of the Sahara, under conditions which make it not entirely certain that I will get home alive; and so I feel more keenly than I used to a faint but poignant hint of what Barth felt during most of his 5 years in central Africa. Kirk-Greene can make even the most sedentary chair-bound reader feel it too, for he is as outstanding a writer as he is a scholar. From either point of view *Barth's Travels in Nigeria* can be described only as a masterpiece.

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On Teaching Methods

Elements of Chemistry. Raymond B. Brownlee, Robert W. Fuller, William J. Hancock, Michael D. Sohon, and Jesse E. Whitsit. Revised by Paul J. Boylan. Allyn and Bacon, Boston, ed. 2, 1962. viii + 696 pp. Illus. Plates. $5.68.

This book has obviously been very carefully planned in a sincere effort to give what, in the judgment of Paul Boylan who revised it, is a useful tool for learning and teaching high school chemistry. A pattern of development is set in the first chapter and is followed with practically no variations to the end of the book. First there is a study outline which, through the medium of 5 to 16 specific questions, calls attention to specific topics that are covered in the chapter. Then come well-identified discussions of specific topics. Distributed among the discussions are two to five sets of "test yourself" questions, which are in italics and thus are easily identified. Following the discussions and questions is a summary, then a list of the key words that have been encountered in the chapter, and then a group of questions and, in some chapters, numerical problems. There follows a list of student activities—that is, special projects. Last is a list of references for further reading.

Although such a well-defined pattern of development, from the first chapter to the last may, in the judgment of many teachers, represent too much rigidity and regimentation it does have merit; there is practically no question, by either student or teacher, as to what is to be learned and taught.

It is with respect to the order in which certain topics are presented, the amount of material covered, and the relative emphasis on facts and on reasons behind these facts that I take issue with the method used in the revision.

The modern theory of the structure of the atom is based on experimental facts. So is the periodic table. A first exposure to chemistry, and for most students high school chemistry is their first exposure, should emphasize this. Accordingly, treatment of the structure of the atom and of the periodic classification of the elements should not be presented until the student knows some of the *facts, reasoning*, and *thinking* on which these concepts are based. Once the foundation has been properly laid, then and then only, is he prepared to use these concepts to correlate and explain new facts and to arrive at logical explanations and conclusions.

It seems to me that the book is too long and that it recites too much factual information to be most useful as a high school textbook. The statement in the preface that "the main concern of the text is with modern chemical theory and principles" is not borne out. Facts are important and must be stressed, but they should be examined in a perspective of reasons and principles.

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Miscellaneous Publications

(Inquiries concerning these publications should be addressed, not to Science, *but to the publisher or agency sponsoring the publication.)*

Brazil, University of Minas Gerais. *Publicações de Anatomia*, vol. 4. Liberato J. A. Di Dio, Ed. The University, Minas Gerais, Brazil, 1960. 14 papers, published during 1958, by Di Dio and others, are reprinted.

British Museum (Natural History). *Fossil Amphibians and Reptiles*. W. E. Swinton (127 pp., ed. 3. 5s.). *A Short Guide to the Exhibition Galleries of the Natural History Museum* (39 pp., ed. 9). *Bulletin: Zoology*, vol. 8, No. 6, pp. 285–312: "On a collection of freshwater gastropod Mollusca from the Ethiopian highlands," C. A. Wright and D. S. Brown (12s. 6d.). The Museum, London, 1962.

Chicago Natural History Museum. *Fieldiana: Anthropology*, vol. 36, No. 11, pp. 243–275: "The Red Ocher culture of the Upper Great Lakes and adjacent areas," Robert E. Ritzenthaler and George I. Quimby ($1); *Geology*, vol. 14, No. 6, pp. 99–104: "A reconstruction of the shield of the Arthrodire, *Bryantolepis brachycephalus* (Bryant)," Robert H. Denison ($0.25); *Zoology*, vol. 44, No. 10, pp. 67–68: "A new species of land snail from Bolivia," Fritz Haas ($0.15). The Museum, Chicago, 1962.

Smithsonian Institution. *Miscellaneous Collections*, vol. 144, No. 2: "Dimensional relationships for flying animals," Crawford H. Greenewalt. Smithsonian Institution, Washington, D.C., 1962. 46 pp. Plates.

Union of International Associations. Publ. No. 173, "Annual international congress calendar, 1962" (96 pp., $4); a list of the scheduled international meeting for the years 1962 to 1967 inclusive. Publ. No. 174, "International initialese" (44 pp., $1); provides full name, whether in English or French, of some 1800 sets of initials now used by international organizations, both governmental and nongovernmental. Publ. No. 175, "The first ten years of international associations," compiled by E. S. Tew (40 pp., $1); an analytical index of articles and surveys published in vols. 1–10 of U.I.A.'s magazine, entitled during 1949–50 *Monthly Review of the Union of International Associations*, during 1951–53 *NGO Bulletin*, and 1954 to date, *International Associations*. U.I.A., Palais d'Egmont, Brussels 1, Belgium.

U.S. Joint Committee on Atomic Energy. Radiation protection criteria and standards. *Index to Hearings and Selected Materials of May 1960*. The Committee, Washington, D.C., 1961 (order from Superintendent of Documents, GPO, Washington, D.C.). 97 pp. $0.30.

U.S. Office of Education. OE-13017, "Literacy and basic elementary education for adults," Betty Arnett and Edward Warner Brice (126 pp., $0.55). Superintendent of Documents, GPO, Washington, D.C., 1961. A selected annotated bibliography, including lists of educational information sources.

U.S. Public Health Service. National Institutes of Health. Publication No. 897: "Highlights of research progress in general medical sciences, 1961." Superintendent of Documents, GPO, Washington, D.C., 1962. 61 pp. $0.25. A statement concerning items of interest on research studies and research training programs supported by the division of general medical sciences; prepared as background material for submission at the fiscal 1962 Congressional hearings on appropriations.

University of Wisconsin. *Geophysical and Polar Research Report*, No. 1: "Geophysical studies in Victoria Land, Antarctica," John G. Weihaupt (123 pp., 1961); No. 2: "Reconnaissance residual and regional magnetic maps of the Arctic Ocean basin," (preliminary report) Ned A. Ostenso, Richard J. Wold, G. P. Woollard (4 pp., maps, 1962); No. 62–3: "Summary and discussion of the geophysical and glaciological work in the Filchner Ice Shelf area of Antarctica," John C. Behrendt (65 pp., 1962); No. 62–2: "Evaluation study of airborne gravimeter operational test," Richard Coons, William Strange, George P. Woollard (66 pp., 1962); *Technical Report*, No. 62–1: "Evaluation study of airborne gravimeter operational test," William Strange Richard Coons, George P. Woollard (40 pp., 1962). Geophysics and Polar Research Center, Madison, Wis.

Voluntary Health and Welfare Agencies in the United States. An exploratory study by an ad hoc citizens committee. Schoolmasters' Press, New York, 1961. 88 pp. $1.