are treated in this work, and its origin goes to emphasize its authoritative standing.

CADET LIFE AT WEST POINT. By Lieut Hugh T. Reed, U. S. A. Illustrated. Chicago: Published by the author. Pp. 236, xx. Price \$1.50.

This very spirited and interesting book tells how the United States cadets live at the military academy. The author seems to have been very fond of his alma mater, and writes about the humorous and social features of it with considerable gusto. Numerous illustrations are given, and among them examples of the different forms, social and official, are given, such as programmes of performances, appointment blanks and the like. We pre dict for the work a very interested circle of readers.

THE PRACTICAL MANAGEMENT OF EN-GINES AND BOILERS. Including boiler setting, pumps, injectors, feed water heaters, steam engine economy, condensers, indicators, slide valves, safety valves, governors, steam gages, incrustation and corrosion, A practical guide for engineers and firemen and steam users generally. By William Barnet Le Van. Philadelphia: Philadelphia Book Company, Practical, scientific and technical books. 1897. Pp. xvi, 267. Price \$2.

THE GUN AND ITS DEVELOPMENT. W. W. Greener. Sixth edition. New York: Charles Scribner's Sons. 1897. Pp. xvi, 768. Price \$4.

This treatise on the gun, by Greener, up to its last developments, in over 700 pages, can only be designated as of the greatest importance. No sportsman, really loving his gun, can afford to dispense with this work, as it cov ers every conceivable branch of this subject. Some very interesting examples of early guns and combined weap ons and pistols are given, with illustrations of beautiful products of olden times, in the way of flint lock muskets and the like. These topics are so treated as to form a most interesting portion of the work. Exceedingly interesting data are given. We cannot refrain from citing It seems, as late as the year 1636, at the battle of the Knisvingen, the slowest soldiers managed to fire seven shots only during eight hours; and a year later, in an action lasting from noon until eight in the evening, the musketeers fired seven times only. The historical portion has numerous illustrations, which would entitle the work to a place in any library, and makes it a wonderful contribution to man's ingenuity as developed in the way of destroying the lives of his fellow creatures. The work is imported by Scribner's Sons, and constitutes the fixth edition of the original work, rewritten,

THE ELEMENTS OF PHYSICS. A College Text Book. By E. L. Nichols and William S. Franklin. In three vol-umes. Vol. III. Light and Sound. New York: The Macmillan Company. London: Macmillan & Company, Limited. 1897. Pp. vii, 201. Price \$1.50.

We here at last have a third portion of this classical treatise. It is in the line of its predecessors, carrying out the same principles. There is little to be said about it in review, except that it has the aspect of thorough modernness and puts the subject at last upon its present

TABLES FOR EARTHWORK COMPUTA-TION. By C. F. Allen. Boston: Published by the author. 1893, Pp. 38. Price \$1 50. Boston:

The book is devoted simply to calculations for earthwork, and will naturally be found of great use by sur veyors, engineers, and others who have to calculate of material which are often very awkwardly shaped. It marks the tendency of the day to produce special scientific monographs, each of which will be sential to a definite clientele of scientific workers.

THE DESIGNING AND CONSTRUCTION OF STORAGE RESERVOIRS. By Arthur Jacob. New York: Van Nostrand

Company. 1897. Pp. 138. Price 50c. This is a valuable addition to the green covered Van Nostrand series, many numbers of which have come to our notice. The city of New York has bad ample experience in storage reservoirs, whereby the cumulative effect of a large watershed is developed and the spring freshets are in a greater or less measure made available for summer supply. The subject is an important one and tends to become more so.

The Shoe and Leather Reporter Annual for 1897 has a valuable compilation of interesting facts and figures relative to the shoe and leather trades of which also it affords a complete business directory ing houses throughout the world. It is one of the best of the annual volumes thus far published by the Reporter, and great care has been taken to make it as nearly accurate as such works can ever be. It appears from it that the shipments of boots and shoes from Boston in 1896 were 3,940,170 cases, or, allowing thirty pairs to the case, 118,205,100 pairs. These figures are just about double those of 1879, and indicate how far New England is ahead of the rest of the country in the shoe business. The exports of American leather and its manufactures also show a large and steady increase, amounting last year to \$20,242,756. And as our exports of leather have increased, our imports, which used to be very large in fine calfskins and kids, have steadily diminished. owing to the great improvement made in the productions of American leather manufacturers.

The Locomotive, in its bound volume for 1896, of 190 pages, forms a valuable record of facts especially interesting to all steam users. Published by the Hartford Steam Boiler Inspection and Insurance Company. It always has most reliable data as to the causes of accidents and the best means for their prevention. Its contents are prepared with great care, J. M. Allen, the president of the company, being the editor.

Business and Personal.

The charge for insertion under this head is one Dollar line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

Marine Iron Works. Chicago. Catalogue free. "U. S." Metal Polish. Indianapolis. Samples free. Yankee Notions. Waterbury Button Co., Waterb'y, Ct. Folding Umbrellas. Write Grove & Stover, Luray, Va. Improved Bicycle Machinery of every description. The Garvin Machine Co., Spring and Varick Sts., N. Y. Concrete Houses - cheaper than brick, superior to

"Ransome," 757 Monadnock Block, Chicago. Anderson's Typewriter makes longhand faster than shorthand-one stroke prints a word! 97 Nassau St. N. Y. (See illustrated notice Sci. Am. May 22, p. 325.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y. The Temperly Transporter.

illustration, front page of Scientific American April 24. It is manufactured by the Lidgerwood Mfg. Co., 96 Liberty Street, New York. Write for particulars. Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.



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Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of

bouses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

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Minerals sent for examination should be distinctly marked or labeled.

(7165) R. J. L. asks how to repair books in an economical manner. The first thing is to secure the loose leaves. Odd leaves can be fixed in with paste or thin glue. If a whole section is loose, first sew it with stout thread, leaving long ends at the back, and then tie these ends to the part that goes before and the part that follows. A sheet of paper glued on the back will fix it in its place, letting a little glue go in before and after the sewed section. If the book has slipped out of the cover, leaving the cover intact, the best way is to strip all the paper off the back (not sides) of the cover, leaving the cloth (or leather, as the case may be) bare; then glue the back of the quires, and etick them on the cloth. 'This, with or without new end papers, will complete the job. This makes what is called a tight back; but it will open fairly well if all the padding is taken out, as directed above, and will make a strong binding. If only one cover is torn off, it can be fastened on thus Raise the leather of the cover from the millboard with a penknife to the depth of one-half inch (or less if book is small). Get a piece of cloth, about one inch wide, and glue this into the opening made; do the same with the back of the book, and put in the remaining one-half inch of cloth with glue, and the job is done. They are not handsome, but are always strong.

TO INVENTORS.

An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at homeand abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

JUNE 1, 1897,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

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Bicycle handle, H. A. Christy...
Bicycle handle bar clip, E. H. Olds...
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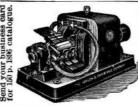
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USE OF HOT AIR IN DRYING.-BY E. M. Cook. A paper in which the author demonstrates the great economy of the use of hot air over that of steam for drying many materials, especially those in lumps, grain, or powder. With 3 illustrations. Contained in Scientific American Supplement, Nos. 1022 and 1023. Price 10 cents each. To be had at this office and from all newsdealers.

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