



The Geochemical News

Number 17

August 1959

BIOGRAPHICAL SKETCHES OF NOMINEES FOR 1959 ELECTION AS OFFICERS OF THE GEOCHEMICAL SOCIETY

For President:

Barth, Prof. Thomas F. W., Director of Mineralogisk-Geologisk Institutt, Oslo, Norway, since 1949. Born Norway, 18 May 99. Instr. geol., Oslo, 1924-47; asst. prof. mineral, Tech. Hochschule, Berlin, 1927-28; Leipzig, 1928-29; Int. Rockefeller fellow, Harvard, 1929; Member sci. staff, Geophys. Lab. Carnegie Institution, 1929-36; prof. and director, Mineralogisk-Geologisk Inst., Oslo, 1936-46; prof. geochem., Univ. Chicago, 1946-49. Member of Norske Vid.-Akad., Oslo, Fysiogr. Sällskap, Lund, Kgl. Danske Vid. Selsk., Copenhagen. Fellow of Mineral. Soc. and correspondent of Geol. Soc. America; foreign member of Mineral. Soc. London, member of Norsk Geol. Foren., Dansk Geol. Foren., Geol. Foren. Stockholm, Deutsche Mineral. Gesellsch.; hon. corres. member Soc. Geol. de France, Soc. Geol. Belgique. Author of Theoretical Igneous Petrology, co-author of Die Entstehung der Gesteine. Chief interests: geochemistry, physical and chemical geology, X-ray crystal structures, equilibrium in silicate melts, field geology.

For Vice-President:

Urey, Prof. H. C., Professor of Chemistry at large, University of California, La Jolla, since 1958. Born Indiana, 29 April 1893. Chemist, Barrett Chem. Co., 1917-19, instr. chem., U. of Mont. 1919-21, Ph.D., U. of Calif. 1923; Am. Scandinavian Foundation Fellow, U. of Copenhagen, 1923-24; assoc. in chem., Johns Hopkins U., 1924-29; assoc. prof. chem., Columbia U., 1929-34, prof., 1934-45, exec. officer, dept. of chem., 1939-42. Director of research, S.A.M. Labs., Columbia U., 1942-45; distinguished serv. prof. chem. Inst. Nuclear Studies, U. Chicago, 1945-52; Martin A. Ryerson distinguished serv. prof. chem., 1952-58. 12 D.Sc. degrees from universities in U.S., Canada, Greece, and England; LL.D., U. Calif. and Wayne Univ. Member of many chemical, astronomical and geological societies in U.S. and Europe. Silliman lecturer, Yale, 1951. Awarded Willard Gibbs Medal, Nobel prize in chem., Davy Medal of the Royal Soc. London, Franklin Medal of the Franklin Inst., distinguished serv. award of Phi Beta Kappa, Priestley award. Author of The Planets, co-author of Atoms, Molecules and Quanta. Editor, Jour. Chem. Physics, 1933-40. Chief interests: structure of atoms and molecules, thermodynamic properties of gases, separation of isotopes, cosmochemistry. Discoverer of deuterium.

For Secretary:

Krauskopf, K. B., Professor of Geochemistry, Stanford Univ., since 1950. Born Wisconsin, 30 Nov. 1910. Ph.D. (Chem.), U. of Calif., 1934; instr. chem. 1934-35; instr. phys. sci., Stanford, 1935-39; Ph.D. (Geol.), 1939; asst. prof. geol., 1939-42, assoc. prof. 1942-50; geologist, U.S. Geol. Surv., various times 1942 - present; Chief of Geographic Section, G-2, U.S. Army, Tokyo, 1947-48; Fulbright research grant, Norway, 1952-53. Fellow of Geol. Soc. Am.; member of Am. Geophys. Union, Soc. Econ. Geol., Norsk Geol. Foren. Chief interests: geochem. of ore solutions, geochem. of sedimentary rocks, geochem. of ocean, igneous and metamorphic petrology.

For Treasurer:

Faust, Dr. George T., Mineralogist, U.S. Geological Survey, since 1942. Born Pennsylvania, 27 Aug. 1908. Ph.D., U. Mich. 1934. Assistant in miner., Mich., 1930-35; asst. prof. ceramic miner., Rutgers, 1935-38; asst. chemist-petrographer, U.S. Bur. Mines, 1938-40; asst. mineralogist-petrographer, U.S. Dept. Agr., 1940-42; asst. miner., U.S. Geol. Surv., 1943-46, assoc. 1946-47; prof. miner., Indiana U., 1946. Head of mineralogy group, U.S. Geol. Survey, 1948 to present; staff assoc. with solid state group, 1953 to present. Fellow, Geol. Soc. America and Mineral. Soc.; member of many geological and mineralogical societies in U.S. and Europe. Editor, *Volcanology*, Sec. of Am. Geophys. Union, 1953-55. Chief interests: Mineralogy and petrology of magnesite deposits, Watchung basalt flows of New Jersey, thermal analysis and X-ray studies of carbonates and magnesium silicates, phase rule studies on silica and phosphate systems.

For Councilor:

Cannon, Dr. Ralph S., Jr. Geologist, U.S. Geological Survey since 1937. Born York, Pennsylvania, 21 April 1910. Ph.D., Princeton, 1935. Geologist, New Jersey Zinc Co., 1935-37. Fellow Geol. Soc. America, Mineral. Soc., and AAAS; member of Soc. Econ. Geol. and Amer. Geophys. Union. Chief interests: geology and geochemistry of base-metal ore deposits; copper resources; isotope geology of lead.

Sahama, Prof. Th. G., Professor of geochemistry, University of Helsinki, since 1946. Born Finland, 14 Oct. 1910. Instr. geol., U. of Helsinki, 1936-38; Ph.D. 1938; Lecturer geochem., 1938-40; State Geologist, Geol. Surv. Finland, 1940-46. Carnegie Inst. Washington Fellowship, 1947-48. Fellow or member in Mineral. Soc. America, Mineral. Soc. London, Mineral. Soc. Finland, Mineral. Assoc. Canada, Schweiz. Mineral. u. Petrog. Gesellsch., Soc. Franc. Mineral. et Cristallog., Geol. Foren. Stockholm, Geol. Soc. Belgian Congo, Geol. Soc. Finland, Finnish Acad. Sci. Finnish delegate to Internatl. Mineral. Assoc. Member Advisory Board, *Geochim. Cosmochim. Acta*. Author of *Geokemia*, co-author of *Geochemistry*. Chief interests: descriptive and structural mineralogy, petrology, geochemistry, volcanology.

EIGHTH NATIONAL CLAY CONFERENCE

On October 12, 13, and 14, 1959, the Eighth National Clay Conference will be held on the University of Oklahoma campus at Norman, Oklahoma, under the auspices of the Clay Minerals Committee of the National Academy of Sciences-National Research Council.

A field trip will be arranged for either Sunday, October 11, or Thursday, October 15, probably to the Wichita Mountains in southwest Oklahoma to visit clay occurrences of geological interest.

Two symposia of invited papers will be held on the subjects of "Clay-Water Systems" and "Clay Mineral-Geochemical Prospecting Methods." In addition to these special symposia there will be general sessions of contributed papers. All those having contributions should contact Professor C. G. Dodd, Chairman, Eighth National Clay Conference, University of Oklahoma, Norman, Oklahoma. The title and a letter of intent should be sent in by June 1, and a 250 word abstract by July 1.

Further information and a preliminary announcement of the Conference may be obtained by writing Professor Dodd.

PROGRESS REPORT OF THE STANDARDS COMMITTEE

A. Van Valkenburg, Chairman of the Standards Committee, announces that the National Bureau of Standards has established a stock of reference samples of isotopic abundance in form suitable for mass spectrographic analysis. Gas and liquid samples are distributed in break-seal tubes containing about 3 ml of gas at one atmosphere or about 0.1 gram of liquid. Solid samples of about 0.1 gram are sealed in vacuum in pyrex tubes. These samples may be obtained by writing Fred L. Mohler, Mass Spectrometry Section, National Bureau of Standards, Washington 25, D. C.

Reference Samples of Isotopic Abundance

No.	Elements	Compound	Source
1	H, O	H ₂ O	Steam Condensate from Potomac River Water
1a	H, O	H ₂ O	Snow Water from Yellowstone
3	D	D ₂ O	Commercial, 99.8 atom percent D
9	Li	Li ₂ CO ₃	Commercial
9a	Li	Spodumene	King's Mountain, N. C.
10	K	K ₂ CO ₃	Commercial
11	Rb	Rb ₂ CO ₃	Commercial
12	Sr	SrCO ₃	Commercial
13	Ag	AgNO ₃	Commercial
14	N	N ₂	From air
15	O	Air	
20	Ca, C, O	Limestone	Solenhofen, Bavaria
21	C	Graphite	Spectroscopic grade
25	Mg	Mg(OH) ₂	Commercial
26	Si	SiF ₄	Commercial
27	B	Borax glass	Commercial
28	Si	Silica sand	Oriskanny deposit, Pa.
29	Cu	CuO	Commercial
100	He		Atmosphere (Commercial)
101	Ne		Atmosphere (Commercial)
102	A		Atmosphere (Commercial)
103	Kr		Atmosphere (Commercial)
104	Xe		Atmosphere (Commercial)
105	Cl	NaCl	Marine, Commercial
106	Br	NaBr	Marine, Commercial
110	Cd	CdI ₂	Commercial
120	S	Mineral	Wharton Co., Texas
120a	S	SO ₂	Mineral and air
190	Hg	Element	Density standard (limited amount) Nat. Physical Laboratory
200	Pb, S	Galena	Iviglut, Greenland
200a	Pb	PbI ₂	From galena
200b	Pb	Pb(CH ₃) ₄	From galena

A new nickel oxide standard for spectroscopic and chemical analysis has been issued by the Bureau. The sample No. 673 is packaged in bottles weighing 25 g and the fee is \$8.00 per sample.

Composition of NBS standard sample 673, nickel oxide

No. 3

Co	Cu	Fe	Mg	Mn	Si	Ti	Al	Cr
%	%	%	%	%	%	%	%	%
0.016	0.002	0.029	0.003	0.0037	0.006	0.003	0.001	0.0003

PROGRESS REPORT ON TRANSLATION OF GEOKHIMIYA

Dr. J. F. Schairer, President of The Geochemical Society, has announced the receipt of three new grants from the translation of the Russian journal Geokhimiya. The first of these, approved April 15, is Grant NSF-G8424, announcing that the treasurer of The Geochemical Society would receive the sum of \$13,200 for continued support of an "English Edition of the Russian Journal, Geochemistry" for a period of approximately one year. This grant is to cover the translation of the volume for 1959. Grants NSF-G8480 and NSF-G8481, totaling \$21,400, or \$10,700 for each grant, were approved for support of "an English Edition of the 1956 and 1957 issues, respectively, of the Russian journal, Geochemistry." The approval of these three grants insures that the Society will be able to proceed with its plans for a complete translation of the issues for 1956-1959 inclusive.

By the time that this issue of the Geochemical News is received, No. 5 of the 1958 Geokhimiya will have been printed and distributed and No. 6 should be in the hands of the printers. The editorial staff is hopeful that with the receipt of these additional NSF grants that the rate of appearance of both current and back numbers will be increased.

Currently we have approximately 300 subscriptions from members and institutes, but it should be remembered that support for this project by the NSF cannot be expected to continue indefinitely. It is therefore to the advantage of all geochemists who are interested in seeing this significant Russian journal in English to subscribe themselves and to urge their associates to subscribe, as well as to bring the translation of this journal to the attention of the librarians of their particular institutes. Certainly on the basis of 300 subscriptions the journal is still a considerable distance from being self-supporting.

* * * * *

Translation of Geokhimiya for 1956 and 1957

The National Science Foundation has granted money for the translation and publication of the Russian geochemical journal Geokhimiya for 1956-57. Since the Geochemical Society began work on the issues for 1958 about this time last year, I have collected translations of almost one-fifth of the articles for these two years.

The more that can be found already translated the sooner and more economically can the whole volumes be published. Pages already translated are listed below. If you have translations of other articles, or can suggest where some can be found, please send the translations in promptly, or write suggesting where to send additional copies of this memorandum. Credit will not be given in the published volumes unless specifically requested by those furnishing the translations.

Pages already translated:

1956, No. 1: 1-52; 96-105
 No. 2: 74-77; 94-96
 No. 4: 3-9; 10-23; 24-27
 No. 5: 3-17; 18-29
 No. 6: 84-94

1957. pp. 63-76; 77-79; 133-141;
 161-165; 187-190; 222-225;
 320-324; 325-333; 334-336;
 351-367; 385-388; 417-419;
 420-424; 606-614; 626-637;
 640-641; 666-672; 696-698;
 699-703; 730-735.

Earl Ingerson, Translation Editor
 Department of Geology
 University of Texas
 Austin 12, Texas

AMERICAN GEOPHYSICAL UNION MEETING

The 40th Annual Meeting of the American Geophysical Union was held May 4-7 in the building of the National Academy of Sciences-National Research Council in Washington, D. C. The Section of Volcanology, Geochemistry, and Petrology had an extensive program, numerous papers of which are of considerable interest to geochemists in general. These particular papers are listed by title and author below, and abstracts have been printed in the program of the meeting, which will also be included in a forthcoming issue of the Transactions of the American Geophysical Union.

- BROWN, W. L.: The existence of monoclinic albite at room temperature.
- CARR, M. H., and K. K. TUREKIAN: A preliminary report on the geochemistry of cobalt.
- EVERNDEN, J. F., G. H. CURTIS, R. KISTLER, and J. D. OBRADOVICH: Argon diffusion in K-feldspar, biotite, glauconite, and illite.
- FAUL, H.: Doubts of the Paleozoic time scale.
- FIREMAN, E. L., and J. DeFELICE: Argon-39 and tritium in meteorites.
- GAST, P. W.: The rubidium-strontium age of stone meteorites.
- GOLDICH, S. S., A. O. NIER, J. H. HOFFMAN, and H. W. KRUEGER: Problems of early Precambrian time.
- GRIFFIN, C. E., and J. L. KULP: K-A ages on the Precambrian basement of Colorado.
- HURLEY, P. M., W. H. PINSON, R. F. CORMIER, and H. W. FAIRBAIRN: Age study of Lower Paleozoic glauconites.
- LONG, A., A. SILVERMAN, and J. L. KULP: Precambrian mineralization of the Coeur d'Alene district, Idaho.
- MURTHY, V. R., and C. C. PATTERSON: Isotopic composition of lead in ore and associated igneous minerals in Butte, Montana.
- REED, G. W., K. KIGOSHI, and A. TURKEVICH: Tl, Pb, Bi, and U contents of meteorites.
- SILVER, L. T., S. DEUTSCH, and C. R. MCKINNEY: Fusion loss of lead in the analysis of zircons for isotopic age dating.
- TURNOCK, A. C. and H. P. EUGSTER: Subsolidus relations of magnetite-hercynite and magnetite-hematite-corundum assemblages.
- WASSERBURG, G. L., G. W. WETHERILL, and L. A. WRIGHT: Ages in the Precambrian of Death Valley, California.
- WETHERILL, G. W., G. R. TILTON, G. L. DAVIS, and C. A. HOPSON: Mineral ages in the Washington-Baltimore area.
- WHITAKER, W. W., S. VALASTRO, Jr., and M. WILLIAMS: The climatic factor in the radiocarbon content of woods.
- WINCHESTER, J. W.: Determination of potassium in biotite by neutron activation.
- WINCHESTER, J. W.: Trace element analysis in geochemistry by neutron activation--discussion of sensitivities and errors.
- WONES, D. R.: Biotites: Phase relations of the $K_2O \cdot 6FeO \cdot Fe_2O_3 \cdot 6SiO_2 \cdot 2H_2O$ end member.
- ZELLER, E. J.: Thermoluminescence as an indicator of past climatic conditions.

FURTHER INFORMATION ON GEOCHEMICAL RESEARCH IN AUSTRALIA

University of Western Australia, Physics Department. Drs. P. M. Jeffery and W. Compston.

Studies of the abundances of the isotopes of carbon, oxygen and potassium from samples of geologic and biologic origin have been carried out in this Department over the last six years. Much of the earlier work published on the variations of the potassium isotope abundances has been shown to be due to isotopic discrimination introduced due to the measuring techniques used.

The present interest of this group lies in the application of mass spectrometry to the radio-

active dating of mineral samples. The Rb-St, K-A and U-Pb methods are being exploited to solve problems relating to geochronology, weathering and metamorphism.

Recent Publications:

Jeffery, P. M., W. Compston, D. Greenhalgh, and J. De Laeter:
On the carbon-13 abundance of limestones and coals. *Geochim. Cosmochim. Acta*, Vol. 7, 255-286 (1955).

Greenhalgh, D., and P. M. Jeffery:
A contribution to the pre-Cambrian chronology of Australia. *Geochim. Cosmochim. Acta*.
Scheduled for publication in 1959.

BOOK REVIEWS

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON ISOTOPE SEPARATION. 704 pp.
Interscience Publishers Inc., 250 Fifth Ave., New York 1, N. Y., 1958. \$15.00.

About a half century ago, as a result of studies of natural radioactivity and of natural variations in the atomic weight of lead, it was discovered that the chemical elements could be subdivided into units called "isotopes", which differ from one another in the number of neutrons in the nucleus. Nevertheless, separated isotopes have become available only very recently and it was not until April, 1957, that the first international symposium on isotope separation was held. At that time some two hundred specialists assembled in Amsterdam for a discussion of the principles of the many different methods of isotope separation and of facilities existing and planned for this purpose.

The proceedings of this conference have now been published by the North-Holland Publishing Company of Amsterdam and Interscience Publishers Inc., New York. The editors are J. Kistemaker, Professor of Physics, F.O.M., Amsterdam, Holland; J. Bigeleisen, Senior Chemist, Brookhaven National Laboratory, U.S.A.; A.O.C. Nier, Professor Physics, University of Minnesota, U.S.A. In the case of the invited lectures, material of a review nature has been included in the book; in the case of the contributed papers on original research, the editors adopted criteria similar to those of a scientific journal. For papers given at the meeting which have been in the meantime published in full in other journals, abstracts are given in the Proceedings.

This book will be of greatest interest to those actively engaged in the production of pure isotopes. However, there is included much material which will interest geochemists, especially those engaged in isotope studies. This is especially true of the theoretical papers, but in addition several authors have turned to the literature of isotope geochemistry, particularly paleo-temperature studies, providing well-studied examples of fractionation systems.

The American Association for the Advancement of Science has sponsored, as a part of its Gordon Research Conference program, several conferences on the chemistry and physics of isotopes. At these conferences, workers interested in achieving isotope fractionation in industrial systems and others studying isotope fractionation in natural systems have come to know each other and to understand each others' points of view. A valuable synthesis of the two approaches is to be noted in the present volume.

The book is divided into nine parts: chemical engineering, molecular interactions, chemical exchange, electromigration, distillation, thermal diffusion, diffusion, electromagnetic separation, and ultracentrifuges. Some individual papers which geochemists may find of particular interest include: "Applications of Isotope Theory to Experiment," by K. P. Choen; "Differences in Vapour Pressure of Isotopic Substances due to Infrared Absorption Bands," by P. Baertschi and W. Kuhn; "Vapor Pressure of Some Isotopic Substances," by T. E. Johns; and "Product and Sum Rules," by

J. Bigeleisen.

In summary, while the book is not directed primarily at the problems of isotope geochemistry it contains much information which workers in this field will find of interest. It provides a comprehensive statement of the status of knowledge of the ways in which isotopes can be separated as of 1957; and, as Prof. H. C. Urey points out in his introduction, "that any new methods of decisively advantageous character will be discovered is doubtful."

Leonard F. Herzog
 Pennsylvania State University
 University Park, Pennsylvania

COLORIMETRIC DETERMINATION OF TRACES OF METALS. By E. B. Sandell. 3d ed. 1032 pp, 110 figs., 131 tables. Interscience Publishers, 250 Fifth Ave., New York 1, N. Y., 1959. \$24.00.

This standard work on trace analysis of metals by the colorimetric method has been revised and enlarged, and an attempt has been made by the author to survey the literature completely on the separation and determination of traces of metals by means of procedures that have been devised since 1950. From this tremendous amount of material the author has selected a number of methods which are described in detail either to replace or extend older, previously described techniques. The book is 50% larger than the preceding edition.

It is divided into two parts. Part I, entitled "General Aspects of Inorganic Trace Analysis," has four sections: 1) Trace analysis in general, dealing with "Methods, Limits and Precautions"; 2) "Methods for the Separation and Isolation of Traces of Elements", which discusses precipitation, coprecipitation, adsorption and related processes, abstraction by means of immiscible solvents, and methods involving gas evolution, distillation and volatilization; 3) "Colorimetry and Spectrophotometry in Trace Analysis", which deals with sources of error, desirable properties of color reactions, fluorimetry, turbidimetry, and nephelometry; 4) "General Colorimetric Reagents", which presents them in two groups, organic and the inorganic.

Part II is entitled "Procedures for the Determination of Traces of Metals", and these are described for 48 elements and the rare earths: Al, Sb, As, Ba, Be, Bi, Cd, Ca, Ce, Cr, Co, Cu, Ga, Ge, Au, In, Ir, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, Nb, Ta, Os, Pd, Pt, K, RE, Re, Rh, Ru, Sc, Ag, Na, Tl, Th, Sn, Ti, W, U, V, Zn and Zr. The book concludes with an appendix that includes 1) Four-Phase Logarithms, 2) Transmission-Absorbance Table, and 3) International Atomic Weights, 1957; and an author index and a subject index. Without doubt this classic work will receive the same favorable consideration accorded its predecessors. Chemists and geochemists concerned with the determination of the trace elements will not wish to be without it.

ewh

GEOCHEMISTRY OF IODINE. 150 pp. Published by the Chilean Iodine Educational Bureau, Stone House, Bishopsgate, London, E.C. 2, 1956. No price indicated.

This short monograph consists essentially of three parts. Part 1 is a general discussion of the geochemistry of iodine, the iodine content of soils, that of rainwater, that of salt, and of caliche and Chilean nitrate. Part 2 consists of 20 tables giving analytical data on the iodine content of igneous rocks; sedimentary rocks; metamorphic rocks; geological strata; minerals and ores; iodine minerals; soils (broken down by continents); coal, lignite and peat; common salt; salt earths and native salts; Chilean nitrate; potash and associated deposits; fertilizers; flue dusts and soot; and meteorites, iron and steel.

This is followed by an index to the rocks, minerals and soils, and the volume concludes with an annotated bibliography on the geochemistry of iodine, encompassing the period 1825-1954. This is broken down under the following general subjects: Reviews and general papers; Rocks and geological formations; Minerals and ores; Soils and earths; Coal, lignite and peat; Common salt;

Chilean nitrate of soda; Potash and associated deposits; Miscellaneous. The book concludes with an author index and an alphabetical key to the abbreviations of periodicals to which reference was made.

Certainly this is the most complete assemblage of data on iodine that has ever come to the reviewers attention, and as such is a volume important to all geochemists.

ewh

LES LACUNES DES CRISTAUX ET LEURS INCLUSIONS FLUIDES. By G. Deicha. 136 pp., 13 figs., 12 plates, 16 1/2 x 24 cm. Masson et Cie, 120 Blvd. Saint-Germain, Paris 6^e, France, 1955. 1200 fr.

This is a monograph on crystal cavities and their fluid inclusions, as well as the significance of these features in genetic considerations of mineral deposits and rocks. Chapter headings (in translation) are as follows:

- I. Growth cavities and crystal architecture
 - II. The formation of counteraction bubbles in no cavities with an aqueous filling
 - III. Geological thermometry and the presence of gas under pressure in minerals
 - IV. Evidence of hydrothermal and pneumatolitic solutions of deep origin
 - V. Vitreous inclusions and the pores of solid deposits with respect to magmatic residu
- The conclusion deals with differentiation of fluid inclusions, the captive fluids, the geochemical importance of inclusions, and the mineral microcosm. There is also a summary bibliography on fluid inclusions and an alphabetical index. The photomicrographs of vacuoles are excellent, and this is a monograph which belongs in every geochemical and crystallographic library.

One noteworthy omission from the extensive bibliography is to the survey results by F. Gordon Smith on "Temperature-pressure research of hydrothermal mineral deposits." For example, Progress Report, Vol. 3, Pt. 6, 204 pp, Nov. 30, 1951.

ewh

MINERALOGY. By E. H. Kraus, W. F. Hunt, and L. S. Ramsdell. 5th Edition. 686 pp., 736 figures, numerous tables including identification tables in the rear. McGraw-Hill Book Company, Inc., New York, 1959. \$9.00.

This is a revised and refurbished edition of one of the most popular textbooks on elementary mineralogy in the English language, one which has been extensively used by several generations of American mineralogists. Modernizing changes have been made in all chapters and in the tables for mineral determination. The most extensive revisions are to be found in Chapters 13 and 14, dealing with chemical mineralogy and crystal chemistry and with rocks and mineral paragenesis. The descriptions of the species have been revised in the light of new chemical data for some of them, and on the basis of new structural results on others. Information on properties, occurrences, production and uses has also been brought up to date. The book needs no other recommendation beyond to point out that it continues the excellent standard set by previous editions, and doubtless it will continue to remain as popular as its predecessors.

ewh

OPTICAL MINERALOGY. By Paul F. Kerr. 3d Edition. (Previous editions by Austin F. Rogers and Paul F. Kerr.) 442 pp. Numerous line drawings, photographs and photomicrographs, and one fold-out color plate. McGraw-Hill Book Company, Inc., New York, 1959. \$8.50.

This is a welcome revision of one of the standard references and teaching works on the optical determination of the non-opaque minerals. It essentially follows the organization of the previous editions, which have met with considerable acceptance in American universities. The format of mineral description has been retained, but each mineral description has been reviewed; many have

been revised, and a few have been added. The section on the polarizing microscope and its use has also been revised to bring attention to new methods and improved equipment. Notable additions here include a discussion of phase microscopy and a chapter on the universal stage. The identification tables, which still are placed in the center of the book along with the interference color chart, also have been reorganized in order to make them more useful.

Although the text is intended primarily for the identification of translucent minerals in thin sections, some information is included in both the descriptions and the tables for their identification in crushed fragments. Doubtless the book will continue to receive the widespread favorable attention of students beginning their microscopic mineralogical studies.

ewh

RESEARCHES IN GEOCHEMISTRY. Edited by Philip Hauge Abelson. 511 pp, illustrated, 6 x 9 1/4 inches. John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1959. \$11.00.

There are two excellent reasons why geochemists should purchase this book: 1) it is a noteworthy landmark in geochemical publications, and 2) royalties from the sale of the volume have been granted to The Geochemical Society to bolster its publication fund. The book "provides a comprehensive view of current research in geochemistry." It contains 23 separate articles dealing with general aspects of current research and ideas in the field of geochemistry. These papers and their authors are as follows:

- Sedimentation on the ocean floor. O. S. Arrhenius.
- Rates of geochemical reactions at low temperatures and pressures. Robert M. Garrels.
- Geochemical indicators of marine and fresh-water sediments. M. L. Keith and E. T. Degens.
- Geochemical prospecting. H. E. Hawkes.
- Geochemistry of organic substances. P. H. Abelson.
- Some chemical aspects of petroleum genesis. W. E. Hanson.
- Mineral assemblages of the Green River formation. Charles Milton and H. P. Eugster.
- Tritium in hydrology and meteorology. W. F. Libby.
- Measurement and use of natural radiocarbon. Hessel de Vries.
- Geochronology. G. R. Tilton and G. L. Davis.
- The variations of the $^{18}\text{O}/^{16}\text{O}$ ratio in nature and some geologic implications. Samuel Epstein.
- Isotopic fractionation of sulfur in geochemical processes. Wayne U. Ault.
- The use of equilibrium calculations in finding the composition of a magmatic gas phase. K. B. Krauskopf.
- The chemical environment of ore deposition and the problem of low-temperature ore transport. Paul B. Barton, Jr.
- Sulfide systems as geological thermometers. Gunnar Kullerud.
- Some aspects of the geochemistry of carbonates. J. R. Goldsmith.
- Diffraction effects of short-range ordering in layered sequences. Felix Chayes.
- Hydrothermal investigations of amphiboles. Francis R. Boyd.
- Reduction and oxidation in metamorphism. H. P. Eugster.
- Local equilibrium in metasomatic processes. J. B. Thompson, Jr.
- Activation analysis applied to geochemical problems. G. W. Reed.
- Chondrites and the chemical composition of the earth. G. J. F. MacDonald.
- Equations of state and polymorphism at high pressures. S. P. Clark, Jr.

An inspection of the above impressive listing is sufficient alone to interest nearly all geochemists, irregardless of what their specialties may be. This is absolutely a must for modern geochemical libraries.

ewh

PUBLICATIONS RECEIVED

Photostat copies of any of the publications listed below, with the exception of the trade journals which are not kept on file, may be received by any reader who wishes to pay for the cost of their reproduction plus postage. Please specify if negative is sufficient (cheaper) or positive is required.

- SOVIET SCIENCE AND TECHNOLOGY, a monthly guide to Soviet research. Vol. 2, Nos. 11-12, Feb. 1959. Consultants Bureau, Inc. 143 pp.
- INTERNATIONAL GEOLOGY REVIEW. Vol. 1, No. 1, Jan. 1959. American Geological Institute. Contains translations of the following main articles:
- "Explanatory notes on the tectonic map of the USSR and adjoining countries", by N. S. Shatzki and A. A. Bogdanoff
 - "Some structural characteristics of mobile tectonic belts", by V. A. Nikolaev
 - "The problem of understanding the nomenclature of facies", by Y. A. Zhemchuzhinikov
 - "The present status of the theory on the origin of oil and tasks for further investigation", by M. F. Mirchink
- and reviews of three others:
- "Fundamental problems of tectonics", by V. V. Belousov
 - "A study of facies", by D. V. Nalivkin
 - "The Caspian Sea and its sediments", by G. Chilingar
- as well as notes on international scientific meetings.
- GEOCHEMICAL NEWSLETTER. Vol. 2, No. 1. Sargeant Geochemical Co., 829 E. 4th St., Casper, Wyoming. Notes on the beryllium spot test and geochemical assaying for boron in soils and rocks.
- COLOR MICROSCOPY FOR THE MILL MAN. Mineral Dressing Notes. American Cyanamide Co. No. 24, Jan. 1959. Reprinted from January 1959 Engineering and Mining Journal. Contains four excellent color plates showing sulfide concentrates.
- RUBIDIUM AND CESIUM, their present status and their potentialities. Hung-Kei H. Lam. Preprint No. 59H114. Paper presented Ann. Mtg. AIME, San Francisco, Feb. 1959.
- PROCEEDINGS OF THE ACADEMY OF SCIENCES OF THE USSR, Geochemistry Section. English translation. Vols. 120-121, Nos. 1-6, May-Aug., 1958, Consultants Bureau, Inc. Vol. 120 contains the articles:
- "The ratio of even and odd rare-earth elements in various minerals", by R. L. Barinskii
 - "The clark of selenium in some rocks of the USSR", by N. D. Sindeeva and N. Z. Kurbanova
- and Vol. 121 contains the following articles:
- "Climatic laws governing the contemporary distribution of iron and aluminum deposits on the earth", by B. P. Krotov
 - "The connection between the electrical characteristic of the cross section of Domanik deposits with the lithological-geochemical properties of the latter", by V. A. Zavalov
 - "Forms of migration of the elements in river water", by M. A. Glagoleva
 - "The geochemistry of the clay sediments of the Caspian Sea", by H. V. Tageeva
- ENGENHARIA, MINERACAO ET METALURGIA, V. 28, Nov. 1958. Contains an article on the Brazilian resources of phosphate minerals, by S. F. Abren.
- ENGENHARIA, MINERACAO ET METALURGIA, V. 28, Dec. 1958. Contains an article on dating of igneous rocks in the iron triangle of Minas Gerais, by Norman Herz.
- INDUSTRIAL LABORATORIES, April 1959. Contains an article on "New chemical compound designed for high temperature use." This is a zirconium chlorine compound having both metallic and ionic bonds in a single lattice.
- INDUSTRIAL LABORATORIES, May 1959. Contains an article entitled "Microwave measurement of dielectric properties under extreme thermal environments".
- KALAHARI SANDS. A. Poldervaart. Offprint, Proc. Third Pan-African Congress on Prehistory, 1955.

- AN OUTLINE OF THE GEOLOGY OF THE BECHUANALAND PROTECTORATE. A. Poldervaart and D. Green. *Congres Géologique International, Proc. 19th Session, Alger, 1952, Fasc. XVI.*
- UNE SOLUTION STABLE DU DITHIOL POUR LA PROSPECTION GEOCHIMIQUE DU TUNGSTENE. J. Jedwab. *Bull. Soc. belge Géol., Paléontol. et Hydrol.*, 67, 104-109, 1958.
- PRESENCE DE TORBERNITE A RICHELLE (province de Liege). J. Jedwab. *Bull. Soc. belge Géol., Paléontol. et Hydrol.*, 67, 300-303, 1958.
- EINE ORIENTIERTE AUFWACHSUNG VON GLYKOKOLL AUF SILIKATISCHEN SCHICHTSTRUKTUREN. H. Seifert and K. F. Seifert. *Neues Jb. Mineral., Mh.* 1958, 145-151.
- STOTTIT, EIN NEUES GERMANIUM-MINERAL, und seine Paragenese in Tsumeb. H. Strunz, G. Söhnge, B. H. Geier. *Ibid.*, pp. 85-96.
- KRISTALLOGRAPHIE VON D'ANSIT, ein auf marin-sedimentären Lagerstätten zu erwartendes Salz. H. Strunz. *Ibid.*, pp. 152-155. „
- GALLIT, CuGaS_2 , DAS ERSTE SELBSTÄNDIGE GALLIUMMINERAL, und seine Verbreitung in den Erzen der Tsumeb- und Kipushi-Mine. H. Strunz, G. H. Geier, E. Seeliger. *Ibid.*, pp. 241-264.
- PLUTONIC AND METAMORPHIC ROCKS OF THE NAKOSO AND IRITŌNO DISTRICTS IN THE CENTRAL ABUKUMA PLATEAU. Fumiko Shido. *Jour. Fac. Science, Univ. Tokyo, Sec. II*, V. XI, Pt. 2, 131-217, 1958.
- ESSAI DE COMPARISON ENTRE LES PROGRAMMES DE RECHERCHE GÉOCHIMIQUE DU CANADA, DES ÉTATS-UNIS ET DE L'U.R.S.S. J. Jedwab. *Bull. Soc. belge Géol., Paleontol. et Hydrol.*, 67, fasc. 2, 303-314, 1958.
- ANALCIMOLITES SEDIMENTAIRES DANS LE CONTINENTAL INTERCALAIRE DU SAHARA CENTRAL (Bassin du Niger-A.O.F.). F. Joulia, M. Bonifas, Th. Camez, G. Millot and R. Weil. *Bull. Serv. Carte Géol. Als. Lorr.*; t. 11, fasc. 2, 67-70, 1958.
- TRANSFORMATIONS ISOVOLUMETRIQUES DANS LES PHÉNOMENES DE LATÉRITISATION ET BAUXITISATION. G. Millot and M. Bonifas. *Ibid.*, t. 8, fasc. 1, 3-20, 1955.
- SUR LA MONTMORILLONITE DANS LES CRAIES. G. Millot, T. Camez, and A. Bonte. *Ibid.*, t. 10, fasc. 2, 25-26, 1957.
- PRESENCE DU TALC DANS LES ROCHES SEDIMENTAIRES INFRACAMBRIENNES DU BASSIN DU NIARI, CONGO FRANCAIS (AEF). G. Bigotte, M. Bonifas, and G. Millot. *Ibid.*, pp. 3-6.
- NUTRITION POTASSIQUE DE LA POMME DE TERRE ET DU BLE EN FONCTION DES TYPES D'ARGILE DES SOLS ET DES PLUVIOSITES. P. J. J. Franc de Ferriere, T. Camez, and G. Millot. *Ibid.*, pp. 11-16.
- EVOLUTION DES MINERAUX ARGILEUX DANS LES LOESS ET LES LEHMS D'ACHENHEIM (ALSACE). G. Millot, T. Camez, P. Wernert. *Ibid.*, pp. 17-23.
- PRESENCE DE MAGHEMITE MASSIVE DANS DES PRODUITS D'ALTERATION LATERITIQUE. M. Bonifas and P. Legoux. *Ibid.*, pp. 7-9.
- DES CYCLES SÉDIMENTAIRES ET DE TROIS MODES DE SÉDIMENTATION ARGILEUSE. M. G. Millot. *Compt. Rend. des Seances de l'Academie des Sciences*, t. 244, 2536-2539, 1957.
- LA SEDIMENTATION ARGILEUSE A ATTAPULGITE ET MONTMORILLONITE. G. Millot, H. Radier and M. Bonifas. *Bull. Soc. Geol. France*, ser. 6, t. 7, 425-433, 1957.
- SUR L'ORIGINE DES GISEMENTS DE BENTONITES DE LALLA MAGHNIA (ORAN). G. Sadran, G. Millot, and M. Bonifas. *Publs. du Service Carte Geologique de l'Algerie (Nouvelle Ser.)*. Vull. 5, Travaux Collaborateurs 1954, pp. 213-234. Alger 1955.
- MINERALOGICAL STUDY ON SOME PYROPHYLLITES IN JAPAN. H. Kodama. *Mineral. Jour.* 2, 236-244, 1958.
- BELLIT, EIN CHROMAT-APATIT. H. Strunz. *Naturwissenschaften*, 6, S. 127/28, 1958.
- HYDROTHERMALE UNTERSUCHUNGEN AM SYSTEM $\text{PbS-As}_2\text{S}_3$. H. Rösch and E. Hellner. *Ibid.*, 2, S. 72, 1959.
- HYDROTHERMALE UND RÖNTGENOGRAPHISCHE UNTERSUCHUNGEN AN GESTEINSBILDENDEN MINERALEN--II: Über hydrothermale Untersuchungen in Druckbomben mit Temperaturgefälle. R. Euler and E. Hellner. *Geochim. Cosmochim. Acta*, 13, 220-221, 1958. III: Über einen hydrothermal hergestellten Granat (Andradit). *Ibid.*, pp. 221-222. IV: Über hydrothermal hergestellten Ägirinaugit. *Ibid.*, 14, pp. 177-178. V: Über hydrothermal hergestellten Osumilith. *Ibid.*, 15, pp. 156-157.

UBER ORIENTIERTE AUFWACHSUNGEN EINFACHER AMINOSÄUREN AUF QUARZ UND EINIGEN SCHICHTSILIKATEN. K. F. Seifert. Dissert. Math.-Naturwiss. Fakultät Westf. Wilhelms- Univ. Münster, h. 13, 26-27, 1958.

NEUE EXPERIMENTELLE UNTERSUCHUNGEN ZUR GRENZFLÄCHENAKTIVITÄTSTHEORIE. H. Seifert. From K. W. Jötten and W. Klosterkötter, Die Staublungenerkrankungen Band 3, 1958.

CALENDAR

Aug.

- 10-11 Rocky Mountain Spectroscopy Society, Centennial Conference, Farmers Union Bldg., Denver, Colorado.
- 12-14 Applications of X-ray Analysis, Ann. Conf. Denver, Colo.
- 21-22 Symposium of Geochemistry, Göttingen, Germany.
- 30-Sept. 12 International Oceanographic Congress, AAAS, UNESCO and ICSU special committee on oceanic research cooperating. United Nations Bldg., New York.
- 31-Sept. 2 Properties of Elemental and Compound Semiconductors Conf., sponsored by AIME. Boston, Mass.

Sept.

- 14-17 American Mining Congress, Metal Mining and Industrial Minerals Convention. Denver, Colo.
- 24-26 SME Industrial Minerals and Coal Divisions, joint meeting. Bedford Springs, Pennsylvania.

Oct.

- 31-Nov. 7 GSA: Ann. Mtg., with Pittsburgh, Pa. Two 3-day trips of Valley and Ridge and Appalachian Plateau; two 1-day trips of SW Penn. and central Penn. Write: Buckwalter, Univ. of Pittsburgh.

NEW MEMBERS OF THE GEOCHEMICAL SOCIETY to June 9, 1959

William B. Arper
Department of Geology
Texas Technological College
Lubbock, Texas

Väinö Auer
Fredrikinkato 66B
Helsinki, Finland

Jens A. W. Bugge
Technical University of Norway
Trondheim, Norway

Rodney N. Cherry
8 South Michigan
Ocala, Florida

Douglas R. Cook
2121 South State St.
Salt Lake City, Utah

James W. Crooks
U. S. Geological Survey
P.O. Box 607
Ocala, Florida

Claudio D'Amico
Istituto di Mineralogia
p. za S. Donato 1
Bologna, Italy

Samuel Epstein
California Institute of Technology
Pasadena, California

James W. Geurin
P. O. Box 607
Ocala, Florida

Don A. Hansen
6625 Teller Street
Arvada, Colorado

Hiroyuki
Chemistry Division
National Institute of Radiological Sciences
250, Kurosuna-cho, Chiba-shi, Japan

Jun Ito
Department of Mineralogy
12 Geological Museum
Oxford Street
Cambridge 38, Massachusetts

Herbert S. Jacobson
721 East Copper St.
Tucson, Arizona

Boyd F. Joyner
U. S. Geological Survey
Box 607
Ocala, Florida

Clarence G. Menke
Box 607
Ocala, Florida

Sergio Morgante
Istituto di Mineralogia dell'Universita
Via Fabio Severo 158 - Trieste, Italy

Walter Nichiporuk
Division of Geological Sciences
California Institute of Technology
Pasadena, California

Alfredo Pollini
Via Spartaco 5
Milano, Italy

Kalervo Rankama
Institute of Geology & Mineralogy
University of Helsinki
Snellmanink. 5
Helsinki, Finland

Brian Geoffrey Johnson Upton
Valhøjs Alle' 121D. Rødovre
København, Denmark

ION EXCHANGE COLUMN

The first general meeting of the International Mineralogical Society, which was founded last year in Madrid, will be held in Zurich, Switzerland, August 31-September 3. There will be two symposia, one on Alpine fissure minerals and the second on twinning. Two concurrent field excursions are planned from September 4-September 7. Interested parties may secure a more detailed program from Prof. J. L. Amoros, Secretary of the IMA, Museo de Ciencias Naturales, Castellana 84, Madrid, Spain.

Dr. K. J. Murata has begun a two-year tour of duty at the new Geochemical Laboratory, the Hawaiian Volcano Observatory, U. S. Geological Survey, Hawaii National Park, Island of Hawaii. The new laboratory was constructed by the U. S. Geological Survey last year to initiate a broad program of geochemical studies on Hawaiian volcanos. Dr. Murata and Dr. W. U. Ault, assisted by two aids, are currently investigating fumarolic gases and lava minerals.

The American Institute of Physics, of 335 East 45 St., New York 17, N. Y., announces the publication of all six 1957 issues of Crystallography, a publication of the USSR Academy of Sciences which includes experimental and theoretical papers on crystal structure and morphology, lattice theory and diffraction studies. Subscriptions for the second volume of the translation of the same journal are also being accepted.

Another metal recently made available in more varied commercial form in rhenium. Chase Brass and Copper Company announces the commercial production of wrought rhenium rod, wire and strip. Rhenium has a melting point of 5,756^oF and also has significant electrical properties as well as high wear resistance. This makes it a suitable metal for use in thermocouples with tungsten, and as a substitute for platinum in contact relays, as well as a potential welding material for molybdenum.

Culled from the Bulletin of the Houston Geological Society is the following apt description of the geologist:

"And some rin up hill and down dale, knapping the chucky stanes to pieces wi' hammers, like sae many road makers run daft. They say it is to see how the world was made."

...Sir Walter Scott
St. Roman's Well, 1824

* * * * *

Sand-in-the-Gears-of-Learning:

Student query in crystallography: "If ice is hexagonal, how come it always comes in cubes?" (Sworn to be a "true" question by a reliable faculty member.)

"Unakite: A most important rock in Virginia."

"Talc: A frustrated silicate magnesium."

Crystal is "Cubic, with four equal axes, all perpendicular and bisecting each other at right angles."

"Quartz: Used in the manufacture of beach sands for buildings."

"Dolomite, MgCa(CO₃)₂, used as a source of Na in soda carb."

Sand-in-the-Gears-of-Learning (If-the-shoe-fits Division): "...the bazaar mineralogy of the Green River...evaporite deposits." (Geochemical News. No. 16, p. 11.)

E. Wm. Heinrich
Editor

Department of Mineralogy
The University of Michigan
Ann Arbor, Michigan