, etc.) you will not receive this notice by March 1, as required by By-Law III. However, the intent of the By-Law can be fulfilled by setting an equally-late date by which any additional nominations must be in my hands. So if there are to be any additional nominations from the membership according to By-Law III, they, and the nominees' acceptances, must be in my hands by June 30, 1971, so that there will be time for printing, mailing out and back, and counting of ballots.

Ernest E. Angino

MEMBERSHIP LIST

Notice to all members

In checking through the new Membership List, just printed for us by the American Geological Institute, we have found that many of the new members who joined the Society in the last year have not been listed, even though AGI received their names promptly on acceptance into the Society. I have tried to correct as many as possible of the errors and omissions that have been made in this listing, but have certainly missed some. If any members have not received their copy of the Membership List by the time this notice is printed, or are not receiving the Geochemical News and Geotimes, please write the Secretary's office. If you hear of other members who have been omitted in these mailings, and hence who might not see this notice, please tell them to write. In any case, I wish to apologize to those who have been omitted. I hope we can put out a better listing in the future.

Edwin Roedder, Secretary
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IMPORTANT NOTICE (APOLOGY) TO MEMBERS OF THE GEOCHEMICAL SOCIETY

We have in the past few weeks been updating the newly published (June, 1970) membership list. To our dismay the number of changes of address, resignations, new members not listed, etc., is large. THERE ARE ABOUT 10 CHANGES PER PAGE! It is suggested that members use the lists published herewith to revise, by entering the changes directly onto the appropriate pages, their own copies. Not all of the corrections of which we are aware are published in this issue.

Members are cautioned to beware of errors of the alphabetical order in the membership list. For example, Dwight G. Moore, Jr.

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There are two listings for Basudeb Das Sarma. The incorrect listing is SARMA, Basudeb das; the correct listing is DAS SARMA, Basudeb.

GSA ABSTRACTS

Members of the Geochemical Society who are not members of the Geological Society of America will not receive the abstracts of the Annual Program. Included with Circular 2 which will appear in the September issue of Geotimes will be an order form for copies of Abstracts with Programs V. 3, No 7, to be obtained from GSA's Publication Sales Department. The form will list the cost of the volume and handling charges.

Ernest E. Angino

GORDON RESEARCH CONFERENCES

A Gordon Research Conference in Geochemistry will be held again this year at the Holderness School, Plymouth, N. H., from August 30 to September 3. The conference title is "Mixed Volatiles and Metamorphism" and includes papers and discussions on Buffers and experimental techniques, Fluid inclusion studies, Experimental phase equilibrium studies, Field investigations, Thermodynamics and theory, and Active natural Systems.

Requests for membership in the conferences, or for additional information, should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Pastore Chemical Laboratory, University of Rhode Island, Kingston, R. I. 02881, Tel. 401-783-4011. From June 14 to September 3, mail to Dr. Cruickshank should be sent to him at Colby Junior College, New London, N. H. 03257, Tel. 603-526-2870.

Members of The Geochemical Society are urged to apply, as the Geochemistry Conferences are not usually filled. Applications should be sent at least two months prior to the date of the conference.

SYMPOSIUM PLANNED

The Division of Water, Air, and Waste Chemistry of the American Chemical Society is organizing a symposium in Washington, D. C. in September, 1971, entitled "The Geochemical Cycle of Trace Metals in Our Environment". It will deal with matters of worldwide concern, e.g., global distribution, and transport and stability of the airborne elements in the atmosphere. Standard abstract forms may be secured through: C. Ellen Gouter, Cyrus Wm. Rice Div., NUS Corp., 15 Noble Ave., Pittsburgh, Pa. 15205. Five copies of a 200-word abstract and three copies of a paper preprint (extended abstract) are due before May 5, 1971.

CALENDAR

- April
5-7 Plutonic rocks in relation to ore deposits, a colloquium honoring Prof. E. Raguin: Paris. (H. Pelissonnier, 60, Blvd. St-Michel, Paris 6^e)
- 14-16 Colloquium on African geology, Leicester, England. (M.J. Le Bas, Department of Geology, the University, Leicester, LE1 7RH, England)
- May
3-7 Intl symposium on man-made lakes--problems & environmental effects; Knoxville, Tenn. By Scientific Committee on Water Research, for Intl Council of Scientific Unions. (W.C. Ackermann, President, Scientific Committee on Water Research, Illinois Water Survey, Box 232, Urbana, Ill., 61801)
- 13-18 Geological Assn. of Canada & Mineralogical Assn. of Canada, ann. mtg, Sudbury. Mtg (May 13-15) & symposiums on Huronian stratigraphy & sedimentation and Sudbury geology. Field trips May 16-18. (D.H. Williamson, Dept of Geology, Laurentian Univ., Sudbury, Ont.)
- 17-21 Symposium on remote sensing of environment, Ann Arbor, Mich. (J.J. Cook, Center for Remote Sensing, Willow Run Labs, Box 618, Ann Arbor, 48107)
- June
16-17 Society of Economic Geologists, field trip, Wyoming trona district. (R.A. Laurence, Box 1549, Knoxville, Tenn., 37901)
- 29-July 1 Trace substances in environmental health, conference at University of Missouri. (D.D. Hemphill, 426 Clark Hall, University of Missouri, Columbia, 65201)
- July
20-25 Intl Geochemical Congress, Moscow. (R.M. Perhac, Dept. of Geology, University of Tennessee, Knoxville, 37916)
- August
8-12 Clay Minerals Soc., ann. mtg, & North American Clay Minerals Conference, Rapid City, S.D. (W.F. Bradley, Chemical Engineering, University of Texas, Austin, 78712)
- 8-12 Mineralogical Soc. of America, summer mtg, jointly with Clay Minerals Soc., Rapid City, S.D. (Pegmatite Phosphate Symposium. D.H. Garske, South Dakota School of Mines, Rapid City, S.D., 57701)
- 9-10 Rocky Mountain Spectroscopy Conf., Denver. (G.M. Pachelo, Dow Chemical Co., Building 559, Box 888, Golden, Colo., 80401) Abstracts deadline: May 20.
- 10 Intl symposium on pollution of ground water, Moscow. (A.I. Johnson, Office of Water Data Coordination, U.S. Geological Survey, Washington, D.C., 20242)

- August
20-28 Meteoritical Society ann. mtg, Univ. of Tubingen, W. Germany. Field trips Aug. 26-28, Ries Crater & Steinheim Basin, Czechoslovakia (W.V. Engelhardt, Mineralogical Institute, Wilhelm-Strasse 56, Tubingen, W. Germany)
- 23-28 Intl conference on thermal analysis, Davos, Switzerland. (Max Mueller-Vonmoos, Federal Institute of Technology, Sonnegg-strasse 5, CH-8006 Zurich, Switzerland)
- 30-Sept. 1 Tritium symposium, Las Vegas, Nev. (A.A. Moghissi, Southwestern Radiological Health Laboratory, Box 15027, Las Vegas, 89114)
- September
6-9 Physics & Chemistry of asbestos minerals, conference at Louvain Univ., Belgium. (G. Poncelet, Laboratoire de Physico-Chimie Minerale, Institut des Sciences de la Terre, de Croylaan 42, 3030 Heverlee, Belgium)
- 6-9 Intl conf. on physics & chemistry of asbestos minerals, Louvain University, Belgium. (B. Lincoln, Turner & Newall Asbestos Fibre Laboratory, c/o TAC Construction Materials Ltd, Box 22, Trafford Park, Manchester M17 1RU, England)
- 7-10 Intl mtg on organic geochemistry, Hannover, Germany. (Dr. H Wehner, Bundesanstalt für Bodenforschung, 3 Hannover-Buchholz, Postfach 54, Germany)
- 21-Oct. 2 Methods of prospecting for uranium minerals, an advanced study institute by Nato Science Committee, UK Atomic Energy Authority, & Institute of Geological Sciences; lectures at Imperial College, London, & field trips in Cornwall. (Michael Davis, UK Atomic Energy Authority, 11 Charles II St., London SW1)
- 30-Oct. 2 Society of Economic Geologists, field trip, Michigan copper deposits, Houghton, Mich. (R.A. Laurence, Box 1549, Knoxville, Tenn., 37901)
- November
1-3 Geological Soc. America, ann. mtg, Washington, D.C. (GSA headquarters, Box 1719, Boulder, Colo., 80302)
- 1-3 Geochemical Society, ann. mtg, Washington, D.C. (Dr. Ernest Angino, State Geological Survey, Univ. of Kansas, Lawrence, Kansas 66044)

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