

long list of these is simply appalling. In spite of many improvements, their number even in recent years is not small, although, as a rule, they are not quite as disastrous as they formerly were. Over 5,500 lives have been lost from this cause in England alone between 1850 and 1889. We can commend the volume to all persons interested in the subject of coal and coal mining.

J. F. J.

The Student's Handbook of Physical Geology. By A. J. JUKES-BROWNE. Second edition, revised. London and New York, G. Bell. 1892. 666 p. 8°.

THE breadth of view expressed in the preparation of this excellent text-book makes it more worthy of notice in an American journal than most English books are. Its illustrations, both verbal and graphic, are of course largely British; but so many examples are taken from other parts of the world that its insular origin is not prominent. Its various chapters suggest many of the newer points of geological view; its style is simple and easy, inciting the student to further reading than the end of his lesson. As is the case with most text-books on geology, the treatment of the chapters on sedimentary deposits and on the origin of valleys shows clearly how much later an understanding was reached in the latter than in the former subject. Stratified rocks are described as if they were manifestly the product of aqueous deposition; but the origin of valleys by aqueous denudation is carefully argued out, with a series of proofs. Buried valleys are mentioned before drowned valleys, although the natural order of occurrence is the other way. From my own greater interest in physiographic geology than in the other chapters of the book, my attention is naturally directed towards that part of the subject, especially as the author recognizes it as a primary division of the science. While its treatment is greatly in advance of that which it commonly receives, it still leaves something to be desired before it shall be commensurate with its importance and with the treatment of other equally important but more attentively considered chapters. For example, it is implied that anticlines are

normally transformed into valleys, and synclines into mountains; while it is easily shown that this transformation is not dependent on the attitude but on the hardness of the beds involved in the folding and on their relation to base-level. Again, in the discussion of sub-aerial denudation and the origin of valleys, no reference is made to the completion of the task of valley-making in the base-levelling of the region; and plains of denudation are referred to only as a product of marine erosion.

The book may be warmly recommended for the reference shelves of school libraries, and until the variety of American text-books of geology is increased, it will doubtless share with Geikie's smaller "Geology" a place in our schools and colleges.

W. M. D.

ONE of the largest cases in the Century Company's room at the World's Fair is devoted to an exhibit of "how a dictionary is made." Beginning with a copy of the very earliest English dictionary, Bullokar's "English Expositor," printed in London in 1616, a half-dozen of the important dictionaries of the past are shown, up to Bailey's, Johnson's, and the Imperial, the latter of which was the basis of the Century Dictionary. The exhibit includes a copy of the edition of Bailey's which was the first to include cuts, or "engraved schemes," as they are called on the title-page. In order to picture the growth of the language, especially in scientific lines, each book is open at the words beginning with "micro," of which in the first dictionary there is but one word, "microcosmus," while in the Century there are eight pages of the compounds of "micro." These eight pages, from the first manuscript, through the various proofs (showing additions and corrections) up to the finished dictionary, form the exhibit, with the addition of plates, original pictures, engravings on wood, and the manuscript and proofs of the word "take." With the latter are the quotations and definitions, used and unused, handed in by readers. The entry under "take" occupies about twelve columns in the dictionary, but it will be seen that not more than half of the material gathered was finally used.

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The undersigned has skins of Pennsylvania and New Jersey birds, as well as other natural history specimens: which he wishes to exchange for marine, fresh water, and earthworms of the South and West. Correspondence with collectors desired. J. Percy Moore, School of Biology, University of Pennsylvania, Philadelphia.

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