

be said of them that he has "so presented his ideas that they may be apprehended with the least mental effort," instead of clouding them in circuitous phrases and intricate mathematics, as seems to be the fashion of late in the writing of technical books.

ELEMENTARY LESSONS IN STEAM MACHINERY AND THE MARINE STEAM-ENGINE, with a Short Description of the Construction of a Battleship. Compiled for the use of junior students of marine engineering, by Staff Engineer J. Langmaid, R.N., and Engineer H. Gaisford, R.N. New edition, revised and enlarged. London and New York: Macmillan & Co. $8\frac{1}{2} \times 5\frac{1}{2}$ in., 261 pp.

These "Elementary Lessons," the authors tell us, "were prepared for the naval cadets in H. M. S. *Britannia*, and represent a systematic course of simple instruction preparatory to a more thorough study of the whole subject."

Under the guise of this rather formidable title and pretentious announcement, the authors and publishers have given the public a lot of what may be called engineering twaddle, and if this is the basis, as the authors say it is intended to be, of the instruction of the naval cadets in H. M. S. *Britannia*, they are deserving of sympathy.

As an example of the sort of intellectual food prepared for them, the following is an example: "In constructing steam or other machinery, measurements are usually made in feet, inches, and fractions of an inch, and these measurements must be very accurate and exactly adhered to." Are the cadets in the British Navy in the habit of thinking that steam machinery is measured by the yard, furlong, mile, or French meter?

Again it is said: "Cylindrical surfaces are measured by gauges, 'ring,' and 'plug,' similar to those represented in fig. 1." This is not true; such gauges are not used for measuring cylindrical surfaces, but only as standards of reference, from which the correctness of the measuring tools or instruments may be verified.

"Truly flat surfaces," it is said, "are insured by the use of 'straight edges' and 'surface plates.'" If the authors had here explained how to use straight edges in order to make a flat surface, and how the inaccuracies in one flat surface can only be corrected by comparing or testing it with two others, they would have been giving the cadets valuable information. The book hardly merits serious review. To tell a student that "a screw may be defined as a cylindrical bar on which has been formed a helical projection or thread," is giving an explanation which is harder to understand than the thing explained.

The book might, perhaps, somewhat coarsely, be described as mechanical hash—that is, it is a lot of fragments which have been thrown together without system and often, apparently, without purpose. The only features which can be commended are the printing and engraving. Both of these are excellent. Apparently the authors procured the services of a good mechanical draftsman, who supplied the illustrations. It is to be regretted that he did not write the book.

MAPS OF THE UNITED STATES GEOLOGICAL SURVEY. We have received from Mr. J. W. Powell, Director of the United States Geological Survey, 12 sheets of maps representing that part of the State of New York and a part of Connecticut adjacent to the Hudson River. These maps are drawn to a scale of 1-62,500, or a little more than an inch to a mile. They are approximately $17\frac{1}{2} \times 13$ in. in size, so that each map represents an area of about 227 $\frac{1}{2}$ square miles. The maps are drawn with the care and have the beauty which is characteristic of the work which comes from this department. The streams and other bodies of water are represented by blue lines, the topography by contour lines printed in brown or bronze-colored ink, and the roads, boundary lines, and lettering in black. They are exquisite examples of this kind of work, and what is of more importance, their correctness is authenticated by the United States Geological Survey and the State Engineer and Surveyor of New York. These maps are made by the co-operation of the Department at Washington and the State of New York, Congress and the State Legislature having each made an appropriation to meet the expense, and we are informed that the same thing has been done in the States of Connecticut and New Jersey.

Most of the sheets before us were engraved by the United States Geological Survey, one by Evans & Bartle, and the others by Julius Bien & Co., of New York. All the maps were made under the authority of the Director of the United States Geological Survey, J. W. Powell, Martin Schenck, Chief Engineer of the State of New York, Henry Gannett, Chief Topographer, H. M. Wilson, Geographer, in charge. The

topography of different maps was by Frank Sutton, J. H. Jennings, G. L. Johnson, E. B. Clark, J. W. Thom, Robert Muldrow, R. D. Cummin, and W. M. Beaman. The triangulation was from the United States Coast and Geodetic Survey, New York State, and New York Aqueduct Commissioners' Surveys.

NEW ATLAS OF THE STATE OF NEW YORK. In connection with the previous notice it may not be out of place to mention that Messrs. Julius Bien & Co. have in contemplation the publication of an atlas of New York, which will fairly represent the greatest State in the Union, which, it may be added, no atlas yet published has ever done. We had the privilege of inspecting some of the advance sheets of this map, and think we are authorized in confirming the publishers' statement that it will be the most complete atlas of this State ever published.

It will contain a general map of the United States, showing State boundaries, principal cities and towns, river systems, railroads, etc. A general map of the State, showing county boundaries, railroads, canals, and all important cities and towns; also the new proposed State Park in the Adirondacks. A temperature map, showing mean annual temperature. A rainfall map, showing average annual rainfall. A population map, showing density of population. A hypsometric map, showing elevations. Also a large map showing original land grants, patents, and purchases throughout the State. These will be followed by detailed maps of each county on large scale, showing city and township boundaries, post-offices and villages, public roads, lakes, rivers, railroad lines and stations, with altitude where obtainable. The lot lines of the original land patents in the State will also be given (where obtainable), from the latest authentic data, most of which have never before been published. An alphabetical list of counties, townships, cities and villages, with population from last census, will be given, and all railroad stations, telegraph, express and post-offices will be appropriately designated.

'THE IRON FOUNDER' SUPPLEMENT. A Complete Illustrated Exposition of the Art of Casting in Iron. Comprising the Erection and Management of Cupolas, Reverberatory Furnaces, Blowers, Dams, Ladles, etc.; Mixing Cast Iron; Founding of Chilled Car-Wheels; Malleable Iron Castings; Foundry Equipments and Appliances; Gear Molding Machines; Molding Machines; Burning, Chilling, Softening, Annealing, Pouring and Feeding; Foundry Materials; Advanced Molding; Measurement of Castings; Wrought Iron, Steel, etc. Also the Founding of Stations; the Art of taking Casts; Pattern Molding; Useful Formulas and Tables. By Simpson Bolland, Practical Molder and Manager of Foundries. $7\frac{1}{2} \times 5$ in., 392 pp. New York: John Wiley & Sons.

As indicated by its title, this book is a supplement to the author's earlier book, "The Iron Founder." The supplement begins with a chapter on the Evolution of the Iron Founder's Art, which is followed by one on Blast Blowers, which gives a description of the several kinds of blowing engines used in the past, as well as some of those in use at the present day. Among the latter the Sturtevant, the Mackenzie, and the Root blowers are illustrated and described. The chapter on Mixing Cast Iron, with the description of its chemical composition, it is feared, will not be of very material help to practical founders. Underlying the descriptions the author seems to entertain the idea that mixing iron is a great mystery, and the reader is left in doubt whether it has all been revealed to him. The chapter on Foundry Cupolas is very clear, but might have been fuller. A defect in the book is that no titles are printed with the engravings. In looking through a book of this kind, the "looker" often wants to know what a given illustration represents without reading the whole description of it. Titles to engravings are a great help in doing this. In these days of overmuch literature, the number of people who look through books and *don't* read them is much larger than those who *do* read them. The demands of the former class ought to be regarded. In the chapter on Reverberatory or Air Furnaces their characteristic features are not sufficiently explained. A little elucidation of the construction and operation of each would be a great help to students who are not practical founders.

The subjects treated are: Casting One Hundred Tons of Iron, showing the construction and use of the necessary equipment for pouring heavy castings, dams, receivers, air furnaces, ladles, with table of capacity, runners, etc.; Castings, how to obtain their measurement and secure their weights. In this latter chapter there is a long dissertation on arithmetic, men-