

is a natural parent of gas engines, and it seems possible that some smokeless explosive might be used for driving motor-cars; for though the fuel would be heavy the mechanism might be simple, and the opportunity for varying the work done at each stroke very considerable, so that its adaptability to the circumstances of motor-car propulsion would be great.

The work is so full of interesting matter that it would be hopeless, in a short review, to call attention to the tenth part of its contents. Accounts of Egyptian, Greek, Roman and Alexandrian inventions are followed by accounts of those of the Byzantines, Arabians and of the Middle Ages. Science progressed slowly in these dark ages. Ten pages suffice for the whole of the inventions of Europe for this thousand years. While the energies of mankind were divided between fasting and praying for others, and fighting and preying on others, there was but little time or opportunity for the study of nature. With the sixteenth century the tide of evolution of the means of studying nature had begun strongly to flow. At first rising slowly it has in this last century come like the bore on the Amazon, almost overwhelming us with the rapidity of its development.

G. F. F. G.

OUR BOOK SHELF.

The Diseases of Children. By G. Elder and J. S. Fowler. Pp. xii + 391. (London: C. Griffin and Co., Ltd., 1899.)

FEW things show more clearly the advance made in the practice of medicine within the last thirty years than the way in which the diseases of children are now regarded as compared with the place assigned to them a generation or so ago.

It was thought then that to attend to the common ailments of women and children, those of children especially, was work that scarcely demanded the preparation of a complete medical curriculum. Even a professor of medicine at one of the leading universities had the courage within living memory to say publicly that a two years' course would be quite enough for successful practice "among women and children."

Nowadays all this has changed. It is universally recognised that the physiology and the ailments of men are not a whit more intricate than those of women, and that both are simpler than those of children. To treat young children successfully requires, not only all the training and knowledge every good practitioner ought to possess, but important additions. Some of these additions, moreover, are natural gifts which cannot be acquired by any amount of training or patience. To be able to read a child's nature easily is as much a gift as a fine ear for music. Some men and women have it, and many more are completely without it. To succeed as specialists in children's ailments it is essential not to be without it.

The work before us is intended mainly for students, and one of its aims is to show them how and what to observe. A large part of the book is concerned with the physiology of growth, of nutrition and of the nervous system. Many of the illustrations are specially good.

The sections devoted to the study of diseases of the various systems, digestive, circulatory, &c., suffer from the condensation necessary in a work of this size. It is a hopeless business to try to make pemmican attractive. But, on the other hand, pemmican has its uses, and a book small enough to be carried to the bedside in a hospital ward will often help a student more, for a time,

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than larger and more interesting works could do. These he will read later and with a mind more ready to appreciate them.

Fowler and Elder's manual will not displace Ashby and Wright's on the same subject, but it is a sound and trustworthy guide in a difficult department of medical practice.

Analyses Électrolytiques. By Ad. Minet. Pp. 170 (Paris: Gauthier-Villars, Masson et Cie, 1899.)

THIS handy volume, which appears as one of the "Encyclopédie scientifique des Aide-Mémoire," affords another indication of the continually increasing application of electricity to chemical analysis. About a third of the book is devoted to the description of apparatus used in electro-chemical analysis and to general considerations of a practical and theoretical nature. The latter contain certain inaccuracies which indicate that the author is not conversant with the advances made during the last decade, in regard to our knowledge of the nature of salt solutions on the basis of the theory of electrolytic dissociation.

The second and third chapters deal respectively with the analysis of metalloids and with the quantitative determination of the metals when present in solutions free from other metals. The fourth chapter treats of the separation and determination of the metals in a mixture; while the last is devoted to a few technical applications, such as the analysis of industrial copper, of bronzes, and of brass.

The practical portion of the book is clearly written; but on account of the lack of details in the case of a considerable number of the analyses, the book can scarcely be recommended to electro-chemical students for use in the laboratory.

Essais des Huiles Essentielles. By Henri Labbé, Ingénieur-Chimiste. Pp. 187. (Paris: Masson et Cie.)

THIS neat little volume, which forms part of the "Encyclopédie scientifique des Aide-Mémoire," published under the direction of M. Leauté, is intended as an introduction to the analysis of essential oils, substances which, according to the author, are very liable to adulteration.

The directions given for analysis are too general and brief to be of real utility to the practical analyst, but the properties of the pure products, compiled from Schimmel and Co.'s publications and from other trustworthy sources, are carefully tabulated, so that the book will at least be serviceable for purposes of reference.

Chemistry for Organised Schools of Science. By S. Parrish, B.Sc., A.R.C.S. With Introduction by Dr. D. Forsyth. Pp. xiv + 262. (London: Macmillan and Co., Ltd., 1899.)

THE course of experimental work described in this volume is designed for students in Schools of Science of the Department of Science and Art during their first two years of study. It is the outcome of experience, and represents the work which pupils from thirteen to fifteen years of age can do and understand. Following the reformed plan of teaching chemistry, the course begins with simple chemical manipulations, weighing, solutions, distillation, the preparation of common gases, composition of water and air, formation of salts, carbon and its oxides and a few organic compounds. In the second year's course easy quantitative experiments are given, and attention is paid to the laws of chemical combination, symbols, formulæ, &c. The halogens, sulphur and its compounds, the estimation of volume, are among other subjects dealt with. The test-tubing exercises, which once formed the chief part of the work of the student of elementary chemistry, are omitted altogether; and in their place we have a rationally constructed course of work, in which the intimate relation between chemistry