The Geochemical News

May, 1970

Number 51

THE GEOCHEMICAL SOCIETY COUNCIL MEETING

Atlantic City, New Jersey

November 9, 1969

The Council met between 2:00 and 7:00 p.m., November 9, 1969, at the Chalfonte Hotel.

Present: J.B. Thompson, Jr., Presiding; Edward Anders, Hubert L. Barnes, Paul L. Cloke, W. G. Ernst Francis J. Flanagan, Donald L. Graf, Konrad B. Krauskopf, Denis M. Shaw, Derek W. Spencer R. I. Tilling, K. K. Turekian, and D.R. Wones.

REPORTS OF OFFICERS

Secretary's Report: As of November 4, 1969, the Society's membership was 2035, only 9 more than at this time in 1968. This stagnation of growth is more apparent than real, as over a hundred duplications in the AGI files of addresses of our members were eliminated during this time. Of this membership total, 28% are outside the United States. The Organic Geochemistry Division comprises 15% of the total membership, of which 11% are U.S. and 4% foreign.

In order to guide the Council in future policy decisions affecting the Society, its journals, and its membership, a Request for Information mailed in July, 1969, was made a part of the ballot for officers. In this request the individual voter was to indicate which one (or two) of a list of seven broad fields most nearly encompassed his current interests. The tabulation below gives the results of this questionnaire, duly weighted for multiple vs single selections:

Field	% of Total
Experimental Petrology-phase equilibria (including hydrothermal).	16.9
Meteoritic - cosmochemistry (incl. lunar studies).	8.7
Organic geochemistry (all types).	9.7
Low temperature solution - mineral geochemistry (experimental, hydrosphere, atmosphere).	15.7
Element distribution and abundance in the crust.	13.9
Stable and radioactive isotope studies and their application.	8.6
Applied geochemistry (trace elements in environments, geochemical exploration).	26.4
	99.9

Only 44% of the membership responded to this request.

A considerable improvement in Society functioning is to be expected in the future resulting from passage of seven of the eight amendments to the By-Laws (see Tellers' Committee Report), and the complete reorganization and cross-checking by the Treasurer's office of the AGI files of our members. This latter should permit a new membership list to be issued shortly.

Some members (and the Secretary) have had considerable difficulty this year getting Pergamon Press to answer letters concerning unfilled subscriptions. I have received assurances from Pergamon that they are better organized and this will not recur, but if problems continue, please contact me.

Edwin Roedder, Secretary

Treasurer's Report: I am pleased to report that the financial status of the Society continued to improve during 1969. The excess of income over the expenses amounts to $2,968.45.

I would like to suggest that Council consider changing the bookkeeping year to the "GSA meeting year" so the Treasurer does not have to prepare another financial report just seven weeks after the GSA meeting.This would not necessitate changing the "dues year"; i.e., it can remain a calendar year as can Geochimica et Cosmochimica Acta subscriptions.

The Society's address files have been checked against the Cheshire roll print-out maintained by the American Geological Institute and their new IBM system. When they finish making corrections to the IBM material, the Society's address files should be in perfect shape and a new Membership List can be readily printed.

Bruce B. Hanshaw, Treasurer

ANNUAL REPORT OF THE TREASURER

for the period

JANUARY 1, 1969 to DECEMBER 31, 1969

ASSETS:			
Operating Fund -			
Cash on hand and in banks	$11,231.03		
Accounts receivable	0.00		
		$11,231.03	
Publications Fund -			
Savings Account		4,613.54	
			$15,844.87
LIABILITIES:			
Operating Fund -			
Balance of 1969 AGI assessment	$ 1,000.00		
Members' equity	10,231.03		
		$11,231.03	
Publications Fund -			
Account balance		4,613.54	
			$15,844.87

STATEMENT OF INCOME, EXPENSES, AND CHANGES IN FUND BALANCES

for the period

JANUARY 1, 1969 to DECEMBER 31, 1969

Operating Fund

Income:			
Dues	$9,561.16		
Interest on savings account	93.34		
Reprint sales (educational series)	277.58		
Sale of mailing list	202.35		
Total Income		$10,134.43	
Expenses:			
Executive Editor	1,250.00		
American Geological Institute assessment	1,873.71		
Printing charges	562.14		
Bank services	36.04		
Freight	21.01		
Geol. Soc. America abstract vols.	392.15		
Int'l. Assoc. Geochem. and Cosmochem.	30.00		
Mailing services (AGI)	363.41		
Secretarial services			
Treasurer	1,037.50		
Secretary	1,008.50		
Newsletter	87.56		
Postage, telephone and misc.	328.20		
Geochemical News (printing)	361.79		
Advertising ESG reprints in Geotimes	181.99		
Transfer to Publications Fund*	50.00		
Total Expenses		7,584.00	
Excess = Income - Expenses			$2,550.43

Publications Fund

Income:			
Royalties	$ 155.41		
Interest	212.61		
Total Income		$ 368.02	
Transfer from operating fund*		50.00	
		418.02	
Expenses:		0.00	
Excess:			418.02
TOTAL 1969 EXCESS			$2,968.45

*To make up minimum $100.00 deposits.

FUND BALANCES

January 1, 1969		
Operating Fund -		
Checking account	$6,853.32	
Savings account	1,827.28	
Publications Fund -		
Savings account	4,195.52	
		$12,876.12
December 31, 1969		
Operating Fund -		
Checking account	$9,122.46	
Savings account	2,108.57	
Publications Fund -		
Savings account	4,613.54	
		15,844.57
Net increase in fund balances for 1969		$2,968.45

COMMITTEE REPORTS

Auditing: The Auditing Committee has examined the accounts of the Treasurer for the period January 1, 1969, to December 31, 1969, and has verified the accuracy of the statements and amounts shown in his report.

B. F. Jones
F. J. Pearson, Jr.
William Back, Chairman

Nominating: The Nominating Committee proposes the following slate of officers for the terms indicated:

President:	H. D. Holland	Nov. 1970-Nov. 1971
Vice-President:	F. R. Boyd, Jr.	Nov. 1970-Nov. 1971
Secretary:		Nov. 1970-Nov. 1973
Councilors:	H. L. Barnes, and	Nov. 1970-Nov. 1973
	H. J. Greenwood	Nov. 1970-Nov. 1973

J. Gordon Erdman
Hans P. Eugster
John F. Lovering
Frans E. Wickman
D. R. Lewis, Chairman

Secretary's note on the Nominating Committee report: The Committee will submit a nominee for Secretary shortly. The Executive Editor of Geochimica et Cosmochimica Acta, Dr. A. A. Levinson, has tendered his resignation, effective November, 1970, after one year of his three-year term. The new By-Laws call for a representative of the Meteoritical Society to sit with the regular five member Nominating Committee to choose the nominee for this post; action has been initiated to accomplish this.

Program: Major innovations were made this year in procedures used in reviewing abstracts and organizing the annual meeting. The deadline for submitting abstracts was moved from July 1 to August 1 to allow latest results to be included: however, the entire review and organizing process had to be completed within 23 days as follows: Immediately after the deadline, a 5-man subcommittee of the GSA Joint Technical Program Committee (including Robert O. Fournier for Geochemistry) effectively scanned the abstracts and sorted them into preliminary sessions and topical symposia. These groups of papers were then sent to those responsible for their review for the affiliated societies. Over 200 abstracts were then reviewed by this committee and organized into sessions. With the complete cooperation of the MSA Program Chairman, David B. Stewart, these sessions were integrated with those organized for the MSA.

Preliminary scheduling of rooms, arranged by the Joint Technical Program Committee Chairman, was on the basis of attendance records and of the tentative sessions recognized by the subcommittee. This schedule was then modified and the final program fixed in a meeting of the Program Chairmen. The technique of scheduling rooms on a preliminary basis (before adjusting to the final set of sessions) has much improved the matching of seating capacities and expected size of audiences and has also decreased the number of conflicting sessions on similar subjects. However, coordination of the MSA and GS programs prior to the final meeting of the Program Chairmen is necessary and should be continued because these include the majority of papers of interest to this Society and in the past resulted in conflicting sessions on duplicating topics.

About the same number of papers were scheduled this year as in the last two years:

	1968 Meeting		1969 Meeting	
	Sessions	Papers	Sessions	Papers
Sedimentary Geochemistry	2	16	2	18
Ore Deposit Geochemistry	1	10	1½	11
Isotopic Geochemistry	2	18	1	7
Element Distribution	1	8	0	0
Organic Geochemistry	2	15	3	18
Petrologic Geochemistry	1	10	1	9
Discussion*	0	0	1	15
Petrology*	4	39	4½	40
	13	116	14	118

*Jointly sponsored with MSA.

W. S. Broecker
D. H. Lindsley
H. L. Barnes, Chairman

Tellers: The number of votes on eight questions and the election of the officers of the Society are tabulated as follows:

Questions	Yes	No
1. Membership dues straight $5.00	842	82
2. Membership dues to include Geochimica et Cosmochimica Acta	565	358
3. Procedure for reinstating delinquent members	901	18

4. Empowering of emergency executive committee	889	28
5. Regional vice presidents	818	91
6. Nomination and election of officers and councilors	865	30
7. Procedure for amending By-Laws; referenda	777	104
8. Ad hoc nominating committee	860	27

Officers for Nov. 1969-Nov. 1970		Number of votes
President	K. B. Krauskopf	887
Vice President	H. D. Holland	864
Executive Ed. (3 yr. term)	A. A. Levinson	868
Councilors	J. G. Erdman	855
	B. J. Skinner	861

The following are write-in votes (in parentheses after name):

For president: Jack Green (1), E. Ingerson (1), H. S. Yoder (1), A. Weisenborn (1), L. Pauling (1).
For vice president: Paul Cloke (1), I. R. Kaplan (1), F. R. Boyd (1), Henry Faul (1), C. Burnham (1).
For executive editor: E. Roedder (1), B. Skinner (1), R. A. Berner (1), E. Chao (1), V. Rama Murthy (1), Ross Taylor (2), E. Ingerson (2), J. Goldsmith (1).
For councilors: I. R. Kaplan (1), Blair Jones (1), G. Tilton (1), L. Pauling (1), D. Lindsley (1), D. R. Lewis (1), K. Turekian (1), H. S. Yoder (1), C. O. Hutton (1), H. J. Greenland (1), S. R. Hart (1), K. J. Murata (1), H. E. Hawkes (1), Klaus Keil (1), Richard Erd (1), R. M. Garrels (1), D. G. Brookins (1).
Total valid ballots cast, 947.

Mary E. Mrose
Eugene Roseboom
E. C. T. Chao, Chairman

Secretary's note on the Nominating Committee Report:

IMPORTANT! All members are reminded of the fact that as a result of the vote of 865 to 30 in favor of Question 6, pertaining to the nomination and the election of officers, this new By-Law is now in effect and therefore the single slate of officers, as proposed by the Nominating Committee (see above) and approved by the Council will be considered to be elected "by acclamation" and take office in November 1970, unless another partial or complete slate is nominated to run against them in an election. The procedure for additional nominations, as spelled out in Question 6, 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' acceptances, 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 nomina-

tions 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."

It is important to realize that although all eight questions received a majority of yes votes, Question 2 received a 61 percent majority, and according to the By-Laws, amendments must be approved by a two-thirds majority of those voting.

One aspect of this vote outcome, that was not known at the time, pertains to the large Apollo-11 Lunar Science Special Volume of Geochimica et Cosmochimica Acta. If the vote on Question 2 had been carried in the affirmative the entire membership would have gotten this as a free bonus in 1970, along with their regular subscriptions to Geochimica et Cosmochimica Acta. As the question was not carried, only those who were on the rolls as subscribers to Geochimica et Cosmochimica Acta as of January 1, 1970, will get the volume free; all others who want it will have to buy it (probably about $30.00).

The members' indications of their areas of interest on this ballot were counted by the Secretary's office - see his report on this.

E. Roedder

Standards: 1. Isotopic Reference Samples and Standards reported on at the Colloquium on the Geochronology of Phanerozoic Orogenic Belts.

Discussions of various reference and standard samples are summarized in the order, Rb-Sr, K-Ar, and U-Th-Pb. No other techniques were mentioned. Tabulations of data will appear in the colloquium volume to be published as an issue of Ecologae Geologicae Helvetiae.

Rb-Sr. For the first time genuine international response was obtained on analyzing isotopic reference samples. Results are available from western countries on the Precambrian feldspar prepared by Shanin, U.S.S.R., and from eastern countries on the Bern-4B, biotite, and Bern-3M, muscovite, prepared by Jäger, Switzerland. A request was made for a Precambrian sample as an Rb-Sr reference and Jäger reported that the feldspar of Shanin is suitable. Ian McDougall reported that the NBS-70a feldspar (age unknown) (1) appears to be a good reference sample as judged by tests at the Australian National University. Data on rock samples of the U. S. Geological Survey and the Geological Survey of Japan were reported. Stanley Hart, DTM, still has about 200 grams of the widely analyzed Eimer and Amend $SrCO_3$. Leutwein and Sonet, France, have proposed some mica reference samples (a biotite and a phlogopite) with high Rb contents (> 1000 ppm) which were favorably received by the participants of the meeting. Leutwein reported that about 2000 splits of the biotite are available and 40 have been analyzed three times to test homogeneity.

K-Ar. The need for a reference sample of low argon content was again expressed. UCB-BCR-2 (Columbia River Basalt from the same quarry as USGS-BCR-1, but coarsely ground) was collected to fulfill this need but is re-

ported to be unsatisfactory. Pleas were made that the reference not be a basalt, an obsidian, or a sanidine. It was agreed that the sample be about 5 m.y. old so that pieces less than 1 cm. in diameter could be analyzed. Ian McDougall was appointed to look further into the problem. Many data were reported on the Bern micas. Leutwein proposed that the Leutwein-Sonet phlogopite may be a good K-Ar reference at higher argon contents and might replace the depleted USGS-P-207 muscovite. He mentioned that their biotite sample may not be suitable for K-Ar as it has been pulverized.

U-Th-Pb. Several secondary isotopic standards of lead are now available in which the isotopic compositions have been calibrated against gravimetric mixtures of ^{206}Pb and ^{208}Pb: California Institute of Technology Shelf Lead, GS/4, UBC-1 (galena), NBS-200 (galena), and the new NBS series, 981 "Common" Lead, 982 "Equal Atom" Lead, and 983 "Radiogenic" Lead that are sold as a set. Investigators were urged to correct their data to absolute values as soon as possible and were cautioned that reference samples should be analyzed exactly as the unknowns to eliminate the possibility of instrumental bias. The first rock lead data are available on four of the U.S. Geological Survey rock reference samples. Interest was expressed for a zircon reference sample but no one knew the status of the zircon from the Pacoima pegmatite prepared some years ago by L. T. Silver (2).

Bruce R. Doe
Emilie Jäger

(1) Compston et al, 1969. On the feasibility of NBS-70a K-feldspar as a Rb-Sr age reference sample. Geochim. Cosmochim. Acta 33, 753-757.

(2) L. T. Silver reports that he still has a quantity of the analyzed zircon available for distribution to those in U-Pb isotopic analysis. Requests for the sample should be directed to L. T. Silver, California Institute of Technology, Department of Geological Sciences, Pasadena, California 91109.

2. Standards for Calorimetry.

Standard Reference Material No. 725, Tris, ($C_4H_{11}NO_3$) was released by the U. S. National Bureau of Standards in September, 1968. This material is intended for use in the intercomparison of various designs of aqueous solution calorimeters. About 20 investigators have so far measured the heat of solution of this material in 0.1N HCl. Their results are being correlated by the Standards Committee of the Calorimetry Conference.

Standard Reference Material No. 720 α-Al_2O_3 (synthetic corundum) is now ready for distribution by the U. S. National Bureau of Standards. This material is to be used as a standard for specific heat calorimetry from 10° to 1000°K.

3. Internal Standards for X-ray Unit Cell Data.

Last year the Standards Committee reported favorably on the desirability of providing a set of reference materials for use as internal standards in x-ray unit cell constant measurements. To implement this suggestion, I propose obtaining one kilogram sample each of silicon (99.999%), quartz, calcium fluoride, 600 small sample vials, and the required labels. We would prepare 200 aliquots (2 grams) of each of the ground and homogenized samples. Their availability could be announced in several journals. The number of different materials could be expanded in the future, if reaction is favorable. The main objective would be to get workers in this field to use the same sample and the same d-values of the internal standards.

Richard A. Robie

4. Items for Committee Discussion.

A. Old business

i. Identification symbols for standards. A revised and enlarged list of geochemical standards, current as of July, 1969, has been published in Geochimica et Cosmochimica Acta. The symbols include the initials of the issuing organizations.

ii. Criteria for rock and mineral standards. There has been very limited discussion of the subject. A short definitive paper relating accuracy, precision, and homogeneity to standards would seem to be a prerequisite for the discussion. The paper should include experimental designs to test homogeneity. The design should be so constructed that future data by analysts (who should agree, a priori, to the specified number of determinations for the plan) could be added to the original design so that valid tests of means and variances could be made.

iii. Certification of standards. Committee members have suggested that the Standards Committee could specify the requirements for certification as standards and establish values. The certification should be as attractive as that of the IMA New Minerals. Samples could be called reference samples until certified, or there could be two classes of standards, an initial Grade B which would assume Grade A status when certified.

iv. Reporting trace elements near the limit of detection. Most members feel that:

(1) N. F. (not found) should not be used. The value of the information is marginal at best.

(2) N.D. or a dash (-) could be used for "not determined".

(3) Some expression of "less than" is useful and necessary. There are at least three methods for noting this:

(a) The usual "$<$". Some typewriters do not have this symbol.

(b) The system used by the U. S. Geological Survey. "L XX" indicates that the element was detected but less than XX. (The element is detectable but not determinable). "N XX" states that the element was not detected at the lower limit of detection of XX.

(c) A variant of (b) above. "$<$10-D-1" indicates that the element was below the lowest standard, 10 ppm, but equal to or greater than the detection limit of 1 ppm. "$<$10-N-1" indicates that the element was not detected with the lowest standard at 10 ppm and the detection limit at 1 ppm. (The "lowest standard" seems unnecessary.)

B. New business

Recording geochemical data for exchangeable computer files. As a project of the IUGS, H. de la Roche presented some preliminary recommendations on the recording of geochemical data. These are briefly as follows:

i. Report elemental conentrations rather than compounds where possible. (One member feels that the suggestion is logical, useful and acceptable while another feels that it might be desirable, if radical. Two members have the following objections: (1) it makes comparisons with earlier analyses difficult; (2) calculations of norms from literature data would be more difficult [but many computers are programmed for this]; (3) it obviates the traditional checks of the summations that are important to petrologists and chemists [will it result in more "determinators" and fewer "analysts"?];

and (4) the elemental combinations in the rock would be reported as they are --pyrite should be reported as such and not as parts of Fe^{+2} and S. Because of the arguments above and the fact that computers can be programmed for oxides, elements, or both, the present system of reporting oxides for rock and mineral analysis should be retained.)

ii. Report data as ratios of the weight of the element (or molecule per weight of sample. Significant figures in the data and the error term are listed as whole numbers with a negative exponent. (As computers can be programmed to accept many kinds of data, it would be safer to program any transformations desired.)

iii. Analytical error - should it be expressed as (1) the standard deviation, s; (2) the standard deviation of a mean of n determinations; or (3) a confidence interval? (Comment: This is almost a moot question as the standard deviation [s] is necessary for the last two alternatives. The exact definition of the standard deviation should be given [n-1 degrees of freedom].)

iv. Data listed should contain all available information. For example, a result of 35.00 ± 0.12% obtained by CRPG in 1969 for 3 determinations by x-ray fluorescence after fusion of the sample, with DTS-1 as the standard, could be entered as:

3500 ± 12 E-4 / 3 BFX / DTS-1 / CRPG 1969

The more complete recommendations may be obtained from H. de la Roche, CRPG, Case Officielle No. 1, 54-Vandoeuvre, France, who would appreciate comments.

F. J. Flanagan

Education: In contrast to most years, this committee is able to make a partially optimistic report. Advertisements were placed in Geotimes starting in August in anticipation of the Fall term, with the result that sales of the Educational Series in Geochemistry reprints increased dramatically. During the year sales were:

ESG	1	184
	2	210
	3	303
	4	203

for which $210.31 was paid. Most of those were sold this Fall ($198.76). The total sales to date are: ESG 1, 407; ESG 2, 915; ESG 3, 533; ESG 4, 226.

The committee must report little success in interesting new authors. One paper was received and rejected, two former offers were withdrawn, and one commitment made for several months hence. In reviewing correspondence of 3 years ago the chairman noted that 6 persons had promised to prepare papers in one or two years time. These prospects will be contacted and reminded of their promises. There were no responses to the last request to the Society at large in The Geochemical News. Thus, one major problem now appears to be obtaining authors.

Dr. Parke Dickey, the representative of the OGD, has submitted his resignation due to lack of time to work effectively on the committee.

Paul L. Cloke

REPORTS OF THE EDITORS

Geochimica et Cosmochimica Acta: The "take-over" of Pergamon by Leasco should have no effect on Geochimica et Cosmochimica Acta; if anything significant should occur, I will notify the officers immediately.

My resignation is hereby submitted, effective November, 1970.

Co-sponsorship with the Meteoritical Society is complete at this end; appropriate announcements have been prepared, journal front cover changed, and so forth.

The complete three-month Lunar Science papers will be published here (probable distribution in March) to be distributed free to all individuals, libraries, etc., who are subscribers on January 1, 1970.

The journal will be air-freighted to North America, then distributed by mail to North American subscribers starting with January, 1970.

The "Letter to the Editor" category will be encouraged, starting in 1970.

Manuscripts (not including special issues) are received at the rate of about 225 per year.

Rejection rate for non-meteorite papers is about 40%; but rejection is much lower(perhaps 10% for meteorite papers). 100% of the papers accepted in the past year have required revision of some type or other. (About 25% of the journal is concerned with meteorites and cosmochemistry.)

Reports to authors on manuscripts are generally made in less than 30 days; publication is generally 4½ months after acceptance.

Two new Associate Editors for 1970 are: Dr. R. Brett and Prof. J. T. Wasson.

A. A. Levinson

The Geochemical News: There is little to report in connection with the News this year. Two issues were published during the year consisting largely of reports of the officers and the council meeting, book reviews, and changes of addresses. The next issue is now being prepared for publication. The difficulties with secretarial help reported last year are temporarily solved, with the result that the Society is no longer paying for a part-time secretary as was needed previously for this purpose.

Paul L. Cloke

Journal Translations: The first number of the 1969 volume of Geochemistry International (Vol. 6) should be published in the latter part of November, perhaps even sooner. This is a major breakthrough and marks the first time since the beginning of the Geokhimiya translation project that some translated papers appear in print the same year as the originals. In fact, with the current production rate, the long-sought goal of a six month lag time (such as that for Doklady ESS) will be attained in 1970.

Beginning with Volume 6, Geochemistry International will have a new

cover and a revised, more efficiently organized format with regard to papers abstracted only. Due to rising costs, the price for copies of papers entirely translated and abstracted only, must be raised to $.25 per typescript page of translation.

Subscription, which showed a slight increase (ca. 4.5%) from last year, is broken down as follows:

Subscribers to Geochemistry International
(as of October 9, 1969)

U. S.			272
Canada	49		
P.U.A.S.*	16		
Europe	142		
Other	135	Total foreign	345
		TOTAL	617

*Postal Union of the Americas and Spain

The increase in subscription is due solely to the increase in non-U.S. subscribers; U. S. subscribers, in fact, number slightly less than in the previous year, 272 as opposed to 276. An analysis will be made by AGI of the subscription list for Geochemistry International, as well as other AGI translations journals, as part of a program to boost subscriptions, particularly from earth-science departments and research institutes of major U. S. colleges and universities.

NSF funding of the AGI Translations program continues to be rather tight. The request for cover-to-cover translations of the four Russian journals (Izvestiya, Ser. Geol.; Geologiya Rudnyk Mestorozhdeniy; Geologiya i Geofizika; and Sovetskaya Geologiya) suggested by the AGI Translations Committee last year was not granted. The continued reduced level of NSF subsidy affects not only the AGI Translations Program but also Russian scientific translations in general. One obvious solution is, of course, for Geochemistry International and other translations publications to become self-supporting by increasing subscriptions and/or (less desirably) subscription rates. Any comments or suggestions pertinent to how this may be realized and to the related problem of overcoming reader apathy would be most welcome.

The reduction in the lag time in publication of Geochemistry International to less than a year has only been possible because of the combined extra efforts of the staffs of Scripta Technica, Inc., and AGI, and of the many members of the Society who have given generously of their time and talents in assisting me with the increased editing load. My sincere thanks to them all, particularly to Dr. L. Paul Greenland, who took over editorship duties during my absences from Washington.

Robert I. Tilling

Book Translations: The essence of this Editor's report is a call for help in a new approach to the translation of Russian monographs, printed in The Geochemical News, No. 50, December 1969, and hence is not reproduced here.

F. T. Manheim

SPECIAL ITEMS AND APPOINTMENTS

Professor L. T. Silver was appointed Society delegate to the inauguration of the new president of the California Institute of Technology.

Professor C. E. Weaver was appointed Society delegate to the inauguration of the new president of Georgia Institute of Technology.

Professor E. Anders was appointed chairman of the Ad Hoc Committee on Awards.

Council urged the president-elect to investigate the possibility of a Committee on Geochemical Aspects of Environmental Pollution.

ORGANIC GEOCHEMISTRY DIVISION

The new officers are:

Derek Spencer, Chairman
K. A. Kvenvolden, Chairman-elect
Ellis Bray, Secretary

The Council had an extensive discussion of the relationship of the OGD to the Society, and the possibility of the OGD affiliating with the IAGC, but no action was taken pending decisions by the OGD itself.

(Editor's Note: OGD has experienced a 22% growth in membership during the year. As of November, 1968, our membership roster contained 262 names. Our membership is now 320.

COUNCIL ACTIONS

The minutes of the previous Council meeting were approved as printed in The Geochemical News, #49, June, 1969.

The change requested by the Treasurer in the bookkeeping year and the use of all upper case letters in the address list was approved by Council.

Council requested the Journal Translations Editor, Robert I. Tilling, to look into the possibility of a special subscription rate for the Society members.

Council approved the two new Associate Editors for Geochimica et Cosmochimica Acta. Various possible ways of decreasing the work load on the Editor were discussed, but no action was taken.

The report from the Book Translation Editor was accepted and approved by Council, who gave Frank T. Manheim their enthusiastic but somewhat pessimistic support.

CHEMICAL ABSTRACTS

Section 53

(Mineralogical and Geological Chemistry)

During 1969, Dr. G. M. Friedman, was forced by the pressure of other duties to give up the position of associate editor of Section 53, which he had filled with distinction since 1962. Fortunately he was able, as a last service, to persuade Dr. E. E. Angino of the University of Kansas to replace him. I should like to express my deep appreciation to them both for excellent and conscientious work.

The abstracts published in Section 53 in volumes 70 and 71(1969), excluding books and cross-references, totaled 6919, by far the largest number yet recorded. The increase over 1968 was 933 abstracts, 15.6%. The often-predicted slowdown in scientific publication is not yet evident! Many abstracts of mineralogical and geological interest are, of course, published in other sections of Chemical Abstracts, especially Sections 68 and 70.

Table 1 indicates that the speed of coverage was close to the level of previous years. In actual fact, it was better because of the express coverage of many of the most important journals. This would be shown by a more detailed analysis of time lag (by days) between publication of paper and abstracts, but I have not attempted this. Chemical Abstracts has frequently published abstracts of papers in journals such as Geochimica et Cosmochimica Acta and Mineralogical Magazine within two weeks of the journal's arrival in the United States.

Table 2 shows the distribution of papers abstracted for the leading countries. The percentages in 1969 were generally close to the averages for 1967 and 1968.

Table 1. Year of abstract compared to issue year, Section 53
(by percentage of total)

	1969	1968	1967	1966	1965
Total number of abstracts	6919	5986	6164	5633	5816
Dated					
1. same year	35.9	37.9	35.2	36.7	35.1
2. 1 year earlier	47.9	44.8	50.3	48.0	47.6
3. 2 years earlier	12.7	15.8	10.6	11.9	12.6
4. 3 years earlier	3.2	1.3	2.1	2.5	2.8
5. > 3 years earlier	0.3	0.2	1.8	0.9	1.9
(1 + 2)	83.8	82.7	85.5	84.7	82.7

Table 2.

(Country of origin of papers abstracted in Section 53 (leading countries)

	1969		1968		1967	
	No.	%	No.	%	No.	%
USSR	2621	37.9	2417	40.4	2114	34.3
USA	1334	19.3	981	16.4	1304	21.2
Germany (W&E)	365	5.3	301	5.0	362	5.9
France	260	3.7	208	3.5	197	3.2
Canada	236	3.4	167	218	161	2.6
Japan	218	3.2	180	3.0	177	2.9
England	208	3.0	185	3.1	277	4.5
India	184	2.7	145	2.4	165	2.7
Australia	145	2.1	149	2.5	162	2.6
Czechoslovakia	145	2.1	161	2.7	124	2.0
Poland	120	1.7	119	2.0	104	1.7
Italy	111	1.6	116	1.9	107	1.7
All others*	972	14.0	857	14.3	910	14.7
	6919	100.0	5986	100.0	6164	100.0

*77 countries in 1969

Thanks are due to the abstractors and the staff at Columbus whose excellent work makes this service possible. As always, we welcome suggestions and corrections from the users of Section 53. One was received in 1969.

Michael Fleischer

BOOK REVIEWS

POTASSIUM-ARGON DATING, by J. Brent Dalrymple and Marvin A. Lanphere, xiv + 258 pages, 98 illustrations, 28 tables. W.H. Freeman and Co., San Francisco, $7.50.

This book has been issued as the first of a series of books in geology edited by James Gilluly and A. O. Woodford. It is in hard cover with excellent quality material, printing, and clear illustrations involving several tones of gray. The work is timely, up to date, very complete and yet easy to read. The authors start with a chapter on atoms, elements,and isotopes followed by a second chapter on radioactivity. The remaining chapters cover essentially all of the material of significance in the subject of K-Ar dating, including analytical techniques and detailed applications. The authors start with isotopes of potassium and argon and how the clock works,then present three chapters on argon and potassium measurement that includes a discussion of every part of the standard system for the extraction of the gas, the mass spectrometric determination of the radiogenic argon and air contamination, various kinds of mass spectrometers, and all of the currently used and prospective methods of potassium measurement. In other words, the analyt-

ical techniques described involve the common approaches and other methods that have or should be tried. The discussion of precision and accuracy would apply equally to any geochemical analytical work, and is a useful elementary coverage of the subject. The problems of argon dating are then introduced, with such questions as extraneous argon and argon loss being covered rather fully. Finally, the authors present detailed information on case histories of dating studies, and a discussion of all of the variety of applications of the method to geological subjects.

This book is an excellent treatise for geologists who wish to become sophisticated in geochronological lore and for students who wish to be well-rounded in modern approaches in solving earth problems. It would make an excellent text or reading assignment in a course in isotope geology. It would represent an advanced compilation of techniques and information for the professional geochronologist.

P.M. Hurley
Mass. Inst. of Technology

STRENGTH AND STRUCTURE OF THE EARTH, by R. A. Daly, 434 pages, 85 figures, 70 tables. Hafner Publishing Co., New York, reprinted 1969. $12.50

With the renaissance of interest in the concept of continental drift resulting from the almost overwhelming evidence for sea floor spreading, the reprinting of Daly's book is of particular significance. As Daly pointed out, the problem, which is defined in the title is fundamental.

> "Discovery of the location and degrees of strength in the globe would help us to fix internal temperatures and to understand the earth's shape, the development of mountain chains, the origin of continents, floodings and recessions of the sea, igneous action and metamorphism. The distribution of the strength is the complex and challenging theme of this book."

Indeed, an understanding of the strength distribution may lead to new insights into the mechanism(s) of continental drift.

The book consists of 12 chapters and an excellent index. The introduction provides the basic background to the problem and discusses the basic discontinuities in the earth, the calculated densities and the figure of the earth. The terminology of lithosphere, asthenosphere and mesosphere, defined here by Daly in terms of long term "strength" are, of course, prevalent today in the geological and geophysical literature. The book itself is centered on the idea of isostasy and the second chapter gives an excellent historical background on the development of that idea. Chapters 3, 5, 6, 7, 8, and 9 deal with testing that idea and, while they are interesting in themselves, they do not constitute the most interesting part of the book today, at least for this reviewer. Chapters 10, 11, and especially 12 are devoted to the question of the internal strength of the earth. The geodetic and gravitational data (as of 1940) on the glacial rebound in Fennoscandia are graphically presented. The early theoretical arguments on the distribution of strength and the effects of surface loading by Darwin, Love, Barrell, and Jeffreys are clearly presented, and strong arguments for a "strong" lithosphere and "weak" asthenosphere are presented.

Although the book was published in 1940, it provides a clear statement of some of the fundamental problems facing geologists today and an excellent summary of data on the problem up to 1940. Although there has been a vast accumulation of data particularly from the oceans, since 1940 (indeed, since the early 1960's),this book remains an important reference and is well worth selective reading for background information.

Paul W. Pomeroy
The University of Michigan

ION EXCHANGE COLUMN

News from the National Academy of Sciences

Washington, April 27, 1970. Among the six scientists who received awards this evening, from the National Academy of Sciences during its 107th Annual Meeting, are two members of The Geochemical Society.

Each award is presented to a scientist selected by the Academy for outstanding achievement in his particular field.

Dr. Klaus Keil, Professor of Geology at the University of New Mexico. was given the George P. Merrill Award in recognition of his mineralogical investigations of meteorites. He is the first winner of this new award, which will be presented every two years for studies of meteors, meteorites and space.

Also for his work on meteoric bodies, Dr. Edward P. Henderson of the Smithsonian Institution was honored with the J. Lawrence Smith Medal. Given approximately every five years, the award goes to Dr. Henderson not only for his research but for his efforts in collecting and classifying meteorites which, over the past 41 years, have contributed greatly to the advancement of knowledge in this field.

NAS & Soviet Academy Renew Exchange Program,Add Provision for Joint Research

The Inter-Academy Exchange program of the National Academy of Sciences has been renewed and broadened through 1971. The new exchange agreement, negotiated in Washington by representatives of the two academies, is latest in a series of two-year agreements begun in 1959 and is retroactive to January 1, 1970.

As in the 1968-69 agreement, the new pact provides for 180 man-months, over the two-year period, of study in the United States by Scientists designated by the Soviet Academy and for 180 man-months of research in the Soviet Union by scientists chosen by the NAS. The new agreement contains in addition an enabling provision for joint research.

Inclusion of the joint-research provision was proposed by the NAS after suggestions by past participants in the program that extended collaboration by U. S. and Soviet scientists would result in improved and longer-lasting contacts. Under this provision, each project is to be proposed, academy-to-academy, and agreed upon separately. Joint research projects arranged under this provision will not be included in the total of 180 man-months to which each academy is limited in connection with individual visits.

GORDON RESEARCH CONFERENCE ON GEOCHEMISTRY

August 31-September 4, Plymouth, New Hampshire

31 August	Geochemistry of Porphyrins and biochemical fossils
1 September	Chemical fossilization and mineralization
2 September	Sedimentary organic matter
3 September	Organic processes in the subsurface
4 September	Lunar samples and general papers

Application forms may be obtained from:

Dr. Alexander M. Cruickshank, Director
Gordon Research Conferences
Pastore Chemical Laboratory
University of Rhode Island
Kingston, Rhode Island 02881

Conferences are limited to about 100 conferees, for a fixed fee of $130.00 (with some exceptions). Further details are available in March OGD Newsletter and from Dr. Cruickshank.

It is preferable to have the conference filled. Therefore, PLEASE DO NOT HESITATE TO APPLY.

SANDS-IN-THE-GEARS-OF-LEARNING

A questionnaire was recently received by the Editor from The University of Michigan's Center for Research on Learning and Teaching. Date: February 30, 1970.

From Science, v. 167, p. 1333, March 6, 1970, The chemistry of the crystalline rocks are lower in Rb, K, Ba, Y, Zr, and Li and higher in Fe and Cr.

CALENDAR

June	
2-5	21st Annual Mid-America Symposium on Spectroscopy. Sheraton-Chicago Hotel, Chicago, Ill. (Miss Adele Rozek, Velsicol Chemical Corp., 330 East Grand Ave., Chicago, Ill. 60611.)
10-12	3rd Symp. on Low Energy X- and Gamma Sources and Applications. (Boston College, Chestnut Hill, Mass. 02167.)
24-July 1	Int'l. symp. (Flagstaff, Ariz) on mechanical properties and processes of the mantle, plus fieldtrips to kimberlite pipes and to Franciscan range. (L. R. Sykes, Columbia University, Palisades, N.Y., 10964.)
August	
3-4	Rocky Mountain Spectroscopy Conference, Denver. (Joseph Haffty, U. S. Geol. Survey, Bldg. 25, Federal Center, Denver, Colorado 80225.)

24-Sept. 6 **IMA and IAGOD**, mtg. Aug. 28-29 in Tokyo and Aug. 31/Sept. 2 in Kyoto. Fieldtrips Aug. 24-27 and Sept. 3-6. (Dr. I. Sunagawa, Geol. Survey of Japan, 8 Kawada-cho, Shinjuku-ku, Tokyo 162.)

31-Sept. 2 Annual meeting Geology Association of Canada and Mineralogical Association of Canada, Winnipeg. Symposium on geology of Manitoba. (R.F.J. Scotes, Manitoba Mines Branch, 900 Norquay Bldg., Winnipeg 1, Man.)

September

6-15 Int'l. symp. on hydrogeochem. and biogeochem., Sept. 6-12 and seminar on isotope geochemistry, Sept. 14-15, Tokyo, by IAGC and joint symposiums with Joint Oceanographic Assembly, Sept. 14-15. Registration deadline, Dec. 31, 1970. (Prof. Y. Miyake, Meteorological Res. Inst., Koenju Kita 4-35, Suginami, Tokyo.)

7-9 Northeast Washington-British Columbia Base Metal Districts Field Conference. (SEG)

7-11 6th Int'l. Symposium on Microtechniques. Graz, Austria. (Prof. G. Kainz c/o Intercong. Reisedienst und Betreuungs Ges. M.B.H., Stadiongasse 6-8, A-1010, Vienna, Austria.)

7-12 NATO Advance Study Inst. on Activation Analysis in Geochem. and Cosmochem. Oslo, Norway. (E. Anderson, Reactor School, Inst. for Atomenergi, 2007 Kjeller, Norway.)

13-18 Fall Mtg. Amer. Chem. Soc., Chicago, Illinois, includes Anal. Chem. Div. Sessions. (J. C. White, Oak Ridge Nat'l. Lab., Oak Ridge, Tenn. 37830.)

22-Oct. 1 U.N. Symp.on Development and Use of Geothermal Resources, Pisa, Italy. (G.R. Robson, U.N. Geothermal Symp, United Nations, N.Y. 10017.)

October

13-17 Clay Minerals Soc., ann. mtg. and N. Amer. Clay Minerals Conf., Miami Beach, Fla. (W. E. Moody, Ceramic Engineering, Georgia Inst. Tech., Atlanta, 30332.)

20-24 World symposium on mining and metallurgy of lead and zinc, St. Louis. Fieldtrips. By AIME. (E. S. Frohling, Parsons-Jurden Corp., 26 Broadway, New York.)

26-28 17th Spectroscopy Symposium. Ottawa, Ontario. Sponsor: Spectroscopy Society of Canada. (R. Ironside, Applied Chemistry Division, National Research Council, Montreal Rd., Ottawa 7, Ontario Canada.)

December

1-8 Int'l Symposium (plus fieldtrips) on Results of Research on Representative and Experimental Basins, Victoria Univ., Wellington New Zealand. By Int'l Ass'n of Scientific Hydrology, UNESCO, and Royal Society of New Zealand. (Executive Officer, Royal Society of New Zealand, Box 196, Wellington.)

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Volume 33 number 9 (1969) - Symposium on Tektites
Volume 31 number 10 (1967) - Harvey H. Nininger 80th birthday issue.

APOLLO 11

LUNAR SCIENCE CONFERENCE

During 1970 Geochimica et Cosmochimica Acta will publish all the proceedings of the historic three month Apollo 11 Lunar Science Conference (Houston, Texas, January 5-10, 1970) when the results of studies on the lunar samples and data obtained by Apollo 11 were presented.

The supplement will be sent free to all those who were subscribing January 1, 1970. Additional copies will be available to subscribers and non-subscribers at $40.00 plus postage. There will be three volumes which will contain about 2300 pages and 180 articles. All volumes will be hard-bound.

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