portant properties, partly because of the advantage, when presenting the analytic method to the student, of applying it in the first instance in the systematic study of a few interesting curves. In deference to usage, a chapter on the circle is introduced immediately after that on the straight line; but, if experience is to be trusted, it is better in a first course to proceed from the straight line directly to the parabola, so that, as early as possible, the student may get the impression which comes from seeing a method employed in the investigation of new material. The part of the book devoted to solid geometry is more extended than is customary in elementary textbooks; but it is desirable that the material here given should be easily accessible to students. Although intended as a college textbook, the present work follows the fortunate modern tendency toward the practical and forms as good a treatise upon the subject as possible for the non-collegiate student.

A Manual of Practical Assaying. By the late H. van F. Furman. Revised and enlarged by W. D. Pardoe. 497 pp.; 8vo. New York: John Wiley & Sons, 1909. Price, $3.

This standard work on assaying has, in the new (sixth) edition, been thoroughly revised and brought up-to-date. The chapters on zinc, water, and coal analyses have been rewritten, and minor changes have been made in certain parts due to the description of new methods. Because of their increasing importance commercially, chapters have been added on the assay of telluride ores, tungsten, molybdenum, and vanadium. On the latter important subjects the reputation of the work as one of the leading text-books on the subject has been completely maintained and the usefulness of the whole enhanced.

Structural Details. Elements of Design of Heavy Framing. By H. S. Jacoby. 368 pp.; 8vo.; 6 folding plates and 34 full-page ill. New York: John Wiley & Sons, 1909. Price, $2.25.

The title of this volume corresponds to a course of instruction conducted by the author in the College of Civil Engineering in Cornell University during the past nineteen years. In this course the students receive their first instruction in the application of the principles of mechanics to the design of the details of structures. Experience has shown that in many respects problems involving timber construction are better adapted for this purpose than if confined to structural steel. It may appear at first as if too much attention to details is given in the examples on the design of joints, beams, and trusses. The author believes, however, that the importance of careful study of every detail can only thus be properly emphasized. In practice it seems to be the exception rather than the rule to give the same attention to details of timber structures as to those of steel. In the interest of sound engineering practice it is essential that all connections and details have the same degree of security as the framed members. In several articles the order of design is given in full, with a view of economizing the time of the student, and of promoting systematic habits in making the computations required, these objects being regarded as important elements in efficient engineering education and practice. Whereas the book is intended for college use, much of it is so written as to be intelligible without the mathematics involved and valuable to the practical carpenter or builder desirous that his work shall be on sound principles or interested in the theory upon which are founded the rules of his practice.

The Internal Combustion Engine. By H. E. Wimperis. 320 pp.; 8vo.; fully ill. New York: D. Van Nostrand Company, 1909. Price, $3.

This is the first treatise on gas, oil, and gasoline engines we have seen which goes as thoroughly into the subject both theoretically and practically as do the best text-books on the steam engine. The author traces the energy that drives our engines all the way from solar heat and molecular action to the uses to which the modern internal combustion engine is applied, covering sufficiently the laws of thermodynamics, the chemistry of combustion and explosion, the best design in gas engines and producers, and oil and gasoline engines. The final chapter on gasoline engine efficiency and rating is the best we have seen on this much debated question, and is in so far practical and helpful to the amateur and the sportsman as to discuss the modification of accepted ratings which should be made in hill-climbing and other automobile competitions.

Henry Hudson. A Brief Statement of His Aims and Achievements. By Thomas A. Janvier. To which is added a newly discovered partial record, now first published, of the trial of the mutineers by whom he and others were abandoned to their death. New York and London: Harper & Bros. 148 pp.; 12 ill.; 16mo. Price, 75 cents.

The Hudson-Fulton Celebration has aroused keen interest in the life of one of the most romantic characters among the explorers and navigators of the sixteenth and seventeenth centuries. The book before us is divided into two parts, the first consisting of a brief sketch of the life of Henry Hudson, and the second dealing with newly-discovered documents. The latter have remained neglected for three centuries, and are here published for the first time. The discovery of these documents is due to Dr. R. G. Marston, M.A., as a result of a search in the Record Office in London. The story of the trial is of great interest, but of little satisfaction, inasmuch as we are ignorant of what punishment, if any, was inflicted upon the mutineers of the "Discovery." The importance of these documents is that they establish the fact (until now not established) that the mutineers were brought to trial, and that they embody a sworn testament, hitherto unproduced, of six members of Hudson's crew concerning the mutiny. The illustrations include no portrait of Hudson, since the author is satisfied that no authentic portrait of the man is in existence. Outside of the new documentary evidence above referred to, the narrative of Hudson's life is a condensation of the facts that have been recorded by Hudson's authoritative biographers, notably Purchas, Gerritz, Van Meteren, Asher, Murphy, Brodhead, and Read.

Machine Shop Drawings. Reading Drawings, Making Shop Sketches, and Laying Out Work. By Fred H. Colvin, A.S.M.E., F.I. New York: McGraw, Hill Book Company, 1909. 16mo.; 139 pp. Price, $1.

This little book is intended to be a help to those who do not thoroughly understand the reading of drawings, rather than an attempt to teach drawing in itself. It shows how seen and unseen portions are represented, the use of full and dotted lines, the way in which different views are drawn, and how to study them all so as to secure a correct idea of the shape of the piece represented. Many actual examples are given from the drawing-room practice of the leading shops in this country, and the meaning of each carefully explained. The book is an eminently practical one and is illustrated by well-executed engravings, the wax process, which is the only suitable one for the purpose, being used.

A Book of Fourth-Dimension Essays.

The subject of the fourth dimension seems to have aroused so much interest among the readers of the Scientific American that we have decided to publish in book form the prize essay, the three essays that received honorable mention, and about sixteen of the best essays which were submitted in the recent Fourth Dimension Contest. The entire collection will be edited by Prof. H. P. Manning, who will prepare an introduction of considerable length, in which the subject of the fourth dimension will be simply and lucidly discussed. The book will be ready about the latter part of December.

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