

line cars of 1904 are fully illustrated and described in the five hundred illustrations contained in the new edition. A few modern foreign machines also are illustrated, and several parts of the book contain snatches of ancient and the more modern automobile history.

The contents might be summarized as briefly the theory involved in the different classes of automobiles, namely, steam, electric and gasoline; general discussion of different forms of constructions of the principal parts of vehicles; and brief details of the typical vehicles of the latest construction. The book is well indexed.

Maxwell's Theory and Wireless Telegraphy

By Frederick K. Vreeland. Published by the McGraw Publishing Company. Cloth. 255 pages. 145 illustrations. 6 x 8½ inches. Price, \$2.

This book is divided into two parts, the first of which is a very good translation of H. Poincaré's work, "Maxwell's Theory, and Hertzian Waves"; the second part is devoted to an essay on "The Principles of Wireless Telegraphy," by the translator and author. The avowed object of Part I is to give a physical treatment of Maxwell's theory and its application to some modern electrical problems, from which to derive a practical understanding of the essentials of wireless telegraphy.

The subjects are treated in everyday language, and mechanical analogies and diagrammatic illustrations are employed in place of mathematics to simplify and elucidate the explanation of what are usually considered rather abstruse problems. Among the subjects thus treated, for example, are electrostatic phenomena; Maxwell's theory; Hertz's oscillator; imitation of optical phenomena, and wave length and multiple resonance. Students unfamiliar with the French language will appreciate the translator's pains to place Poincaré's work within their reach, in virtually its original shape.

On page 94 and elsewhere in the translation occurs the expression "Thin films." Without having the original before us, we cannot be certain as to the accuracy of this translation, but we should say that the expression belongs in the same category with "hollow tubes," "mental acumen," "acumen of mind," "slow speed," and the like, against which Messrs. Lockwood, Maver and Crocker, respectively, have inveighed.

In Part II Mr. Vreeland gives an interesting and important addition to

Book News

Self-Propelled Vehicles

A Practical Treatise on the Theory, Construction, Operation, Care and Management of all Forms of Automobiles. Second edition, 1904. By J. E. Homans, A. M. Size, 8 x 5; pp. 650. Publishers, Theo. Audel & Company. Price, \$2.

Mr. Homans' book is intended to give practical information to those not having the time or inclination to study the mechanics of anything except their own automobiles. It furthermore is intended to give principles of theories involved in automobile designs of various types, and to explain their construction and operation, and to do this briefly but explicitly. It illustrates the constructions used on va-

rious automobiles of 1904. A large portion of the book is of direct interest to owners of vehicles, while the balance is particularly interesting to the more technically inclined, or students of the art.

The first edition of this book appeared in 1902, and gave the impression of championing the steam-propelled road vehicle. A material change is evident in the present second edition, reflecting most markedly the transposition in importance of steam and gasoline automobiles which has taken place in the past three or four years. A large number of what may be considered typical American gaso-

the literature of wireless telegraphy, especially as relates to the development of the art in its essential features—as the author explains. In this part of the work chapters are devoted to the grounded oscillator, the propagation of grounded waves, the receiving apparatus, selective signaling, etc., all of which subjects are treated in a clear and comprehensive manner. It is a curious fact that on page 189 the author claims the credit for the development of the electrolytic detector, which is now a bone of contention between Fessenden and De Forest. In the index this is termed the “Vreeland Electrolytic Detector,” so that we are not left in doubt as to the author’s claim. The discovery of this detector is already credited to Schloemilch and to Pupin, as well as to the others named, and unless an authoritative decision is shortly given on the subject, there may soon be as many claimants for the discovery of this device as for the authorship of “Beautiful Snow.”

The work is not intended as a handbook of the subject, and consequently no attempt is made to describe the various systems of wireless telegraphy that have been invented, that being left for others. The interested reader will, however, find much information of value within its pages. The typography is excellent and the diagrams are well designed and reproduced.

The Up-to-Date Hardwood Finisher

By Fred T. Hodgson, architect and editor of the “National Builder.” Published by Frederick J. Drake & Company. 209 pages. Illustrated.

In this book the author has extended the limits of his manual on “Hardwood Finishing,” prepared about twelve years ago, and added more to the subject of wood preparation. The title is somewhat misleading, as the book gives general instructions in finishing woods of all kinds—hard and soft. Directions are given also for finishing the raw wood, making it ready for the finisher or varnisher and polisher, together with formulæ for mixing the materials and applying them to the prepared wood. Descriptions are given of the tools required, methods of using and how to care for them.

Scientific American Reference Book

Compiled by Albert A. Hopkins and A. Russell Bond. Published by Munn & Company. 516 pages. Illustrated. Price, \$1.50.

This book is the result of the queries of three generations of readers of the “Scientific American,” and covers a wide range of topics, as evidenced by the subjects of the chapters. In Part

I., covering 398 pages, are included the progress of discovery, shipping and yachts, navies, armies, and railroads of the world, population of the United States, education, libraries, printing and publishing, telegraphs, patents, manufactures, departments of the Federal Government, post office, international institutions and bureaus, mines and mining. Part II. devotes 44 pages to geometrical constructions, machine elements and mechanical movements. Part III. treats of chemistry and astronomy in 22 pages. Weights and measures in Part IV. take up 36 pages. The work has been made as non-technical as the subjects treated of will admit, and is intended as a ready reference book for the home and the office. Many statistics are presented in the form of illustrations and diagrams supplemented by figures, after the manner of treatment familiar to the readers of the “Scientific American.” Thus a comparison of the railways of the world is shown in one case by locomotives of characteristic designs of the principal countries, and the size gives the relation of the number of miles of track in the various countries.

Alternating-Current Engineering Practically Treated

By E. B. Raymond. Published by the D. Van Nostrand Company. Cloth. 240 pages. 102 illustrations. 4 x 5½ inches. Price, \$2.50.

There is a class of text books which among self-taught students are known as “the well-known manner” books, from the fact that at the critical point of an explanation the author ends it by saying “and the result is obtained, or the operation occurs, in the well-known manner,” that “manner” being exactly what the student is most desirous of knowing. The book before us is not of that class. Indeed, it stands out, as comparatively few technical books do, as one in which the author evidently takes pains to make the “well-known manner” unavoidably clear to the student. For example, where the author is defining impedance, he states, “the reciprocal of the impedance is called admittance. Thus the admittance is the current flowing in a circuit with one volt applied. Thus admittance times volts = amperes.” Again, further on, he says, “One property of great importance is a value called its square root of mean square; that is,

$\sqrt{\text{mean square}}$,

which is, as the name implies, the square root of the average of the squares of all the values.”

On the other hand, the author is not always conventional. On page 9 he

states:—“It was discovered some time ago that if a wire were moved to cut across the magnetic flux which has been described, etc.” He might have said, conventionally, “In 1832 Faraday discovered, etc.” But authors of text books, like other authors, must be allowed to tell their stories in their own way.

The subject matter of the book is divided into two parts. The first part treats of “The General Subject of Magnetism and Alternating Current”; the second treats of “Modern Alternating-Current Apparatus.” In the first part, magnetism, permeability, electromotive force, self-induction, impedance, hysteresis, and other related subjects are discussed. In the second part, transformers, alternating-current motors, the repulsion motor, the alternating-current generator and other types of alternating-current apparatus are considered, together with a chapter on testing.

The author, in his position as director of the students’ course in practical engineering in one of the largest electrical manufacturing concerns of this country, has had excellent opportunity to ascertain the needs of students and, as he states in his exemplary brief preface, has had impressed upon his mind the necessity for a general treatise on alternating-current engineering, presented in a simple and practical way, and the book under consideration is the successful outcome of his endeavor to supply such a treatise. If we have any suggestion to make, it is that the title might quite appropriately have been “Alternating-Current Engineering, Simplified and Practically Treated.”

While mathematics are employed in the book, they are not at all complex, and the graphic method has been followed in the illustrations, which, by the way, are well executed. We can cordially recommend the book as a text book to students, and as a work of reference for the library of the electrical engineer.

Notes on Track Construction and Maintenance

By W. M. Camp. Published by the author. Second edition, revised. Size, 6½ x 10 inches. 1214 pages and 620 illustrations. Price, \$3.75; cloth, bound in two volumes, \$4.

The author, the editor of the “Railway and Engineering Review,” has treated the construction and maintenance of railroad track from the standpoints of both the trackman and the engineer. This would seem to be the logical method of handling the subject, as a thorough trackman must necessarily be able to understand some of the principles of engineering, and a

knowledge of some of the important details of track work is essential to the qualifications of a track engineer. The book is addressed to those who are in need of a thoroughgoing treatment of details as well as of general principles. The descriptive matter and illustrations treat of work, methods or appliances in actual service, and the discussions of practice are based upon experience.

The general scope of the book includes information on the track proper, such as materials, laying, ballasting, curves, switching arrangements and appliances, maintenance, double-tracking, track tools, work trains, miscellaneous and organization. Supplementary notes and tables occupy 60 pages, and an index of 18 pages concludes the work. One particular object in view has been to cover as widely as possible the development of labor-saving machinery in connection with track work.

**Moody's Manual of Corporation
Securities. Fifth Annual
Number, 1904**

By John Moody, editor. Published by the Moody Publishing Company. 2370 pages. Price, bound in cloth, \$10 per copy; in flexible leather, \$12 per copy.

This annual statistical publication is a reference book for American investment securities of every nature, embracing information on practically all the industrial, gas, electric light, electric railway and steam railroad corporations in the United States, Canada and Mexico. Each corporation is described as to statistics and property owned and controlled, capitalization and bonded debt, dividends paid, financial condition and earnings, officers, managers and directors, location of plants, offices, etc. The statements vary in fullness, according to the size and importance of the corporation involved. The volume is likely to be particularly useful to the banker, broker, corporation lawyer and general investor, as well as to all who are in any way interested in corporation finance or the general evolution and growth of twentieth century industrial conditions.