The Geochemical News

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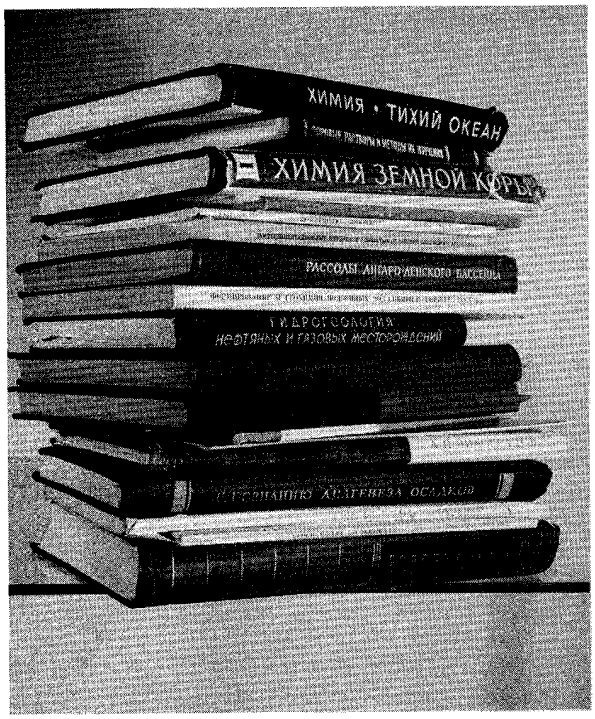
TRANSLATION OF RUSSIAN MONOGRAPHS: A CALL FOR HELP



Translation and publication of Russian monographs in the Earth Sciences is in a discouraging state. This conclusion is agreed on by the past Chairman of the Book Translation Committee of the Geochemical Society, Earl Ingerson, and by the new Chairman, Frank T. Manheim. The reasons are complex, but boil down mainly to apathy in the reading public, and consequently, apathy among responsible publishers. Result: Russian monographic literature, which amounts to over 60 per cent of total Russian earth science literature, remains virtually unknown (often even unabstracted) in the United States.

An approach now proposed by the Committee to assault this apathy is to compile monographs on given topics, by carefully and even ruthlessly selecting from Russian literature the meatiest and most pertinent data - however obscure the source - and attempting to assemble translated volumes consisting mainly of short articles. The articles need not be self-contained, but may be taken from monographs, and augmented by addenda from various sources. The goal is to provide an introduction to the best efforts of Soviet scientists in a given area, while providing results of interest to a broad audience, at a moderate price.

Such a program has enough potential advantages to be worth a strong effort. Yet the difficulties inherent in it will be evident, and it cannot succeed without the assistance and contributions of many people. The call now goes out to readers of this Report to make contributions based on a) knowledge, and b) ignorance. From those who may have some knowledge of Russian work in a given field of geochemistry, or area of ancillary interest to geochemists (we hope that although the topics will chiefly involve geochemistry, they may be of interest to non-geochemists as well, at least in part) we wish to learn what Soviet workers, articles and books merit especial interest--even if only a part of a publication, such as a table or figure.

qualifies. Those who claim (perhaps overmodestly) ignorance can make an equal and indispensable contribution by telling us from which areas they wish to get solid information on Soviet progress, without padding and gristle. Comments on what it would take to get them to buy such a book would be especially pertinent.

Comments on the above should be sent to F.T. Manheim, Woods Hole Oceanographic Institute, Mass. 02543. Remember, if you have read this far and do not send even a postcard, you will confirm the apathy problem mentioned above and may delay the time when some reasonable effort at mining the Russian literature for whatever gold it may yield can be maintained.

THE GORDON RESEARCH CONFERENCES

The Conferences were established to stimulate research in universities, research foundations, and industrial laboratories. This purpose is achieved by an informal type of meeting consisting of scheduled speakers and discussion groups. Sufficient time is available to stimulate informal discussion among the members of each Conference. Meetings are held in the morning and in the evening. The afternoons are available for recreation, reading, or participation in discussion groups, as the individual desires. This type of meeting is a valuable means of disseminating information and ideas to an extent that could not be achieved through the usual channels of publication and presentation at scientific meetings. In addition, scientists in related fields become acquainted and valuable associations are formed that often result in collaboration and cooperative efforts among laboratories.

It is hoped that each Conference will extend the frontiers of science by fostering a free and informal exchange of ideas among persons actively interested in the subject under discussion. The purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments and to provoke suggestions concerning the underlying theories and profitable methods of approach for making progress. The review of known information is not desired.

In order to protect individual rights and to promote discussion, it is an established requirement of each Conference that no information presented is to be used without specific authorization of the individual making the contribution, whether in formal presentation or in discussion. Scientific publications are not prepared as emanating from the Conferences.

From August 25 to 29, 1969, a Conference on the Geochemistry of Ore Deposits was held at the Holderness School, Plymouth, New Hampshire, under the co-chairmanship of Brian J. Skinner and Heinrich D. Holland. Speakers and

topics, except for short contributions, were as follows. Sulfide melts and sulfides in melts: B.J. Skinner, "The solubility of sulfur in silicate melts"; A.J. Naldrett, "Sulfide-oxide melts"; W.H. MacLean, L.A. Clark, and H. Shimazaki, "Liquidus phase relations in the system FeS-FeO-Fe_3O_4-Na_2O-SiO_2 and their geologic applications." Water in silicate intrusions: H.P. Taylor, Jr., "Isotopic evidence for the origin of water in igneous rocks"; S.M.F. Sheppard, "Hydrogen and oxygen isotope studies of hydrothermal deposits"; B.B. Hanshaw, "Linear and convective hydrologic flow models near intrusives," Experimental evidence for the composition of hydrothermal fluids: H.C. Helgeson, "Mass transfer among silicates, sulfides and hydrothermal solutions"; J.L. Haas, Jr., "The solution geochemistry of iron"; H.D. Holland, "The sulfur content of hydrothermal solutions." Observational evidence for the origin and composition of hydrothermal fluids: E. Roedder, "Validity of T, P and X data on ore fluids from fluid inclusion studies"; R.O. Rye, "Fluid inclusion and isotopic studies of the ores at Providencia, Mexico"; H. Ohmoto, "Fluid inclusion and isotopic studies of the ores at the Bluebell Mine, British Columbia." Metallogenic provinces: R.E. Zartman, "The use of lead isotopes to distinguish between 'Laramide' and Precambrian mineralization in northwestern Montana and northern Idaho."; U. Petersen, "South-American metallogenic provinces."

Future Gordon Research Conferences in Geochemistry are planned each year. Plans are to hold a Conference on Organic Geochemistry in 1970, and tentatively, pending decisions each year, on Igneous and Metamorphic Petrology in 1971, Organic Geochemistry in 1972, and Ore Deposits in 1973.

Attendance at the Conferences is by application. Individuals interested in attending the Conferences are requested to send their application to the Director at least two months prior to the date of the Conference. It should be noted that, whereas most Conferences have more applicants than can be accommodated, the Conferences in Geochemistry have been somewhat undersubscribed. Interested geochemists should, therefore, not hesitate to apply.

Requests for membership in the Conferences, or for additional information (e.g. regarding fees, special assistance fund, etc) should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Pastore Chemical Laboratory, University of Rhode Island, Kingston, Rhode Island, 02881.

NEW MEMBERSHIP DIRECTORY

If all goes according to plan, a new membership list will be published in January. The addresses will be taken directly from the computer output which now, through AGI, handles all the Society mailings to the membership. Accordingly, no changes of addresses are published in this issue. Members noting errors in the directory, after its publication, should notify the treasurer, Dr. Bruce B. Hanshaw, Treasurer, The Geochemical Society, U.S. Geological Survey, Arlington Towers W-215, Arlington, Virginia 22209.

BOOK REVIEWS

The reavailability of two classic works in geology-mineralogy is certain to meet the approval of workers and students in these sciences. These are:

IGNEOUS ROCKS AND THE DEPTHS OF THE EARTH, 2nd ed., by Reginald Aldworth Daly; and

MANUAL OF PETROGRAPHIC METHODS, 2nd ed., by Albert Johannsen

These have been reprinted by the Hafner Publishing Company, 31 East 10th Street, New York 3, New York, and are available, at what is under today's inflated book-cost environment, for relatively moderate prices: Daly, $12.00; Johannsen, $12.50.

Daly's classic and elegant reference work was originally published in 1933, and copies have long been unavailable, and are zealously guarded by members of our profession. It is particularly interesting and nostalgic to reread Daly's chapter on the origin of alkalic rocks (limestone syntexis) in view of modern field and laboratory data on carbonatites.

Johannsen's MANUAL long was the "workhorse" text in optical mineralogy and microscopic petrography. With but little change it could be brought up to date and its complete usefulness extended for many years. It is still a very helpful book.

E. Wm. Heinrich
The University of Michigan

ERUPTIVE ROCKS, by S.J. Shand. 3rd edition. Originally published 1949; reprinted 1969. Hafner Publishing Co., New York. $12.50.

The Hafner Publishing Company is providing a considerable service to geologists and petrologists in reprinting a number of classic textbooks and monographs. Already there have appeared Daly's "Igneous Rocks and the Depths of the Earth" and Johannsen's "Manual of Petrographic Methods." Now the company has made available once more Shand's useful textbook on igneous rocks, one of the first works that attempted to link petrography, occurrence, and experimental evidence into a unified genetic picture. In addition it presented a useful chemical-mineralogical scheme of classification closely tied to the origin of the rocks.

In addition to its historical significance the book contains much that is still of practical value today. Because of this it remains a most desirable reference work.

E. Wm. Heinrich
The University of Michigan

DECOMPOSITION TECHNIQUES IN INORGANIC ANALYSIS, by J. Daležal, P. Povondra, and Z. Šulcek. 224 pages. American Elsevier Publishing Company, Inc., New York, 1968. $9.50

With the rapid progress of instrumental methods for inorganic quantitative analysis, the difficult process of the classical wet chemical method has been revised, and new, simpler and more accurate methods have been developed.

Very few methods, however, are capable of giving reliable quantitative results for the analysis of inorganic solids without preliminary treatment of the samples. Most frequently, the samples must be brought into solution before determination. The choice of the proper dissolution method, especially for the beginner, is not a simple one, because it requires certain practical knowledge of analysis. Furthermore, the information is scattered among both original papers and texts.

This book, by three Czech chemists, is the first comprehensive guide ever published on the decomposition techniques of inorganic chemical analysis. The contents are divided into four chapters: 1) Decomposition with various acids in open and closed vessels; 2) Decomposition by fusion, using alkali-, acid-, and reductive flux; 3) Decomposition by sintering, using alkali salts alone or other metal oxides; 4) Some special decomposition methods.

These authors discuss briefly the detailed process of decomposition, resistivity of the container used, and the suitability of the decomposition agents for further steps in the analysis. In addition to a complete coverage of the literature on classical and modern decomposition technique, the authors took pains to test critically each decomposition procedure in the laboratory, and to select only the articles which, in their opinion, have practical value.

The book is not only invaluable to the experienced analyst, but will also prove to be an excellent handbook for all who are involved with general inorganic analysis.

Jun Ito
Harvard University

SODIUM CHLORIDE (THE PRODUCTION AND PROPERTIES OF SALT AND BRINE), edited by Dale W. Kaufmann. 743 pages. American Chemical Society Monographs Series. Hafner Publishing Company, New York, 1968. $25.00.

The monograph consists of 27 chapters by 14 different authors, 12 of the chapters being written by the editor. It includes a glossary (7 pages), author index (8 pages), and subject index (40 pages).

The subject material covers the following general categories: mineralogy and geology; mining, brine and pan operations; analytical industrial methods and specifications; utilization in human physiology, nutrition, and medicine; and in animal and plant nutrition; industrial materials handling; chemical-physical properties; economics of the industry; and industrial salt utilization. Of particular interest to geochemists will be the general chapters on mineralogy of salt, petrography of salt, geology of salt deposits, and salt deposits of the United States. Geochemists will also have specific interest in the chapters on analytical methods, low temperature properties and uses, chemical reactions, and physical properties.

Overall, the monograph is a comprehensive and inexhaustive source of information on sodium chloride, and should serve as a necessary reference book to those scientists working in areas where sodium chloride solids or liquids are of specific interest.

Louis I. Briggs
The University of Michigan

INDUCED RADIOACTIVITY, by Marcel Barbier. 424 pages. Wiley-Interscience, 1969. $21.00.

The specialist in nuclear geochemistry should find this book a valuable reference for it is an eminently practical text on the nuclear physics behind a wide variety of nuclear reactions. Although no specific reference is made to nuclear reactions occurring in nature, the chapters on activation by high evergy particles producing spallation and on fission products and activation by thermal to fast neutrons will be useful to the researcher in cosmic ray effects in meteorites and to persons concerned with atmospheric radioactivity. Especially noteworthy of this book is the set of problems at the end of each chapter to illustrate the subject matter. This reviewer would like to see such problems traditional in textbooks of geochemistry as they are in nuclear physics.

John W. Winchester
The University of Michigan

ION EXCHANGE COLUMN

News From the National Academy of Sciences

Last spring it was announced that Philip H. Abelson, Director, Geophysical Laboratory, Carnegie Institution of Washington, and a member of the Organic Geochemistry Division of the Geochemical Society, was elected to fill the remaining two years as Councilor in the term of Philip Handler who became President of the Academy on July 1.

April 1969

Frederick C. Fuglister, a former professional artist without any formal scientific training, was given the Alexander Agassiz Medal for original contributions in oceanography. A Senior Scientist at the Woods Hole Oceanographic Institution, he was cited for his "stimulating and successful observations of the Gulf Stream and its vortices." Since joining the Woods Hole staff in 1941 he has spent a total of three years at sea. In his early cruises he developed techniques of tracking and studying the edge of the Gulf Stream using the bathythermograph. In one of his more recent voyages to study the large and numerous cyclonic rings formed by the Gulf Stream, he discovered a cold eddy south of the Stream. His attempts to follow, track, and explain this phenomenon have led to a hypothesis that may demand a major revision of the theory of the general circulation of the oceans. He theorizes that the Gulf Stream sometimes shortens its course by cutting across the shortest distance between sides of loops in its channel. The result is a large vortex or rotating ring of warm water that can be more than

100 kilometers in diameter, extend to the ocean floor, and move as an independent entity for as long as six months. "Fritz" Fuglister was graduated from the Corcoran Gallery of Art in Washington in 1929, and began his career as a professional artist, exhibiting in many major cities. His second career began in 1940 when he was invited on a cruise on the Atlantis and then offered a full-time job at Woods Hole.

May 1969

Full Exchange Programs Reinstated with USSR, East European Academies

Having been forced last fall to retrench in its exchange programs with the Soviet and some East European academies because of a marked cutback in financial support from the National Science Foundation (News Report, December 1968), the National Academy of Sciences has subsequently been able to reinstate virtually all of the programs at their original levels in the current year. This is due to the restoration of most of the funds by the NSF.

In November the NAS had been compelled to reduce the exchange program with the Soviet Academy from about 90 months of visits in each direction for the year to 52, and to reduce the program with the Polish Academy from 40 to 27 months. Plans for commencing exchange activities with the Hungarians and Bulgarians were put in abeyance, but they, too, are once again active. The NAS has reinvited the Hungarian Academy to send a delegation to survey research in this country in return for the NAS delegation's visit in Hungary in 1966. It is hoped that the Hungarian Academy delegation would be empowered to conclude arrangements for a continuing exchange of scientists. A comparable program with the Bulgarian Academy is also envisaged within the coming year.

June-July 1969

Program Proposed for Decade of Ocean Exploration in 70's

Guidelines for the content of an International Decade of Ocean Exploration in the 1970's--focused on putting the resources of the sea to use for human benefit--have been recommended by the National Academy of Sciences and National Academy of Engineering.

The report, An Oceanic Quest (see "New Publications," p. 16), was prepared at the request of the National Council on Marine Resources and Engineering Development.

The principal focus of Decade activities, the report says, should be on exploration effort in support of increasing net yield from ocean resources, predicting and enhancing control of natural phenomena, and improving the quality of the marine environment. This exploration should include the scientific and engineering research and development required to improve the description of the ocean, its boundaries, and its contents, and to understand the ocean processes.

The study group adopted the following broad statement of Decade objectives:

> To achieve more comprehensive knowledge of ocean characteristics and their changes and more profound understanding of oceanic processes for the purpose of more effective utilization of the ocean and its resources.

The report is cautious regarding the wealth to be obtained from the oceans. It would be a serious mistake, it says, to saddle the Decade with the aim of delineating immediately exploitable resources. Instead, "the objectives should be a broad general survey to provide background for the later detailed investigations of resources and the implementation of carefully selected scientific programs designed to increase basic understanding of the earth and sea."

Among 31 specific programs proposed by the report as "a first rough priority judgment of those that should be initially supported" are the following:

International cooperative reconnaissance of the continental shelf of the eastern Atlantic Ocean from northern Norway to the Cape of Good Hope, including seismic, magnetic, and gravity measurements and bottom coring.

Cooperative hydrographic survey and charting of the continental margins.

Assessment of mineral resource potential in the Mediterranean, East Indies, and Red Seas.

Hard rock sampling, geophysical studies, and surveys for metal-rich brines on mid-ocean ridges, especially the Mid-Atlantic Ridge.

Studies of the Peru-Chile Trench with coring, sampling, and geophysical profiles both at sea and on land as part of the study of the new "plate tectonics" concept of geologic structure.

Survey of selected sites in the South Pacific for manganese nodules and phosphorite deposits.

Assessment of the production potential of the latent living resources in the Gulf of Mexico, Caribbean Sea, and Gulf of Alaska, and of the oceanic tuna-like fish in the Equatorial Eastern and Central Pacific.

The report was prepared by a Steering Committee organized by the Committee on Oceanography of the National Academy of Sciences and the Committee on Ocean Engineering of the National Academy of Engineering. Warren S. Wooster, Professor of Oceanography at the Scripps Institution of Oceanography, was chairman of the Steering Committee.

June-July 1969

A committee of the National Research Council warned on November 7, 1969 that, unless prompt action is taken, the adequacy of vital natural resources will be severely strained by the demands of an expanding population.

In a report titled Resources and Man*, the committee points out that shortages already exist for many substances essential for industrial society --mercury, tin, tungsten, and helium, for example--and that known reserves of these irreplaceable substances will be nearly exhausted by the end of this century or early in the next.

It will take only another 50 to 65 years to use up the first 90 per cent of the world's initial supply of recoverable petroleum liquids and natural gas. Nor is nuclear power a panacea. The known supply of uranium-235 from high-grade ores is severely limited, and the long-term production of nuclear power at a cost competitive with fossil fuels or water power depends on the perfection of a practicable breeder or fusion reactor.

As for food, the committee estimates that the ultimate carrying capacity of the earth is about 30 billion people--"at a level of chronic near-starvation for the great majority!"--a figure that could be reached by the year 2070 in the absence of other controlling factors. It concludes that "a human population less than the present one would offer the best hope for comfortable living for our descendants, long duration for the species, and the preservation of environmental quality."

The popular belief that the oceans contain inexhaustible mineral wealth and that aquatic food products will provide a long-range solution to the nutrition problem is also open to serious question.

The only solution, the committee states, is better resource management and population control. "If population and demand level off at some reasonable plateau, and if resources are used wisely, industrial society can endure for centuries or perhaps millenia. But technological and economic brilliance alone cannot create the essential raw materials whose enhancement in value through beneficiation, fabrication, and exchange constitutes the basic material fabric of such a society."

"We hope," the committee writes, "by viewing selected critical aspects of the resource picture in an ecological context, to make clear the need for more comprehensive evaluation and wiser use of our resources."

The report was prepared by the Committee on Resources and Man, appointed in 1966 by the National Research Council to evaluate national and world resources in the light of current and expected stresses. Based on the committee's own studies and a canvassing of divergent views, the report is concerned with issues that are central to a realistic understanding of the problem rather than with detailed estimates or projections.

The members of the Committee were Preston E. Cloud, Jr. (chairman), Professor of Biogeology, Department of Geology, University of California,

*Published by W.H. Freeman and Co., 660 Market Street, San Francisco, California 94104. $5.95 clothbound; $2.95 paperbound. A limited number of copies are available to the working press from Freeman and Co. or the Office of Information.

Santa Barbara; Marston Bates, The University of Michigan; John D. Chapman, The University of British Columbia; Sterling B. Hendricks, U.S. Department of Agriculture; M. King Hubbert, U.S. Department of the Interior; Nathan Keyfitz, University of California, Berkeley; Thomas S. Lovering, The University of Arizona; and William E. Ricker, Fisheries Research Board of Canada.

November 1969

News from New Zealand Geochemical Group Newsletter

"A Sampling Bottle for Collecting Fluids from Geothermal Drillholes"

During the last twenty years a wealth of information has been obtained on the chemistry of hot fluids found at depths of several thousand feet in geothermal systems. Almost all this information has been deduced from the composition of steam and water collected from the surface piping of discharging drillholes at pressures ranging from approximately 250 pounds per square inch down to atmospheric pressure. To obtain the correct chemical composition of the original water phase at depth (in all the NZ hydrothermal systems investigated only a water phase has been present at deeper levels in the aquifers) the steam and water results are combined in the correct proportion to give the concentrations in the total discharge.

There are certain factors in this method of obtaining the underground water composition that could give rise to anomalous results and prevent certain information being obtained. For this reason attempts have been made to construct a sampling container capable of taking water samples from drillholes at depths of up to 8000 feet and at high temperatures (200-300°C). As many as fifteen different bottles of various design have been built and tested but with only a marginal amount of success.

The difficulties in designing a bottle for use in high temperature and pressure water, containing corrosive constituents, are very apparent. The main body of the bottle must be made of stainless steel since most metals, including mild steel, are readily attacked by gases such as hydrogen sulphide (which is practically always present to a greater or lesser extent in natural hot waters) and by rust which causes rapid deterioration of finely machined fittings. Similarly metals such as copper, zinc, silver, lead, and alloys containing these metals such as brass and to a lesser extent bronze, which are readily attacked by sulphide, cannot be used. Metals of approximately the same coefficient of thermal expansion are preferable and tolerances between moving parts must be relatively large to allow for expansion. The selection of sealing materials for O-rings is confined to those stable at 200 to 300°C which excludes many of the common materials in general use in lower temperature work.

The Chemistry Division, Wairakei, has recently acquired a sampling bottle built to their own specifications by the Kuster Instrument Company of California, USA. The bottle is a modified version of one used in temperature and corrosion problems encountered in geothermal work. The outer casing of the bottle and all the moving parts are made of stainless steel and O-ring seals on valves are made from viton, a substance which does not become plastic and extrude or become brittle at elevated temperatures. The valves on the bottle are opened by a clock controlled timing system and closed by a spring loaded mechanism acting on the valve stem.

The bottle has been in operation for almost two months now and already valuable information on the chemistry of the deep waters in several drillholes in the new Broadlands Geothermal Field has been obtained. The advent of the bottle makes it possible to correlate water composition and mineral alteration at various depths in the drillholes and since the bottle is gas-tight, an analysis of the fluids collected gives the gas content of the deep water, an important factor when calculating the solubility of certain minerals. Knowledge of the absolute concentrations of constituents in the deep waters can aid in determining certain facts about the physical characteristics of drillholes, such as the discharge enthalpy.

Modifications have already been made to the original design of the bottle and it is likely that further changes will have to be made to improve the performance of the bottle at the highest temperatures of sampling. This however in no way detracts from the usefulness of the bottle and is to be expected in an instrument of this nature. It is hoped that during the next few months the bottle will add valuable information and data to the rapidly expanding science of high temperature and pressure solution chemistry of natural systems.

W.A.J. Mahon, Wairakei, N.Z.
June 1969

PERSONALS

Two members of the Geochemical Society and the National Academy of Sciences, W. Maurice Ewing and Francis J. Turner, have been awarded medals by the Geological Society of London for 1969. Dr. Ewing received the Wollaston Medal for his "distinguished contributions to geological studies of the oceans and seismic wave propagation," and Dr. Turner, the Lyell Medal for his "distinguished contributions to the study of metamorphic rocks made in many parts of the world."

National Academy of Sciences and Geochemical Society member Linus Pauling has been appointed to the faculty of Stanford University. Dr. Pauling was formerly at Caltech and most recently on the faculty of the University of California at San Diego.

CALENDAR

1969
December
26-31 AAAS, Annual Meeting, Boston. (AAAS, 1515 Massachusetts Ave. N.W., Washington, D.C., 20005)

1970
January
26-29 LSU 23rd Ann. Symposium on Modern Methods of Analytical Chemistry. Baton Rouge, La. (J.W. Robinson, Louisiana State University, Baton Rouge, La. 70803)

27-29 Automatic Laboratory Techniques Exhibition (ALTEX '70). Royal Horticultural New Hall, Westminster, London. (Maureen Duck, Pressaids Ltd., 5 New Bridge Street, London, EC4, England)

February
1-6 ASTM Winter Meeting. Netherland-Terrace Hilton Hotels, Cincinnati, Ohio. (ASTM, 1916 Race St., Philadelphia, Pa. 19103)

12-14 Northeastern Section, Geological Society of America, Annual Meeting, Pittsburgh. (J.T. Galey, Box 1015, Pittsburgh, 15230)

15-19 Society of Mining Engineers of AIME, Annual Meeting, Denver. (J.C. Fox, AIME, 345 East 47th Street, New York, 10017)

22-27 159th Natl ACS Meeting. Houston, Tex. (J.C. White, Oak Ridge National Laboratories, Oak Ridge, Tenn. 37830)

March
1-6 21st Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy. Cleveland, Ohio. (Robert Mainier, Koppers Co., Inc., 440 College Park Drive, Monroeville, Pa. 15146)

9-13 Symposium on Isotopes in Hydrology, Vienna, by Intl Atomic Energy Agency. (U.S. participation: J.H. Kane, Div. of Tech. Inf., AEC, Washington, D.C., 20545)

24-25 Metropolitan ACS Regional Meeting. Stevens Inst. of Tech., Hoboken, N.J. (Dr. H.E. Heller, Du Pont Co., Photo Products Div., Parlin, N.J. 08591)

26-28 Cordilleran Section, GSA, Calif. State College, Hayward. (J. C. Cummins, Dept. of Earth Sciences, Calif. State College, Hayward, 94542)

April
3-4 Joint Symposium on Accurate Methods of Analysis for Major Constituents. Imperial College of Science and Technology, London, England. Soc. for Anal. Chem. and Anal. Sec. of the Koninklijke Nederlandse Chemische Vereniging. (Dr. F.J. Bryant, Soc. for Anal. Chem., 9-10 Savile Row, London W1X 1AF, England)

6-8 Symposium on Chem. and Min. of Meteorites and Extraterrestrial Matter, British Museum (Natural History), South Kensington,

(cont.) April 6-8	England. Min. Soc. of Great Britain, Meteoritical Society, and IAGC. (P. Wilkinson, Dept. of Geol., University of Sheffield, Mappin St., St. George's Square, Sheffield, S1 3JD, England)
16-18	Intl Geochem. Exploration, Symposium, Toronto; Can. Inst. of Min. and Metall., SEG. Abstracts deadline: Jan. 1, 1970. (R. W. Boyle, Geological Survey of Canada, 601 Booth St., Ottawa, Ont.)
16-18	Francis Birch Symposium, Nature of the Solid Earth, by Harvard Dept. of Geol. Sci. and U.S. Upper Mantle Committee, Harvard. (E.C. Robertson, U.S. Geological Survey, 8001 Newell St., Silver Spring, Md. 20901)
August 24-Sept. 6	IMA and IAGOD, met. Aug. 28-29 in Tokyo and Aug. 31-Sept. 2 in Kyoto. Field trips Aug. 24-27 and Sept. 3-6. (Dr. I. Sunagawa, Geological Survey of Japan, 8 Kawada-cho, Shinjuku-ku, Tokyo 162)
31-Sept. 4	Triennial Intl Mass Spectrometry Conf. Brussels, Belgium. (Prof. P. Goldfinger, Service de Chimie Physique 1-Faculte des Sciences, Univ. Libre de Bruxelles, 50 av. F.D. Roosevelt, Brussels, 5, Belgium)
September 7-9	Northeast Washington-British Columbia Base Metal Districts Field Conference. (Society of Economic Geologists)
7-12	IAGC Symposium on Hydrogeochemistry and Biogeochemistry, Tokyo (K. Sugawara, Sagami Chemical Research Center, 3100 Onuma, Sagamihara-Shi, Kanagawa Prefecture, Japan)
7-12	NATO Advanced Study Institute on Activation Analysis in Geochem. and Cosmochem. Oslo, Norway. (E. Anderson, Reactor School, Institutt for Atomenergi, 2007 Kjeller, Norway)
7-15	Intl Symposium on Hydrogeochem. and Biogeochem. (Sept. 7-12) and Seminar on Isotope Geochem. (Sept. 14-15) Tokyo; and joint symposia with Joint Oceanographic Assembly, Sept. 14-15. Registration deadline, Dec. 31. (Prof. Y. Miyake, Meteorogical Research Inst., Koenju Kita 4-35, Suginami, Tokyo)
22-Oct. 1	U.N. Symposium on Development and Use of Geothermal Resources, Pisa, Italy. (G.R. Robson, U.N. Geothermal Symposium, United Nations, New York, 10017)
December 1-8	Intl Symposium (plus field trips) on Results of Research on Representative and Experimental Basins, Victoria Univ., Wellington, New Zealand. By Intl Assn. of Scientific Hydrology, UNESCO, and Royal Society of New Zealand. (Executive Officer, Royal Society of New Zealand, Box 196, Wellington)

EDUCATIONAL SERIES IN GEOCHEMISTRY

Progress at Last

As of early November sales were up substantially:

	Sales Nov., 1968-Nov., 1969	Total Sales
E.S.G. 1	184	407
E.S.G. 2	210	615
E.S.G. 3	303	533
E.S.G. 4	203	226

Most of these were sold since August, indicating a potential yearly volume of 500 to over 1000. At that rate the initial stock of 3000 reprints will be depleted within a few years.

Prices and titles are listed in Issue No. 49 of The Geochemical News.

Authors are still needed. Where else can you get free distribution of 3000 reprints as well as publication in a well known journal?

SAND-IN-THE-GEARS-OF-LEARNING

In a recent issue of The University of Michigan Reporter, under the heading "NSF Invites Proposals on Studies of Earth-Core Material", the following statement appeared: "The National Science Foundation will be supporting research on samples of the earth's core, as part of the Deep Sea Drilling Project."

Paul L. Cloke
Editor