

ter, we should have data to support or eliminate some of these theories.

K. Johnson reports on the results as of 1976 of the MIT bag model. Predictions of the hadron masses are sufficiently good in this model to make its derivation from a fundamental field theory one of the important tasks of particle physics today. Efforts to derive the model have been made most recently by C. Callan, R. Dashen, and D. Gross at Princeton, and it will be interesting to compare the quantitative properties they promise to derive with the predictions in Johnson's paper.

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Seabirds

Sulidae. Gannets and Boobies. J. BRYAN NELSON. Published for the University of Aberdeen by Oxford University Press, New York, 1978. xii, 1012 pp., illus., + plates. \$98. Aberdeen University Studies Series, No. 154.

The sulids are goose-sized seabirds, closely related to the pelicans and more remotely to the cormorants, that nest in colonies on remote cliffs and islands and capture their fish prey in spectacular dives from the air. The nine species of the family (genus *Sula*) display both phylogenetic compactness and adaptive radiation in morphology, ecology, and behavior that has enabled them to occupy widely different cold temperate and tropical habitats. Two species are still economically important producers of guano fertilizer.

The best-known species is the North Atlantic gannet, which is currently increasing in numbers and spreading. The other two gannets (the three together form a superspecies) inhabit South Africa, southern Australia, and New Zealand. All the boobies frequent tropical or subtropical waters. Three species are pantropical, two closely related forms are restricted to the eastern Pacific Ocean, and one endangered booby now breeds only on Christmas Island southwest of Java in the Indian Ocean. This last, Abbott's booby, discovered in 1892 on an island north of Madagascar, used to be more widespread in the Indian Ocean, but guano mining and deforestation on many islands destroyed the tall trees in which it nested. Even now phosphate mining seriously threatens the last 7000 to 8000 birds on Christmas Island.

Because the sulids have never been

treated in detail as a unit before, Nelson's book, the results of a 17-year study, is a landmark.

Instead of the long introduction usual in works of this type Nelson presents the reader with a two-page résumé and proceeds directly to the species accounts. The accounts follow a standard format: nomenclature, external features (including molt and voice), population and distribution, breeding ecology, and breeding behavior. They begin with 226 pages on the North Atlantic gannet. Nelson then summarizes the other two gannets and compares the species before tackling each of the boobies. The entire family is then reviewed and the species are compared in a concluding 146-page chapter. The text and its 135 tables are exhaustive in their presentation of details. But Nelson had many more data (most collected by himself) that didn't fit into his regular chapter scheme, so he added 19 appendices in 31 pages.

Nelson's forte is breeding ecology and behavior, which he has studied at first hand in all species except the two Southern Hemisphere gannets. These subjects receive by far the most extensive treatment, and the discussions of them are informatively and profusely illustrated with Nelson's (and a few others') excellent photographs and John Busby's charming drawings. The detailed lists of breeding localities, which are supplemented by photographs, maps, and tables, provide a compendium of present distribution as well as documentation of past population changes. Total breeding population censuses are possible for the three gannets and Peruvian and Abbott's boobies, but the three pantropical boobies will remain impossible to census reliably.

The information on scientific nomenclature is presented inconsistently, and the treatment reflects the author's unfamiliarity with the subject. A one-page appendix list of common and scientific names is similarly riddled with errors.

Although some 1976 papers are included in the 12-page bibliography, coverage of the recent literature is spotty, and relevant information on boobies in some Hawaiian leeward islands, St. Helena, and Isles Glorieuses published in the 1970's has been overlooked.

The author "supposes" that he ought to apologize for the length of the book, which he concedes is "hardly a thriller," but says that "the idea has been to make a browsable book with ideas and atmosphere as well as facts." The leisurely pace of the text does make reading or browsing enjoyable, but Nelson's informal, verbose style and his endeavor to

present (at least once) everything you ever wanted to know about sulids have, in adding to the length of the volume, also added to its cost. Alas, the resulting restricted circulation of this important book may prevent the sulids from receiving the attention they warrant as paradigms of radiation and adaptation.

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Books Received

The American Railroad Passenger Car. John H. White, Jr. Johns Hopkins University Press, Baltimore, 1978. xiv, 700 pp., illus. \$45. Johns Hopkins Studies in the History of Technology.

Annual Review of Earth and Planetary Sciences. Vol. 6. Fred A. Donath, Francis G. Stehli, and George W. Wetherill, Eds. Annual Reviews, Palo Alto, Calif., 1978. x, 544 pp., illus. \$17.

Applied Sciences and Development. Vol. 10. Horst Mensching and Jürgen Hohnholz, Eds. Institute for Scientific Co-operation, Tübingen, Germany, 1977. 176 pp., illus. Paper.

The Asymptotic Theory of Extreme Order Statistics. Janos Galambos. Wiley, New York, 1978. xvi, 352 pp. \$24.95. Wiley Series in Probability and Mathematical Statistics.

Atlas of Radiologic Anatomy. Lothar Wicke with the assistance of Wilhelm Firbas and Roland Schmiedl. Translated from the German edition (Munich, 1977). Urban & Schwarzenberg, Baltimore, 1978. 234 pp. \$15.

The BASIC Idea. An Introduction to Computer Programming. Richard Forsyth. Chapman and Hall, London, and Halsted (Wiley), New York, 1978. vi, 154 pp. Paper, \$4.95.

Basic Numerical Mathematics. Vol. 2, Numerical Algebra. John Todd. Academic Press, New York, and Birkhäuser Verlag, Basel, 1978. 2/6 pp. \$15. International Series of Numerical Mathematics, vol. 22.

Bibliography of the Harvard Chiapas Project. The First Twenty Years, 1957-1977. Evon Z. Vogt. Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, Mass., 1978. 76 pp., illus. Paper, \$2.

Biochemische Grundlagen der Industriellen Mikrobiologie. Wolfgang Fritsche. Gustav Fischer Verlag, Jena, East Germany, 1978. 192 pp., illus. Paper, 38 M.

The Biochemical Basis of Ergonomics. Anatomy Applied to the Design of Work Situations. E. R. Tichauer. Wiley-Interscience, New York, 1978. x, 100 pp., illus. Paper, \$9.95.

Biométrie et Ecologie. No. 1. J. M. Legay and R. Tomassone. Société Française de Biométrie, Jouy-en-Josas, France, 1978. xii, 388 pp., illus. Paper, \$8.

A Child's Journey. Forces That Shape the Lives of Our Young. Julius Segal and Herbert Yahraes. McGraw-Hill, New York, 1978. xiv, 354 pp. \$10.95.

Chemical Weapons and Chemical Arms Control. Papers from a conference, Boston, Jan. 1977. Matthew Meselson, Ed. Carnegie Endowment for International Peace, New York, 1978. xvi, 128 pp. Paper, \$3.

Chronologies in New World Archaeology. R. E. Taylor and Clement W. Meighan. Academic Press, New York, 1978. xiv, 590 pp., illus. \$39.50. Studies in Archeology.

Combating the #1 Killer. The *Science* Report on Heart Research. Jean L. Marx and Gina Bari Kolata. American Association for the Advancement of Science, Washington, D.C., 1978. xii, 206 pp., illus. Cloth, \$17; paper, \$7.50. AAAS Publication 78-3.

Conservation Directory 1978. A List of Organizations, Agencies, and Officials Concerned with Natural Resource Use and Management. Fran Mitchell, Ed. National Wildlife Federation, Washington, D.C., ed. 23, 1978. x, 264 pp. Paper, \$3.

The Creative Engineer. The Art of Inventing. Winston E. Kock. Plenum, New York, 1978. xiv, 386 pp., illus. \$25.

Crystals in the Sky. An Intellectual Odyssey Involving Chumash Astronomy, Cosmology and Rock Art. Travis Hudson and Ernest Underhay. Illustrated by Campbell Grant. Ballena Press, Socorro, N.M., and Santa Barbara Museum, Santa Barbara, Calif., 1978. 164 pp. Paper, \$8.95. Ballena Press Anthropological Papers No. 10.

Explorations in Basic Biology. Stanley E. Gunstream and John S. Babel. Burgess, Minneapolis, ed. 2, 1978. viii, 254 pp., illus. Paper, \$8.95.

Family Therapy in Clinical Practice. Murray Bowen. Aronson, New York, 1978. xviii, 566 pp. \$25.

A FORTRAN Coloring Book. Roger Emanuel Kaufman. MIT Press, Cambridge, Mass., 1978. viii, 286 pp. Paper, \$6.95.

Foundations of Logico-Linguistics. A Unified Theory of Information, Language, and Logic. William S. Cooper. Reidel, Boston, 1978. xvi, 250 pp. Cloth, \$26; paper, \$12.50. Synthese Language Library, vol. 2.

Fundamentals of Aerosol Science. David T. Shaw, Ed. Wiley-Interscience, New York, 1978. xii, 372 pp., illus. \$27.50.

Geothermal Energy in the Western United States. Innovation versus Monopoly. Sheldon L. Bierman, David F. Stover, Paul A. Nelson, and William J. Lamont. Praeger, New York, 1978. xx, 470 pp. \$25. Praeger Special Studies.

How to Compose Slides for Lectures. A Book for Lecturers in All Fields of Study. Katharina Meyer-Hartwig, Walter Bleifield, and Ulf Hegewald. Translated from the German edition. Gerhard Witzströck, New York, 1977. 56 pp., illus. Paper, \$7.75.

Immunological Influence on Human Fertility. Proceedings of a workshop, Newcastle, Australia, July 1977. Barry Boettcher, Ed. Academic Press, New York, 1977. xii, 370 pp., illus. \$22.50.

Impedance Measurements in Biological Cells. Otto F. Schanne and Elena Ruiz P.-Cereetti. Wiley-Interscience, New York, 1978. xviii, 430 pp., illus. \$29.95.

Infancy. Kathryn Sherrod, Peter Vietze, and Steven Friedman. Brooks/Cole, Monterey, Calif., 1978. xii, 212 pp., illus. Paper, \$5.95. Life-Span Human Development Series.

The Information in Contingency Tables. D. V. Gokhale and Solomon Kullback. Dekker, New York, 1978. xii, 366 pp. \$29.75. Statistics, vol. 23.

Injustice. The Social Bases of Obedience and Revolt. Barrington Moore, Jr. Sharpe, White Plains, N.Y., 1978 (distributor, Pantheon Books, New York). xviii, 540 pp. \$17.50.

The Language of Change. Elements of Therapeutic Communication. Paul Watzlawick.

Basic Books, New York, 1978. xii, 172 pp., illus. \$11.

Look Who's Talking! Emily Hahn. Crowell, New York, 1978. viii, 168 pp., illus. \$8.95.

Mathematics, Science and Epistemology. Imre Lakatos. John Worrall and Gregory Currie, Eds. Cambridge University Press, New York, 1978. x, 286 pp. \$22.95. Philosophical Papers, vol. 2.

Metal-Semiconductor Contacts. E. H. Rhoderick. Clarendon (Oxford University Press), New York, 1978. xvi, 202 pp., illus. \$18.50. Monographs in Electrical and Electronic Engineering.

Methane Generation from Human, Animal, and Agricultural Wastes. National Academy of Sciences, Washington, D.C., 1977 (available as PB 276-469 from the National Technical Information Service, Springfield, Va.). xiv, 132 pp., illus. Paper, \$7.25. Board on Science and Technology for International Development Advisory Studies and Special Reports, 19.

Optical Shop Testing. Daniel Malacara, Ed. Wiley, New York, 1978. xx, 524 pp., illus. \$29.95. Wiley Series in Pure and Applied Optics.

Pakistan Association for the Advancement of Science. Its History and Achievements, 1947-1975. M. I. D. Chughtai. Pakistan Association for the Advancement of Science, Lahore, 1977. x, 98 pp. Paper, \$5.

Pre-Columbian Man in Costa Rica. Doris Stone. Peabody Museum Press, Harvard University, Cambridge, Mass., 1977. xviii, 238 pp., illus. Paper, \$10.

The Prehistory and Palaeogeography of the Great Indian Desert. Bridget Allchin, Andrew Goudie, and Karunarkara Hegde. Academic Press, New York, 1978. xx, 370 pp., illus. \$48.90.

Proceedings Forest and Field Fuels Symposium. Winnipeg, Canada, Oct. 1977. Biomass Energy Institute, Winnipeg, 1978. Various pages, illus. Paper, \$12.50.

Proceedings of the Institute of Electrical and Electronics Engineers 1977 Conference on U.S. Technological Policy Issues. Washington, D.C., Sept. 1977, Franklin H. Blecher and John J. Guarrera, Eds. Institute of Electrical and Electronics Engineers, New York, 1977. x, 102 pp., illus. Paper, \$6.

Programming for Poets. A Gentle Introduction Using PL/I. Richard Conway with contributions by Charles Van Loan and Kathryn Conway. Winthrop, Cambridge, Mass., 1978. xvi, 348 pp. Paper, \$10.95.

Quantum Theory of Polymers. Proceedings of a NATO Advanced Study Institute, Namur, Belgium, Aug. 1977. Jean-Marie André, Joseph Delhalle, and János Ladik, Eds. Reidel, Boston, 1978. xii, 376 pp., illus. \$35. NATO Advanced Study Institutes Series C, vol. 39.

Questions. Henry Hiz, Ed. Reidel, Boston, 1978. xviii, 366 pp. \$38. Synthese Language Library, vol. 1.

Radio, Television, and Sound System Repair. An Introduction. Joel Goldberg. Prentice-Hall, Englewood Cliffs, N.J., 1978. x, 326 pp., illus. \$16.95.

Ravens, Crows, Magpies, and Jays. Tony Angell. University of Washington Press, Seattle, 1978. 112 pp., illus. \$14.95.

Reaction Rate and Photochemical Data for Atmospheric Chemistry—1977. Robert F. Hampson, Jr., and David Garvin, Eds. National Bureau of Standards, Washington, D.C., 1978 (available from the Superintendent of Documents, Washington, D.C.). iv, 108 pp.

Paper, \$2.75. NBS Special Publication 513.

The Reclamation of Disturbed Arid Lands. Papers from a symposium, Denver, Feb. 1977. Robert A. Wright, Ed. University of New Mexico Press, Albuquerque, 1978 (available from the AAAS Southwestern and Rocky Mountain Division, P.O. Box 3AF, Las Cruces, N.M. 88003). x, 196 pp. Paper.

Recombinant DNA Research. Vol. 2, Documents Relating to "NIH Guidelines for Research Involving Recombinant DNA Molecules," June 1976–November 1977. Prepared by the Office of the Director, National Institutes of Health, Bethesda, Md., 1978 (available from the Superintendent of Documents, Washington, D.C.). vi, 902 pp. Paper, \$7.75. DHEW Publication No. (NIH) 78-1139.

The Scandinavian Psychoanalytic Review. Vol. 1. Bo Larsson, Ed. Universitetsforlaget, Oslo, 1978 (U.S. distributor, Columbia University Press, New York). 200 pp. Paper, \$14.

The Science of Archaeology? Richard S. MacNeish. Duxbury Press (Wadsworth), North Scituate, Mass., 1978. xiv, 254 pp., illus. Paper, \$7.95.

Specification Searches. Ad Hoc Inference with Nonexperimental Data. Edward E. Leamer. Wiley-Interscience, New York, 1978. xiv, 370 pp., illus. \$24.95. Wiley Series in Probability and Mathematical Statistics.

Thermolumineszenz biologischer Objekte. Fritz Pliquet and Michail K. Solncev. Georg Thieme, Leipzig, 1978. 92 pp., illus. Paper, 29 M. Fortschritte der experimentellen und theoretischen Biophysik, Band 22.

Three Dimensional Reconstruction in Biology. P. N. Grant and W. A. Gaunt. University Park Press, Baltimore, 1978. x, 174 pp., illus. \$29.50.

Time and Traditions. Essays in Archaeological Interpretation. Bruce G. Trigger. Columbia University Press, New York, 1978. xii, 274 pp. \$12.50.

The Tokyo Puzzles. Kobon Fujimura. Translated from the Japanese edition by Fumie Adachi. Martin Gardner, Ed. Scribner, New York, 1978. iv, 184 pp., illus. \$8.95.

Treatise on Analytic Chemistry. Part 2, Analytical Chemistry of Inorganic and Organic Compounds. Vol. 10. I. M. Kolthoff and Philip J. Elving, Eds. Interscience (Wiley), New York, 1978. xx, 566 pp., illus. \$34.50.

Valency. M. F. O'Dwyer, J. E. Kent, and R. D. Brown. Springer-Verlag, New York, 1978. xii, 252 pp., illus. Paper, \$10.80. Heidelberg Science Library.

Viruses and Human Cancer. Yohei Ito, Ed. Karger, Basel, 1978. viii, 298 pp., illus. \$61. Progress in Experimental Tumor Research, vol. 21.

Voices in the Labyrinth. Nature, Man and Science, Erwin Chargaff. Seabury Press, New York, 1978. xxiv, 164 pp. \$9.95. The Tree of Life. A Continuum Book.

Water Activity and Food. John A. Troller and J. H. B. Christian. Academic Press, New York, 1978. xvi, 236 pp., illus. \$19.50. Food Science and Technology.

Wild Geese. M. A. Ogilvie. Illustrations by Carol Ogilvie. Buteo Books, Vermillion, S.D., 1978. 350 pp. + plates. \$25.

The Wizard War. British Scientific Intelligence, 1939-1945. R. V. Jones. Coward, McCann and Geoghegan, New York, 1978. xx, 556 pp., illus. + plates. \$12.95.

World Resources. Energy, Metals, Minerals. Studies in Economic and Political Geography. Gunnar Alexandersson and Björn-Ivar Klevebring. Walter de Gruyter, Berlin, 1978. viii, 248 pp., illus. Paper, DM 36.