

The Geochemical News

NUMBER 34

NOVEMBER 1962

GSA CONVENTION CALENDAR

Monday	Geochemical Society Council	8:30 a.m.	Castilian Rm. A
Monday	Geochemical Society Business Meeting	4:00 p.m.	Bluebonnet Rm.
Monday	Section on Organic Geochemistry, Business Meeting	1:00 p.m.	Bluebonnet Rm.

Sessions

Monday	Inorganic Geochemistry I	8:30 a.m.	Azalea Rm.
Monday	Organic Geochemistry I	8:30 a.m.	Bluebonnet Rm.
Monday	Organic Geochemistry II	1:30 p.m.	Bluebonnet Rm.
Wednesday	Inorganic Geochemistry II	8:30 a.m.	Bluebonnet Rm.

GEOCHEMISTRY

The Geochemical Society has published a Promotion Edition of GEOCHEMISTRY listing the contents of the 1956-1960 volumes and partial contents of the 1961 volume, which will contain twelve issues and is now in production. Through a special series subscription offer, those who subscribe to the three volumes for 1959, 1960, and 1961 at this time may complete their set of GEOCHEMISTRY volumes paying only \$5.00 for each of the 1956, 1957, and 1958 volumes (same price to all purchasers) if these are ordered at the same time as the 1959, 1960, 1961 volumes (the latter at regular prices). Order forms have been included in the Promotion Edition and are addressed to The Geochemical Society, c/o Scripta Technica, Inc., 1000 Vermont Ave., N.W., Washington 5, D.C.

It is also pleasing to announce that an NSF grant will make possible the translation and production of the 1962 volume of GEOCHEMISTRY.

GEOSCIENCE ABSTRACTS

GeoScience Abstracts announces the appointment, as of September 1, 1962, of Mrs. Lois Dane Soule as Associate Editor. Mrs. Soule, a staff member since June 1959, succeeds Miss Anne C. Sangree, who has resigned. Miss Sangree was Associate Editor, then Editor, of GeoScience Abstracts for four years starting with its republication organization during the fall of 1958.

GeoScience Abstracts is currently seeking to provide regular comprehensive coverage of the following journals through volunteer abstracters, or through improved cooperation of societies, publishers, or agencies.

Canadian Geographical Journal
Economic Geology (Unabstracted
notes and discussions)
Engineering and Mining Geology
Gems and Gemology

National Academy of Sciences,
(U.S.) Proceedings
Virginia Polytechnic Institute,
Bulletin of Engineering Ex-
periment Station

If you are willing and able to provide for systematic coverage of any of these journals in the field of geology, solid-earth geophysics, and related sciences, we would like to hear from you. We need complete coverage of journals published in North America, and coverage of papers dealing with North American geology from journals published elsewhere. Volunteers who already subscribe, or have ready access, to these listed journals are particularly sought. If you can help, or have suggestions which might lead to improved coverage, please write: Martin Russell, Managing Editor, GeoScience Abstracts, c/o American Geological Institute, 2101 Constitution Avenue, N.W., Washington 25, D.C.

GeoScience Abstracts requires the services of a geologist with a thorough command of precise technical English to assist in editing. If you know of someone who might be interested in establishing a professional career in geologic documentation on our staff in Washington, D.C., we would appreciate your writing Martin Russell at the above address. The applicant must be able to type, have at least a Bachelor's degree, and preferably have some library training.

OTTAWA GEOCHEMISTRY GROUP

The Ottawa Geochemistry Discussion Group held its first meeting in 1962 on Thursday, October 11th; in the Science Faculty Lounge (Room 393), Science Building, of Carleton University. The speaker was Dr. Allan C. Turnock of the Physical Chemistry Section, Mineral Sciences Division, Mines Branch, who spoke on "Iron-Aluminium Oxides: Phase Relationships below 1000°C."

Abstract

The subsolidus phase relationships of magnetite, hercynite, hematite, corundum, wüstite, and iron are described. Tie-lines were located by determining compositions of these phases in univariant assemblages. The phases were synthesized from chemical mixtures. Reactions and solid solution between them were induced under controlled conditions of composition, temperature, total vapor pressure, and partial pressure of oxygen. Reaction rates are slow, so that the experiments lasted from 1 to 40 days, and quenching is completely successful.

The diagrams provide a basis for the discussion of the paragenesis of the oxide minerals. For example, the progressive metamorphism of laterite deposits can be represented by (1) laterites and bauxites: hematite and hydrated aluminum oxides; (2) diasporites: hematite and diasporite and corundum, with magnetite as a rare accessory; (3) emery: corundum and magnetite, with hematite as an accessory.

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BOOK REVIEW

THE GEOLOGICAL ASPECTS OF THE ORIGIN OF LIFE ON EARTH, by M. G. Rutten. vii + 146 pages, 36 illustrations, 6 tables. Elsevier Monograph in Geo-Sciences Section, Geology Subseries, Elsevier Publishing Company, Amsterdam and New York, 1962.

This pocket-sized hard-cover proves that good things still come in small packages. Rutten presented a similar, shorter paper entitled "Origin of life on earth, its evolution and actualism" in 1957 (Evolution, v. 11, p. 56-59). That paper seems to have escaped the attention it deserved from American geochemists, biochemists, biologists, and geologists. Now he modifies, elaborates, and updates both the data and conclusions.

Although in accord with the principle of uniformitarianism, Rutten distinguishes carefully between "pre-actualistic" (anoxygenic) and "actualistic" (oxygenic) periods in the histories of both life on earth and exogenic (surface) geologic processes of weathering, erosion, transportation, and sedimentation. His excellent summaries of the nature of geologic time, methods and limitations of relative and absolute geologic dating, and biochemical hypotheses for the mode of origin of life set the stage for the geological considerations that follow. He then delimits the results to be expected from biochemical and exogenic geologic processes operating in anoxygenic as opposed to oxygenic surface environments. Summaries and evaluations of the most recent data on Precambrian life, their nature and age, and evidence from Precambrian rocks for the existence and age of both anoxygenic and oxygenic surface conditions are included.

Rutten's conclusions may be summarized briefly as follows:

1) The initial atmosphere of the earth was anoxygenic. Pre-actualistic surface conditions with an especially high incidence of short ultraviolet light then prevailed. That early environment would have allowed the first steps in the chemical evolution of life to have occurred in accord with recent hypotheses of biochemists.

2) Early Precambrian, calcareous, biogenic deposits no less than 2.7 billion years old, laid down under anoxygenic but aerobic conditions, provide the most ancient, known geologic evidence for the existence of life.

3) Sediments accumulated under anoxygenic (pre-actualistic) conditions at least until about 2 billion years ago.

4) Fungi and bacteria, probably anoxygenic but also probably aerobic in the atmosphere of the time, had originated by about 1.6 billion years ago.

5) An oxygenic atmosphere, supporting normal, actualistic exogenic geologic processes had developed no less than about 1 billion years ago.

6) Thus the transition from anoxygenic--pre-actualistic to oxygenic--actualistic surface environments took place, probably gradually, during a period sometime between 2 billion and 1 billion years ago.

7) The process of plant photosynthesis, which releases free oxygen into the atmosphere, originated during that period and was responsible for the transition.

8) Additional geologic data should be sought to delimit more closely the time of that transition.

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CALENDAR

- Nov.
12-14 Ann. Meeting. Geological Society of America. Houston, Texas.
- 13-21 Internat. Soil Conf., Palmerston North, New Zealand. Write Secy. Gen., P.O. Box 8001, Wellington, New Zealand.
- 15 Frontiers of Geology Symposium. 50th Anniv. Rice University, Hammon Hall, Houston, Texas.
- 16-17 Conf. on X-ray Diffractometry. Inst. of Physics and The Physical Soc. Write Dr. U. W. Arndt, Royal Institution, Albermarle Street, London W. 1., England.
- Dec.
26-31 Ann. Meeting, AAAS, Philadelphia, Pa.

ION EXCHANGE COLUMN

The journal Research/Development continues to provide high quality, informative articles of general interest to scientists in many fields. Noteworthy for crystallographers and geochemists: "Superconductivity" by R. W. Schmidt and Warren DeSorbo 13, (9), Sept. 1962; "Geothermal Power" by J. W. LaPatra (*ibid.*); and "Optical Gas Masers" 13, (10), Oct. 1962.

The Central Treaty Organization (CENTO) has published SYMPOSIUM ON CHROME ORE (held in Ankara, Turkey, September 1960), a paper-bound volume of 272 pages containing 25 articles and 3 appendices. Twelve of the papers deal with the geology of chromite deposits (Turkey, Iran, Pakistan); the other papers are concerned with the mining and beneficiation of chrome ores and their economics.

The September 1962 number (Vol. 4, No. 9) of the Battelle Technical Review contains an article entitled "A New Form of Silica," an account of the synthesis of stishovite at the Battelle Memorial Institute.

By the time this number reaches most of the membership, the annual meetings of The Geochemical Society either will be in progress or will be concluded. Sessions on geochemistry form one of the most important parts of the program of the combined societies at Houston. Important decisions await action by the Council of The Geochemical Society -- decisions that will influence both the structure and scope of the Society's activities for many years to come. It is the earnest hope of the officers that many members will actively participate in the business meeting.

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

The three great geological processes are: 1) vulcanism, 2) gradation, 3) diabolism.

We believe that the reptiles came from the amphibians by spontaneous generation and the study of rocks.

Selected Daffynitions from our Unabashed Fictionary

Porphyritic texture - the partly cooled magma is extruded...forming small crystals in the presents of the already larger ones.

Caliche - the calcite in Nevada is left after the holding it evaporates leaving it bear on the ground.

Karst topography - ...there are many sinks and wholes through the region.

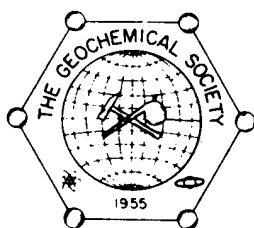
A rock is an aggravate of minerals.

Dripstone is found in underground caves where water has flown.

E. Wm. Heinrich
Editor

William C. Kelly
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GEOCHEMISTRY

A Translation of

ГЕОХИМИЯ

CONTENTS OF FORTHCOMING ISSUE

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