THE GEOCHEMICAL NEWS

Number 12 October 1958

ANNUAL MEETING

The Annual Meeting of the Geochemical Society will be held in St. Louis, Missouri, at the Sheraton-Jefferson Hotel between November 6-8, in connection with the Annual Meetings of the Geological Society of America and associated societies.

The Council of the Geochemical Society will meet Wednesday, November 5, at 2:00 p.m. in Room 7 of the Sheraton-Jefferson Hotel. The business meeting of the Geochemical Society is scheduled for Thursday afternoon, November 6, in the Crystal Room of the Sheraton-Jefferson Hotel at 5:00 p.m.; members are urged to attend.

Scientific sessions of papers dealing primarily with geochemistry will be held Thursday afternoon, Friday morning, Saturday morning, and Saturday afternoon, with Professors Farrington Daniels and K. B. Krauskopf as co-chairmen of the session on Thursday afternoon. President Daniels' presidential address is to be delivered at 2:00 p.m. Saturday afternoon in the Crystal Room.

An attempt will be made to arrange breakfast or luncheon for interested Geochemical Society members either Saturday morning or Saturday noon. Members are asked to watch the announcement bulletin board at the meetings for further details with respect to this possibility.

PROGRESS REPORT ON TRANSLATIONS

During June of 1958, work was initiated on the publication of an English translation of GEOKHIMIYA. Chosen as translator was V. P. Sokoloff. The Council of the Society appointed Dr. Earl Ingerson as Translation Editor, assisted by the following board of Associate Editors: Leasen H. Adams, F. R. Boyd, Paul E. Damon, Michael Fleischer, Jack Green, E. P. Henderson, T. S. Lovering, A. O. Nier, Jack Vallentyne, O. E. White, Samuel Zerfoss. The translation is to be published in Ann Arbor, Michigan, by Edwards Brothers, and during the summer work has proceeded on Number 1, which is a translation of the Russian issue No. 1 for 1958. Eight issues of the translation, each corresponding to a Russian issue, are planned. The complete annual volume of the Russian consists of 8 issues.

For this purpose the Geochemical Society has received a grant from the National Science Foundation of $15,000. Costs above this grant are to be met by subscriptions from the members of the Society and outside sources. The cost of a year subscription to a member of the Geochemical Society or to an educational institution is $10.00; to all others the cost is $20.00 (see coupon on last page of this issue.)

The Managing Editor is happy to report that as of this date (October 8) 130 subscriptions have been received. Issue No. 1 is scheduled for mailing October 17, so that American subscribers at least should have it in their possession before the Annual Meeting of the Society.

Work is progressing on issue No. 2, for which most of the material has been translated.

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The National Science Foundation is supporting a program of translation of books of geochemical interest. The first group that have been submitted are the following:

Date	Author	Title	Pages
1955	A. G. Betektin (Ed)	Fundamental Problems in the Magmatic Origin of Ore Deposits.	622
1956	A. A. Beus	Beryllium (Mineralogy and Geochemistry)	148
1957	A. A. Brodsky	Hydrogeochemical Methods of Prospecting for Ore Deposits	80
1957	N. P. Ermakov	Investigations of Mineral-Forming Solutions (Largely studies of liquid inclusions in minerals)	200
1957	D. S. Korzhinskii	Physicochemical Basis of the Analysis of Paragenesis of Minerals	180

Date	Author	Title	Pages
1957	V. I. Krasnikov (Ed)	Geochemical Prospecting for Ore Deposits in the U.S.S.R.	467
1953	D. P. Serdyuchenko	Chlorites: Their Chemical Composition and Classification	338
1957	V. I. Smirnov	Geological Principles for Prospecting and Searching for Ore Deposits	587
1956	N. M. Straknov (Ed)	Types of Dolomite Rock and their Genesis	378
1955	(Symposium)	Geobotanical Methods for Geological Investigation	152
1957	A. A. Vinogradov	The Geochemistry of Rare and Widely Scattered Chemical Elements in Soils	236

Requests for information on status of the translation, probable publishers and prices of these volumes, and suggestions of other books that ought to be translated, should be directed to the translation editor:

Prof. Earl Ingerson, Department of Geology, The University of Texas, Austin 12, Texas

Sponsored by the Geochemical Society, Consultants Bureau, Inc., 227 W. 17 St., New York 11, N.Y., has already completed the translation of two of the volumes in the above series: Korzhinskii, "Physicochemical Basis of the Analysis of Paragenesis of Minerals", available, casebound at $7.50; and Vinogradov, "The Geochemistry of Rare and Widely Scattered Chemical Elements in Soils", $9.50.

GEOCHEMICAL RESEARCH IN JAPAN

by Ken Sugawara

General Account

The Geochemical Society of Japan was inaugurated in 1953 to promote geochemical investigations in Japan by facilitating ready contact among researchers and to introduce Japanese geochemistry abroad. As of May 1958, the Society had 387 members, representing nearly every domestic institution wherein geochemical researches are being conducted. Dr. E. Ingerson of the United States Geological Survey is the only foreign member. The Society issues a semiannual circular called "News of the Geochemical Society of Japan" and once a year holds a geochemical symposium under the sponsorship of the Chemical Society of Japan.

The Council of the Geochemical Society of Japan meets in Tokyo in February, June, October and December; and two other meetings are held, one in April at the place where the annual meeting of the Chemical Society of Japan is held and the other on the occasion of the geochemical symposium at the various places where the symposium is held. At the moment, the council consists of 17 members representing the districts where the geochemical laboratories are situated.

In Japan, expenses of geochemical researches are primarily covered by the budgets allocated to each institute by the Central Government, Prefecture or Municipality. Some researches are financed by the Grants-in-aide from the Fundamental Research Funds of Ministry of Education and by other ministries or from private sources.

For the 1958 fiscal year, the Special Distribution Committee of the Fundamental Research Funds of Ministry of Education decided to underwrite two group research projects: "Chemical investigations in thermal springs" and "Researches on the methods of water analysis", for the chemical section; and for the geophysical section, one group-research project "Researches on volcanic eruption". Besides these, as items on the general radioactivity investigation program, they also decided to support "Studies on artificial radioactive substances in natural waters" and "Studies on decontamination of radioactive waste". Furthermore some projects of oceanochemical research were adopted for aid to be given by the Japan Association for the Promotion of Sciences.

The main times at which results of geochemical investigation are reported are both the geochemical symposium and the annual meeting of the Chemical Society of Japan. Also other reports are made at the meetings of other scientific societies, such as the Geological Society of Japan, the Oceanographical Society of Japan and the Japanese Society of Limnology.

To meet requests of foreign colleagues for information on current geochemical topics in Japan, we have already published the English version of abstracts of the papers which were presented at the 1957 Geochemical Symposium held at Sapporo, Hokkaido, last July, a limited number of which are available in reprint form at a cost of 50 cents, including postage. In the geochemical section of the 1958 Annual Meeting of the Chemical

Society of Japan, which was held in Tokyo last April, 47 reports were presented.

It is appropriate to add that based on replies to the questionnaire distributed among all members, the Geochemical Society of Japan is now compiling a list of research subjects on which Japanese geochemists are engaged, and the Society is also considering the publication of an English version of that list.

Selected Topics On Which Reports Were Made At The 1958 Annual Meeting Of The Chemical Society Of Japan

Volcanic Chemistry

1. Volcanic gas

Noguchi and his group have been continuing observations on gas emissions from Mihara Volcano, Oshima Island, where they established that Cl, S, Br, H_3BO_3 and F as well as the ratios Cl/CO_2, S/CO_2 increase with an increase of volcanic activity, especially at the time of eruption.

Masuda et al compared a number of fumaroles having different temperatures at Showashinzan Volcano, Hokkaido, where they found that the gaseous fraction remaining after water condensed and separated, increases with temperature and also that it increases linearly with temperature. Boron increases logarithmically, and H_2S, SO_2, CO_2 and HCl do not have simple relations to temperature, if they are inspected individually. However, as a whole, they are related to temperature as a thermodynamical equilibrium.

Mizutani et al treated the data of the composition of the gas from Kilauea Volcano, Hawaii, from the standpoint of thermodynamics with the conclusion that the equilibrium between H_2O, CO_2, CO and H_2 is governed by

$$2FeSiO_3 + H_2O \text{ (or } CO_2) = Fe_2O_3 + 2SiO_2 + H_2 \text{ (or CO)}$$

a relation favored by the fact that the lava of that volcano consists of olivinebasalt.

Matsuo et al attempted to trace the origin of various gaseous components emitted from Showashinzan Volcano. They assumed that H_2O, CO_2, S and N_2 as primary gaseous components which, by reacting with other solid components possibly found in magma, give rise to secondary gaseous components such as H_2S, H_2, CO, CH_4 and NH_3. Then they considered the subject thermodynamically. From the data they obtained at that volcano they concluded that at some of the fumaroles, the gaseous mixture reaches the fumarole mouth in a metastable state before the gases could adapt themselves to the changes of pressure and temperature which occur along the fumarole duct.

Sakai et al determined the isotopic composition of sulfur for H_2S and SO_2 from the fumaroles at Showashinzan Volcano with the result that while the ratio $^{34}S/32$ for H_2S does not vary with temperature, the ratio for SO_2 increases as the furmarole temperature rises, evidently pointing to an isotopic fractionation between H_2S and SO_2 according to

$$H_2S + 2H_2O = SO_2 + 3H_2$$

2. Igneous rocks

Hamaguchi and Kuroda determined silver content for different kinds of igneous rocks and obtained 0.06 ppm Ag as the average, a value somewhat smaller than the current one.

Y. Takahashi, who previously reported on the contents of Cl and F for igneous rock samples from Fuji-Asama volcanic zone, determined Br for the same series of rock samples. The samples are very poor in Br, the content being of the order of 10^{-4}%, with the exception of volcanic ejecta and those rock varieties enriched by volatile components. The Onioshidashi lava from Asama Volcano (3×10^{-4}%), and a sample of volcanic ash (9×10^{-4}%) are examples of the latter type, previously found to be rather rich in F and Cl.

A group headed by I. Iwasaki examined magnetite samples from Aso volcano rocks by both chemical analysis and X-ray diffraction method and showed that these magnetites are highly oxidized in comparison with the Fe_2O_3-FeTiO system. They clarified the relation of degree of oxidation to both lattice constant and content of minor elements, as well as the relation of FeO/Fe_2O_3 of magnetite to that of the mother rock.

Katsura, one member of Iwasaki's group, examined the composition of titan-magnetite in various volcanic rocks and concluded: (1) on the FeO-Fe_2O_3-TiO_2 triangular diagram, titanian magnetite is not in the range Fe_3O_4-Fe_2TiO_3, but is in the range Fe_2TiO_4-Fe_3O_4-Fe_2O_3-$FeTiO_3$; (2) the deviation from Fe_2TiO_4-Fe_3O_4 points to lack of metallic elements as compared with oxygen; and (3) the lack of metallic elements occurs in samples poor in titanium.

Shimoda, as one of the projects of his study on the distribution of elements among various pegmatite minerals, compared the primary and secondary elements in mica isolated from a Naegi-type granite with mica from Kerokubo-type granite and showed that Kerokubo mica is enriched in Mg and Ti as compared with Naegi mica.

Sudo et al studied the crystallization of volcanic glass by heating the material in a solution of caustic soda or Na Cl. Kitahara measured the vapor pressure of systems, Na_2O-H_2O and Na_2-SiO_2-H_2O, at various compositions and in the temperature range 200-360°C.

3. Volcanic ash

Kamada et al, who previously determined the F content of volcanic ash from Sakurajima Volcano, Kyushu, extended their research to iodine. By using samples which had been ejected through many eruptions since 1955, they found that the averages for I and Cl are respectively 4.4 μg/g and 450 μg/g. Therefore, the atomic ratio I/Cl x 1000 for volcanic ash is 0.06-4.3 in contrast to the corresponding values, 0.00059 for sea water, 0.03-0.3 for thermal spring water, and 0.27 as averaged for igneous rocks.

Chemical Studies of Oriental Rare Element Minerals

This program, which was begun by Y. Shibata as early as 1920 and continued by K. Kimura, is still being carried on by a group of researchers who are extending it. Kawai treated a samarskite-line sample and found that this sample is high in the ratio of uranium to rare earth elements as compared with ishikawaite or samarskite, leading to the conclusion that the sample with ishikawaite and samaraskite constitute a mineral series with samarskite representing one of the end members and this sample representing the opposite end.

Nagashima and Kato examined a silicate mineral containing rare earth elements from Kawamata, Fukushima Prefecture, by chemical, X-ray, and optical methods. They established that SiO_2 and yttrium series elements are the primary components associated with a small amount of cerium series elements and identified the sample as representing a new mineral.

Saito et al in an attempt to determine the variation range of the composition of monazite, examined what was to be an assumed monazite sample and identified it as a monazite rich in Th from Kuroe mine, Ishikawa, Fukushima Prefecture.

Thermal Springs, and Mineral Waters

Shoji et al reported on the result of their protracted observations of the Zao hot spring group (strongly acidic), which they began in 1957. They established that temperature and chemical composition fluctuate greatly, depending upon the precipitation and season.

Koga examined colloidal silica for a number of samples from different openings at Beppu hot spring and found that colloidal silica tends to increase with time after collection of the sample. However, the amount of increase is usually not great, and an equilibrium is reached rather quickly. Even with a neutral sample, equilibrium is complete within the first two days. For one exceptional sample, colloidal silica increased from 0 to 310 mg (70% of total silica) after 24 hours, when equilibrium was reached. It is of interest to find that many acidic samples (pH 2) of high temperature contain only molecular dispersed silica.

Kamada et al examined Ibusuki hot spring group, located near the sea coast, where he previously found that SO_4 /Cl is smaller than the corresponding value for sea water and that this deviation from sea water decreases unexpectedly with distance from the sea. They mentioned that the ratio Na/K is also smaller than the sea value.

Uzumasa et al determined the Li content of many hot springs of Hokkaido with the result that while Na varies from 114 to 8925 mg/1, Li varies from 0.1 to 6.5 mg/1, with Li/Na 1-20 x 10^3 being greater than the values which Yamagata previously reported for a number of hot springs in Honshu. The values are greater than the sea value.

Titani et al determined D content of hot spring waters from Honshu and Kyushu with reference to Tokyo city water, the source of which is the Tama River issuing from the mountain region of the Kanto District. They showed waters of Arima-, Kaminoyama- and Ibusuki hot springs as 3-8% enriched by D.

Fallout Determination

In October 1957, T. Hanya examined Lake Haruna-Ko, Gumma Prefecture, which has a maximum depth of 12 m, and found that ^{90}Sr was 50 s.u., i.e., 300-400 $\mu\mu$c/ton of the water and 2-4 s.u. for the bones of fish caught there.

S. Nagayama et al examined 60 different samples of wild grass and tree leaves which were collected in Kinki District at the beginning of June 1957 and found that artificial radioactivity per one gram ash varied from 1.55×10^{-10}C for Equisetum to $3.61\ 10^{-9}$C for Selaginella. Their results for leaves of Cryptomeria japonica was as follows:

	^{90}Sr	^{137}Cs
June, 1952	1.8 $\mu\mu$c ^{90}Sr/gCa	1.2 $\mu\mu$c ^{137}Cs/gK
November, 1954	8.1	5.3
June, 1957	30.0	16.2

N. Yanagata et al compared the 137C content of urine of school children from two different farm areas, viz., that near Hiroshima and that near Kiryu, Gumma Pre. The value was found to range from 20 to 30 ^{137}Cs μC/gK with no significant difference between the two different areas. Abnormally high values greater than 100 ^{137}Cs $\mu\mu$C/gK were found in three cases among ten of those who drink meteoric water daily.

K. Seto et al determined ^{90}Sr in a standard diet prepared for the standard menu prescribed by the National Nutrition Research Laboratory, Sendai, and in samples of the straw of the same variety of rice plants cultivated in the same rice field inside Sendai city and harvested in 1948, 1954, 1955 and 1956. They found ^{90}Sr has evidently been increased from year to year.

Yokoyama and Saito examined a rain sample collected in June 1957 and detected in its uranium fraction both a β-ray and α-ray. From the half life and energy, the β-ray was identified as coming from ^{237}U, whereas the source of the α-ray was identified as $^{238}U + ^{234}U$ from α-ray wave-level analysis.

Marine and Atmospheric Chemistry

K. Sugawara et al determined the chemical composition of Antarctic pool water. The samples were collected in February of 1957 by T. Torii, a member of the team of the Japanese Antarctic Expedition, from pools in the ice field near Ongle Island. The result shows that the salt in the samples had to have been supplied partly from the air through snowfall and partly in the form of spray from the nearby sea. In connection with the result, they propose a new idea referring to it as a "Syn-bubble-bursting fractionation of sea salt" by which they mean that when sea foam bursts, there is emitted spray having a composition different from the sea water itself. They further proved this idea through a series of laboratory experiments.

T. Titani and his collaborators reported on distribution of D, both horizontal and vertical, in the Pacific, Indian and Antarctic Oceans.

MEMORIAL TO MARCELLUS HENRY STOW
(1902 - 1957)

By R. S. Edmundson*/

Marcellus Henry Stow was born at Washington, D. C., on May 19, 1902, and died at his home in Lexington, Virginia, on November 27, 1957. At the time of his death he was Professor and Head of the Department of Geology at Washington and Lee University.

"Mar", as he was known to a host of colleagues and friends, had an outstanding personality and unlimited energy. He was a dedicated scientist, a highly successful teacher, and an esteemed member of many groups serving his adopted State and the South.

Stow's early education was received in the public schools of Washington, D. C. In 1921 he entered

*/ The writer has drawn freely on the memorials to Doctor Stow written by B. N. Cooper (Va. Jour. of Sc., vol. 9, pp. 3-4, 1958) and by W. Taylor Thom, Jr. (G. S. A. Proc. vol. for 1957, pp. 165-166, 1958).

Cornell University where he received the B. A. degree in 1926, an M. A. in 1927, and a Ph.D. in 1931. His teaching career began at Cornell where he served as geology laboratory assistant from 1924 to 1926; as an instructor in 1926 - 1927; and as an Assistant Professor during the summer sessions of 1929 to 1931. In 1927 Doctor Stow joined the faculty of Washington and Lee University as Assistant Professor of Geology and advanced to become Associate Professor and acting Department Head in 1934, Robinson Professor and Department Head in 1937, and Thomas Ball Professor in 1947.

Before completing his undergraduate studies at Cornell he gained field experience as a Topographic Aid with the U. S. Geological Survey during the summer of 1923 and continued to work in this capacity during the field seasons of 1924 and 1926. As a graduate student he spent one season as Mine Surveyor for the Lehigh Valley Coal Company (1925) and two seasons (1927 and 1928) on a detailed study of the Oriskany sandstone.

In the summer of 1933 Doctor Stow became a member of a group of faculty members and students who were engaged in research work in the Yellowstone-Bighorn region of Montana and Wyoming. Later when the Yellowstone-Bighorn Research Association was incorporated he became a charter member and served as President of the Association from 1939 to 1941 and again in 1944. In this research work with the Association he applied his speciality - sedimentary petrography.

During the war years (1942 - 1946) Doctor Stow was on leave from Washington and Lee to serve as Deputy Director of the Mining Division of the War Production Board and for a short period in 1945 he was Chief of the Mining Branch of the Civilian Production Administration. Also for several years he was a geological consultant to the Atomic Energy Commission.

Shortly after arriving in Lexington Doctor Stow became a member of the Virginia Academy of Science and served as a member of the Council from 1939 to 1946 and President of the Academy in 1942 - 1943. He was elected Chairman of the Academy's James River Project Committee in 1941 and editor of the monograph entitled "The James River Basin - Past, Present and Future". He was also Chairman of the Long Range Planning Committee from 1950 to 1954. The personal interest that he manifested in the Academy was recognized by his advanced students, and many of them presented papers before the Geology Section at the annual meetings.

Throughout his career he was generous with his time and talents. Appointed a member of the Governor's Advisory Council of Virginia Economy in 1948, he served as Chairman of the Committee on Mining in 1948 - 1949. He served also as a member of the Advisory Board of the Virginia Fisheries Laboratory, the Virginia State Museum Commission, the Southern Association of Science and Industry, the National Research Council sub-committee on pre-doctoral fellowships, and the Southern Research Institute. In 1956 and 1957 he was geological consultant to the Director of the Virginia Department of Conservation and Development.

He was a member of Sigma Xi, Phi Kappa Phi, Sigma Gamma Epsilon, Sigma Phi Epsilon, Phi Beta Kappa; Fellow of The Geological Society of America and the American Association for the Advancement of Science; and a member of The American Association of Petroleum Geologists, The Mineralogical Society of America, American Geophysical Union, American Institute of Mining and Metallurgical Engineers, Society of American Engineers, Society of Economic Paleontology and Mineralogy, Virginia Academy of Science, Washington Academy of Science, and the Yellowstone-Bighorn Research Association, Inc.

Doctor Stow married Grace W. Hammond of Washington, D. C. in 1932. With her encouragement and continued interest in his work he was able to render a great service to Washington and Lee University and to the State of Virginia.

As one of his friends has written and as all will agree, "The loss we have sustained in losing 'Mar' in the very prime of life is indeed a heavy one. But life need not be long to be rich and full. As measured not in years but in accomplishments 'Mar' lived a full, valuable, dedicated life of service."

REVIEWS

THE NEXT HUNDRED YEARS, by Harrison Brown, James Bonner, and John Weir. 193 pp. The Viking Press, New York. $3.95. 1957.

In 1956 three members of the faculty of the California Institute of Technology, a geochemist (Brown), a biologist (Bonner) and a psychologist (Weir) arranged a series of discussions with the chief executives of 30 of the greatest industrial corporations of America for the purpose of exploring the future of the natural resources of the earth, with respect to raw materials, products, manpower, brainpower, and processes. On the basis of the results of the conferences, attempts were made to outline the future of our industrial civilization. This book embodies these attempts. Some of the topics discussed include raw material demands and technical manpower in industrial societies, rates of industrialization, world population, and food production, new food, patterns of agricultural change, energy resources, technical manpower, production of scientists and engineers, and brainpower.

The data presented on these subjects and the predictions on their future status are of considerable interest to all geochemists to whose attention the book is earnestly directed.

E. W. H.

THE EVOLUTION OF THE IGNEOUS ROCKS by N. L. Bowen. xviii + 334 pp., 82 figures, 3 indexes, 5 3/8 x 8, paper bound. Dover Publications, Inc. $1.85. 1956.

This classic work in igneous petrogenesis, first published in 1928 by the Princeton University Press, has long been out of print and thus unavailable to several generations of students. Dover Publication has performed an important service to geologists by republishing the work in unabridged and unaltered form, adding the complete bibliography of Bowen and a new introduction by J. F. Schairer. Three indexes, general, systems, and components and compounds, complete the usability of the volume. This work is an imperative addition to all personal geological libraries, and it is fortunately again available at a very modest price.

E. W. H.

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MINERAL COMMODITIES OF CALIFORNIA. Bull. 176, Calif. Dept. Nat. Resources, Divis. Mines. 736 pp. $7.50. 1957.

Edited by L. A. Wright, this bulletin, a revision of Bulletin 156, has 25 contributing authors. The list of metals and minerals treated is as follows: abrasives, aluminum, antimony, arsenic, asbestos, asphalt, barite, beryllium, bismuth, black sand, boron, bromine, cadmium, calcite, calcium chloride, carbon dioxide, cement, chromite, clay, coal, cobalt, copper, diatomite, feldspar, fluorspar, gemstones, gold, graphite, gypsum, iodine, iron industries, kyanite, lead, limestone, lithium, magnesium, manganese, mercury, mica, minor metals, molybdenum, natural gas, nickel nitrogen compounds, peat, petroleum, phosphate, platinum, pumice, pyrite, pyrophyllite, quartz crystal, quartzite, rare earths, salines, salt, sand and gravel, shale, silver, sodium carbonate, sodium sulfate, speciality sand, stone, strontium metals, sulfur, talc, thorium, tin, titanium, tungsten, uranium, vanadium, wollastonite, zinc, and zirconium and hafnium.

The volume not only gives information on California occurrences and industries but data on general sources, geology, mineralogy, mining, milling, utilization history, buyers, marketing, and prices. Thus the book is also a valuable general reference work for all economic geologists.

E. W. H.

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THE POWDER METHOD IN X-RAY CRYSTALLOGRAPHY by L. V. Azaroff and M. S. Buerger. 342 pp. McGraw-Hill Book Company, Inc., New York. $8.75. 1958.

Without doubt this will become the standard text and reference book in English on the x-ray powder method, one of the most fundamental techniques in the identification of crystalline materials. Discussions of x-ray diffraction theories and the principles of powder photography are followed by descriptions of cameras, techniques, and the interpretation and indexing of powder photographs. Other chapters deal with the reciprocal lattice, reduced cells, homogeneous axes, identification via the powder method, sources of error in measured spacings, the practice of attaining accuracy, and the appearance of powder photographs. The book concludes with five appendixes: 1) Quadratic forms, 2) Conversion of d to Q, 3) Extrapolation function $1/2\left(\frac{\cos^2\theta}{\sin\theta} + \frac{\cos^2\theta}{\theta}\right)$, 4) Extrapolation function $\cos^2\theta$, and 5) Extrapolation function $\sin^2\theta$.

E. W. H.

NEW LITERATURE

The Preston Gabbro and the Associated Metamorphic Gneisses, New London County, Connecticut, by Charles B. Sclar. Bull. 88, Connecticut State Geological and Natural History Survey. 136 pp. 1958.

Geochemical Newsletter. A newsletter for those interested in applied geochemistry, published by Sargent Geochemical, Box 1632, Casper, Wyoming.

Bedrock Geology of the North End of the Tobacco Root Mountains, Madison County, Montana. By Rolland R. Reid. Memoir 36, Montana Bur. Mines and Geology. 25 pp. 1957.

Gypsum in the Weatherford-Clinton District, Oklahoma. By William E. Ham and Neville M. Curtis, Jr. Mineral Rpt. 35, Oklahoma Geological Survey. 32 pp. 1958.

Spectrochemical Determination of Copper, Nickel, and Vanadium in Crude Petroleum. By Kozo Nagashima and J. S. Machin. Circ. 235, Illinois State Geological Survey. 10 pp. 1957.

Use of Trace Metals to Identify Illinois Crude Oils. By Paul A. Witherspoon and Kozo Nagashima. Circ. 239, Illinois State Geological Survey. 16 pp. 1957.

Trace Elements in Illinois Pennsylvania Limestones. By Meredith E. Ostrom. Circ. 243, Illinois State Geological Survey. 34 pp. 1957.

Rhodesian Mining Journal. Lawrence H. Tearle Publication, 15 Simmonds St., Johannesburg. Vol. 50, No. 371, April 1958.

Atlas Steels' Album of World Minerals, Nos. 1-12. Atlas Steels Ltd., Welland, Ontario. Beautiful color plates of minerals by V. B. Meen.

Advanced Materials Technology. The Carborundum Company, Niagara Falls, N. Y.

Bulletin D'Information No. 9, June 1958. Universite Libre de Bruxelles, Centre de Geochimie Appliquee.

Filmstrip on Nickel. One in a series including asbestos, iron ore, and petroleum. Screening can be arranged through the National Film Board, Ottawa, Canada.

CALENDAR OF FORTHCOMING EVENTS

Nov.
9-12 Atomic Industrial Forum, Ann. Mtg.--Washington, D. C.
12-14 Soc. for Experimental Stress Analysis, Ann. Mtg.--Albany, N. Y.
13-14 Missouri School of Mines and Metallurgy, 4th ann. symposium on mining research--Univ. of Missouri, Rolla, Mo.
13-14 ASTM Committee on Materials for Electron Tubes and Semiconductor Devices--Sky Top, Pa.
13-15 Ultrasonic Exhibit and Conf., Internat'l. Mtg.--New York City.
16-21 Internat'l. Conf. on Scientific Information, Nat. Academy of Sciences, Nat. Research Council, Nat. Science Foundation, American Documentation Inst. -- Mayflower Hotel, Washington, D. C.
17-20 Magnetism and Magnetic Materials, Ann. Conf. (AIEE, APS, IRE, AIME, ONR)--Philadelphia, Pa.

Dec.
3-5 ASTM Committee on Concrete and Concrete Aggregates--Lafayette, Ind.
4-6 Industrial Engineering Conf.--Chicago.
8-10 Am. Nuclear Soc., Winter Mtg.--Chicago.

Jan.
13-14 Ann. Mining Symposium, Univ. of Minnesota--Duluth.

Feb.
15-19 AIME, Ann. Mtg.--San Francisco, Calif.

Mar.
16-19 44th Ann. Mtg., American Association of Petroleum Geologists; 33d Ann. Mtg., Society of Economic Paleontologists and Mineralogists--Dallas, Tex.

Aug.
15-25, 1960 XXI International Geological Congress--Copenhagen, Denmark

ION EXCHANGE COLUMN

Further information on Russian translations:

The Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., has available the following: PB131632, "Soviet Bloc International Geophysical Year Information", $10. Contains selected translated information on Soviet block plans and efforts in fields of rocketry, satellites, upper atmosphere studies, meteorology, oceanography, seismology, glaciology, and other subjects. Remittance must accompany order; designate PB number.

The Chronicle of United Nations Activities, Document Service, Dept. R, Section IL, 234 W. 26th St.,

New York City 1, has published a "List of Soviet Nuclear Research" containing over 100 titles representing the latest Soviet research in atomic energy presented at the Second International Conference on the Peaceful Uses of Atomic Energy. Apparently free to interested individuals.

Consultants Bureau, Inc., 227 W. 17th St., New York City 11, has published two translations of Russian books of interest to earth scientists: 1) "The Geology of Uranium", collection of 12 papers originally published as Suppl. No. 6 to the Soviet Journal of Atomic Energy. $6.00. 2) "Growth of Crystals" (English translation of Rost Kristallov), 294 pp, $15.00. This volume consists of 43 papers presented at the First Convention on Crystal Growth held at the Institute of Crystallography in Moscow in 1956.

The Special Libraries Association Translation Center at the John Crerar Library, 86 E. Randolph, Chicago 1, Illinois, announces the availability of printed catalog cards for current scientific and technical material translated into English from all languages including Russian. Four types of subscriptions to the translation catalog are available:

1) Full coverage of Translation Monthly (approx. 12,000 titles yearly).
2) Coverage of all translations currently received by the Center (approx. 6,750 titles yearly).
3) Coverage of all Russian translations received by the Center (approx. 3,100 titles yearly).
4) Coverage of all titles in specific subject fields.

For information, interested individuals may write the Translation Center.

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Dr. Edward W. Roedder of the U. S. Geological Survey in Washington has been appointed by President Farrington Daniels to represent the Geochemical Society on the Advisory Board of the Office of Critical Tables of the National Research Council.

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Dr. S. A. Billgrami, of Pakistan Chrome Mines, Ltd., has accepted a Fulbright Fellowship for a two-year period of postdoctoral research at the University of Minnesota. He joined the University September 29.

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Congratulations to the American Geological Institute, which this month is celebrating its 10th Anniversary. The Geochemical Society became the 14th Member Society of the Institute early in 1957.

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Sand-In-The-Gears-Of-Learning Department (or Culls from the Tree of Knowledge):

Phonyetic Geologese: cerk,Ordivition, frugginous, arrhenatious.

New Geological Materials and Processes: kaolinite porphyry, pyroclase, meta-horn, redundant fold, contract metamorphism, pyrothermal metamorphism.

"Since the land was submerged in relatively shallow water, the chief sedimentary agents were the longshore currents and probably some non-existent river."

Four major groups of vertebrate animals: 1. Fish, 2. Reptiles, 3. Mammals, 4. Amphiboles.

E. Wm. Heinrich
Editor

Department of Mineralogy
University of Michigan
Ann Arbor, Michigan

(See subscription blank on Page 10)

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c/o Prof. E. Wm. Heinrich
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