



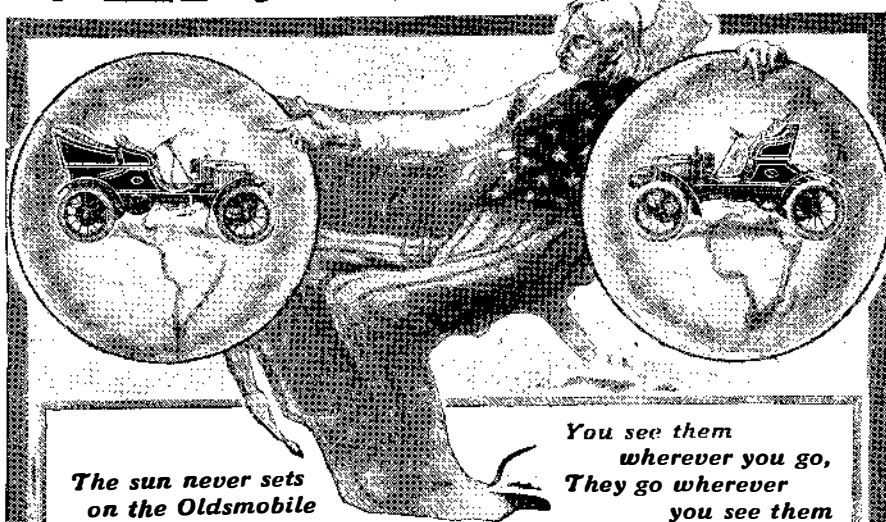
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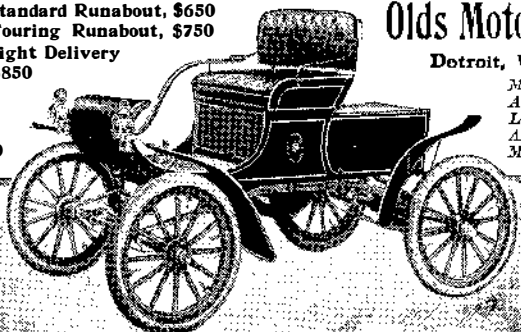
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NEW BOOKS, ETC.

SUBMARINE NAVIGATION PAST AND PRESENT. By Allen H. Burgoyne, F.R.G.S. Illustrated. Two volumes. London: Grant Richards. New York: E. P. Dutton & Co. 1903. Price, \$10.

Mr. Burgoyne's book, although primarily a history of submarine navigation, may be considered a strong plea for the more general introduction of the submarine boat in the British navy. Starting with the mythical attempts of the ancients at submarine navigation, the author passes to more modern times and discusses the inventions of such pioneers as Van Drebel, Norwood, Borelli, Bushnell, and other historic inventors. Although Americans have been behindhand in the development of the submarine boat, despite the inventions of Holland and Lake, still it must be said that the first successful attempt to use the submarine in modern warfare is to be found recorded in the annals of our Civil War. Mr. Burgoyne has not confined himself to a description of actually built submarines, but has even given accounts of craft that have never developed beyond paper. Many of these designs are mere fantasies, mechanically bad, and often displaying anything but a clear conception of the needs of submarine craft. Particularly valuable in this book are the chapters dealing with the development of the Holland and the Lake submarine boats. They, at least, show how success may be attained. Altogether, Mr. Burgoyne has succeeded in presenting a highly instructive book upon a subject with which most of the navies of the world are now concerning themselves.

MY AIRSHIPS. By Alberto Santos-Dumont. New York: The Century Company, 1904. 12mo.; pp. 400; 75 photographs and diagrams. Price, \$1.40.

It can hardly be said that Mr. Santos-Dumont's book is a scientific work on aerial navigation. All that he has done is to tell in a very breezy, entertaining way the story of his airship experiences, outlining his career as an aeronaut from the time that he made his first balloon ascent to the time he built the Santos-Dumont No. 10. The book is frankly written for the man in the street. Still, many of the adventures which Mr. Santos-Dumont describes shed a flood of light upon the mistakes that are very frequently made in the construction of dirigible airships. Particularly is this true of the account of the collapse of one of the first, if not the first airship, that Santos-Dumont built. He dwells instructively upon the lessons which that accident taught him and upon the way in which it influenced the construction of his subsequent vessels. The book as a whole is striking, bright, and instructive.

LES AMALGAMES ET LEURS APPLICATIONS. Par Léon de Mortillet. Paris: Librairie Bernard-Tignol. 8vo.; pp. 52.

ENTROPY, OR, THERMODYNAMICS FROM AN ENGINEERS' STANDPOINT, AND THE REVERSIBILITY OF THERMODYNAMICS. By James Swinburne. Westminster: Archibald Constable & Co., Ltd., 1904. 8vo.; pp. 137. Price, \$1.80.

This volume is made up of a series of articles printed last fall in Engineering, and dealing with the oft misunderstood subject of entropy. Instead of treating this subject in the usual mathematical and, to most people, vague and puzzling way, Mr. Swinburn has looked at it from a common-sense point of view and has used language (not figures) intelligible to the ordinary lay mind. The treatment of the subject, which is somewhat novel in order to make the theory clear, is along lines laid down in a paper on "The Reversibility of Thermodynamics," found at the end of the book. This paper was read before the British Association last year for the purpose of drawing out the criticism of men well up in the subject; but it resulted in very little discussion, and so the author considers the views set forth in it to be approved. The book is well written and concise, and will be found useful to engineers generally who desire enlightenment on this somewhat obscure subject.

THE METALLURGY OF STEEL. By F. W. Harbor, Assoc. R.S.M., F.I.C. With a Section on The Mechanical Treatment of Steel. By J. W. Hall, A.M. Inst.C.E. London: Charles Griffin & Co., Ltd. Philadelphia: J. B. Lippincott Company. 1904. 8vo. Pp. 258, 595 cuts. Price, \$9.

The subject matter of the book is divided into four sections, which treat of (1) The Manufacture of Steel; (2) Reheating; (3) The Mechanical Treatment of Steel; and (4) Finished Steel. Section I. describes the theory and practice of steel manufacture, special attention being given to recent developments in the same both here and abroad. The latest types of steel furnaces, gas producers, mechanical appliances, Bessemer and open-hearth and crucible plants are fully described and illustrated. Sections II. and III. describe the treatment of the ingot and the appliances used in shaping it into the finished section. The third section, by Mr. Hall, treats of the rolling, hammering, forging, wire-drawing, and fluid compression of steel, and includes detailed descriptions of the latest modern rolling mills, hammers, forging presses, and other labor-saving devices in common use. The section on Reheating contains a description of the



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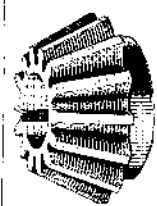
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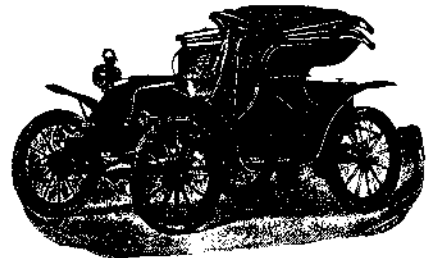
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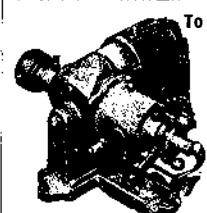
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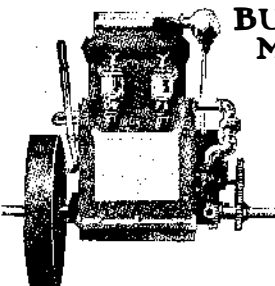
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most recent type of coal- and gas-fired re-heating furnaces, mechanical chargers, and various appliances for handling the materials at the reheating furnaces and transferring them to the mills. Section IV. describes the properties of finished steel. The influence of impurities on the mechanical properties of steel is thoroughly discussed, as is also the important subject of its heat treatment and the pyrometers used in connection with the same. The relation of microstructure to heat treatment is fully illustrated by numerous micro-photographs, and the latest theories on hardening, tempering, and other matters of much interest and importance are discussed. The question of specifications, both as regards chemical composition and mechanical properties of various steels, is treated in an appendix. Other appendices contain valuable matter on the relation of percentage of carbon to tensile stress, and on the rapid determination of phosphorus and manganese.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending April 26, 1904.

AND EACH BEARING THAT DATE [See note at end of list about copies of these patents.]

Table listing inventions and their patent numbers. Includes items like 'Adding and recording machine, A. S. Dennis', 'Adjustable protective frame, A. L. C. Marsch', 'Air brake train pipe testing device, W. S. De Camp', etc.

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Continuation of the Index of Inventions table, listing various patents and their numbers, such as 'Coil, radiating condensing, R. Jardine', 'Column, metallic, E. Ohnstrand', 'Combustion structure, G. C. Savage', etc.