

speech to which they belong. To learn to speak a foreign language by reading a grammar and writing exercises is an impossibility. We must imitate the procedure of the child, and be content to follow the same method in learning a new language that we followed when learning our own. The essence of a language is its idioms; no amount of grammatical study will teach us these. The study of grammar should come after our acquisition of a language, not before it.

M. Gerard defines his method as follows:—"We must accustom ourselves to the expression of ideas in the language we wish to learn by comparing it with their expression in our own, until we are able, through imitation and analogy, to express them in our own. In other words, we must understand the language and think in it before we use it." Understanding a language means reading and hearing it; using a language means speaking and writing it. Hence the course of study recommended by M. Gerard comprises the four distinct processes of reading, hearing, speaking, and writing, reading coming first and writing last. If reading is the primary object in learning a new language, M. Gerard's course is undoubtedly the right one, but if speaking is rather aimed at, we think it a mistake to make reading precede. What is heard will then have to be translated into the language of the eye before it is understood, and this will be a serious impediment to the learner. Moreover, a language consists in the phonetic sounds by which it is conveyed, not in the symbols whereby these sounds are expressed on paper. Learning to read should follow learning to speak, as it does in the case of children. With this single exception, we can heartily endorse all M. Gerard's recommendations; they are founded upon nature and reason, and their practical efficiency has already been proved. Especially noticeable are his remarks on the use of translations; a dictionary is desirable only when we have acquired a fair elementary knowledge of a language and its forms of expression. Language starts with the sentence, not with the isolated word.

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OUR BOOK SHELF

The School Manual of Geology. By J. Beete Jukes, M.A., F.R.S., late Director of the Geological Survey of Ireland. Third Edition, revised and enlarged, edited by A. J. Jukes-Browne, B.A., F.G.S. (Edinburgh: A. and C. Black, 1876.)

THE late Prof. Jukes's admirable "School Manual of Geology" is already so favourably known to teachers of the science, for the clearness of its style, the accuracy of its information, and the abundance and excellence of its illustrations, that, in welcoming the appearance of a third edition of the work, we shall confine ourselves to a few remarks upon the changes which the editor has found necessary to make in it. In doing so, we have again to commend Mr. Jukes-Browne's skill in so well maintaining the distinctive characters of his uncle's work, while not hesitating to introduce such new matter as is demanded by the progress of the science.

In revising the chapter on igneous rocks, the editor acknowledges the assistance he has received from the Rev. T. G. Bonney. The principle of classification which he adopts—that, namely, of grouping the rocks, not according to one set of characters only, but on the basis both of their mineralogical constitution and their minute structure—we consider unexceptionable. To some of the definitions adopted in this chapter we must however de-

mur, as for example to those of andesite, porphyrite, and diorite, in all of which the essential felspar is stated to be *oligoclase*. As petrographers are not in possession of any ready means for determining the exact variety of felspar in a rock, in the absence of a complete chemical analysis of it, such a distinction becomes almost entirely useless in practice. Most continental writers avoid this difficulty by applying the same general terms to all such rocks as are shown, by microscopic examination or otherwise, to have any variety of the plagioclase felspars as their predominant constituent. We must also confess to grave doubts as to whether the revival of the obsolete term *leucilite* is warranted either by necessity or convenience.

In respect to that long-veged question of geology, the limit between the Silurian and Cambrian systems, we think that Mr. Jukes-Browne has exercised a very wise discretion. He has in the present edition adopted the judicious compromise between the claims of Murchison and Sedgwick, which was long ago suggested by Lyell and Phillips, and has received such able support from the researches of Salter and Hicks. If convenience and scientific truth are not to be wholly sacrificed to the desire to do homage to the memory of an individual, it is quite time that the aggrandised empire of Siluria should be resolved into its proper elements, and that these should resume their due place in the brotherhood of formations.

In introducing some necessary changes into the chapter on the Glacial period, the editor has wisely avoided too hastily adopting any of the crude speculations which have recently been advanced on the subject. The statement, however, that the till of Scotland is of *older* date than the boulder clay of the English Midland Counties surely stands in need of some modification.

We heartily congratulate the editor and publishers of this very useful little manual on the well-merited success which it has attained.

Geology: its Influence on Modern Beliefs. Being a Popular Sketch of its Scientific Teachings and Economic Bearings. By David Page, LL.D., F.G.S. (Edinburgh and London: William Blackwood and Sons, 1876.)

UNDER the above title Dr. Page has published two essays which are devoted to an exposition of the chief scientific results, and a vindication of the economic value and importance, of geological research. The somewhat rhetorical style of these essays is sufficiently accounted for by the fact that they were originally prepared by their author as popular lectures for an Edinburgh audience—a disposition of them which was frustrated by his ill-health. Dr. Page has very effectively grouped, and eloquently sustained his several theses, while many of the chief points of his discourses are rendered more telling by admirably chosen illustrations from the immediate neighbourhood of the city in which the lectures were to have been delivered. In one or two instances, however, we notice that the author has not succeeded in avoiding the danger of making his generalisations of too sweeping a character—as for example when he informs us, without any qualification, that "men need not search for the veined marbles of the metamorphic rocks in tertiary beds, for metalliferous veins in secondary strata, nor for workable coal-seams in the Old Red Sandstone and Silurian systems."

The Law of Storms Considered Practically. By W. H. Rosser. (London: Chas. Wilson, 1876.)

WE have read this little book with very great pleasure, and can strongly recommend it to the navigator as giving briefly, but pleasantly and intelligently, an account of the history of the law of storms, down to the present time, inclusive of the various theories which have been propounded. The book is also to be commended as evincing throughout a remarkable justness of criticism, of which