

feature of the work will commend it to the attention of those who are concerned practically with the carbonisation of coal, whether in gas manufacture, coke-oven work or tar distillation. They may not always agree with Prof. Lewes, but it will be admitted that he speaks as a well-trained chemist with the experience of a generation on practically every aspect of the subject, and that his opinions are fairly and temperately stated, such as becomes a man of science whose sole object is to elucidate the facts.

A commendable feature of the book is the excellence of the illustrations. Many of them are novel and all are of the character that experts will appreciate.

T. E. THORPE.

#### THE TRAINING OF GOLDSMITHS.

*Metalwork and Enamelling: a Practical Treatise on Gold- and Silver-smiths' Work and their Allied Crafts.* By Herbert Maryon. Pp. xiii + 327 + plates. (London: Chaoman and Hall, Ltd., 1912.) Price 7s. 6d. net.

THE abolition of the apprenticeship system of training and the establishment of technical institutions for the education of young goldsmiths and silversmiths have created a demand for text-books which have in view the wants both of technical students and of those who are already practically engaged in these crafts.

The modern practice whereby the worker in the precious metals confines himself to a single branch of the craft results in technical skillfulness and in cheapness of production, but its influence is definitely against the production of craftsmen who are masters of their art. There will, however, always be a demand, and we hope an increasing demand, for work executed throughout by one man—a man who can both design and carry the work through—and text-books which will assist in the production of such men are rendering great service to the ancient craft of precious metal working. The information must be given in a form not too academic, and expressed in language that the worker of ordinary intelligence can understand.

This book is an important addition to this class of technical literature, and will be of value not only to the student but to those already engaged in gold- and silver-smiths' work. It deals with metalwork and enamelling from the essentially practical and technical rather than from the artistic or historical point of view. The author has departed from the course adopted by most writers on the subject, which consists in describing in detail the making of single articles, such as a brooch, cup, or casket.

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The operations of soldering, raising, stone-setting, enamelling, &c., are fully discussed in a clear and concise manner, and the descriptions are accompanied by good illustrations.

Two chapters are devoted to a description of the materials and tools used, and to the making of small tools required for special work. The sharpening, hardening, and tempering of tools, which are matters of considerable importance to the craftsman, have also been dealt with. Designing, which is the essential basis of the gold- and silver-smiths' art, is ably discussed, and the method of teaching design adopted by Mr. Catterson Smith, at the Birmingham Municipal School of Art, for training lads who propose to enter the jewellery and metal trades is described and well illustrated.

Twenty-three plates illustrative of some of the finest examples of Greek, Etruscan, Renaissance, Celtic, and modern gold- and silver-smiths' work are given. These are taken from masterpieces exhibited in the British Museum and the Victoria and Albert Museum, and the publishers are to be highly congratulated on the excellent way in which these have been reproduced. The plates, which are fully described, will be of considerable assistance to students in studying the numerous styles of ornamentation, &c. A short chapter on the life and work of Benvenuto Cellini is appended.

A bibliography is given, but several important modern works have been omitted.

ERNEST A. SMITH.

#### GAS, OIL AND PETROL ENGINES.

*The Gas, Petrol and Oil Engine.* Vol. ii.: *The Gas, Petrol and Oil Engine in Practice.* By Dr. Dugald Clerk, F.R.S., and G. A. Burls. New and revised edition. Pp. viii + 838. (London: Longmans, Green and Co., 1913.) Price 25s. net.

THE first volume of this book, which we reviewed some three years ago (November 11, 1909), was devoted chiefly to thermodynamics. Dr. Dugald Clerk, with the help of Mr. Burls, has now issued the companion volume treating of the gas, petrol and oil engine in practice. The current volume is much bulkier than its predecessor, and is one calling more for the skill of an editor in its composition than for that of an author. "Practice" with gas, oil and petrol engines now covers such a ramification of diverse uses that it is exceedingly difficult to write any treatise on the subject which shall show at the same time breadth of knowledge and unity of conception; and it is characteristic of Dr. Clerk's writings that the former is always the more pronounced.