The Geochemical News

NUMBER 44 May 1966

REPORTS OF OFFICERS

Treasurer's Report for the Year 1965: The assets of the Geochemical Society are contained in two funds--the Operating Fund and the Publication Fund. The Operating Fund contains all assets derived from normal business operation of the Society, such as from membership dues, overhead on past NSF Grants, as well as funds of current NSF Grants. The Publication Fund, on the other hand, contains only assets derived from royalties or from interest accrued thereon. The Operating Fund is further subdivided into two categories: one, the General Fund, consists only of funds belonging to the Society, and the other of funds whose use is restricted to the translation and production of Geochemistry International.

The financial well-being of the Society is indicated--in a general way--by the gains or losses in the General Funds, and, unfortunately, the Treasury closed the year 1965 with a deficit of $755.75 in this category. This deficit was anticipated, however, and prompted the request to Council, at the annual meeting in November, 1965, to recommend an increase in dues effective in 1967. This proposed increase in dues was necessitated by loss in revenue from other sources (chiefly overhead on NSF Grants) coupled with increased commitments and rising costs over the past few years. Despite the deficit of the current year, however, the total assets of the Society have increased approximately 75 percent during the four-year term of this Treasurer. Hopefully, the financial condition of the Society will improve even more substantially in the next four years.

Inasmuch as this is my last report as Treasurer, I wish finally to say that it has been a privilege to serve the Geochemical Society.

C. Wayne Burnham
Treasurer

BALANCE SHEET

December 31, 1965

ASSETS		LIABILITIES AND FUND BALANCES	
Operating Fund:		Operating Fund:	
Cash on hand and in banks	$21,703.97	Fund Balance	$21,703.97
Accounts receivable to the Operating Fund on December 31, 1965			
Balance of NSF Grant GN-295			$ 77.00
Accounts payable from the Operating Fund on December 31, 1965			
Balance of 1965 Assessment American Geological Institute			$ 561.80
Income from sales of Geochemistry International due the National Science Foundation			3,586.80
			$4,148.60
Publication Fund:		Publication Fund:	
Cash on hand and in banks	3,246.24	Fund Balance	3,246.24
Total:	$24,950.21		$24,950.21

STATEMENT OF INCOME, EXPENSES AND CHANGES IN FUND BALANCES
JANUARY 1, 1965 to DECEMBER 31, 1965

Operating Fund

General

Income:

Dues	$5,899.15	
Back issues of The Geochem. News	6.00	
Indirect costs (GN-295)	470.50	
Interest on savings accounts	62.12	
Total income		$ 6,437.77

Expenses:

Operational	4,781.92	
Assessments	1,161.60	
Executive Editor	1,250.00	
Total expenses		$ 7,193.52
Excess of income over expenses		(-)$755.75

Translations

Income:

NSF Grant GN-295	10,000.00	
Subscription sales	11,586.80	
Total income		$21,586.80

Expenses:

1964 Volume (GN-295)	20,667.28	
Total expenses		$20,667.28
Excess of income over expenses		$ 919.52

Fund Balance, January 1, 1965

Savings account	1,529.71	
Checking account	19,972.83	
Petty cash		
Treasurer	4.96	
Translation Editor	32.70	
Total		$21,540.20

Fund Balance, December 31, 1965

Savings account	1,591.83	
Checking account	17,475.48	
Petty cash		
Treasurer	11.52	
Translation Editor	6.69	
AGI Escrow account	2,618.45*	
Total		$21,703.97

* This item represents subscription income from sales of Geochemistry International in excess of the allowable discount against expenses ($8,000), and is held in escrow for the Geochemical Society by the American Geological Institute, Washington, D. C. This money belongs to the National Science Foundation and eventually must be returned to them.

STATEMENT OF EXPENSES JANUARY 1, 1965 TO DECEMBER 31, 1965

General Expenses

Operational (including Geochemical News):			
Addressograph		$ 353.01	
Bank charges and refunds		8.22	
Express and shipping		15.56	
Postage		409.75	
Printing		2,141.59	
Programs and circulars (annual meeting)		710.00	
Secretarial services			
Secretary		210.00	
Treasurer		932.00	
Stationery & supplies		1.79	
Total operational expenses			$ 4,781.92
Assessment, American Geological Institute			1,161.60
Exec. Editor, Geochim. et Cosmochim. Acta.			1,250.00
Total general expenses			$ 7,193.52

Translations

Production:			
Translation	$ 1,738.00		
Composition	10,569.42		
Printing	4,405.29		
Total production		$ 16,712.71	
Mailing		350.49	
Handling		299.90	
Promotion		899.72	
Supplies and Miscellaneous		26.01	
Scientific Editors:			
Managing Editor	1,066.00		
Ass't. Editor	427.20		
Total		1,493.20	
Indexing		200.00	
Clerical assistance		100.00	
Acquisition of Translation		114.75	
Sub total			$20,196.78
Indirect Costs (Admin. costs)			470.50
Total translations expenses			$20,667.28

Publication Fund

Income:			
Royalties	112.84		
Interest	124.74		
Total income		$ 237.58	
Expenses:		------	
Total expenses		------	
Excess of income over expenses		$ 237.58	
Fund balance January 1, 1965		3,008.66	
Fund balance December 31, 1965		$3,246.24	

Auditing Committee: The Auditing Committee has examined the accounts of the Treasurer of the Geochemical Society for the period January 1, 1965 through December 31, 1965 and has verified the accuracy of the amounts shown in his report with one exception. This exception is the Escrow Account of the Society with the American Geological Institute which cannot be checked here since we do not have access to the books of that organization. You will note that the amount on this Escrow Account is $2,618.45 as of September 30, 1965, the last date on which an accounting was supplied by the AGI to the Treasurer of the Geochemical Society. It should be emphasized that these funds actually belong to the National Science Foundation and will, undoubtedly, eventually be reassigned by that organization. They do not belong to the Geochemical Society and do not represent funds under the control of this Society.

Hubert L. Barnes
Robert F. Schmalz
John D. Ridge, Chairman

EDUCATIONAL SERIES

The Geochemical Society's Educational Series has finally been started with the publication of the six page article, "Geochemical Weathering of Rocks: Source of Raw Materials for Good Living" by W. D. Keller, in the February issue of the Journal of Geological Education.

Reprints of articles in the Educational Series will be available from the Editor, The Geochemical News, according to the following price schedule. Please make checks payable to the Geochemical Society.

Price per Reprint Number of copies:	1-10	11-50	51 or more
8 pp. or less	35¢	20¢	15¢
9-12 pp.	40¢	25¢	20¢
13-16 pp.	45¢	30¢	25¢

Executive Editorship of Geochimica et Cosmochimica Acta: The ad hoc nominating committee appointed at the last council meeting and reported in issue number 43 of The Geochemical News has nominated Dr. Alfred A. Levinson for the position of Executive Editor of Geochimica et Cosmochimica Acta to succeed Dr. J. A. S. Adams.

Symposium on Origin and Distribution of the Elements: The symposium will be held at UNESCO Headquarters, Place du Fontenoy, Paris, September 21-23, 1966. It is being organized by the International Association of Geochemistry and Cosmochemistry and co-sponsored by UNESCO and IUGS. The symposium is divided into five subject sections. Papers in all of these fields are invited. These sections are listed below together with names and addresses of the chairmen-organizers, to whom titles, abstracts, inquiries, etc., should be directed.

Section I -- Theories of origin, Dr. A. G. W. Cameron, Institute for Space Studies, 475 Riverside Dr., New York 27, New York, U.S.A.

Section II -- Solar, Stellar and Interstellar Abundances, Professor Wm. P. Bidelman, Department of Astronomy, University of Michigan, Ann Arbor, Michigan, 48104, U.S.A.

Section III -- Meteorites, Dr. John F. Lovering, Department of Geophysics, Australian National University, Canberra, Australia.

Section IV -- Planets, asteroids, comets, tektites, Dr. Audouin Dollfus, Observatoire de Paris, Section de Astrophysique, Meudon (Seine-et-oise), Paris, France.

Section V -- Terrestrial abundances, Professor Dr. Mario Fornaseri, Via di Villa Ada 10R, Rome, Italy.

Proceedings of the symposium will be published in one or more volumes. To the end that these may be made as comprehensive a summary as possible, manuscripts are solicited for publication whether or not the papers can be presented at Paris. Manuscripts for publication only can also be sent to the Section Chairman, or directly to the Chairman of the Program Committee, Professor L. H. Ahrens, Department of Geochemistry, University of Cape Town, Rondebosch, South Africa.

General questions about the symposium or about the Association can also be directed to Professor Ahrens or to Professor Earl Ingerson, Department of Geology, University of Texas, Austin, Texas 78712, U.S.A.

Cost-Sharing on Research Grants: It is recognized that institutions contribute to the support of basic research in many ways, including the provision of faculty or other staff time and accumulated knowledge, and the furnishing of the institution's physical plant and organization. For the last several years the Acts of Congress providing appropriations for the Foundation limited overhead for research grants to a fixed percentage of the direct costs. This has had the effect, in most cases, of assuring another type of institutional contribution to research projects receiving Foundation support. However, the Independent Offices Appropriations Act for fiscal year 1966 (which applies to the National Science Foundation and became effective August 16, 1965), eliminates this limitation and stipulates that the Agencies may not reimburse any recipient of a grant for the full costs of a research project. This legislative change affects grants made by various government agencies. Consequently, the Bureau of the Budget has issued Circular No. A-74 dated December 13, 1965 which provides Government-wide guidelines governing cost-sharing on all research projects supported by Federal grants.

In determining the amount of NSF support for research grants awarded by the Foundation on or after March 1, 1966, full indirect costs, calculated in accordance with applicable cost principles, will be reimbursable. However, institutions will be required to share in the cost of each of their research projects supported by an NSF grant.

The provisions of this cost-sharing requirements will not apply to those grants awarded in support of research which are made solely for the purpose of providing funds for (a) conferences and symposia; (b) publication of manuscripts; (c) travel; (d) rehabilitation, construction, or purchase of equipment or facilities; or (e) logistic support activities.

CHEMICAL ABSTRACTS

(Mineralogical and Geological Chemistry, Sec. 25)

During 1965, 5618 papers (not including books and cross-references) were published, a decrease of 7.7% from 1964. The reasons for this decrease are not clear; we doubt that it reflects a real decrease in the amount published.

Table 1 shows that there was a marked improvement in speed of publication of abstracts. This was undoubtedly due to expanded coverage of journals from page proof; in one instance abstracts from Geochim. et Cosmochim. Acta were published by Chemical Abstracts two weeks before the journal arrived in this country.

Table 2 shows the distribution of papers from the leading countries. No marked changes were noted.

Thanks are due to the abstractors who make it possible to provide this service and to the excellent staff at Columbus. As always, we welcome suggestions from those who use Sec. 25. One letter, pointing out an error, was received in 1965.

Michael Fleischer
Gerald M. Friedman

Editors, Sec. 25

Table 1. Year of abstract compared to Issue Year, 1965
(by percentage of total)

		1965	1964	1963	1962
	Total number of abstracts	5816	6297	5256	4509
1.	Dated same year	35.1	29.1	29.5	28.7
2.	Dated 1 yr. later	47.6	44.8	49.6	47.8
3.	Dated 2 yrs. later	12.6	17.0	14.3	16.2
4.	Dated 3 yrs. later	2.8	5.3	4.8	5.1
5.	3 yrs. later	1.9	3.8	1.8	2.2
	1 + 2	82.7	73.9	79.1	76.5

Table 2. Country of origin of papers abstracted in Sec. 25
(leading countries)

	1965		1964		1963	
	No.	%	No.	%	No.	%
USSR	2651	45.6	2921	46.4	2322	44.2
USA	934	16.1	1062	16.9	970	18.5
Germany (W&E)	249	4.3	255	4.0	275	5.2
Japan	206	3.6	222	3.5	238	4.5
France	193	3.3	170	2.7	166	3.2
England	177	3.0	169	2.7	110	2.1
India	149	2.6	113	1.8	119	2.3
Czechoslovakia	136	2.3	222	3.5	100	1.9
Australia	136	2.3	107	1.7	112	2.1
Canada	121	2.1	107	1.7	76	1.4
Italy	100	1.7	74	1.2	79	1.5
All others (64 in 1965)	764	13.1	872	13.9	689	13.1
	5816	100.0	6297	100.0	5256	100.0

BOOK REVIEWS

SPEKTRALANALYSE VON MINERALIEN UND GESTEINEN. Eine Anleitung zur Emissions- und Absorptionsspektroskopie, von Dr. Rer. Nat. Horst Moenke. x + 222 pages, 58 Abbildungen, 21 Texttabellen. Akademische Verlagsgesellschaft, Leipzig, 1962. DM 23.

In SPEKTRALANALYSE VON MINERALIEN UND GESTEINEN, Professor Moenke's treatment of the spectral analysis of minerals and rocks provides an excellent introduction for the beginning student in mineralogy or geochemistry. Its counterpart in the English language is SPECTROCHEMICAL ANALYSIS by L. H. Ahrens and S. R. Taylor. Both books cover the ultraviolet emission spectroscopy of minerals and rocks; Moenke also includes a discussion of the infrared absorption spectroscopy.

Following an introduction on a rather simple level, Moenke discusses fifty-six elements, including the rare earths. Details of the quantitative analyses of the elements constitute the essence of that portion of the book devoted to emission spectroscopy. The infrared portion of the text begins with a qualitative explanation of vibration modes. After a brief description of infrared spectrophotometers, about seventy-five representative mineral infrared spectra are illustrated. Many absorption peaks of additional minerals are included in the text.

A rather novel feature of the book is the twenty-seven page section which concludes the text. In this section, Professor Moenke proposes a mineralogical scheme based upon U. V. emission analyses to supply information on the cations and IR absorption analysis for anion determination. An excellent bibliography of both emission and infrared absorption spectra is included, with well over three hundred references on emission spectra and over two hundred and sixty references on infrared absorption being listed.

Readers familiar with German will find the book a useful text for both types of the spectral analysis of minerals and rocks described. Those more familiar with English will no doubt prefer the works at present available in that language. On the other hand, a doctoral candidate in mineralogy or geochemistry in an American university may find the book an ideal one for use in fulfilling the German language reading requirement for the Ph. D. degree.

R. M. Denning

SILICATE SCIENCE, VOL. 1, SILICATE STRUCTURES, by Wilhelm Eitel. xii + 666 pages, 375 figures, 14 tables. Academic Press, New York and London, 1964. $24.00

This book is the first part of a five volume treatise on silicate science. It is intended to cover the period 1954 to 1962, thereby including only material appearing since the publication of THE PHYSICAL CHEMISTRY OF THE SILICATES by W. Eitel by The University of Chicago Press in 1954. This volume is divided into three sections: A, Silicate Crystal Structures, B, Clay Minerals; Structures, and C, Silicate Dispersoids. The system of classification of silicate structures proposed by T. Zoltai has been adopted, and the role of polytypism is emphasized much more than in the 1954 book. The section on clay minerals deals extensively with mixed layer combinations of structural types. The long section on silicate dispersoids emphasizes the results of X-ray and electron diffraction studies and presents other new information.

The format is essentially the same as in the 1954 volume. Topics are presented by exhaustive reference to the literature and citation of the principal results of several hundred authors. This book is accordingly an excellent compendium of the topics covered.

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SILICATE SCIENCE, VOL. 2, GLASSES, ENAMELS, SLAGS, by Wilhelm Eitel. xii + 707 pages, 406 figures, 1 table. Academic Press, New York and London, 1965, $26.00.

This volume, as the first in this series, is a comprehensive treatise on progress from 1954 to 1962. The book is divided into three sections. The first, on properties and constitution of silicate glasses, covers such topics as viscosity (nearly 100 pages), conductance, theory of structure of liquids and glasses, physiocochemical theory of the glassy state, and non-silicate glasses. The second section deals with industrial glass and enamels. It includes reactions in the glass, homogenization, color, viscosity, relation of physical properties to the chemical composition, electrical properties, and other topics. The final, comparatively short section on industrial slags includes discussions of the constitution of slags, viscosity and corrosivity of molten slags, and equilibria of slags with metal baths.

The style of the book makes it very useful for a rapid review of the principal results of several hundred papers. The indexes appear to be sufficiently extensive to make the volume easy to use as a reference for basic information.

plc

ION EXCHANGE COLUMN

News from the National Academy of Sciences and National Research Council

Space Scientists Recommend Post-Apollo Research Goals: The Space Science Board of the National Academy of Sciences has issued a report outlining research objectives in planetary and lunar exploration for the period 1970-1985. The report affirmed earlier recommendations from the Space Science Board to the National Aeronautics and Space Administration that the unmanned exploration of Mars should have first priority in the post-Apollo period, with secondary importance assigned to more detailed investigation of the lunar surface and the unmanned exploration of Venus. The report goes further, however, by completing the priority listing in this order: other major planets, comets and asteroids, Mercury, Pluto, interplanetary dust.

Having established an overall conception of an orderly program of planetary and lunar exploration based on scientific objectives, the report proceeds to analyze in considerable detail the most promising research opportunities arising from the immense variety of matter in solar orbit. Mars receives most attention because its origin and development may be expected to resemble those of Earth. The report says, "The two planets, taken

together, would form a couple far more powerful in illuminating the general setting in which we live than the geology of the Earth (or Earth and Moon) alone."

The report recommends the incorporation of life-detection experiments in early landers "even though they may have a low a priori chance of success," but adds, "In the event of a severely limited payload capability, the emphasis on life detection may have to be decreased in order to permit high-priority environmental measurements to be taken."

Major scientific questions to be asked in the exploration of Mars, beyond the possible existence of life either now or in the past, are: whether the planet is geologically differentiated, as the earth, into a core, mantle and crust; whether evidence exists of seismic, or volcanic, or mountain-building activity; whether "Mars (has) come from the same chemical crucible as the earth;" and what is the character of its atmospheric circulation.

Lunar exploration, whose scientific significance is based on the "possibility that...the Moon's surface may contain an unique record of events related to the formation or accretion of the terrestrial planets," calls for photogrammetric mapping from lunar orbit, landings and extended traverses, geophysical observations from orbiters and landers including the measurement of lunar motions and possible moonquakes, as well as chemical investigations of lunar material.

Jupiter is of interest because its high gravity may have preserved on its surface a good sample of the primordial material of the planetary system. Considerable interest is manifested in the Great Red Spot of Jupiter, a surface feature that has been observed by dedicated amateur as well as professional astronomers since the seventeenth century. Also of significance is that in the investigation of planetary systems of other stars, Jupiter-like objects are likely to be encountered first. In total, the report lists 20 scientific questions concerning the five outer planets and proposes almost 50 specific investigations.

The recommendations in the report conclude with a listing of scientific questions about satellites, comets, planetary dust, and the planet Mercury.

Exchange Programs: The U.S. National Academy of Sciences and the Academy of the Socialist Republic of Romania today announced the beginning of a three-year exchange program, providing for visits of up to one year by individual scientists of the two countries to lecture and to conduct research. The new program is the third to go into effect this year between the U.S. Academy and one of its sister institutions in Eastern Europe; earlier, similar arrangements were concluded with the Council of the Academies of Yugoslavia and with the Polish Academy of Sciences.

The program of exchanges will take place under a Memorandum of Understanding, confirmed by the respective presidents of the Romanian and U.S. academies, I.G. Murgulescu and Frederick Seitz, which provides for visits in each direction totaling approximately 40 man-months a year.

Exchanges under the inter-academy understanding may cover all areas of the natural, engineering, and behavioral sciences. There is no requirement that either the number of visits or the fields of study of exchange scientists be the same for both countries.

In addition to individual visits, the new program also provides for exchanges in the areas of scientific publications, seminars and conferences, and information on institutions and programs of research.

NEWS FROM THE MONTANA BUREAU OF MINES AND GEOLOGY

New Report on Geochemical Prospecting, Northwestern Montana: The Montana Bureau of Mines and Geology has issued a bulletin entitled Geochemical Reconnaissance Stream-Sediment Sampling in Flathead and Lincoln Counties, Montana. The report was written by U. M. Sahinen, W. M. Johns, and D. C. Lawson, of the Bureau staff, under a cooperative agreement with the Great Northern Railway Company and the Pacific Power & Light Company.

The geochemical project was started in 1964 as a follow-up to the six-year program of reconnaissance mapping and mineral survey of the Kootenai-Flathead area of northwestern Montana. The first phase, described in this report, involved sampling of stream sediment for base-metal mineralization in three areas--the Yaak River area in the Purcell Mountains north of Troy and the Star Meadows and Hog Heaven areas in the Salish Mountains northwest and southwest of Kalispell, respectively.

Total project area was 818 square miles, and 1,284 samples were collected at half-mile intervals along all drainages in the three areas. Samples were analyzed for total heavy metals and for copper, lead, and zinc individually. Further investigation of specific localities by soil sampling is recommended.

Analytical procedures followed are described in an appendix to the report. Maps show the locations where samples were collected and areas of anomalously high values for each metal.

Bulletin 48, Geochemical Reconnaissance Stream-Sediment Sampling in Flathead and Lincoln Counties, Montana, can be obtained free by writing or visiting the Montana Bureau of Mines and Geology, Room 203-B Main Hall, Montana College of Mineral Science and Technology, Butte.

PERSONALS

JEVAN P. BERRANGE has resigned from the Department of Geology at the University of Nigeria and joined the Photogeological Division of the Institute of Geological Sciences which is part of the newly created Natural Environment Research Council in England. For the next four years he will be engaged on a photogeological project which aims to map all of British Guiana south of 4° latitude.

DONALD S. MILLER of Rensselaer Polytechnic Institute has received an NSF Science Faculty Fellowship for 1966-1967. He will do fission track research with Professor E. Jager of the Mineralogic-Petrographic Institute, University of Berne, Switzerland.

HAROLD L. JAMES has been appointed by the U. S. Geological Survey as its Chief Geologist, replacing William T. Pecora.

WILLIAM W. RUBEY has been awarded the National Medal of Science for his contributions to the discovery and definition of basic geological principles.

LINUS PAULING has been given membership in the Academy of the Romanian Socialist Republic.

HARRISON BROWN, Professor of Geochemistry at the California Institute of Technology, was elected to a second four-year term as Foreign Secretary of the National Academy of Sciences. His re-election took place during the business session of the Academy's 103rd Annual Meeting in Washington.

FRANCIS JOHN PETTIJOHN, Professor of geology, Johns Hopkins University and HANS EDUARD SUESS, Professor of geochemistry, University of California San Diego were elected recently to membership in the National Academy of Sciences.

CHANGES OF ADDRESS

The new address of members as presently on record, is given below. Please report any errors promptly to Dr. Russell Honea, Treasurer, Dept. of Geological Sciences, University of Colorado, Boulder, Colo., 80304 U.S.A.

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G. F. Dressel
Donald Henry Eckhard
Margaret D. Foster
Eugene B. Gross
Dieter E. Jung
Yoshihiro Matida
Edwin Lawrence Miller, Jr.
Erik S. Norin
Elmer D. Patterson
Robert F. Shurtz
Dr. Hendrik Van Olphen
Alfred E. Walker

Roger L. Batten
Louise B. F. Clark
Donn M. Clippinger
Miss J. H. W. de Widt
J. Brian Eby
James McLaren Forbes
Robert Burwell Fulton III
Ralph J. Holmes
Carl Eugene Legate
Pierre Mauffette
B. T. Newland
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Robert S. Roth
Charles J. Sullivan
Warren R. Wagner
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Dr. Harold N. Fisk
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CALENDAR

June

6-19 The American Univ. 7th Summer Conf., Stratigraphy and Structure of the Appalachians. Appl. deadline, Mar. 14 (Dr. M. F. Norton, Dept. Earth Sciences, The Amer. Univ., Washington, D. C. 20016

20-24 Intl. Clay Conf. Field trips. Hebrew Univ., Jerusalem, Israel (Intl. clay conf., Geol. Survey of Israel, 30 Malkei Israel St., Jerusalem).

20-24 Intl. Conf. on Crystal growth, Boston, Mass.

24-26 The Marine Geology of the Pacific Basin, Berkeley, Calif. (Letters and Science Extension, Univ. of Calif., Berkeley, Calif., 94720).

July

12-21 Intl. Union of Crystallography, Moscow, USSR

Aug.

4-6 Intermountain Mineral Conf., Vail, Colo., American Institute of Mining, Metallurgical & Petroleum Engineers. (L.A. Stinnett, AIME Intermountain Subsection, Box 283, Leadville, Colo. 80461).

8-12 Rocky Mountain Spectroscopy Conf. (Aug. 8-9) & Denver Research Institute X-ray Conf. (Aug. 10-12), Denver, (R.C. Reinke, Dow Chemical Co., Rocky Flats Div. Box 888, Golden, Colo. 80402).

Aug.

30-Sept. 4 Intl. Mineralogical Assn. Gen. Congress, Field trips, Cambridge Univ., England (T. F. W. Barth, Oslo Univ., Oslo, Norway).

5-13 Comité International de Thermodynamique et de Cinetique Electrochimiques, 17th meeting, Tokyo and Kyoto, Japan (Prof. S. Tajima, National Secretary for Japan, CITCE, Laboratory of Electrochemistry, Dept. of Industrial Chemistry, Tokyo City Univ., 1 Fukazawa, Setagaya-ku, Tokyo, Japan).

9-10 Geological Assn. of Canada field trips, St. John & Bathurst N.B. Guidebook. (D. G. Kelley, GSC, 601 Booth St., Ottawa 4, Ontario).

11-13 Geol. Assn. Canada & Min. Assn. Canada, Joint Mtg. Halifax, Nova Scotia; (J. P. Nowlan, P. O. 1087, Halifax).

11-16 Amer. Chem. Soc. 152nd Natl. Mtg., New York, N. Y.

12-14 Alberta Soc. of Petroleum Geologists & Canadian Soc. of Exploration Geophysicists, Joint Mtg., Palliser Hotel, Calgary, Alberta.

Sept.

14 Geological Assn. of Canada field trips, Bay of Fundy, Annapolis Valley, N.S.; Walton, N.S. Guidebooks. (D. G. Kelley, GSC, 601 Booth St., Ottawa).

14-15 Geological Assn. of Canada field trips, Minas Basin, N.S.; Cape Breton Island; W. Newfoundland. Guidebooks. (D. G. Kelley, GSC, 601 Booth St., Ottawa).

21-23 Intl. Assn. Geochem. and Cosmochem., Symposium on origin and distribution of the Elements. (Prof. L. H. Ahrens, Dept. of Geochemistry, Univ. of Capetown, Rondebosch, South Africa or Prof. Earl Ingerson, Geol. Dept., Univ. of Texas, Austin, Texas).

Oct.

10-13 Clay Minerals Soc. Mtg., Mellon Inst., Pittsburgh, Pa. (Dr. J. Iannicelli, Huber, Ga. 31040).

Nov.

3-4 Meteoritical Soc. at Smithsonian Institution, (E. P. Henderson, Division of Meteorites, U.S. National Museum, Washington, D. C. 20560).

12-13 Soc. Econ. Geologists, Symposium, Stanford Univ., Palo Alto, Calif. (J.O. Kalliokoski, Geol. Dept., Princeton, Univ. Princeton, N. J.).

14-16 Geol. Soc. America, Ann. Mtg., San Francisco, Calif.

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Paul L. Cloke
Editor

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