

the whole passage. Again, on p. 200, even after carefully considering the meaning of "purchaser," "consumer," the author arrives at the conclusion that "the consumer is simply the purchaser or customer," whereas the consumer is the purchaser who does not intend to sell again. If an architect builds a palace (to take Mr. Macleod's first example) to carry out some grand idea of his own which he feels sure will attract him a royal customer for it, but lack of funds compels him to sell it unfinished to a commercial company who have a similar faith in his design, they are not consumers, because they intend to sell it again. But if a monarch retired from business buys it of them for his residence, he is the consumer, because, although the palace may stand for centuries, he does not intend to sell it again. To take a much more familiar case, going on under our own eyes: a builder erects a row of villas as a speculation of his own; as long as he has them on his hands they are stock in the market, but as one purchaser is found who elects to inhabit one, and another to inhabit another, those houses are, as far as economics is concerned, "consumed," and the builder is encouraged to produce more.

Far more careful printing is required in such a book. On p. 309, Vol. II., line 1 is quite unintelligible through the misplacing of two commas. On p. 156, no doubt the "division of labour" should be the "division of employment" with combination of labour. For the sake of clearness (we suppose) qualifications have been sacrificed in many places, with, we feel sure, mischievous effect to any student inquiring into the "elements" of so intricate a science.

OUR BOOK SHELF.

Outlines of Lectures on Physiology. By T. Wesley Mills. (Montreal: Drysdale and Co., 1886.)

THIS little work of scarcely 200 pages gives at a glance very precise information as to the kind of instruction provided in the Physiological Department of the McGill University.

The teaching appears to be both scientific and practical in its character, and of a standard certainly equal to that of the teaching in many of our English schools. Prof. Mills most properly insists on the importance of comparative physiology and biology, the only keys to many of the most complicated problems in human physiology itself. It is, however, unfortunate that he is obliged to incorporate so much elementary biology in his lectures, suggesting, as it does, that this important subject is, in Canada as well as in England, often relegated to the teachers of physiology, who should be in a position to begin with students already acquainted with the fundamental facts of this science. Pathology, or the application of physiology to disease, is hardly touched upon in this book. It is a most unfortunate omission, unless both pathology and therapeutics are taught in other departments of the University far more systematically than with us. From the fact that it is so sketchy it is difficult to understand how Dr. Mills' work can be of any value to the general reader who is not at the same time interested in the progress of medical education, or to the ordinary student of physiology. Under "Saliva" (page 86), which may be taken as an example, we find the following headings without any explanatory text. "Mixed saliva found in the mouth. Secretion of serous and mucous glands compared. Morphological elements of saliva. Chemical constitution," &c. The work professes, however, to be only an outline, and such it is.

Chemistry for Beginners. By R. L. Taylor. (London: Sampson Low and Co., 1887.)

THIS little book is valuable as being the outcome of practical experience in the teaching of the first principles of chemistry, and, from its small size and simple statement, is likely to be much used in the sphere for which it is intended. It appears eminently suited for the use of pupils in our higher grade Board schools, where the author has gained most of his experience, and may with advantage be used as an elementary class-book, especially as it contains a graduated series of original problems. We are glad to notice the introduction of an undoubtedly beneficial method of representing chemical reactions, which, especially in more complex cases, expresses what really happens in a very clear light. An example extracted from Mr. Taylor's book is as follows:—



Of course, the equation written in the ordinary form is given, as is proper, side by side with the above.

Although it is unfortunate that the illustrations are of so primitive a character, the book is very readable and likely to interest beginners, and the author may be congratulated upon the absence of all appearance of cram, which has such a paralyzing influence upon the thinking powers of those from amongst whom our future chemists are to be derived.

A. E. T.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Thought without Words.

THE recent work of Prof. Max Müller contains theories on the descent of man which are entirely based on the assertion that not even the most rudimentary processes of true thought can be carried on without words. From this he argues that as man is the only truly speaking animal the constitution of his mind is separated from that of brutes by a wide gulf, which no process of evolution that advanced by small steps could possibly stride over. Now, if a single instance can be substantiated of a man thinking without words, all this anthropological theory, which includes the more ambitious part of his work, will necessarily collapse.

I maintain that such instances exist, and the first that I shall mention, and which I will describe at length, is my own. Let me say that I am accustomed to introspection, and have practised it seriously, and that what I state now is not random talk but the result of frequent observation. It happens that I take pleasure in mechanical contrivances; the simpler of these are thought out by me absolutely without the use of any mental words. Suppose something does not fit; I examine it, go to my tools, pick out the right ones, and set to work and repair the defect, often without a single word crossing my mind. I can easily go through such a process in imagination, and inhibit any mental word from presenting itself. It is well known at billiards that some persons play much more "with their heads" than others. I am but an indifferent player; still, when I do play, I think out the best stroke as well as I can, but not in words. I hold the cue with nascent and anticipatory gesture, and follow the probable course of the ball from cushion to cushion with my eye before I make the stroke, but I say nothing whatever to myself. At chess, which I also play indifferently, I usually calculate my moves, but not more than one or two stages ahead, by eye alone.

Formerly I practised fencing, in which, as in billiards, the "head" counts for much. Though I do not fence now, I can mentally place myself in a fencing position, and then I am intent and mentally mute. I do not see how I could have used mental