

with a series of short summary papers, their authors representing eight countries. Exceptionally good summaries cover Greenland and much of the Canadian Arctic. Especially noteworthy is Trettin's outline of the starved basin, geanticlinal uplift, and igneous history of the Franklinian geosyncline. A lucid discussion of the tectonic framework of Alaska by Lathram concludes that Alaska is not a "graveyard" of continental segments that drifted thousands of miles, but rather was formed by the interaction of the Canadian and Siberian shields with the Pacific and Arctic oceans. The geologic development of Arctic Alaska is clearly illustrated in a series of maps and stratigraphic sections by Brosgé and Dutro for the Paleozoic and by Detterman for the Mesozoic.

The U.S.S.R., with 52 percent of its land fronting on the Arctic Ocean, is dealt with in an impressive set of 22 papers. Six of these deal with the regional geologic structure and most of the rest with biostratigraphy. Krasny subdivides northeastern U.S.S.R. into major "geoblocks" having unique crustal characteristics and separated by steep faults. This tectonic style is implicit in many of the Russian papers, including those of Tkachenko and Egiazarov, which postulate that a Precambrian platform sank to form the Arctic Ocean basin. Unfortunately, too few maps, structure sections, and stratigraphic diagrams are provided to enable a reader not familiar with Soviet geology to grasp readily the geologic framework of this enormous region. The translations from the Russian are unusually good and reflect a monumental job of editing by Pitcher, who journeyed to the U.S.S.R. to read through each paper with the author.

More integration would have been desirable across the international borders, but some correlations are given by Egiazarov and others between northeast U.S.S.R. and Alaska; by Bridgewater and others between Greenland, Labrador, and Baffin Island; by Brosgé and Dutro between Alaska and Yukon Territory; by Friend for Devonian stratigraphy between Greenland and Svalbard; by Cherkesova for Lower Devonian deposits between U.S.S.R. and North America; by Ustritsky and Chernyak for upper Paleozoic strata of the entire Arctic; and by Biske for Tertiary nonmarine deposits between Alaska and northeastern Asia.

Besides the papers covering regional geology, two sections constitute in

themselves minisymposia: Evolution of Arctic Ocean Basin (12 papers) and Economics of Petroleum Exploration and Production in the Arctic (seven papers). The papers specifically dealing with the development of the Arctic Ocean basin themselves cover a wide range of topics, including opening of the Eurasian basin by sea floor spreading continuing north from the Atlantic, rifting between Canada and Greenland to form Baffin Bay, and rift versus sea floor spreading origin of Canada basin; then a theory totally discounting plate tectonics and sea floor spreading in the North Atlantic-Arctic since the Precambrian is presented.

An inside view of oil and gas possibilities in a dozen major basins in the Soviet Arctic, including its continental shelf (70 percent of the total Arctic shelf), is given by Semenovich and others. Patrunov and Samoilovich show the wide distribution of middle Paleozoic reefs in the Arctic as potential petroleum reservoirs and also as paleogeographic indicators. Meyerhoff and Meyerhoff provide an overview of physical and political geography, coupled with estimates of total mineral resources that show that "Russia's position in the Arctic is not just predominant; it is overwhelming." The set of six papers covering the economic aspects of petroleum production in the Arctic indicates that potential rewards are commensurate with the risks—very timely reading in view of the energy crisis.

Finally, there are some 25 papers covering a range of topics: With respect to igneous rocks, three major episodes of batholithic intrusion in the Alaska-Aleutian Range are described by Reed and Lanphere. Volcanic arc development in northeast Asia is discussed by Belyi. On biostratigraphy there is a set of outstanding summaries of the Soviet Arctic, with papers ranging from one on the latest Precambrian by Sokolov, through a comparison of Carboniferous and Mesozoic zones for warm water and Arctic areas by Menner, to one on Tertiary zones of the North Pacific by Gladenkov. A number of papers deal with the tectonics of particular areas—a new interpretation of the Denali fault in Alaska as an ancient subduction zone reactivated later into a transform fault is presented by Richter and Jones, and there are papers on the tectonics of Sweden by Padget, East Greenland by Henrikson, and Norway by Guyer and by Nilsen. On marine geophysics there are half a dozen papers covering not only the Arctic Ocean basin proper—

its sedimentary layering by Dement'skaya and others, its magnetics by Karasik and others and by Ostenso and Wold, and the Alpha Ridge by Hall—but also parts of the Canadian Arctic Archipelago by Sobczak and Weber, the Baffin Bay-Davis Strait region by Manchester and Clarke, and the Barents and Kara seas by Vogt and Ostenso.

All in all, this book has something for almost anyone who has an interest within the broad realm of earth science and mineral development of the Arctic and is a milestone in the mutually beneficial international exchange of data on the region.

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Books Received

ABC's of Celebration. Mary Phelan. Photos by Brother Joseph Vail. Orbis Books, Maryknoll, N.Y., 1974. vi, 54 pp. Paper, \$2.95.

ABC's of the City of Man. Mary Phelan. Orbis Books, Maryknoll, N.Y., 1974. vi, 54 pp., illus. Paper, \$2.95.

Abelian Categories with Applications to Rings and Modules. N. Popescu. Academic Press, New York, 1973. xii, 468 pp., illus. \$32.50. L.M.S. Monographs.

The Abortion Experience. Psychological and Medical Impact. Howard J. Osofsky and Joy D. Osofsky. Harper and Row, New York, 1973. xx, 668 pp., illus. \$25.

Across the Frontiers. Werner Heisenberg. Translated from the German edition (Munich, 1970) by Peter Heath. Harper and Row, New York, 1974. xxiv, 230 pp. \$7.95. World Perspectives, vol. 48.

Activation Analysis with Neutron Generators. Sam S. Nargolwalla and Edwin P. Przybylowicz. Wiley-Interscience, New York, 1973. xviii, 662 pp., illus. \$29.50. Chemical Analysis Series, vol. 39.

Advances in Carbohydrate Chemistry and Biochemistry. Vol. 28. R. Stuart Tipson and Derek Horton, Eds. Academic Press, New York, 1973. x, 540 pp., illus. \$37.50.

Advances in Protein Chemistry. Vol. 27. C. B. Anfinsen, John T. Edsall, and Frederic M. Richards, Eds. Academic Press, New York, 1973. xiv, 506 pp., illus. \$29.

Advances in Veterinary Science and Comparative Medicine. Vol. 17. C. A. Brandly and Charles E. Cornelius, Eds. Academic Press, New York, 1973. xii, 474 pp., illus. \$36.50.

Aerosol Technology in Hazard Evaluation. Thomas T. Mercer. Academic Press, New York, 1973. xii, 394 pp., illus. \$19.50. Monograph Series on Industrial Hygiene.

Aimé Césaire. Black between Worlds. Susan Frutkin. Center for Advanced International Studies, University of Miami, Washington, D.C., 1973. xiv, 66 pp. Paper, \$3.95.

The Application of Comparative Morphology in the Identification of Intestinal Parasites. John W. Moose. Thomas, Springfield, Ill., 1973. xiv, 42 pp., illus. \$7.50.

Applications of Cryogenic Technology. Vol. 5. Papers from a conference, Chicago, Oct. 1972. Robert H. Carr, Ed. Scholium, Whitestone, N.Y., 1973. xxii, 330 pp., illus. \$16.50.

Background to Migraine. Proceedings of a symposium, London, Sept. 1972. J. N. Cumings, Ed. Springer-Verlag, New York, 1973. xiv, 182 pp., illus. \$15.20.

Bacterial Lipopolysaccharides. The Chemistry, Biology, and Clinical Significance of Endotoxins. Proceedings of a conference, Warrenton, Va., May 1972. Edward H. Kass and Sheldon M. Wolff, Eds. University of Chicago Press, Chicago, 1973. vii, 304 pp., illus. \$10.95. Reprinted from *The Journal of Infectious Diseases*, Vol. 128, No. 1 (1973).

Chameleons and Other Quick-Change Artists. Hilda Simon. Illustrated by the author. Dodd, Mead, New York, 1973. 158 pp., illus. \$7.95.

Channeling. Theory, Observation and Applications. D. V. Morgan, Ed. Wiley-Interscience, New York, 1973. xvi, 486 pp., illus. \$29.50.

Chemical Engineering in Practice. Gordon Nonhebel. Wykeham, London, and Springer-Verlag, New York, 1973. xii, 184 pp., illus. Paper, \$6.20.

The Chemistry of the Transition Elements. A. Earnshaw and T. J. Harrington. Clarendon (Oxford University Press), New York, 1973. x, 102 pp., illus. Cloth, \$8; paper, \$4.95. Oxford Chemistry Series.

Le Ciel et Deux Ecrits. Jean-Claude Pecker. Hermann, Paris, 1972. 158 pp. Paper, 12 F.

A Concept Dictionary of English. Julius Laffal. Gallery Press, Essex, Conn., and Halsted (Wiley), New York, 1973. xiv, 306 pp. \$13.50.

DC and AC Circuits. Gordon Lancaster. Clarendon (Oxford University Press), New York, 1973. viii, 96 pp., illus. Paper, \$4.95. Oxford Physics Series.

Developmental Neurobiology of Arthropods. D. Young, Ed. Cambridge University Press, New York, 1973. viii, 268 pp., illus. \$16.50.

Dictionary of Behavioral Science. Benjamin B. Wolman, Ed. Van Nostrand Reinhold, New York, 1973. xii, 478 pp., illus. \$19.95.

Encyclopedia of Explosives and Related Items. Vol. 5. Basil T. Fedoroff and Oliver E. Sheffield. Picatinny Arsenal, Dover, N.J., 1972 (available as ASTIA AD 768063 from National Technical Information Service, Springfield, Va.). xxii, pp. D 1109-E 141, illus. \$37.50.

Foams. Jacob J. Bikerman. Springer-Verlag, New York, 1973. x, 338 pp., illus. \$22.80. Applied Physics and Engineering, vol. 10.

Food Supply and the Annual Cycle of the Anna Hummingbird. F. Gary Stiles. University of California Press, Berkeley, 1973. vi, 110 pp., illus. + plates. Paper, \$4. University of California Publications in Zoology, vol. 97.

Frontiers in Econometrics. Paul Zarembka, Ed. Academic Press, New York, 1974.

x, 252 pp. \$17.50. Economic Theory and Mathematical Economics Series.

Functional Analysis of Information Networks. A Structured Approach to the Data Communications Environment. Hal B. Becker. Wiley-Interscience, New York, 1973. xiv, 282 pp., illus. \$14.95. A Wiley Series in Business Data Processing.

The Future of Religion. James O. Unwin. Exposition Press, Jericho, N.Y., 1973. 126 pp. \$4.50.

Grundbegriffe der Biochemie. Hans-Joachim Flechtner. Hirzel, Stuttgart, Germany, 1973. 380 pp., illus. Paper, DM 20.

Handbook of Photochemistry. Steven L. Murov. Dekker, New York, 1973. xiv, 272 pp., illus. \$27.

High-Temperature and Flame-Resistant Fibers. Proceedings of a symposium, New York, Aug. 1972. J. Preston and J. Economy, Eds. Interscience (Wiley), New York, 1973. vi, 226 pp., illus. \$15. Applied Polymer Symposia, No. 21.

Human Poisoning from Native and Cultivated Plants. James W. Hardin and Jay M. Arena. Duke University Press, Durham, N.C., ed. 2, 1974. xii, 194 pp., illus. \$6.75.

Ingenieure in der Industriegesellschaft. Zur Soziologie der Technik und der naturwissenschaftlich-technischen Intelligenz im öffentlichen Dienst und in der Industrie. Gerd Hotleder. Suhrkamp, Frankfurt, 1973. 193 pp. Paper, DM 6.

Initial Reports of the Deep Sea Drilling Project. Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). Vol. 20, Sept.-Nov. 1971. Prepared for the National Science Foundation by the Scripps Institution of Oceanography, La Jolla, Calif., 1973 (available from the Superintendent of Documents, Washington, D.C.). xxii, 958 pp., illus. + charts. \$16.15.

International Review of Cytology. Vol. 36. G. H. Bourne, J. F. Danielli, and K. W. Joen, Eds. Academic Press, New York, 1973. viii, 350 pp., illus. \$24.

Intestinal Enzyme Deficiencies and Their Nutritional Implications. Proceedings of a symposium, Saltsjöbaden, Sweden, Aug. 1972. Bengt Borgström, Arne Dahlqvist, and Leif Hambræus, Eds. Swedish Nutrition Foundation, Uppsala, Sweden, 1973. 150 pp., illus. Sw. Fr. 50.

Inventions Necessity Is Not the Mother Of. Patents Ridiculous and Sublime. Stacy V. Jones. Quadrangle, New York, 1973. viii, 144 pp., illus. \$6.95.

Jean Piaget. The Man and His Ideas. Richard I. Evans. Translated by Eleanor Duckworth. Dutton, New York, 1973. lxiv, 190 pp. Paper, \$2.95. Dialogues with Notable Contributors to Personality Theory Series, vol. 7.

The Last Refuge. J. G. Nelson. Harvest House, Montreal, 1973. 230 pp., illus. \$7.50. Environment Series.

Machinery Acoustics. George M. Diehl. Wiley-Interscience, New York, 1973. xii, 204 pp., illus. \$14.

Martinus Van Marum. Life and Work. Vol. 4, Van Marum's Scientific Instruments in Teyler's Museum. E. Lefebvre and J. G. De Bruijn, Eds. Noordhoff, Leyden, Netherlands, 1973. x, 402 pp., illus. \$24.

Molecular Biology of Rifomycin. MSS

Information, New York, 1973. 216 pp., illus. \$15.

Multihandicapped Mentally Retarded. Training and Enrichment Strategies. Jon D. Swartz and Charles C. Cleland. Hogg Foundation for Mental Health, University of Texas, Austin, 1973. 46 pp. Paper, \$1.

Nuclear Physiology and Differentiation. Proceedings of a symposium, Minas Gerais, Brazil, Dec. 1968. Robert P. Wagner, Ed. Genetics Society of America, Austin, Texas, 1973 (distributed by Oak Ridge National Laboratory, Oak Ridge, Tenn.). xvi, 470 pp., illus. Paper

Oil and the Outer Coastal Shelf. The Georges Bank Case. William R. Ahern, Jr. Ballinger, Cambridge, Mass., 1973. xvi, 134 pp., illus. \$10.

Organometallic Chemistry. Vol. 2. A Review of the Literature Published during 1972. E. W. Abel and F. G. A. Stone, Reporters. Chemical Society, London, 1972. xviii, 612 pp., illus. £13. A Specialist Periodical Report.

Post-Mortem. David M. Spain with Janet Kole. Doubleday, New York, 1974. xii, 296 pp. \$7.95.

Progress in Physiological Psychology. Vol. 5. Eliot Stellar and James M. Sprague, Eds. Academic Press, New York, 1973. xiv, 370 pp., illus. \$24.50.

Progress in Toxicology. Special Topics. Vol. 1. Gerhard Zbinden. Springer-Verlag, New York, 1973. vi, 88 pp. \$4.90.

Radar, Sonar, and Holography. An Introduction. Winston E. Kock. Academic Press, New York, 1973. xviii, 140 pp., illus. \$9.50.

Red Cell Manual. Robert S. Hillman and Clement A. Finch. Davis, Philadelphia, ed. 4, 1974. vi, 84 pp., illus. Paper, \$1.50.

Renal Physiology. Jack Orloff, Robert W. Berliner, and Stephen R. Geiger, Eds. American Physiological Society, Washington, D.C., 1973 (distributor, Williams & Wilkins, Baltimore). viii, 1082 pp., illus. \$72.50; by subscription \$58. Handbook of Physiology, Section 8.

Surface Mechanics. Frederick Fongsun Ling. Wiley-Interscience, New York, 1973. xvi, 320 pp., illus. \$19.95.

Synoptic Climatology. Methods and Applications. R. G. Barry and A. H. Perry. Methuen, London, 1973 (U.S. distributor, Barnes and Noble, New York). xvi, 556 pp., illus. \$35.

Timber. Its Structure and Properties. H. E. Desch. St. Martin's, New York, ed. 5, 1974. xx, 424 pp., illus., + plates. \$17.50.

Transport Mechanisms in Epithelia. Proceedings of a symposium, Copenhagen, Denmark, Sept. 1972. H. H. Ussing and N. A. Thorn, Eds. Munksgaard, Copenhagen, and Academic Press, New York, 1973. iv, 628 pp., illus. \$37.50. Alfred Benzon Symposium 5.

Vertebrate History. Problems in Evolution. Barbara J. Stahl. McGraw-Hill, New York, 1973. xii, 594 pp., illus. \$25. McGraw-Hill Series in Population Biology.

Zeolite Molecular Sieves. Structure, Chemistry, and Use. Donald W. Breck. Wiley-Interscience, New York, 1974. xii, 772 pp., illus. \$32.50.