

arranged so that it may lift a small armature. Supposing that a dilute acid be poured into one of the arms, will a current flow through the bridge and will it be sufficient to lift the small armature? I intend using a small relay to lift a heavier armature; also a glass vessel for holding the water and carbon electrodes. A. The question you ask regarding a water resistance has only the answer that the current will lift the armature of an electro-magnet if you make it strong enough. The only way to determine the matter is to make the experiment. 2. Can a small dynamo be used for charging a condenser or, in other words, is it possible to charge a Leyden jar to the same capacity as with a frictional electric machine, by a direct continuous current? A. A dynamo will charge a condenser to its own voltage and no higher. It may be 110 volts, or some other voltage. When that is reached the action stops. As a friction machine has many thousands of volts in its spark, it can charge a condenser to a much greater height than a dynamo can do. An alternating current will not charge a condenser; a continuous current will do so.

NEW BOOKS, ETC.

THE WAR IN THE AIR AND PARTICULARLY HOW MR. BERT SMALLWAYS FARED WHILE IT LASTED. By H. G. Wells. New York: The Macmillan Company, 1908. 12mo.; 395 pages. Price, \$1.50.

The author leads up to a peculiar situation in which the cockney hero finds himself marooned on Goat Island with the bridge to the American shore destroyed by the wreckage of a dirigible balloon, and cut off from the main land by the swirling Rapids. The hero, however, succeeds in getting hold of a damaged Japanese "heavier-than-air" machine and escapes. The book is filled with the most romantic, but not altogether impossible incidents. There is no question that the dirigible balloon and the heavier-than-air machine are both destined to play a very important part in the wars of the future. Mr. Wells writes as entertainingly as ever and is never unscientific. It must be said that his knowledge of New York geography is impeccable.

THE TEMPERATURE-ENTROPY DIAGRAM. By Charles W. Berry. New York: John Wiley & Sons, 1908. 12mo.; 300 pages, 109 illustrations. Price, \$2.

In the revised edition of the Temperature-Entropy Diagram a more extended application of the principles of the T-phi analysis to advanced problems of thermo-dynamics has been made than was possible in the limited scope of the previous edition. The chapter on the flow of fluids has been entirely rewritten and treats at length various irreversible processes. A graphical method of projecting from the p-v into the T-phi plane has been elaborated for perfect gases and its application illustrated in the chapters on hot-air engines and gas engines. The various factors affecting the cylinder efficiency of both gas and steam-engines have been thoroughly discussed. One chapter has been devoted to the thermodynamics of mixtures of gases and vapors, and another to the description and use of Mollier's total energy-entropy diagram.

THE MECHANICAL ENGINEERING OF STEAM POWER PLANTS. By Frederic Remsen Hutton, E.M., Sc.D. New York: John Wiley & Sons, 1908. 8vo.; 825 pages, 700 illustrations. Price, \$5 net.

A former edition of this book, issued in 1897, embodied the study and experience of the author gathered during the previous twenty years and brought together for teaching purposes. The years since then have been a period of great and rapid progress in the power plant and in all engineering departments contributory thereto; and while the old edition was modernized here and there and year by year, the time had come with the opening decade of the twentieth century that it be rewritten entirely. The present edition is the result of such rewriting. It is a new book so much enlarged that the old plates could not be used, but the size of page has been increased, new illustrations chosen, and many new topics and treatments have been introduced. While the former approved analytical view-point is retained and amplified, there has also been introduced a discussion in many chapters of the principles and data of applied mechanics attaching to the subject in hand. This has been done to enable teachers who desire to enliven the drill in the mathematical classes to find practical problems and applications of interest and future meaning, and to encourage teachers of the applications of theory to find easily the links and bases for such sound applications. The distinction between the applied thermal principles and those derivable from other departments of theory should tend also to clearness and benefit.

ALONG THE RIVIERA, FRANCE AND ITALY. Written and illustrated by Gordon Home. London: J. M. Dent & Co., 1908. New York: The Macmillan Company. 8vo.; pp. 328. Price, \$3 net.

This is a beautifully made book, with most charming colored illustrations. The Riviera may be described as a collection of jewels strung together at irregular intervals on a rough mountain chain. Some are genuine antiques, others are overlaid with modern workmanship, and they vary much in size and

shape, but the mediæval holds good nevertheless. It has been the author's endeavor to describe every place along the whole coast from Marseilles to Pisa, omitting only a few towns close to Genoa which have suffered through the growth of factories and uninteresting houses. There is nothing more delightful than an automobile trip over the perfect roads of the Riviera, and thousands of enthusiasts take this trip each year. The book is beautifully printed and bound and belongs to the series known as "Old World Travel." The aim of this new series is to describe both by pen and brush those parts of the Old World which travelers find most worthy of their attention, and to do for countries and districts what the same publishers' well-known "Mediæval Town" series has done for cities. The various volumes will prove not only welcome to the traveler during his visit, but will serve as pleasant reminders of bygone days, and will also bring the different districts vividly before the minds of those who are unable to leave home. The colored illustrations are in all cases reproduced from drawings actually made on the spot.

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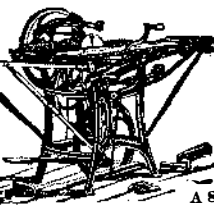
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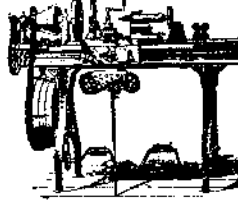


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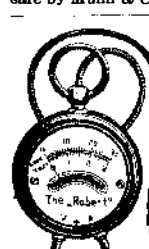
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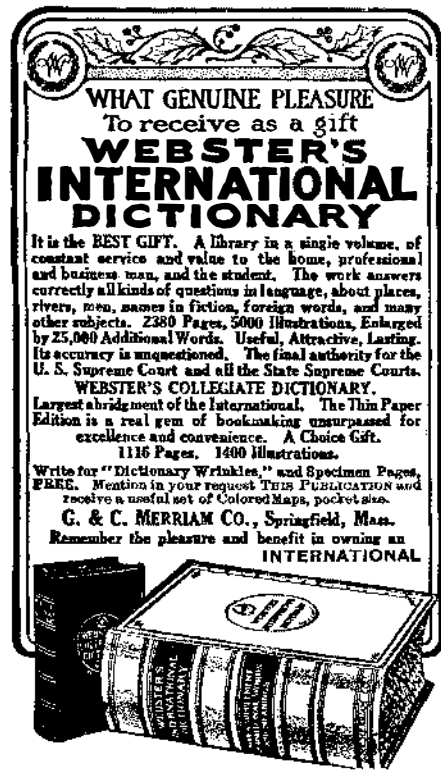
The Automobile Number of the Scientific American Will issue on January 16, 1909 THIS YEAR WE HAVE DONE SOMETHING ENTIRELY NEW We called on 1200 manufacturers of automobiles and accessories for suggestions. The result was eye-opening. For days and days suggestions came in, most of them illuminating, helpful, and instructive. We read over every one of those letters and made up our minds to use each in some way. We classified them carefully and turned them over to a corps of expert writers on automobiles, with instructions to EMBODY THESE IDEAS IN THE BEST SERIES OF PRACTICAL ARTICLES AND SHORT MEATY NOTES that ever appeared in any one issue of a magazine. Among the articles will be one on the commercial truck and delivery wagon. It tells just what the commercial self-propelled vehicle is capable of doing, compared with the horse-drawn vehicle of the same type. The average automobilist is not an engineer. When his machine stops, he is all but helpless. Many of the 1200 thought it would be an act of mercy to help him out. Mr. Roger Whitman, technical director of the New York School of Automobile Engineers, has prepared a "TROUBLE CHART," which a man can carry in his hat, if need be, and consult if he finds himself in mechanical straits. A glance at that chart will tell any intelligent man, woman, or child how to locate a defect and what to do if a car refuses to run. Magneto Ignition, because it is comparatively new, is a subject on which the automobile user needs enlightenment. Just what magneto ignition is, how it compares with coil ignition, and the comparative advantages of high and low tension, are ably explained in a lucid article. The Two-cycle Engine is another innovation which ought to be dealt with in the opinion of the trade. Mr. E. W. Roberts, a well-known authority on the subject, has prepared an article which sets forth simply and accurately what the two-cycle engine is, and what it will do to simplify and improve the automobile. Tires are found to demand more in the way of repair and renewals than any other part of the car. A tire expert has prepared an article, which the tire manufacturer ought to welcome, simply because it informs the chauffeur what he ought to do and what he ought not to do, and places the blame for much tire trouble where it properly belongs—on the man who drives the car. We think we have succeeded in explaining some of the mysteries of tire construction, and that we have laid a heavy finger on the cause of the trouble. "Lubricants and Lubrication" is made the subject of some straight talk by Mr. Hanauer, whose chief business in life at present is to lecture on oil and oil devices at the New York School of Automobile Engineers. The driver of a car is set right on the subject of lubricants, and informed what lubricant to use for the various parts of his car. Mr. Hanauer explains all this clearly. What is more, he gives a few simple tests which will indicate whether the oils are what they purport to be. Repairs are charged for at piratical prices. Automobile manufacturers rail at the garage keeper, because he is not fair to their cars. He puts them in a bad light. No manufacturer cares to learn how many dollars his car cost in repairs, particularly if most of the repairs are easily made. So we intend to publish an article "Making Your Own Repairs," which will pluck out a painful thorn and make the owner of a car at least partly independent of the exorbitant garage man. There will be a page full of novelties—short, illustrated articles about clever automobile inventions that save time and labor. Many of them will give the reader a little thrill of mechanical pleasure to learn that such simple—we might almost say obvious—devices are conceived and manufactured. Every one of them is a mechanical short cut. The number will contain about 40 pages and will have a striking colored cover. The price will remain the same—10 cents. MUNN & COMPANY 361 Broadway, New York



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Scientific American Supplements 1567, 1568, 1569, 1570, and 1571 contain an elaborate discussion by Lieut. Henry J. Jones of the various systems of reinforcing concrete, concrete construction, and their applications. These articles constitute a splendid text book on the subject of reinforced concrete. Nothing better has been published.

Scientific American Supplement 997 contains an article by Spencer Newberry in which practical notes on the proper preparation of concrete are given.

Scientific American Supplements 1568 and 1569 present a helpful account of the making of concrete blocks by Spencer Newberry.

Scientific American Supplement 1534 gives a critical review of the engineering value of reinforced concrete.

Scientific American Supplements 1547 and 1548 give a resume in which the various systems of reinforced concrete construction are discussed and illustrated.

Scientific American Supplement 1564 contains an article by Lewis A. Hicks, in which the merits and defects of reinforced concrete are analyzed.

Scientific American Supplement 1551 contains the principles of reinforced concrete with some practical illustrations by Walter Loring Webb.

Scientific American Supplement 1573 contains an article by Louis H. Gibson on the principles of success in concrete block manufacture, illustrated.

Scientific American Supplement 1574 discusses steel for reinforced concrete.

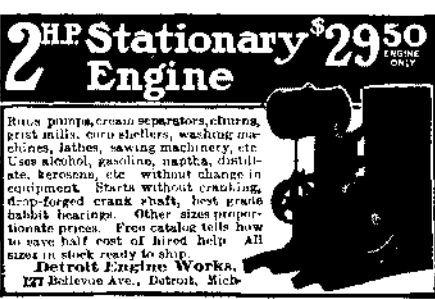
Scientific American Supplements 1575, 1576, and 1577 contain a paper by Phillip L. Wormley, Jr., on cement mortar and concrete, their preparation and use for farm purposes. The paper exhaustively discusses the making of mortar and concrete, depositing of concrete, facing concrete, wood forms, concrete sidewalks, details of construction of reinforced concrete posts.

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