The Geochemical News

NUMBER 39 November 1963

ANNOUNCEMENT OF ANNUAL MEETING

The annual meeting of The Geochemical Society will be held in New York City, November 17-20, 1963 in connection with that of The Geological Society of America and affiliative Societies. Place: Commodore Hotel.

Events of The Geochemical Society are scheduled as follows:

Council meeting: Monday, November 18, 2:00 p.m., Studio 108.

Organic Geochemistry Group luncheon: Monday, November 18, 12:30 p.m., Windsor Terrace. (To be followed by business meeting of Organic Geochemistry Group.)

Presidential address: Dr. George Tunell, "Chemical Processes in the Formation of Mercury and Antimony Ore Deposits." Tuesday, November 19, 10:00 a.m., East Ballroom.

Business meeting: Tuesday, November 19, 11:00 a.m., East Ballroom.

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

SYMPOSIUM ON RELATION OF GEOLOGY AND TRACE ELEMENTS TO NUTRITIONAL PROBLEMS. Sunday, November 17, 2-5 p.m., East Ballroom.

Harry V. Warren and Robert Delavault: Possible correlations between geology and epidemiology

Henry C. Harris: Effect of micronutrient deficiencies on the mineral content of certain plants and on animal and human nutrition

W.H. Allaway: Selenium in soils and plants in relation to muscular distrophy in livestock

Michael Fleischer: Fluoride content of ground water in the contermnnous United States

Captain F.L. Losee: Soil, plant, animal, and human relationships

Hansford T. Shacklette and Margaret E. Cuthbert: Iodine content of plant groups as influenced by variation in rock and soil type

James E. Bants, Homer K. Hall, and Herbert I. Sauer: Epidemiologic and demographic problems in the study of the geographic relationship of trace elements and the cardiovascular diseases

GENERAL DISCUSSION. 7:30-10:00 p.m., East Ballroom.

SYMPOSIUM ON ORGANIC-INORGANIC GEOCHEMICAL RELATIONSHIPS
ORGANIC GEOCHEMISTRY I. Monday, November 18, 9:00 a.m., Windsor Terrace.

H.A. Lowenstam: Mineral precipitates and their relation to the organic chemistry of marine invertebrates
Carl H. Oppenheimer and I.M. Master: Transition of silicate and carbonate crystal structure by photosynthesis and metabolism
Joseph Shapiro: Natural coloring substances of water and their relation to inorganic components
James J. Carroll and Leonard J. Greenfield: Mechanism of calcium and magnesium uptake from the sea by marine bacteria
G.W. Brindley, Robert Bender, and Satyabrata Ray: Sorption of nonionic aliphatic molecules from aqueous solutions on clay minerals
Oiva Joensuu and Eric Olausson: Barium content in deep-sea cores and its relationship to organic matter
J. Gordon Erdman: Concluding remarks

INORGANIC GEOCHEMISTRY I (Phase Equilibrium). Monday, November 18, 9:00 a.m., Windsor Ballroom.

G.W. Franz and P.J. Wyllie: Phase relationships in portions of the joins Mg_2SiO_4-$Ca(OH)_2$ and $MgSiO_3$-$Ca(OH)_2$ at 1 kilobar pressure
A.F. Koster van Groos and P.J. Wyllie: Liquid immiscibility in the system $NaAlSi_3O_8$(Ab)-$CaAl_2Si_2O_8$(An)-Na_2CO_3-H_2O
D.H. Lindsley and A.F. Buddington: Equilibrium relationships of coexisting pairs of Fe-Ti oxides
A.F. Buddington and D.H. Lindsley: Estimated temperatures of formation of Fe-Ti oxide mineral pairs
William D. Romey and Dirk de Waard: Evolution of anorthosite and associated rock suite in the Snowy Mountain dome, Adirondack Highlands
Allan Hills and P.W. Gast: Age of pyroxene-hornblende granitic gneiss of the Adirondack Mountains, New York
Leon T. Silver: Isotope investigations of zircons in Precambrian igneous rocks of the Adirondack Mountains, New York
Hugh P. Taylor, Jr.: Isotopic evidence for large-scale oxygen exchange during metamorphism of Adirondack igneous rocks
Brian T.C. Davis: System $MgSiO_3$-$CaMgSi_2O_6$ at 30 kilobars pressure
D.L. Hamilton: Solubility of water in igneous rock melts
Gregor M. Anderson, C. Wayne Burnham, and N.F. Davis: Solubility of quartz in supercritical water
D.B. Stewart: Petrogenesis and mineral assemblages of lithium-rich pegmatites

INORGANIC GEOCHEMISTRY II (Geochronology). Monday, November 18, 2:00 p.m., Windsor Ballroom.

I.R. Kaplan and J.R. Hulston: Isotopic abundance and content of sulfur in meteorites
William T. Holser, I.R. Kaplan, and S.R. Silverman: Isotope geochemistry of sulfate rocks
James L. Powell and Patrick M. Hurley: Sr^{87}/Sr^{86} ratios in carbonate rocks of possible igneous origin
F.P. Fanale and J.L. Kulp: Uranium, thorium-helium dating of magnetite
William C. Pearn: Mathematical model of thermoluminescence age determination
Rudolf H. Steiger: Use of K-Ar ages of hornblende for dating phases of Alpine orogeny
R.W. Kistler, P.C. Bateman, and W.W. Brannock: Isotopic ages of minerals from granitic rocks of the east-central Sierra Nevada and Inyo Mountains, California
P.M. Hurley, P.C. Bateman, H.W. Fairbairn, and W.H. Pinson: Preliminary investigation of Sr^{87}-Rb^{87} relationships in the Sierra Nevada plutonic rocks
P.B. Price, R.L. Fleischer, D.S. Miller, and E.S. Symes: Fossil charged-particle tracks and mineral ages
R.L. Fleischer and P.B. Price: Tektite ages by fission track dating
J.M. Aaron and A.B. Ford: Isotope age determinations in the Thiel Mountains, Antarctica
K.A. Richardson and J.A.S. Adams: Effect of weathering on radioactive elements in the Conway Granite of New Hampshire

ORGANIC GEOCHEMISTRY II. Monday, November 18, 2:00 p.m., Windsor Terrace.

Roger E. La Plante: Origin of cyclic compounds in petroleum
W.E. Robinson, J.J. Cummins, and G.U. Dinneen: Alteration of paraffinic compounds in Green River oil shale after deposition
Richard D. McIver, C.B. Koons, M.O. Denekas, and G.W. Jamieson: Maturation of oil, an important natural process
E.S. Cheney and M.L. Jensen: Stable carbon isotopes of calcite in the Gas Hills, Wyoming, uranium district
J. Robert Dodd: Environmentally controlled strontium and magnesium variation in *Mytilus*
Ernest E. Angino and Lela M. Jeffrey: Identification of sterols and fatty acids in Recent marine sediments
F.M. Swain, M.A. Rogers, F.T. Ting, G.W. Paulson, and G. Venteris: Abundance and stability of amino acids, carbohydrates, and pigments in aquatic plants and associated lake sediments
James I. Jones and Wayne D. Bock: Trace-element distribution in some living and fossil Foraminifera from south Florida, Bahamian, and Caribbean waters
M. Grant Gross: Heavy-metal concentration of diatomaceous sediments in a stagnant fjord

INORGANIC GEOCHEMISTRY III (General Geochemistry). Tuesday, November 19, 2:00 p.m., East Ballroom.

C.L. Christ and A.H. Truesdell: Cation exchange in clays interpreted by regular solution theory

A.H. Truesdell: Theory of divalent-cation exchange selectivity

Julian R. Goldsmith and David A. Northrop: Systems $CaCO_3$-$MgCO_3$-$CoCO_3$ and $CaCO_3$-$MgCO_3$-$NiCO_3$

Luke Li-Yu Chang: Subsolidus phase relations in the systems $BaCO_3$-$SrCO_3$, $SrCO_3$-$CaCO_3$ and $BaCO_3$-$CaCO_3$

Robert F. Sippel and Everett D. Glover: Solution alteration of carbonate rocks: the effects of temperature and pressure

Robert F. Schmalz: Role of surface energy in carbonate precipitation

K. Jinghwa Hsu: Solubility of dolomite estimated on the basis of the chemical composition of Florida ground waters

R.H. Arntson: Effect of temperature and confining pressure on the solubility of calcite at constant CO_2 concentrations

Marc W. Bodine, Jr.: Calcium-manganese carbonates, Providencia district, Zacatecas, Mexico

G.K. Billings, P.C. Raglund, and J.A.S. Adams: Major and trace element relationships within coexisting biotites and potassium feldspars of the Enchanted Rock batholith, Llano uplift, Texas

Robert M. Hutchinson: Minor-element content of north half of Pikes Peak batholith, Colorado

G.R. Webber and J.U. Jellema: Comparison of chemical composition of soils and bedrock of Mount St. Hilaire, Quebec

Stanely Bernold and Daniel R. Shawe: Beryllium in volcanic rocks

BALLOT

"An unfortunate typographical error appeared on the ballot sent to you last month in that boxes marked 'For the Ammendment' and 'Against the Ammendment' were not printed below the two proposed ammendments to the By-laws. It is hoped that most members will have realized the nature of the error and will have indicated their approval or disapproval of the ammendments by writing in the margin of the ballot. In the event that a considerable number of members express disapproval of the ammendments or feel that the error prejudiced the vote, an opportunity will be found for a second vote on these ammendments."

F.R. Boyd, Secretary

SEMINAR ON GEOCHEMICAL PROSPECTING METHODS AND TECHNIQUES

Sponsored by the Economic Commission for Asia and the Far East of the United Nations, this Seminar was opened on 5 August at the ECAFE headquarters in Bangkok. It was inaugurated by His Excellency, Mr. Thanat Khoman, Minister for Foreign Affairs and concurrently Deputy Minister for National Development of His Majesty's Government of Thailand. In his opening speech, the Minister considered that mineral resources formed the material basis for all economic development. Much of the mineral wealth in Asia still lay hidden in impenetrable jungles, high mountains and below thick soils. The use of new and modern techniques would help to discover deposits hitherto unknown. He felt that the Seminar, which would bring to light the latest technical development in the geochemical prospecting methods was significant.

The Seminar was attended by experts from Australia, Ceylon, Republic of China, Federation of Malaya, France, India, Indonesia, Iran, Japan, Republic of Korea, Pakistan, the Philippines, Republic of Viet-Nam, Thailand, UK, USA, North Borneo and Sarawak and Federal Republic of Germany. Although USSR was not officially represented at the meeting, one of their experts namely, Prof. Nicolay A. Eremenko, attended the Seminar and contributed usefully to the item on prospecting for oil and natural gas. The following served as officers of the Seminar:

Director:	Prof. Dr. John S. Webb, Professor of Applied Geochemistry, and Director of Research at the Geochemical Prospecting Research Center, London University
Co-Director:	Dr. C.Y. Li, Chief, Mineral Resources Development Section, and concurrently Deputy Chief, Industries Division, United Nations Economic Commission for Asia and the Far East (ECAFE)
Technical Secretary:	Dr. Otto Brotzen of Swedish Geological Survey
Assistant Technical Secretary:	Dr. H. Sawata of Geological Survey of Japan

The agenda as adopted by the Seminar was as follows:

1. Geochemical methods in mineral reconnaissance.
2. Geochemical methods in detailed prospecting.
3. Analytical methods used in prospecting.
4. Geochemical prospecting for base metal deposits.
5. Geochemical prospecting for Nb, Ta, W, Sn, Mo, U, Be and Li.
6. Geochemical prospecting for minerals associated with basic rocks (Cu, Ni, Co, Cr, Pt, diamonds).
7. Geochemical prospecting for other metals (including gold) and non-metallics (excluding oil and natural gas).
8. Application of geochemical methods in the search for oil and natural gas.
9. Integration of geochemical prospecting with other methods of minerall exploration, with particular reference to geology and geophysical prospecting.
10. Evaluation of the scope for geochemical methods in the ECAFE region, with recommendations for further work.
11. Consideration for further geochemical investigations for the discovery of mineral resources through joint efforts by the countries.

There were over 40 technical papers presented to the Seminar. At the concluding session on 14 August, the Seminar adopted a report summarizing the discussions which took place during the meeting period. If the members of the

Geochemical Society are interested, copies of the report can be obtained either by addressing to me here in Bangkok or at the United Nations headquarters in New York. The final proceedings of the Seminar, which will include the report as well as the papers presented to the meeting, are being finalized for printing, and printed copies are expected to be available towards the end of the year.

I do not propose to go into detail a number of technical suggestions made by the Seminar, as these are amply covered in the report. I merely wish to mention some of the Seminar's recommendations relating to furthering geochemical work through joint efforts by countries:

(a) In view of the large number of Asian countries interested in geochemical prospecting and their lack of experience in undertaking work of this nature, the Seminar requested the ECAFE secretariat to engage a well qualified geochemist who will be stationed in the area to guide the work of national experts and to undertake training of junior technicians in countries of southeast Asia.

(b) The Seminar requested us to make necessary arrangements for training geologists in geochemical work in some established institutes in the countries of Asia.

(c) The Seminar considered it desirable to have frequent regular exchange of information on problems and results from geochemical exploration in Asian countries. It expressed the hope that some international professional associations (such as the Geochemical Society) would consider the establishment of a special section to handle the matter especially for the benefit of countries in southeast Asia.

(d) The importance of providing appropriate bulk samples for standardizing geochemical analytical data throughout the area was stressed.

(e) A suggestion was made that the possibility of establishing a joint spectrographic laboratory in southeast Asia should be considered. As spectrographic methods, particularly those which employed multi-channel direct recording instruments, required expensive instruments which are not justified in geochemical prospecting in a country before about 50,000 samples a year are involved. They also require highly trained and specialized personnel.

(f) It felt that the next Seminar should concern itself with broader aspect of mineral exploration and cover the full range of appropriate techniques including geology, photogeology, geophysics and geochemistry that might be applicable in southeast Asia (which we propose to implement at a suitable time). Meanwhile, Asian countries are requested to consider convening informal meetings among themselves with the help of the ECAFE secretariat, if necessary, in order to discuss mutual problems. It was suggested that the first of such meetings might conveniently be arranged to coincide with the International Geological Congress in India in 1964.

C.Y. Li, Deputy Chief
Industries Division and Chief,
Mineral Resources Development Sec
Section, ECAFE
Sala Santitham, Bangkok,
Thailand

BOOK REVIEWS

ANALYSIS INSTRUMENTATION 1963: Proceedings of the Ninth National Instrument Society of America Analysis Instrumentation Symposium, April 29-May 1, 1963, Houston, Texas. Edited by L. Fowler, R.D. Eanes and T.J. Kehoe. 261 pages, Plenum Press, New York, August 1, 1963, $12.50.

The editors and publisher have edited, produced and distributed this symposium volume in less than four months, promptness which is highly commendable. A great variety of instrumental developments and techniques are covered. Gas chromatography ramifications are the subject of one-fourth of the papers, while several treat infrared applications. Geochemists interested in monitoring natural environments will find articles on a "driftless" all-solid-state pH meter, potentiometric chloride determinations, and an "inexpensive electrical conductivity system for dynamic testing" worth while. Other articles of more than average content are "Electrolytic calibration of gas monitors," "Infrared analysis of gases," "A new and simple approach to square wave polarography," and "Quantitative analysis by charged particle bombardment."

David G. Nussmann

THE WORLD OF ICE, by James L. Dyson. 292 pages, Alfred A. Knopf, New York, 1962, $6.95.

Dyson has written a comprehensive summary of ice: its formation, movement, distribution, and effects. The book serves as an excellent introduction to, and general survey of, the world of ice for those outside the speciality. As such, it is a readable and well balanced treatment of such diverse topics as the origin of glacial ice, and the relation of ice to snakes in Ireland. A chapter of special interest is titled, "Nature keeps the record," which includes comments on the application of radiocarbon dating, and oxygen isotope ratios to glacial chronology. A useful bibliography cites the major references in the field, and a glossary defines the jargon of the specialist. The book is profusely illustrated with examples drawn primarily from North America.

N.P. Lasca

DATA OF GEOCHEMISTRY, 6th ed. Chapter S. Chemical Composition of Sandstones-Excluding Carbonate and Volcanic Sands by F.J. Pettijohn. pages S1-S21 + v, U.S. Geological Survey Professional Paper 440-S.

This chapter, Data of Geochemistry, is a summary of the chemical data on sandstones. The summary is arranged by major, minor, in trace elements, and given in like categories sedimentary sandstones types - orthoquartzites, lithic sandstones (subgraywackes), graywackes and arkose. One hundred and thirty references are cited and a topical index is included.

Louis I. Briggs

CALENDAR

Nov.

6- 8	AAPG Mid-Continent Regional Mtg., Skiroin Hotel, Oklahoma City.
11-15	First Internat. Conf. on Permafrost, Purdue Univ., Lafayette, Ind. Write: AFCRL, Attn. G.H. Cabaniss, CRZGT, L.G., Hanscom Field, Mass.
12-14	AFIPS Fall Joint Computer Conf., Las Vegas Convention Center, Las Vegas, Nev. Write: P.M. Davies, Abacus, Inc., 1718 21st, Santa Monica, Cal.
13-15	Eastern Analyt. Symposium and Instrument Exhibit, Statler Hilton Hotel, New York City.
17-20	Symposium on Relation of geology and trace element distribution to nutritional problems. Sponsored by The Geochemical Society. Hotel Commodore, New York City.
17-20	Ann. Mtg. Geol. Soc. Amer., Hotel Commodore, New York City.
18-21	Amer. Nuclear Soc., New York City.

ION EXCHANGE COLUMN

Your attention is called to the Symposium on the Relation of Geology and Trace Element Distribution to Nutritional Problems listed in the program of the Annual GSA meeting. This symposium, sponsored by the Geochemical Society, will be held at the Hotel Commodore in New York on Sunday, November 17, 1963 immediately preceding the 3-day annual meeting of the Geological Society of America. The symposium and an informal evening meeting have been planned to emphasize and encourage cooperation between workers in various fields who are studying trace elements in plant, animal and human nutrition and the implications of the geologic and geographic distribution of many degenerative diseases.

For further information, contact (Mrs.) Helen Cannon, U.S. Geological Survey, Bldg. 25, Denver Federal Center, Denver 25, Colorado.

Membership in the Society not required for attendance at the Symposium.

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An American Conference on Coal Science will be held on the campus of the Pennsylvania State University, June 23-26, 1964. The conference will be devoted to basic science without technology, which will include papers on chemical and physical studies of coal structure, coal petrography and the chemical characterization of macerals, the origins and metamorphism of coal, coal geology and paleobotany, and the relations of coal to other organic deposits. The proposed theme under which papers will be assembled is "coal as an organic rock." Please call this conference to the attention of anyone who might be interested, and for further information write to the committee chairman, Dr. P.H. Given, College of Mineral Industries, Pennsylvania State University, University Park, Pennsylvania.

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Many of you have undoubtedly received the first edition of The Geochronicle, a newsletter to be published now and then by Geochron Laboratories, Inc. This first number announces Geochron's annual K-Ar Research Grant Competition, and lists publications available through this Laboratory. Aside from a certain amount of "insidious advertising" as humorously forewarned by the authors, The Geochronicle will carry useful information on dates that will not be published elsewhere. For future copies, write to Geochron Laboratories, 24 Blackstone Street, Cambridge, Mass., 02139, giving your institutional affiliation, scientific specialty, and particular interests in age determinations.

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The 1963 Eastern Analytical Symposium will be held at the Statler Hilton Hotel in New York City on November 13, 14, and 15, 1963, conveniently close to the time and place of the Annual GSA meeting. The program is being sponsored by the Analytical Groups (ACS) of the New York and North Jersey Section, four sections of the Society for Applied Spectroscopy (New York, Delaware Valley, New England, and Baltimore-Washington), and the American Michrochemical Society.

The meeting will consist of a series of 3-hour symposia of invited papers of extended length by experts in a number of fields of interest to instrumental analysts, chemists and spectroscopists. The emphasis will be on recent developments in these specialties. The exhibition will consist of 90 manufacturers of scientific apparatus and supplies. J.F. Cosgrove of the General Telephone and Electronics Labs will serve as General Chairman.

The program will include the following sessions:

Wednesday, November 13, 9:00 a.m.	Gaseous Spectroscopy
	The Media of Technical Communications
	Radiochemistry
Wednesday, November 13, 2:00 p.m.	Excitation in Controlled Atmospheres
	Critique of Automatic C, H, and N Analyzers
	Detectors for the Measurement of Radiation
	Challenges in Instrumental Methods of Analysis
Thursday, November 14, 9:00 a.m.	Spectroscopy of Single Crystals
	Functional Group Analyses
	Electroanalytical Chemistry
Thursday, November 14, 2:00 p.m.	Analysis of Thin Films
	Infrared Spectroscopy of Inorganic Materials
	Vapor Phase Chromatography
	Challenges in Organic Chemical Analysis
Friday, November 15, 9:00 a.m.	Mass Spectroscopy of Solids
	Free Radicals in Organic Systems
	Crisis in Analytical Chemistry
Friday, November 15, 2:00 p.m.	Analysis of Polymers
	X-Ray Spectroscopy
	Challenges in Classical Inorganic Analytical Chemistry

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Sand-in-the-Gears-of-Learning-Department

Our alert and cooperative readers have extracted the following grit from the literature and suggested that it be made readily available for whatever abrasive function it may fulfil.

From E & M.J., Vol. 164, No. 2. Analysis of an unaltered baack igneous rock.

TiO_{22}	6.76
Fe_2O_3	14.47
Al_2O_3	20.69
SiO_2	12.74
CaO	10.39
Mg	1.89
Loss on Igneous!	11.22
	97.12

From a recent Fischer catalog:

> Flash #9-650 is interestingly described as having "a flat bottom, a wide neck, and vial type mouth."

From the abstracts of the 1963 Annual Meeting of the Rocky Mountain section of the GSA, Albuquerque, N. Mex.

> "X-ray fluorescent spectrographic analyses show that the Stronghold Granite is impoverished in Sr with respect to other analyzed granites that are similar in Ca content and higher in the ratio Ca/Sr.

Your attention is also called to an intriguing article recently published in Beckman's The Analyzer entitled "Head Space Analysis at Pabst!"

Apologetically,

William C. Kelly
Editor

Department of Geology and Mineralogy
The University of Michigan
Ann Arbor, Michigan

GEOCHEMISTRY

A Translation of

ГЕОХИМИЯ

CONTENTS OF FORTHCOMING ISSUE

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SOME OF THE PAPERS SOON TO BE PUBLISHED IN

GEOCHIMICA ET COSMOCHIMICA ACTA

JOURNAL OF THE GEOCHEMICAL SOCIETY

August 1963

K.S. Heier: Uranium, thorium and potassium in eclogitic rocks
P.K. Hormann: Zur Geochemie des Germaniums
L.H. Ahrens: Lognormal-type distributions in igneous rocks - V
Peder J. Estrup: Spallation yields from iron with 24 GeV protons
C.O. Ingamells and Norman H. Suhr: Chemical and spectrochemical analysis of standard silicate samples
Makoto Shima: Geochemical study of boron isotopes
J.J. Rowe: Releasing-addition method for the flame-photometric determination of calcium in thermal waters
H. Watts: The possible role of adsorption and diffusion in the accumulation of crude petroleum deposits; a hypothesis

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September 1963

L.H. Ahrens: Element distribution in igneous rocks-VI. Negative skewness of SiO_2 and K
Klaus Keil and Kurt Fredrikson: Electron microprobe analysis of some rare minerals in the Norton County achondrite
H. Craig and L.I. Gordon: Nitrous oxide in the ocean and the marine atmosphere
H.D. Holland, M. Borcsik, J. Munoz and U.M. Oxburgh: The coprecipitation of Sr^{+2} with aragonite and of Ca^{+2} with strontianite between 90° and 100°C

Geochemical Note:

F.C. Wolff: The Pollen meteorite, a Norwegian carbonaceous chondrite

Errata
Notice: The Twelfth Clay Minerals Conference

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