already irretrievably committed to a certain type of differentiation, but let us build up a phylogenetic series every step of which shall be a "working" adult animal with a mouth and all necessary parts. In such a series there should be no violent revolutions either in structure or in function, no awkward intermediate stages in doubt whether to eat with the mouth or the neuropore, or whether to digest with the brain or think with the stomach.

It seems reasonable to suppose that the common ancestor must have been an elongated creeping animal with anterior mouth, posterior anus, excretory nephridia, paired cœlomic sacs from the walls of which developed the germ-cells to be carried to the exterior by paired genital funnels, and with a nervous system consisting of an anterior very rudimentary brain and a subepidermal plexus, possibly with ill-defined longitudinal dorsal and ventral cords. Such an undifferentiated form might diverge, on one hand into an annelid, and on the other into a vertebrate, without violating any physiological or structural principles.

The author is so sincerely persuaded of the value of his views, has put them forward with such care, and discussed them so fairly, that they fully deserve to be seriously considered, although we believe that he has failed to prove his case. Moreover, the book contains many interesting pages, among which may be mentioned those devoted to the relation of the blastopore to the anus in the last chapter. E. S. GOODRICH.

Our Bookshelf.

Les Confins de la science et de la foi. Par l'Abbé Th. Moreux. Tome premier. Pp. iv+299. (Paris: Gaston Doin, 1924.) 7 francs.

M. L'ABBÉ MOREUX is the director of the observatory at Bourges, and is well known as a writer of credit of popular books on science, especially on astronomy. In the realm of natural science we obtain our knowledge by observation, experiment, and measurement. Hence, employing the principles of sound philosophy and right reasoning, we formulate the so-called laws of Nature. These are necessarily but partial and inadequate expressions, which are continually being changed with the progress of scientific research. We may instance the effect of the principle of relativity on Newtonian mechanics, and of the theories of Mendel on evolutionary hypotheses.

In the things of the spirit, however, in supernatural science, we rely upon authority, upon God the Revealer. These supernatural truths are believed through the gift of faith. This body of doctrines is fixed and immutable. It admits of development in this sense, that we see ever more and more its implications, its mutual relations, and its consequences. Consequently, and it is this Catholic point of view which is expounded by the author, which too is embodied in the decrees of the Vatican Council, there cannot be any real dissension between faith and reason. Otherwise the God of revealed truth, the Creator of all the marvellous processes we study and codify in the laws of Nature, would contradict Himself, which is impossible. It is extraordinary how very few dogmas of revealed religion even apparently contravene some of the hypotheses of some scientific men. In the development of this thesis the author gives us in various chapters an interesting and adequate account of the progress and hypotheses of modern science, both in the physical and in the biological order. We shall await with interest the completion of the work in the second volume.

The present work has been passed by the ecclesiastical censor, and bears the "imprimatur" of the Archbishop of Bourges. This only means that there is no statement in the book which is contrary to faith or morals. It does not imply that the opinions of the author, theological, philosophical, or on matters of natural science, are thereby approved; for example, his system of cosmogony. A. L. C.

Elementary Experiments in Practical Mathematics. By R. C. Fawdry. Pp. 61. (London: G. Bell and Sons, Ltd., 1922.) 1*s.* 4*d.*

Practical Mathematics. By V. T. Saunders. Pp. 46. (London: G. Bell and Sons, Ltd., 1923.) 1*s.* 6*d.*

(1) MR. FAWDRY'S little book is essentially a collection of laboratory notes dealing with experiments on elementary mensuration, loci in two-dimensions, some field work on "heights and distances," experiments on the principle of Archimedes and specific gravities, the construction of graphs to represent experimental results, the derivation of equations to represent such graphs, and some experiments on the calculus. It is not a text-book, but a laboratory manual. It is interesting to note that nearly all the experiments on the calculus are taken from army examination papers—a testimonial to these excellently conducted examinations.

(2) Mr. Saunders's book is very similar in object and scope, but it is very irregular as regards difficulty: thus compare Expt. 27 with that preceding it. A further fault is that in trying to avoid the use of mathematical formulæ the author is reduced to asking the learner to *memorise* a rule like this: "The specific gravity of a substance is the number of times a certain volume of it is as heavy as an equal volume of water." We older people think that these horrors of our youth are no longer used to torture innocent children.

S. B.

The Human Side of Fabre. By Percy F. Bicknell. Pp. viii + 340 + 4 plates. (London: T. Fisher Unwin, Ltd., 1924.) 10*s.* 6*d.* net.

ALL readers of Fabre's works should find a place for this book on their shelves. Mr. Bicknell has here given us a vivid portrait of a very remarkable man whose talents and intellect appear to bear no relation to those of his peasant ancestors. Neither environment nor heredity afford any clue to the origin of this celebrated "mutation," on whom the red ribbon of the Legion of Honour was conferred by Louis Napoleon. It is frequently thought that Fabre's attainments were confined to entomology: this, however, is far from the case, for he was at home in nearly all branches of natural science, and was no mean mathematician. An excellent frontispiece portrait enables the reader to visualise the incidents so skilfully described by the author.

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