present flora of New Zealand can not legitimately be postulated as having entered that region as a unit at the central point advocated by Willis, nor can the flora of any region as a whole be dated from one period of time or from a single geographical point.

Finally the statement that the dying out of species is a rare event is overwhelmingly opposed by all of the facts of paleontology and by all of the facts of history unless its adherents are prepared to accept the Mosaic cosmogony. This comment is as true of vertebrate and invertebrate paleontology as it is of plants. In the case of the last the probability is very great that the present flora of the globe represents a minute fraction of the extinct floras. Pointing in the same direction is the well-authenticated fact that in all the orders of plants that are prevailingly arborescent the geologic distribution where it is known is found to have been more extensive than the present distribution. The same statement is true of the higher animals and of such invertebrate groups as I am familiar with.

So-called monotypic genera, whether plant or animal, at least in the majority of cases, are relicts of a once wider distribution. Among plants this is strikingly true of arborescent forms and needs qualification only in the case of certain mainly herbaceous, relatively modern and prevailingly temperate groups such as the Papilionaceæ, Labiatæ, Scrophulariaceæ, Plantaginaceæ, Valerianaceæ, etc.

Edward W. Berry
The Johns Hopkins University

SCIENTIFIC BOOKS

A Text-book of Sanitary and Applied Chemistry; or, the Chemistry of Water, Air and Food. By E. H. S. Bailey, Ph.D., Professor of Chemistry, University of Kansas. Fourth Edition revised. New York, The Macmillan Company. 1917. Cloth. 12mo, xxiv + 394 pp. Price $1.60.

As Dr. Bailey says in his preface, the object of the book is to furnish a text, for the use of students, upon chemistry as applied to the most important topics having to do with daily life in the household. The opening chapters deal with the Atmosphere, Fuels, Heating and Ventilation, Lighting, Water, Sewage, Textiles, Soap, Disinfectants and Poisons. The second half of the book treats of the chemistry of food. The treatment is naturally descriptive only and does not cover analytical processes. Throughout the text there are distributed 197 well selected experiments which will greatly help to fix important facts in the student's mind.

W. P. Mason

SPECIAL ARTICLES

THE UFFINGTON SHALE OF WEST VIRGINIA AND ITS SUPPOSED MARINE FAUNA[1]

At a number of localities in northern West Virginia the Uffington shale of I. C. White[1a] lies at the base of the Conemaugh formation, occupying the interval between the Mahoning sandstone above and the Upper Freeport coal of the Allegheny formation below. It is a dark shale, a portion or the whole of which is sandy and bears plant fossils in abundance. It is variable in thickness, forty feet being about the maximum reported, while over much of the area it is lacking altogether, the sandstone being in contact with the coal. The replacement of the shale by the sandstone is clearly the result of erosion as is indicated by the sinuous contact between the two strata, the shale often varying in thickness as much as twenty feet in a distance of a hundred yards.

In 1871, John J. Stevenson, in a paper entitled: "A geological examination of Monongalia county, West Virginia," by John J. Stevenson; together with lists of fossils and descriptions of new species, by F. B. Meek,"[2] described a "dark colored, fine grained, argillaceous" shale overlying the "Upper Freeport" coal and containing abundant invertebrate fossils. Its thickness is given as 12 feet. It is said to be best exposed in the "bluff bordering the bottoms two or three

[1] Published by permission of I. C. White, state geologist of West Virginia.

[1a] I. C. White, West Virginia Geol. Survey, Vol. II., 1903, p. 323.

[2] West Virginia University, Board of Regents, Third Ann. Rept., 1871, for 1870, pp. 41 to 73.