



The Geochemical News

NUMBER 41

November 1964

ANNOUNCEMENT OF ANNUAL MEETING

The annual meeting of The Geochemical Society will be held in Miami Beach, November 19-21, 1964 in conjunction with that of The Geological Society of America and affiliated Societies. Place: Deauville Hotel.

Events scheduled by The Geochemical Society are as follows:

Geochemical Council Meeting: Thursday, November 19, 2:00 p.m., Room 402.

Geochemical Society Presidential Address: Dr. Michael Fleischer, "Geochemistry of Yttrium and the Lanthanides." Friday, November 20, 10:00 a.m., Cavalier Rooms 1, 2, and 3.

Geochemical Society Business Meeting: Friday, November 20, 11:00 a.m., Cavalier Rooms 1, 2, and 3.

Organic Geochemistry Group Business Meeting: Thursday, November 19, 11:40 a.m., Charlemagne Room.

Other events of special interest will be The Geological Society of America Presidential Address by Dr. Francis Birch, "Speculations on the Earth's Thermal History," Thursday, November 19, 8:00 p.m. (Napoleon Rooms 2 and 3); the Geological Society Annual Dinner, Friday, November 20, 7:30 p.m. (Richelieu Room); Geological Society Smoker, Thursday, November 19, 9:00 p.m. (tentatively scheduled to be held around the swimming pool).

For those who have not received copies of the General Program, the following sessions and papers in geochemistry are scheduled:

GEOCHEMISTRY I - Experimental Petrology. Thursday morning, November 19, 9:00 a.m., Musketeer Room; Co-chairmen, W.G. Ernst and H.S. Yoder.

1. Taro Takahashi and W.A. Bassett*: Molar volume of iron at pressures up to 200 kilobars and the crystal structure of a high-pressure polymorph 9:00
2. Stanley K. Dickinson: Alpha-beta quartz equilibrium 9:15
3. Peter M. Bell*, Joseph L. England, and M. Gene Simmons: Experimental observations of a fast reaction with CaCO_3 9:30

*Asterisk denotes speaker

4. Ian D. MacGregor: Reaction 4 enstatite plus spinel equals forsterite plus pyrope and its application to the genesis of peridotites 9:45
5. F.R. Boyd* and Joseph L. England: System enstatite-pyrope and its bearing on the genesis of kimberlite 10:00
6. I. Kushiro* and H.S. Yoder, Jr.: High-pressure experiments on the basalt-eclogite transformation 10:15
7. B.T.C. Davis: Basaltic liquids from garnet peridotites? 10:30
8. G.M. Anderson* and C. Wayne Burnham: Solubilities of quartz, corundum, and gold in aqueous chloride and hydroxide solutions 10:45
9. C.Wayne Burnham* and G.M. Anderson: P-V-T relationships of water at high pressures and temperatures 11:00
10. David H. Speidel* and E.F. Osborn: Element distribution among coexisting phases in the system MgO-FeO-Fe₂O₃-SiO₂-TiO₂ as a function of oxygen fugacity, temperature, and bulk composition 11:15
11. M.C. Gilbert: Synthesis and stability relationships of the hornblende, ferro-pargasite 11:30
12. J.J. Rowe*, G.W. Morey, and R.O. Fournier: System H₂O-Na₂O-SiO₂ at 200°, 250°, and 300° C 11:45
13. Alan D. Edgar: Subsolidus relationships in the system Ca₂Al₂SiO₇ (gehlenite) - Ca₂MgSi₂O₇ (akermanite) - NaCaAlSi₂O₇ ("soda-melilite") - H₂O at 1000 Kg/an² 12:00

ORGANIC GEOCHEMISTRY I. Thursday morning, November 19, 8:30 a.m., Charlemagne Room; Co-chairmen, Irving A. Breger and R. Siever

1. Patrick L. Parker: Geochemistry of fatty acids and alcohols in Texas coastal waters 8:30
2. J. Gordon Erdman and Richard B. Schwendinger*: Occurrence and quantitative distribution of sterols in aquatic sediments from fresh-water bogs and swamps to deep marine 8:45
3. Max Blumer and David W. Thomas*: Hydrocarbons in marine organisms 9:05
4. Brian Pasby*, B.S. Cooper, and D.W. Hood: Hydrocarbons and waxes of coral-reef organisms 9:25
5. Lela M. Jeffrey and Donald W. Hood*: Chemistry of organo-silicate complexes isolated from marine sediments 9:40
6. Carl H. Oppenheimer* and Eugene F. Corcoran: Water quality in the Guinea and Benguela currents 10:00
(5-minute recess)

GENERAL SESSION

1. Donald R. Baker and W.S. Ferguson*: Stable carbon isotopes in petroleum and sediment hydrocarbons from the Cherokee petroleum province 10:30
2. Grover J. Schreyer* and W.M. Zarrella: Organic geochemistry of shales, II. Distribution of extractable organic matter in the siliceous Mowry Shale of Wyoming 10:45
3. P.E. Hare* and P.H. Abelson: Comparative biochemistry of the amino acids in molluscan shell structures 11:00
4. Frederick M. Swain: Regional variation in organic geochemistry of Onondaga beds of Pennsylvania 11:15

*Asterisk denotes speaker

GEOCHEMISTRY II. Saturday morning, November 21, 8:30 a.m., Cavalier Rooms 1 and 2; Co-chairmen, Robert M. Garrels and Richard M. Jahns

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| 1. Roger W. Kolvoord* and J.A. Whelan: Reconnaissance of the system $\text{BeO-Al}_2\text{O}_3\text{-H}_2\text{O}$ | 8:30 |
| 2. Dale R. Simpson: Rate of crystallization of a granitic melt | 8:45 |
| 3. Luke L. Y. Chang: Subsolidus phase relations in the system $\text{CaCO}_3\text{-SrCO}_3\text{-BaCO}_3$ | 9:00 |
| 4. Peter J. Wyllie: Melting relationships in the system $\text{CaO-MgO-CO}_2\text{-H}_2\text{O}$ | 9:15 |
| 5. H.P. Taylor, Jr., J. Frechen, and E.T. Degens*: Oxygen and carbon isotope studies of carbonatites from Laacher See district, Germany | 9:30 |
| 6. J.R. Weidner* and O.F. Tuttle: Stability of siderite, FeCO_3 | 9:45 |
| 7. H.D. Holland*, M. Borcsik, and E. Goldman: Solubility of calcite in NaCl solutions between 50° and 200° C | 10:00 |
| 8. David R. Waldbaum: Unsymmetrical binary solution as a thermodynamic model for sylvite-halite solid solutions | 10:15 |
| 9. Cooper H. Wayman* and John B. Robertson: Zero point of charge on kaolinite surfaces in acid solution | 10:30 |
| 10. L.A. Hardie: Gypsum-anhydrite equilibrium at 1 atm pressure | 10:45 |
| 11. H. Donald Curry: Geology of rock-forming sedimentary zeolites | 11:00 |
| 12. R.L. Hay: Pattern of silicate authigenesis in the Green River Formation of Wyoming | 11:15 |
| 13. H.E. Cook* and R.L. Hay: Salinity control of zeolite reaction rates in Teels Marsh, Nevada | 11:30 |
| 14. M.K. Horn* and J.A.S. Adams: Computer-derived geochemical balances and element abundances | 11:45 |

GEOCHRONOLOGY and GEOCHEMISTRY. Saturday afternoon, November 21, 2:00 p.m., Charlemagne Room; Co-chairmen to be announced.

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| 1. F.P. Fanale* and O.A. Schaeffer: Dating of fossil aragonite shells and corals by the U-He method | 2:00 |
| 2. Jon N. Weber: Changes in the oxygen isotopic composition of sea water during the Phanerozoic evolution of the oceans | 2:15 |
| 3. Rudolf H. Steiger* and Clifford A. Hopson: Minimum age of the Glenarm Series, Baltimore, Maryland | 2:30 |
| 4. Daniel H. Anderson* and Paul W. Gast: Uranium-lead zircon ages and lead isotope compositions in two Algomian granites of northern Minnesota | 2:45 |
| 5. W.R. Van Schmus: Geochronology of the original Huronian area, Ontario, Canada | 3:00 |
| 6. Allan Hills*, Paul W. Gast, and Robert S. Houston: Chronology of some Precambrian igneous and metamorphic events of the Medicine Bow Mountains, Wyoming | 3:15 |
| 7. M.E. Bickford* and G.W. Wetherill: Primary and metamorphic chronology in central Colorado | 3:30 |
| 8. R.W. Scott* and W.W. Hambleton: Geology of basement rocks in western Kansas | 3:45 |

*Asterisk denotes speaker

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| 9. | J.N. Rosholt*, B.R. Doe, and M. Tatsumoto: Isotopic composition of uranium in soil profiles | 4:00 |
| 10. | G.N. Hanson*, P. Signer, and P.W. Gast: Loss of radiogenic argon-40 and strontium-87 from biotites under geologic conditions and in laboratory heating experiments | 4:15 |
| 11. | P.M. Hurley*, H.W. Fairbairn, and W.H. Pinson: Sr ⁸⁷ /Sr ⁸⁶ relationships in volcanic rocks of unusual composition in western Italy | 4:30 |
| 12. | E.J. Catanzaro*, T.J. Murphy, E.L. Garner, and W.R. Shields: Magnesium isotope abundances in natural samples | 4:40 |
| 13. | Harry J. Rose, Jr.*, and Frank Cuttitta: Microanalysis by X-ray fluorescence: Determination of selected major constituents in silicates | 4:55 |
| 14. | J. Hower*, L.A. Schmittroth, E.C. Perry, D.G. Towell, and T.C. Mowatt: X-ray spectrographic major-constituent analysis in undiluted silicate rocks and minerals | 5:10 |

Also of interest are geochemical papers to be presented at the General Session and a special session devoted to "Geochemistry in Economic Geology". These are as follows:

ECONOMIC GEOLOGY II - GEOCHEMISTRY IN ECONOMIC GEOLOGY. Thursday afternoon, November 19, 2:00 p.m. Room and Co-chairmen to be announced.

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| 1. | K.H. Wedepohl: "Kupferschiefer" and the problem of syngenetic ore deposition | 2:00 |
| 2. | M.L. Jensen* and E. Dechow: Bearing of sulfur isotopes on the origin of southern African ore deposits | 2:15 |
| 3. | E.W. Presant*, W.M. Tupper, and R.W. Boyle: Geochemical study of soil profiles from the Bathurst area, New Brunswick, Canada | 2:30 |
| 4. | R.O. Fournier* and J.J. Hemley: Effects of supersaturated silica solutions during the hydrothermal alteration of feldspars | 2:45 |
| 5. | G. Kullerud* and H.S. Yoder, Jr.: Sulfide-silicate reactions | 3:00 |
| 6. | Motoaki Sato* and C.L. Christ: Electrode properties of semiconductive binary sulfides and their possible geologic application | 3:15 |
| 7. | James R. Craig: System Ag-Bi-S | 3:30 |
| 8. | Robin Brett: Kinetics of exsolution in two sulfide systems | 3:45 |
| 9. | Harold D. Wright*, Walther M. Barnard, and Joseph B. Halbig: Solid solution in the systems ZnS-ZnSe and PbS at 300° C and above | 4:00 |
| 10. | S.B. Romberger* and H.L. Barnes: Solubility of covellite in synthetic ore solutions | 4:15 |
| 11. | Eugene H. Roseboom, Jr.: Reactions in some synthetic and natural copper sulfides between 25° and 200° C | 4:30 |
| 12. | Brian J. Skinner: System Cu-Ag-S | 4:45 |
| 13. | R.A. Yund* and B.J. Giletti: Partition of zinc between pyrite and galena | 5:00 |
| 14. | Harold Bohmer: Mineralogy of the tetrahedrite series | 5:15 |

*Asterisk denotes speaker

GENERAL SESSION. Saturday morning, November 21, 9:00 a.m., Casanova Room;
Chairman, J. Frank Schairer

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| 1. | A.E.J. Engel* and Celeste G.Engel: Igneous rocks of the oceans | 9:00 |
| 2. | Vince Manson* and Arie Poldervaart: Geochemistry of basalts and dolerites | 9:15 |
| 3. | Hisashi Kuno: Origin of calc-alkali rock series | 9:30 |
| 4. | G.R. Tilton* and B.R. Doe: Lead isotopes and the age of the earth | 9:45 |
| 5. | Leon T. Silver: Mazatzal orogeny and tectonic episodicity | 10:00 |
| 6. | O. Frank Tuttle and Richard H. Jahns*: Genesis of homogeneous aplite dikes | 10:20 |
| 7. | J.A. Grant*, G.J. Wasserburg, and A.L. Albee: Rubidium-strontium isochron study of the Grenville Front near Lake Timagami, Ontario, Canada | 10:35 |
| 8. | Thomas P. Rooney* and Paul F. Kerr: Mineralogy of North Carolina phosphorite | 10:50 |
| 9. | D.Alt* and H.K. Brooks: Evolution of the landscape of Florida | 11:05 |
| 10. | K.J. Murata* and R.C. Erd: Composition of sediments from the experimental Mohole Project (Guadalupe Site) | 11:25 |
| 11. | Robert S. Dietz and John C. Holden*: Deep-sea sediments in but not on the continents | 11:40 |
| 12. | W.D. Keller* and George E. Smith: Ground-water contamination by dissolved nitrate | 11:55 |

*Asterisk denotes speaker.

REPORT OF THE TREASURER

of the

Geochemical Society for the Calendar Year 1963

The report covers the period January 1 to December 31, 1963, and is the first to cover a full year since the change of the fiscal year to coincide with the calendar year. This change has simplified the bookkeeping in several respects, and it also has made possible a ready evaluation of membership standing.

In November, 1962, Council approved action to remove from the mailing list those members whose dues were more than two years in arrears and who failed to bring their accounts up to date after an additional billing. As of the end of 1963, 110 persons remained more than three years in arrears and, in accordance with the newly enacted by-law, automatically have been dropped from the rolls of the Society. In general, however, efforts to collect arrearages were successful and at year's end only about 60 currently active members had not paid their 1963 dues.

The increased dues in 1963 helped to reduce the Society's dependence on overhead income from National Science Foundation grants to defray general operating costs, but they will be inadequate in 1964. Sixty cents of the dollar increase represents the AGI assessment, and the recent (November, 1962) Council-approved action to contribute \$1250 annually to the expenses of the Executive Editor's office represents an additional obligation of nearly sixty cents per member. In terms of each dues dollar received in 1964 it is anticipated that 20 cents will go to the American Geological Institute, approximately 20 cents to the Executive Editor of *Geochimica et Cosmochimica Acta*, 20 cents for postage and mailing, 20 cents for publications, and 15 cents for printing charges. The remaining five cents will cover only part of the day-to-day operating costs of the Society, and extraordinary expenses, such as publication of a Directory of Members, must be defrayed from other funds.

The general financial condition of the Society improved somewhat in 1963 and is expected to improve slightly in 1964, but the longer term outlook is not clear, owing to uncertainties connected with the translation program. Certainly, permanent stability will be achieved only when the normal operational expenses of the Society are met by income from the general membership.

Respectfully submitted,

C. Wayne Burnham
Treasurer

BALANCE SHEET

December 31, 1963

ASSETSLIABILITIES AND FUND BALANCES

Operating Fund:

Cash on hand
and in banks \$16,428.41

Operating Fund:

Fund balance \$16,428.41

Accounts receivable to the Operating Fund on December 31, 1963:

Subscriptions Credit, Scripta Technica, Inc. \$ 339.25

Balance of NSF Grant GN-188 19,188.00
\$19,527.25

Accounts payable from the Operating Fund on December 31, 1963:

Balance of 1963 assessment-
American Geological Institute \$ 736.00

Income from sales of Geokhimiya
translations due the National
Science Foundation 11,585.63
\$12,321.63

Publication Fund:

Cash on hand
and in banks \$ 2,758.79

Publication Fund:

Fund balance \$ 2,758.79

Total: \$19,187.20

Total: \$19,187.20

STATEMENT OF INCOME, EXPENSES AND CHANGES IN FUND BALANCES

FOR THE PERIOD JANUARY 1, 1963 TO DECEMBER 31, 1963.

Operating FundGeneral

Income:

Dues	\$ 5,809.12	
Subscriptions to Geochemical News	47.00	
Indirect costs		
NSF G-19808	935.89	
NSF GN-34	2,829.70	
NSF GN-188	640.15	
Interest on savings account	<u>57.36</u>	
Total income		\$10,319.22

Expenses:

Operational	4,047.06	
Assessments	500.00	
Publications	<u>3,729.33</u>	
Total expenses		<u>8,276.39</u>
Excess of income over expenses		2,042.83

Translations

Income:

NSF Grant		
GN-34	13,000.00	
GN-188	10,257.00	
Credit against cash advance to Scripta Technica, Inc.	260.00	
Subscriptions	<u>11,585.63</u>	
Total income		\$35,102.63

Total income		\$35,102.63
Expenses:		
1962 Volume (GN-34)	21,855.74	
1963 Volume (GN-188)	<u>7,041.60</u>	
Total expenses		<u>28,897.34</u>
Excess of income over expenses		6,205.29
Fund balance January 1, 1963: *		
Savings Account	1,412.65	
Checking Account	6,766.81	
Petty cash	<u>.83</u>	
Total		8,180.29
Fund balance December 31, 1963:		
Savings Account	1,470.01	
Checking Account	14,946.22	
Petty cash	<u>12.18</u>	
Total		<u>\$16,428.41</u>

*The Society's Savings and Publication Fund are on deposit with the State College Federal Savings and Loan Association at 4.0 percent interest. The checking account is with the First National Bank of State College, Penna.

Publication Fund

Income:

Royalties	\$266.93	
Interest	<u>104.33</u>	
Total income		\$371.26

Expenses:

		- - - -
Total expenses		- - - -
Excess of income over expenses		371.26

Fund balance January 1, 1963		<u>2,387.53</u>
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Fund balance December 31, 1963		<u>\$2,758.79</u>
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STATEMENT OF EXPENSES FOR THE PERIOD
JANUARY 1, 1963 TO DECEMBER 31, 1963

Operational:

Addressograph	\$	361.90
Bank charges		10.73
Express and shipping		36.56
Miscellaneous		172.53
Postage		1,268.11
Printing and lithographing		1,049.79
Secretarial services:		
Editor-Geochemical News		45.60
Secretary		233.00
Treasurer		850.00
Stationery and supplies:		<u>18.84</u>
Total operational expenses		\$4,047.06

Assessment, American Geological Institute		500.00
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Publications:

Geochemical News		1,611.54
Programs, Annual Meetings		354.24
Directory		<u>1,763.55</u>
Total publications expenses		<u>3,729.33</u>
		\$8,276.39

Translations of Geokhimiya:

	1962 Volume GN-34	1963 Volume GN-188
Production	\$16,028.70	\$3,890.60
List Maintenance	- - - -	1,500.00
Mailing	1,367.00	- - - -
Editor	900.00	750.00
Preparation of Index	250.00	40.00
Promotional Material	276.90	128.80
Travel (Editor)	- - -	42.05
Communications	88.44	- - -
Clerical assistance	100.00	50.00
Office supplies	15.00	- - -
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	19,026.04	6,401.45
Indirect costs	1,902.60	640.15
Indirect costs due December, 1962	927.10	- - -
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Total	\$21,855.74	\$7,041.60
Total translation expenses		<u>28,897.34</u>
Total expenses		<u>\$37,173.73</u>

CALENDAR

Nov.

19-21 Annual Meeting, GSA, Geochemical Society, MSA, NAGT, SECG, Miami Beach

Dec.

14-22 4th General Meeting, International Mineralogical Assn., New Delhi, India

14-22 XXII International Geological Congress, India (Organizing Committee, Geological Survey of India, 27 Chowringhee, Calcutta 13, India)

28-30 Western National Meeting, AGU, University of Washington, Seattle (AGU, Suite 506, 1145 19th NW, Washington, DC 20036)

26-31 131st Annual Meeting, AAAS, Montreal (See Ion-Exchange Column)

ION EXCHANGE COLUMN

AAAS Annual Meeting

The annual AAAS meeting will be held December 26-31 this year in Montreal (Headquarters: Queen Elizabeth Hotel). The chemical section will meet on December 29 and 30 and the program (Roland Rivest, University of Montreal, and C.B. Purves, McGill University) will consist of two 2-session symposia; December 29, "Problems related to hydrogen bonding - theoretical, spectroscopic, and biological aspects" and December 30, "Stereospecificity".

A symposium on "Medical Geology and Geography" will be held on Monday morning, December 28, 1964. This interdisciplinary symposium has been planned to encourage cooperation among workers in the fields of medical science, nutrition, and the biological, chemical and earth sciences who are studying the possible correlations between trace elements in plant, animal and human nutrition and certain diseases in animals and man.

The following papers will be presented:

Helen Cannon, U.S. Geological Survey, Denver, Colorado, "Comparison of geochemical environment in areas of high rate of cancer and heart disease in New York and Maryland with that of an area of low disease rate in New Mexico".

Dr. A. Furst, Director, Institute of Chemical Biology, University of San Francisco, San Francisco, Cal. "Speculations on Trace Metals and Cancer".

Dr. Anna H. Koffler, Professor of Pharmacognosy, College of Pharmacy, Ohio Northern University, Ada, Ohio. "Trace Elements in Plants".

Dr. R.J.F.H. Pinsent, Research Adviser, College of General Practitioners, Birmingham, England. "The Beginnings of Disease".

Dr. H.V. Warren, Professor, Department of Geology, University of British Columbia, Vancouver, Canada, - Chairman of the Symposium (Section E) will open the Session with some introductory remarks on "The Relationship Between Geology and Soils".

For further information, contact Dr. H.V. Warren, Professor, Department of Geology, University of British Columbia, Vancouver 8, B.C., Canada.

Simultaneous TGA-DTA Analysis

The periodical Research/Development continues to carry articles of interest to the geochemist and is available free of charge by writing R/D, 205 West Wacker Drive, Chicago 60606. For example, the September 1964 issue describes a new instrument capable of simultaneous differential thermal and thermogravimetric analysis in the range 25-1600° C and in vacuo ($8 \cdot 10^{-6}$ torr).

ONE GRAIN OF SAND

D.M. Henderson has contributed this month's bit of grit to the gears-of-learning

"Hot-off-the-exam-press:

Magmatic stoping is the process of replacing sedimentary rock by dissimulation."

See you in Miami Beach

William C. Kelly
Editor