done maps. A small inconvenience results from labels' being placed in the legends for figures rather than directly on the figures themselves.

The book follows a logical format, dealing with the basement and tectonic features first. There are good papers on geophysics and deep structure by Hinz *et al.*, Roeser, and Weigel *et al.* These papers do not merely describe the results of surveys but put forward original interpretations, such as the idea of Weigel *et al.* for a plume crust as the transition from continent to ocean. There are several good papers on deep stratigraphy, both onshore and offshore, based on the Deep Sea Drilling Project sites. In fact, the findings of leg 79, which was finished only a year ago, are included. Although preliminary, the findings are fundamental to our understanding of the margin. It is left to the reader to see the implications of the leg 79 results with respect to some of the other papers in the volume, some of which were obviously written before the results were available.

A paper by Jansa and Wiedmann compares the northwestern African margin with its conjugate partner, the eastern North American margin. Though this is an excellent paper for a stratigraphic comparison, it shows structural cross-sections in cartoon form and illustrates none of the original geophysical data from the American margin. There are similarities in crustal thickness, continent-ocean transitions, and magnetic and gravity anomalies between the two margins that might have been illustrated in an additional paper.

A transitional and very valuable paper by Jacobi and Hayes deals with the physiography and acoustic mapping of the modern margin facies, although only for the southern part of the area. The paper serves as a transition in that it provides acoustic evidence for the sedimentary processes responsible for pelagite, turbidite, and contourite deposition in the modern ocean, which then can be used to interpret the paleoenvironment. Several good later papers deal with the sedimentation and paleoenvironmental interpretations for the Cretaceous and Cenozoic.

Ideas about ocean currents and gravity processes are well employed by Einsele and Wiedmann to interpret the paleoenvironment of the Turonian black shales and by Einsele and by Behrens and Siehl to interpret the paleoenvironment of the Cretaceous clastics. And modern ideas about geohistory that take into account regional subsidence, relative sea-level rise, sediment accumulation, and compaction are well utilized by Ranke *et al.* in a paper on the development of the Aaiun-Tarfaya Basin and by Wiedmann *et al.* in a paper on the Moroccan continental margin. Conclusions about eustatic sea-level rise and subsidence caused by crustal thinning and sediment loading are similar to and supportive of those of recent studies of the American margin.

A discussion and comparison of the stratigraphy and geologic histories of the Cape Verde and Canary islands by Robertson and Bernoulli is extremely thorough and well placed in the context of the plate tectonic history of the area. Good comparisons with the Jurassic and Cretaceous facies in the western Atlantic are made.

Sarnthein *et al.* thoroughly synthesize data on the late Cenozoic paleoenvironment of the area. The complex interplay of oceanic currents, upwelling, and offshore wind transport are considered, and the variation in these factors through the changing climates of single-pole and double-pole glaciations is documented. Modern techniques that provide high time resolution, such as the oxygen isotope techniques, are employed by Thiede *et al.* to address the Quaternary paleoenvironment off Africa.

Finally, a paper on the origin of heavy metals in the black shales by Brumsack and Lew and one on the petroleum potential and maturity of these shales by Rullkötter *et al.* have possible economic implications for the northwest African margin. The conclusions of these papers regarding the source of metals from sea water and the source and preservation of the kerogen are of broad scientific interest.

The book is an excellent reference volume on the geology of the northwest African margin, one of the oldest rifted passive margins. The area illustrates many of the phenomena common to all passive margins. The book is vital to all researchers working on passive margins, and I would also recommend it for use in graduate seminars on continental margins.

One slight deficiency in the book is the absence of the most recent breakthrough in the use of long-range side-scan sonar in margin research. Several recent studies using these techniques have been done on the American margin, resulting in surprising new ideas about canyon formation and mass movements. Apparently no similar studies have been done off northwest Africa that might have been included in this otherwise comprehensive volume.

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British Thought on Race

The Idea of Race in Science. Great Britain 1800–1960. NANCY STEPAN. Archon (Shoe String), Hamden, Conn., 1982. xxii, 230 pp. $27.50.

The study of race has never belonged exclusively to a single discipline. In the 19th century, the concept of race was of central importance to certain areas of anthropology and a significant concern of ethnology, philology, phrenology, natural history, evolutionary biology, eugenics, and political theory. Nancy Stepan's book on the science of race in Britain displays an impressive command of both primary and secondary literature from an extraordinary variety of fields. At the same time, this interesting study is fully accessible to the general reader.

The main argument of the book, characterized in the preface as a "history of scientific racism," is that, from the mid-19th century until the Second World War, science provided spurious support for the belief that certain races are degraded or inferior to others. The author contends that the persistence of racist attitudes in these various sciences, even in the face of the transformation of the species concept brought about by Darwin's theory of evolution, makes the theory of race a cardinal instance of the continuity of scientific ideas. Stepan seems uncertain how to account for this fixity of ideas, for she argues both that ideas about race "gained weight in the scientific community precisely because they were based on the ideas and methods of the sciences of the day" (p. xv) and that "the history of racial science is a history of a series of accommodations of the sciences to the demands of deeply held convictions about the 'naturalness' of the inequalities between human races" (pp. xx–xxi). She places the watershed in the history of race science around 1940, when modern population genetics and Nazi excesses acted together, though in very different ways, to discredit the old orthodoxy.

Fixity has no history, of course. The least interesting parts of the book survey scientific movements like phrenology and eugenics, which were only marginally concerned with race, in order to announce that their practitioners, like everyone else, accepted racist assumptions. The chapter on the assimilation of biological evolution into a largely unmoved race theory is better, as is that on the invention of such measures as the cephalic index (ratio of head width to length) by craniometrists and physical anthropologists, who were mainly inter-

ested in isolating the "pure" racial ancestors of existing peoples. Stepan also has some new material on the rise of polygenism (the view that the races of man belong to different species) at the expense of the traditionally accepted, and scripturally sanctioned, monogenism.

Although several chapters are very good, the general claims made in the book seem more dubious. To begin, it is a mistake to identify advocacy of or opposition to eugenics, phrenology, or even polygenism with the endorsement or rejection of racism. Nearly everyone assumed that non-Europeans belonged to lower races; it was both possible and common to hold that environment is responsible for race differences while maintaining, as did the unswerving monogenist James Cowles Prichard, that blacks and Australians had "ruder faculties" and less capacious skulls corresponding to their less civilized state. The polygenist or eugenic race view may be more biological, but the general superiority of the white race simply was not at issue in these scientific debates. The persistence of "racism" among phrenologists and evolutionists prior to the time of anticolonialism and the American civil rights movement must be explained in the same terms as the continued belief in white superiority among members of the lay public.

In particular, there is little basis for linking racism with "typological" as opposed to "population" thinking, as Stepan does. Darwin and his followers were preeminently population thinkers, yet they were happy to fill the gap between ape and Englishman with lower human forms and cared little whether they were seen as separate species. Karl Pearson may have used statistical methods to devastate certain racialist arguments, but he was also a leading eugenicist who held unambiguously that the black race was, on the average, vastly inferior to the white. Stepan's own assertion that polygenist racism was greatly promoted by the resurgence of belief in the Great Chain of Being, and the consequent need to find intermediate types between humans and the animals, is inconsistent with her argument about typological thinking, for the Great Chain assumes a continuous plenum of life forms that is incompatible with the existence of fixed, discrete species.

Not surprisingly, race is for Stepan very much a live issue, and she accepts as dogma that the progress of science has left no justification for racialist thinking. She is unable to resist lashing out at modern proponents of scientific ideas on man of which she disapproves, by placing them in a discredited tradition. IQ enthusiasts are dismissed either as dishonest (Cyril Burt) or as not up to the highest standards of scientific argument (Arthur Jensen). Inevitably, if somewhat mysteriously, she takes on sociobiology: "The simplistic speculations of sociobiologists about human behavior do a disservice to society by falsely [?] making hereditarianism popular" (p. 189). The long and mostly irrelevant sections on phrenology and eugenics seem to have been written simply so that the author could express disapproval of their hereditarian assumptions about human nature. Stepan can also be quite Whiggish. A. R. Wallace "could never free himself entirely from the racial ideas of his day" (p. 75); T. H. Huxley "tried, but ultimately failed, to avoid the errors of a social Darwinist" (p. 77).

I am far from wishing to discourage historical investigation into controversial matters like the science of race. Stepan, however, has too much confidence that the good is the true, and that she knows the good. It may be correct, and is certainly a fair argument, that sociobiology is simplistic, or the IQ concept deeply flawed, but these ideas cannot be dismissed merely by being categorized as relics of an outdated tradition. Stepan has made a real contribution toward a history of British thought on one of the most elusive concepts of the 19th-century scientific vocabulary, race. If she wishes also to refute modern proponents of race inequalities, she should address their arguments fully and explicitly.

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Books Received

Advances in Marine Biology. Vol. 19. J. H. S. Blaxter, Frederick S. Russell, and Maurice Yonge, Eds. Academic Press, New York, 1982. xii, 382 pp., illus. $61.50.

The Aging Brain. Cellular and Molecular Mechanisms of Aging in the Nervous System. Ezio Giacobini, Guido Filogamo, Giacomo Giacobini, and Antonia Vernadakis, Eds. Raven, New York, 1982. xii, 292 pp., illus. $33.50. Aging, vol. 20.

Animal Genetics. Frederick B. Hutt and Benjamin A. Rasmusen. Wiley, New York, ed. 2, 1982. x, 582 pp., illus. $25.95.

Annual Review of Public Health. Vol. 3. Lester Breslow, Jonathan E. Fielding, and Lester B. Lave, Eds. Annual Reviews, Palo Alto, Calif., 1982. x, 496 pp. $22.

Anomalistic Psychology. A Study of Extraordinary Phenomena of Behavior and Experience. Leonard Zusne and Warren H. Jones. Erlbaum, Hillsdale, N.J., 1982. xiv, 498 pp. $29.95.

Antarctica. Wilderness at Risk. Barney Brewster. Friends of the Earth, San Francisco, 1982. x, 126 pp., illus., + plates. Paper, $14.95.

Anthocyanins as Food Colors. Pericles Markakis, Ed. Academic Press, New York, 1982. xiv, 266 pp., illus. $35. Food Science and Technology.

Application of Vegetation Science to Forestry. G. Jahn, Ed. Junk, The Hague, 1982 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xii, 408 pp., illus. $79.50. Handbook of Vegetation Science, Part 12.

Aquatic Toxicology. Vol. 1. Lavern J. Weber, Ed. Raven, New York, 1982. xii, 226 pp., illus. $27.

Artificial Selection and the Development of Evolutionary Theory. Carl Jay Bajema, Ed. Hutchinson Ross, Stroudsburg, Pa., 1982 (distributor, Academic Press, New York). xvi, 364 pp., illus. $47. Benchmark Papers in Systematic and Evolutionary Biology, vol. 4.

Arzneimittal- und Apothekenrecht der Deutschen Demokratischen Republik. Gesetzessammlung mit Kommentar. 4. Lieferung. Joachim Richter, Hans-Joachim Seidlein, Manfred Böhm, and Hans Georg Keune, Eds. Akademie-Verlag, Berlin, 1981. 330 pp. In looseleaf binder, 45 M.

Astronomy for the Inquiring Mind. The Growth and Use of Theory in Science. Eric M. Rogers. Princeton University Press, Princeton, N.J., 1982. x, 164 pp., illus. Paper, $7.95. Based on *Physics for the Inquiring Mind* (1960).

Atlas of Molecular Structures in Biology. Vol. 2, Haemoglobin and Myoglobin. G. Fermi and M. F. Perutz. Clarendon (Oxford University Press), New York, 1981. vi, 104 pp. Spiral bound, $45.

Attitudes. Themes and Advances. D. W. Rajecki. Sinauer, Sunderland, Mass., 1982. x, 354 pp., illus. $16.50.

The Critical Link. Energy and National Security in the 1980s. Charles K. Ebinger, Project Director. Ballinger (Harper and Row), Cambridge, Mass., 1982. xxx, 260 pp. $29.75.

Critical Stability Constants. Vol. 5, First Supplement. Arthur E. Martell and Robert M. Smith. Plenum, New York, 1982. xviii, 604 pp. $69.50.

Current Topics in Membranes and Transport. Arnost Kleinzeller and Felix Bronner, Eds. Vol. 16, Electrogenic Ion Pumps. Clifford L. Slayman, Ed. Academic Press, New York, 1982. xxxviii, 522 pp., illus. $56.

Current Views on Insulin Receptors. Proceedings of a symposium, Rome, Sept. 1980. D. Andreani, R. De Pirro, R. Lauro, J. M. Olefsky, and J. Roth, Eds. Academic Press, New York, 1981. xii, 626 pp., illus. $71.50. Proceedings of the Serono Symposia, vol. 41.

Darwinism Defended. A Guide to the Evolution Controversies. Michael Ruse. Addison-Wesley Advanced Book Program, Reading, Mass., 1982. xviii, 356 pp., illus. Paper, $12.50.

Desert Locust Forecasting Manual. D. Pedgley, Ed. Centre for Overseas Pest Research, London, 1981. Two volumes, viii, 268 pp., illus., and ii, 142 pp., illus. £95.

Development of Perception. Psychobiological Perspectives. Vol. 1, Audition, Somatic Perception, and the Chemical Senses. Richard N. Aslin, Jeffrey R. Alberts, and Michael R. Petersen, Eds. Academic Press, New York, 1981. xx, 464 pp., illus. $39. Behavioral Biology.

Environmental History of East Africa. A Study of the Quaternary. A. C. Hamilton. Academic Press, New York, 1982. xvi, 328 pp., illus. $49.50.

Environmental Impact Analysis. Peter E. Black, Praeger, New York, 1981. xiv, 146 pp. $19.95.

Evolution of Receptor Cells. Cytological, Membranous and Molecular Levels. Yakov A. Vinnikov. Translated from the Russian edition (Leningrad, 1979) by Nicholas Bobrov. Springer-Verlag, New York, 1982. xii, 142 pp., illus. $41. Molecular Biology, Biochemistry and Biophysics, 34.

Exercises in Psychological Testing. George C. Thornton III and Eugene R. Oetting. Harper and Row, New York, ed. 2, 1982. x, 342 pp. Paper, $15.50.

Experiences in Biochemical Perception. L. Nicholas Ornston and Stephen G. Sligar, Eds. Academic Press, New York, 1982. xx, 382 pp., illus. $47.

Experimental Methods in Organic Chemistry. James A. Moore, David L. Dalrymple, and Oscar R. Rodig. Saunders, Philadelphia, ed. 3, 1982. viii, 368 pp., illus. Cloth. Saunders Golden Sunburst Series.

Exploration for Carbonate Petroleum Reservoirs. Translated from the French edition and revised by Anne Reeckmann and Gerald M. Friedman. Wiley-Interscience, New York, 1982. xvi, 214 pp., illus. $39.95.

The Extended Phenotype. The Gene as the Unit of Selection. Richard Dawkins. Freeman, San Francisco, 1982. xii, 308 pp. $19.95.

Faces of Mathematics. An Introductory Course for College Students. A. Wayne Roberts and Dale E. Varberg. Harper and Row, New York, ed. 2, 1982. xvi, 492 pp., illus. $21.50.

Finite Mathematics and Calculus. With Business, Social, and Behavioral Science Applications. Lawrence E. Spence. Harper and Row, New York, 1982. viii, 760 pp., illus. $24.95.

The Interaction of Strong Electromagnetic Fields with Plasmas. I. R. Gekker. Translated from the Russian edition (Moscow, 1978) by J. B. Sykes and

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