have uniformly given credit to the original authors, which is at once simple justice to them, and a convenience to the student who wishes to know the sources of the various data given. In a few cases translations or abstracts have been referred to as if they were original articles; but this slight failing only emphasizes the general excellence of the work. The book is well printed and freely illustrated throughout.

ALLEN HAZEN.

THE MINERAL INDUSTRY: ITS STATISTICS, TECHNOLOGY AND TRADE IN THE UNITED STATES AND OTHER COUNTRIES, TO THE END OF 1900. FOUNDED AND EDITED BY RICHARD P. ROTHWELL AND COMPLETED BY JOSEPH STRUTHERS, PH.D. Vol. IX. New York and London: The Scientific Publishing Company. xxx+918 pp. Price, $5.00.

This is the ninth annual volume of a series begun in 1892 and edited by Mr. Rothwell, who died on April 17, 1901. The series has contained information of great interest and value to the metallurgist. The present volume seems to maintain the high standard of excellence reached by those preceding it. Among the special articles contained in this volume, aside from the progress reports, are those on "The Emery Deposits of West Chester County, N. Y.," by E. C. Eckel; "Production of Bromine in Michigan," by A. C. Lane; "Calcium Carbide and Acetylene," by L. K. Böhm; "Clay and its Manufacture into Brick and Tile," by H. Ries; "The Manufacture of Water-gas, with Special Reference to European Conditions," by G. Lunge; "The Utilization of Blast-furnace Gases for the Direct Production of Motive Power," by G. Lgune; The Utilization of Lignite in Germany," by P. Krusch; "The Raritan Copper Works," by L. Addicks; "Diamondiferous Deposits in the United States," by W. H. Hobbs; "A Report on Iron and Steel Metallurgy at theParis Exhibition," by H. M. Howe; "Alloys of Iron," by H. Souther; "The Manufacture of White Lead," by P. C. McIlhaney; "A Review of the Tin Industry of the Malay Peninsula," by F. Owen.

During the year the industry increased in value $147,393,946. reaching the sum of $1,365,608,583. The total production of iron ore in the United States was 25,917,393 long tons, of pig iron 13,789,242 long tons, and of steel 10,218,572 long tons. This represents about one-third of the world's production. The coal product in 1900 was 52,131,212 metric tons antracite and 191,256,216 metric tons bituminous, a total of 243,414,163 (including cannel coal), and an increase of 14,696,584 tons over the total for 1899. The total excess of exports over imports was nearly 6,000,000 tons, an increase of about 1,750,000 tons over 1899. Our coal forms now about one-third of the world's production.

Our copper product in 1900 was 600,832,505 lbs., an increase

of 20,000,000 pounds. This is more than half the world's product. Of lead we produced 411,568 short tons, and of zinc 123,231 short tons.

Nearly all our potassium chlorate, about 6,000,000 pounds per annum, is now manufactured at home by electrolytic processes. We are the largest producers of salt (in 1900 20,738,729 barrels of 280 pounds), of gold (3,781,310 ounces), of silver (59,561,797 ounces), of phosphate rock (1,663,476 net tons), and second only to Russia in petroleum output.

This year has witnessed a great increase in the cement industry (7,991,639 barrels of Portland cement). Of the Portland cement three-quarters is produced in the states of Pennsylvania and New Jersey. The opinion is expressed that the cheapest producing territory is likely to be found in the Lehigh Valley where the industry has already had enormous development.

It is quite impossible in the space available to give an adequate idea of the vast amount of data of all sorts contained in this magnificent report of progress. E. H.

AN ELEMENTARY TREATISE ON QUALITATIVE CHEMICAL ANALYSIS. By J. F. SELLERS, A.M., Professor of Chemistry, Mercer University, Georgia. Boston: Ginn & Co. 1900. ix + 160 pp.

Within the compass of 137 pages, the author seeks to present "a course both practical and progressive * * * selected from the most recent and approved methods * * * free from the mechanical schemes in qualitative analysis * * * and conformable to the modern dissociation theory of solutions and giving * * * more than ordinary emphasis to the spectroscope."

The reviewer has read the various chapters with great interest. The impression made is that almost too much has been attempted, and that comparatively few of the students, who may pursue the course from beginning to end, as it is presented, would really become "practical analysts" or be thoroughly prepared "for advanced university work." From the reviewer's experience to attain to either of these states, would require a decidedly more exhaustive and thorough drill than seems to be intended by the author. It is hardly likely, for example, that a beginner, in carrying out the instructions for the decomposition of an insoluble silicate by the J. Lawrence Smith method, as described on page 133, would meet with much success, because of a lack of detailed directions as to how he should proceed. Other and similar instances of incomplete descriptions of analytical methods exist but they need not be pointed out, as the teacher and student will of course discover them for themselves. It only remains to say that the book is well written and will doubtless be acceptable to those who do not lay great stress upon drill in analysis.

EDGAR F. SMITH.