of his task he has been eminently successful. In his appeal to a wider public, it is to be hoped that the difficulties of "treating the wider and deeper generalisations of natural science as fit subject-matter for current thought and literature" will not deprive him of a further measure of well merited success.

T. M. L.

THE CYANIDE PROCESS.

Cyaniding Gold and Silver Ores. A Practical Treatise on the Cyanide Process; embracing Technical and Commercial Investigations, the Chemistry in Theory and in Practice, Methods of Working and the Costs, Design and Construction of the Plant and the Costs. By H. Forbes Julian and Edgar Smart. Pp. xx+405; illustrated. (London: C. Griffin and Co., Ltd., 1904.) Price 21*s.* net.

THE cyanide process is still in its teens, but it is a lusty stripling. Much of the enormous increase in the production of gold during the last few years is due to it, either directly or indirectly. There are few gold mines of any importance in the world at which the process is not installed, and it has been stated on high authority that the majority of these mines could not earn profits and pay dividends without its aid. Owing to the shortness of the time since the industry of cyaniding gold and silver ores began to spring up, there is a lack of data on the subject readily available to men at work far from centres of civilisation. There are many books on the cyanide process, but new ones are still welcome, particularly a work like that of Messrs. Julian and Smart, in which some degree of completeness is attained.

The authors were well equipped for their task, both having been engaged in the industry for a number of years. They have not, however, merely written down the results of their own practical experience, a course which usually leads to dogmatic assertion on doubtful points, but, on the contrary have studied the voluminous literature of the subject with evident care, and displayed some judgment in their extractions. If they had added a bibliography, one shudders to think of the portentous length it would have attained.

Not content with this, they have made a number of laboratory experiments on the dissolution and precipitation of gold, and advance views based on these which are in part novel and somewhat unsatisfactory. Exception may fairly be taken to this portion of the book, for whether these views are right or wrong, they are out of place in a text-book until they have been discussed adequately. To the practical worker, for whom this book is intended, theories are useful only if they explain and elucidate phenomena with which he is confronted in the mill, or enable him to decide on a course of action in unusual cases. Much of the authors' theorising does not appear to answer this test very well.

The book begins with an interesting, if not an impartial, chapter on the early history of the cyanide process. The authors next proceed to describe the laboratory experiments which are necessary to determine the method of applying the process to any particular ore. In the useful discussion on sampling, the omission of any reference to recent work is noticeable, and the account of automatic machines is hardly adequate.

The most serious omission in this section, however, is in regard to laboratory work in connection with a mill in operation. The examination of mill solutions for gold and other metals, for available cyanide, for oxygen, or for dissolving power is not touched on. The only reference to the matter is in the sentences:—

"It must however be understood that there is no relation between the (total cyanide) found present and the dissolving action of the solution on gold and silver. For this reason two different solutions containing by the test the same quantity of cyanide may have very different dissolving effects."

This would be cold comfort to anyone who wished to learn what he could of the methods adopted to determine the condition of a mill solution. The gap should be filled in a future edition.

The later chapters, dealing with the methods and machinery used in practice, form by far the most interesting and useful part of the book. The authors seem to be quite at home in describing the design and construction of leaching vats, precipitation boxes, pumps, launders, sizing plant, and all the accessories of a modern cyanide mill. The methods of treating different classes of material are also handled with skill and judgment, and are fairly up to date. It is not the fault of the authors that progress in the industry continues to be rapid, and that any description is behind the times almost as soon as it is printed. The book ends with a couple of excellent chapters on the cost of constructing plants and of treating ores, and the index has been carefully prepared.

The volume is handsomely got up, and enough has probably been said to show that the merits of the work so far outweigh its faults that those interested in the cyaniding industry cannot do without it.

T. K. R.

OUR BOOK SHELF.

Fireside Astronomy. By D. W. Horner. Pp. 105. (London: Witherby and Co., 1904.) Price 1*s.* 6*d.* net.

"THE articles which go to make up this little book originally appeared in the 'English Mechanic and World of Science,' and caused some discussion therein." This we read in the preface of the book before us, and we are further told there that this "simple worded treatise" is intended for the "man in the street."

A perusal of these pages will, however, tend to bewilder the mind of this very practical personage considerably, for the text is not a specimen of clearness, and the illustrations are very far from being self-explanatory; in fact, the latter are as bad as it seems possible for illustrations to be.

In justification of these statements it may be remarked that the zodiac is mentioned on p. 3 and *defined* on p. 14. On p. 4 we have a very ambiguous statement about the various altitudes of the sun at different *seasons* of the year, no reference being made

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