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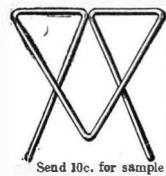
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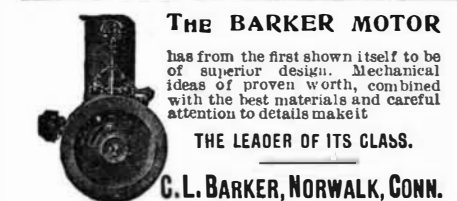
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and not 13 for original in thirteen States? A. The firing of 21 guns as a salute to the national flag, the President of this or other countries, or the sovereigns of foreign states, is an international custom.

(10880) M. W. and C. P. write: We would like to know, through the columns of your valuable paper, how a boiler of 15 horsepower, that is only in use about three months during a year, should be left. Should it be filled with water or empty, and should the smokestack be protected? A. A boiler to be laid up for a season should be thoroughly cleaned on the inside, filled with water with steam on, so as to be full of hot water that has been boiled, up to the safety valve. The flues and fire surface of the boiler should then be cleaned; ashes and soot removed from every part where such lodge. Then close fire doors, ash pit, and put a cap on the smokestack. With this treatment laid-up boilers do not rust inside or outside. It is the moist air drawn through a laid-up boiler that does damage by rust.

(10881) C. F. C. asks: 1. Are lantern slides (which are printed by contact) more sensitive to the light than carbon velox? For instance, a plate that printed a good clear picture on carbon velox in 15 seconds, being held 12 inches from a large size house lamp, would a lantern slide take longer or shorter time to print it? A. Lantern slide plates are always slow plates, much less sensitive than ordinary plates. A longer exposure is required. 2. Have you a SUPPLEMENT telling how to make lantern slides? A. We can send you "Photo-Miniature Lantern Slides," price twenty-five cents, and Elmendorf's "How to Make and Color Lantern Slides," price \$1 by mail. We can send you SUPPLEMENT 483, 517, 724, 1062, 1082, on slide making, for ten cents each. 3. Also, how to make a lantern slide camera for making slides from 4 x 5 negatives? A. SUPPLEMENT 625 tells how to make a bellows for a camera to take 4 x 5 negatives, and in Elmendorf's book there is a chapter on working with a camera in slide making. 4. Is there a magic lantern made which takes standard slides and burns oil for the light? Is this done, and are the pictures clear when thrown on the screen? A. Yes. The pictures cannot be enlarged more than four feet in diameter with oil lamps since the light becomes so faint by diffusing it over so large a screen.

(10882) E. E. S. asks: 1. What is the best way to mount a map on a muslin backing, and would a window shade be suitable? A. Moisten the muslin, stretch and tack it down on a table. Then wet the map thoroughly and apply the paste evenly over the entire back of the map, being very careful to bring it to the edges of the paper. Now lay the sheet on the cloth and smooth it out and rub it down upon the cloth so as to remove air bubbles and bring it into contact with the cloth. A roller or squeegee such as is used for mounting photographs will enable you to do the job much better. 2. How can I produce on brass the bronze-like finish used on the instruments of surveyors and engineers? A. Bronzing of brass is effected by dipping in a solution of 5 drachms of perchloride of iron to 1 pint of water, until the desired color is obtained; then wash in hot water, dry, and lacquer with a thin shellac and alcohol varnish.

**NEW BOOKS, ETC.**

THE BUILDING MECHANICS' READY REFERENCE. Cement Workers' and Plasterers' Edition. By H. G. Richey, Superintendent of Construction of U. S. Public Buildings. New York: John Wiley & Sons. 16mo.; 458 pages, 193 illustrations. Price, \$1.50.

Of the making of handbooks there is no end, but their multiplication is hardly more rapid than that of highly specialized branches of engineering construction; and, if we may judge from the number of inquiries received, not only from builders' mechanics but from architects and engineers, information on the lines of reinforced and other concrete work is less completely supplied than in other branches. This want Mr. Richey's latest work seems to very adequately supply; the mensuration and miscellaneous tables are as complete as in the earlier editions for other builders' mechanics, those for transmutation from one system of measurement to another being exceptionally so. The various hints and recipes and the rules for superintendence are most practical; and as regards tests, analyses, and specifications for cements, we cannot think of any practical detail upon which we desire information which we cannot find in these pages. That most essential feature of a useful handbook, the index, has received proper attention and the illustrations are excellent, coated paper having been used where required for the reproduction of photographic half-tones, the remainder of the book being printed on thin paper to reduce bulk and keep it within dimensions convenient for the pocket.

NOTES ON HYDROELECTRIC DEVELOPMENTS. By Preston Player. New York: McGraw Publishing Company, 1908. 16mo.; pp. 68. Price, \$1.

The present book deals with the commercial aspect of an industry in which investors, capitalists, and bankers are much interested, as schemes for the utilization of water power are constantly coming to the fore. It is the object of this short discussion to indicate as



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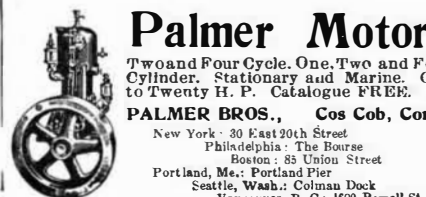
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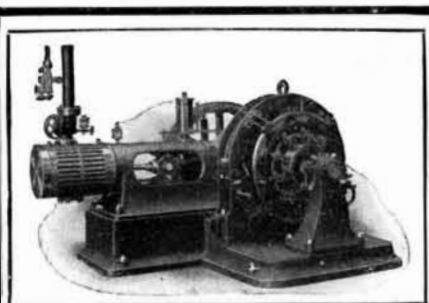


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far as possible the information which should be obtained in order to afford a definite basis for forming a decision as to the merits of any proposed undertaking.

**THE AUTOMOBILE ROUTE BOOK.** Compiled by D. H. Lewis. Automobile Route Book Company, 1907. 12mo.; pp. 192. Price, \$1.50.

The present volume deals with routes which start from Buffalo, N. Y., and is therefore particularly valuable for automobile enthusiasts that live in the western part of the State of New York. The maps are excellent. There is also a list of automobile owners in Buffalo and nearby places.

**CYANIDE PROCESSES.** By E. B. Wilson, E.M. New York: John Wiley & Sons, 1908. 12mo.; pp. 249. Price, \$1.50.

Owing to the recent improvements in cyanide practice, especially in the treatment of slime, the author adds a chapter giving the latest treatment, thus bringing the fourth edition up to date. Since the first edition, the volume of literature on the subject of cyaniding has increased twelve-fold (one-fold for each year), and while many theories have been proved and disapproved, there remains much to learn, although the process is an established metallurgical one. With the main facts, as outlined in this book, thoroughly digested, the metallurgist need not work haphazard, or the reader be mystified, and any investor must see an element of success in this as in any other undertaking. The details of plant construction are purposely omitted, since they vary at each mill and must be worked out by the engineer and performed by masons, carpenters, and millwrights. The detailed construction of machinery and apparatus is likewise omitted, as they are purchased from mill supply houses ready made and from designs that have been tested. By dealing with the subject in this manner a large mass of generalities is eliminated from the text, to the advantage of those seeking facts about the process rather than mechanical details.

**HOUSE PAINTING, GLAZING, PAPER HANGING, AND WHITEWASHING.** By Alvah Horton Sabin, M.S. New York: John Wiley & Sons, 1908. 12mo.; pp. 121. Price, \$1.

For every man, woman, and child in this country more than a gallon of paint is used every year; and the relative amount is increasing. Paint is a necessity; it is an economy; it is a means of sanitation; it helps us to keep clean; it keeps us warm in winter and dry in summer; it brings light into dark corners; it beautifies our homes; it increases our credit; it raises our assessments; the most ignorant enjoy its benefits; and the most highly developed minds, whose culture is so profound that they have forgotten all they ever learned at college, retain its appreciation. A subject so various in its uses, so universal in its appreciation, deserves attention—indeed, merits intelligent study. The book tells simply and plainly the use of preservative coatings of one sort and another for the protection and ornament of common houses, as they are known, or should be, to every one of the author's fellow-countrymen. An experience of many years in the manufacture and use of paints and varnishes is the foundation of the author's knowledge, and while on many points even experts disagree, the intention is to set forth fairly sound and safe practice.

**CONSUMPTION.** By N. S. Davis, A.M., M.D. Philadelphia: F. A. Davis Company, 1908. 12mo.; pp. 172. Price, \$1.

Although this book has been reprinted many times since it was first issued, it has not been revised until the present time. When it was written the education of the public in regard to the nature of pulmonary tuberculosis, its prevention and management was just begun. To-day everyone knows much of these subjects. However, the need of an explanation of the ways of preventing it, and of guiding those who have it to recovery, is as great as ever. Every chapter has been rewritten, and an additional one has been incorporated upon the advantages and character of treatment in sanatoria and other institutions.

**ELECTRICAL CONTRACTING.** By Louis J. Auerbacher. New York: The McGraw Publishing Company, 1908. 12mo.; pp. 155. Price, \$2.

This volume was written for the wireman and contractor with a view to giving him not only some practical hints on the latest construction methods, but also to suggest to him means for increasing his income. Many special devices are described which will prove of great interest, such as a safety stop for a motor, picture reflectors, etc.

**WIRELESS TELEGRAPHY AND TELEPHONY POPULARLY EXPLAINED.** By Walter W. Massie and Charles R. Underhill. New York: D. Van Nostrand Company, 1908. 12mo.; pp. 76. Price, \$1.

An objection to the majority of books on wireless telegraphy, even though prepared for the layman or the younger students of wireless telegraphy, is that they begin with a history of the situation, including in the subject various forms of induction methods of communicating through space, which are apt to confuse the reader. This form of introduction is avoided in the present work. The subject is dealt with very simply, and the principle of wireless tele-

## Home-Made Experimental Apparatus

In addition to the following articles, the Scientific American Supplement has published innumerable papers of immense practical value, of which over 17,000 are listed in a carefully prepared catalogue, which will be sent free of charge to any address. Copies of the Scientific American Supplement cost 10 cents each.

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A few of the many valuable articles on the making of experimental apparatus at home are given in the following list:

**ELECTRIC LIGHTING FOR AMATEURS.** The article tells how a small and simple experimental installation can be set up at home. Scientific American Supplement 1551.

**AN ELECTRIC CHIME AND HOW IT MAY BE CONSTRUCTED AT HOME.** is described in Scientific American Supplement 1566.

**THE CONSTRUCTION OF AN ELECTRIC THERMOSTAT** is explained in Scientific American Supplement 1566.

**HOW TO MAKE A 100-MILE WIRELESS TELEGRAPH OUTFIT** is told by A. Frederick Collins in Scientific American Supplement 1605.

**A SIMPLE TRANSFORMER FOR AMATEUR'S USE** is so plainly described in Scientific American Supplement 1572 that anyone can make it.

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**A SIMPLE CAMERA-SHUTTER MADE OUT OF A PASTEBOARD BOX, PINS, AND A RUBBER BAND** is the subject of an article in Scientific American Supplement 1578.

**HOW TO MAKE AN AEROPLANE OR GLIDING MACHINE** is explained in Scientific American Supplement 1582, with working drawings.

**EXPERIMENTS WITH A LAMP CHIMNEY.** In this article it is shown how a lamp chimney may serve to indicate the pressure in the interior of a liquid; to explain the meaning of capillary elevation and depression; to serve as a hydraulic tourniquet, an aspirator, and intermittent siphon; to demonstrate the ascent of liquids in exhaust tubes; to illustrate the phenomena of the bursting bladder and of the expansive force of gases. Scientific American Supplement 1583.

**HOW A TANGENT GALVANOMETER CAN BE USED FOR MAKING ELECTRICAL MEASUREMENTS** is described in Scientific American Supplement 1584.

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**SIMPLE WIRELESS TELEGRAPH SYSTEMS** are described in Scientific American Supplements 1363 and 1381.

**THE LOCATION AND ERECTION OF A 100-MILE WIRELESS TELEGRAPH STATION** is clearly explained, with the help of diagrams, in Scientific American Supplement 1622.

**THE INSTALLATION AND ADJUSTMENT OF A 100-MILE WIRELESS TELEGRAPH OUTFIT,** illustrated with diagrams, Scientific American Supplement 1623.

**THE MAKING AND THE USING OF A WIRELESS TELEGRAPH TUNING DEVICE,** illustrated with diagrams, Scientific American Supplement 1624.

**HOW TO MAKE A MAGIC LANTERN,** Scientific American Supplement 1546.

**THE CONSTRUCTION OF AN EDDY KITE.** Scientific American Supplement 1555.

**THE DEMAGNETIZATION OF A WATCH** is thoroughly described in Scientific American Supplement 1561.

**HOW A CALORIC OR HOT AIR ENGINE CAN BE MADE AT HOME** is well explained, with the help of illustrations, in Scientific American Supplement 1573.

**THE MAKING OF A RHEOSTAT** is outlined in Scientific American Supplement 1594.

Good articles on **SMALL WATER MOTORS** are contained in Scientific American Supplement 1494, 1049, and 1406.

**HOW AN ELECTRIC OVEN CAN BE MADE** is explained in Scientific American Supplement 1472.

**THE BUILDING OF A STORAGE BATTERY** is described in Scientific American Supplement 1433.

**A SEWING-MACHINE MOTOR OF SIMPLE DESIGN** is described in Scientific American Supplement 1210.

**A WHEATSTONE BRIDGE,** Scientific American Supplement 1595.

Good articles on **INDUCTION COILS** are contained in Scientific American Supplements 1514, 1522, and 1527. Full details are given so that the coils can readily be made by anyone.

**HOW TO MAKE A TELEPHONE** is described in Scientific American Supplement 966.

**A MODEL STEAM ENGINE** is thoroughly described in Scientific American Supplement 1527.

**HOW TO MAKE A THERMOSTAT** is explained in Scientific American Supplements 1561, 1563, and 1566.

**ANEROID BAROMETERS,** Scientific American Supplements 1500 and 1554.

**A WATER BATH,** Scientific American Supplement 1464.

**A CHEAP LATHE UPON WHICH MUCH VALUABLE WORK CAN BE DONE** forms the subject of an article contained in Scientific American Supplement 1562.

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raphy and telephony is made clear by showing its analogy to the action of waves in water. The commoner forms of apparatus are described in a practical way. The book closes with a special article by Nicola Tesla on the future of the wireless art, which might better have been left out.

**THE PLANE TABLE AND ITS USE IN SURVEYING.** By W. H. Lovell. New York: McGraw Publishing Company, 1908. 18mo.; pp. 49. Price, \$1.

The plane table, one of the oldest of surveying instruments, is in its simplest form merely a board for holding paper or other material upon which a map is drawn with the aid of a rule or straight edge. Although a useful and serviceable instrument for railroad and land surveyors, it has never come into general use in the United States. This may be explained, however, by lack of knowledge of the instrument, and its methods, as little has been written upon the subject. Of late years it has gradually become better known, and the present little treatise will tend to assist in the diffusion of knowledge relative to the plane table.

**THE RAILROAD SIGNAL DICTIONARY.** An Illustrated Vocabulary of Terms Which Designate American Railroad Signals, Their Parts, Attachments, and Details of Construction. With Descriptions of Methods of Operation and Some Illustrations of British Signals and Practice. First Edition. Compiled for the Railway Signal Association. By Braman B. Adams and Rodney Hitt, Associate Editors of the Railroad Gazette. Under the Supervision of the Following Committee: Mr. C. C. Anthony, Assistant Signal Engineer, Pennsylvania Railroad; Mr. Azel Ames, Jr., Signal Engineer, Electric Zone, New York Central and Hudson River Railroad; Mr. J. C. Mock, Electrical Engineer, Detroit River Tunnel Company. New York and Chicago: Railroad Age Gazette, 1908. Quarto; 3,127 illustrations; pp. 514.

The publishers of the present volume have previously issued a Car Builder's Dictionary and a Locomotive Dictionary of great value, and were therefore well equipped for undertaking the present work, which is the result of a discussion by the Railway Signal Association, the publication having been authorized by the Association. The present dictionary constitutes a complete encyclopedia of the signal systems, the apparatus and devices in use in the United States, and affords a very detailed explanation and covers the complete field in a most satisfactory manner. While primarily intended for signal engineers and other railroad men directly connected with signaling, the volume should be welcomed by patent experts and draftsmen and technical writers. The illustrations and descriptions cover manual block-signaling apparatus, automatic block signals with their various appurtenances, and electric and electro-pneumatic and electro-gas apparatus for semaphore signals. The different track circuits are very clearly explained with diagrams of the tracks and the wiring; block signals for electric trolleys are given, and the standard manual interlocking machines and power interlocking machines. The various signals employed are explained in connection with diagrams of tracks indicating the practice at yards, junctions, terminals, and other situations. Different ways of working the block system are shown by diagrams. One of the authors, Mr. Adams is especially well informed on all subjects relating to railway signaling from its beginning, while Mr. Hitt is an experienced technical lexicographer, so that the work not only elucidates the mechanical construction and actual operation of railway signaling, but affords an exceedingly desirable and authoritative terminology of the subject.

## INDEX OF INVENTIONS

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