ing a socket and a locking device, the sockets receiving a stretcher or an ammunition frame. The device is very light and may be folded to occupy but small space.

WASHBOARD.—Lewis Peterson, Madrid, Iowa. A hydraulic attachment for a washboard is provided by this invention, adapted to throw a stream of water from the tub on the clothes being rubbed. The upper end of the board in use is supported by cylindric sections which form substantially a pump by which the water is lifted from the tub and discharged over the clothes as the operator exerts a downward pressure in rubbing the clothes.

FOOT BALL.—Alexander Nisbet, New York City. This ball is made with a concealed lace, preventing abrasion of the skin of the player and insuring a truer rebound of the ball, and the leather cover is practically in two pieces only, dispensing with the four connected seams usually found at the end of the ball. A valve is also provided of such character and so placed that the ball need not be unlaced to inflate it.

TAG AND TAG DRIVER.—William L. Millar, Charleston, S. C. This is a device for use with bales and packages as an improvement upon ordinary metallic tags and drivers. The shank of the tag has marginal flanges with a roughened surface, there being an anchor in the shank, and the tag driver, by which the tag is forced into the bale, has a handle at one end, while its opposite end is widened, terminating in a point. The driver is easily detached from the tag and removed from the bale.

CONTINUOUS CHARCOAL KILN.—Erik J. Ljungberg, Falun, Sweden. This kiln has several compartments in which the wood is ignited, the combustion gases being conveyed from one compartment to the other. The connection of the compartments is effected through valves closed by a sheet of water or water seals, the rising or falling of the surface of the water connecting or disconnecting the compartments. The process of carbonization is regulated by raising or lowering the water surfaces, whereby the area for the passage of inflammable gases is controlled.

Designs.

EWER.—Robert L. Johnson, Hanley, England. The mouth of this ewer has a convoluted edge in which scroll figures intersect each other, and the base has also a convoluted appearance matching the margin of the mouth.

CHRISTMAS TREE ORNAMENT.—William E. Wagner, Gordon, Pa. Within a circular tufted frame, according to this design, is held a spherical figure with upper and lower projections, forming an ornament for suspension from Christmas trees, etc.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

THE HERSCHELS AND MODERN ASTRONOMY. By Agnes M. Clerke. New York: Macmillan & Company. 1895. Pp. 324. Portrait. Price $1.25.

This work is a volume of the Century Science series, which is edited by Sir Henry E. Roscoe. It is interesting to note that there are in preparation the lives of Michael Faraday, Clerk Maxwell, Sir Charles Lyell, Humphry Davy, Pasteur, Charles Darwin and Herman von Helmholtz. There are already several works on Herschel, but the present work contains the results obtained from a study of the correspondence of Sir William Rowan Hamilton and Herschel, the author having been favored by the late Miss Herschel with the perusal of a considerable number of the manuscript letters of Sir John Herschel as well as Sir William's. There are chapters on the "King's Astronomer," the "Explorer of the Heavens," "Herschel's Special Investigations," "Influence of Herschel's Career," "Caroline Herschel," "Writings and Investigations."

BULLETIN OF THE UNITED STATES FISH COMMISSION. Vol. XIV, for 1894. Washington: Government Printing Office. 1895. Pp. 496. 8vo. 25 plates, illustrated.

This volume, like the preceding Bulletins, consists of monographs, and, as usual, contains some important papers, as for example the Salmon Fisheries of the Columbia River Basin, by the late Marshall MacDonald, United States Commissioner of Fish and Fisheries.

INSECT LIFE: DEVOTED TO THE ECONOMY AND LIFE HABITS OF INSECTS, ESPECIALLY IN THEIR RELATIONS TO AGRICULTURE. Edited by L. O. Howard, Entomologist United States Department of Agriculture. Vol. VII, No. 5. Washington. 1895. 8vo pamphlet.

This journal is published by authority of the Secretary of Agriculture, and is deserving of more attention than it has received. The present number gives the results of some remarkable experiments and observations. The division of entomology of the Department of Agriculture consists of one entomologist, three assistant entomologists, four investigators, one artist and a special agent in apiculture.

UNIVERSITY CORRESPONDENCE COLLEGE. The Calendar 1894-1895. London, September 1, 1894. Pp. 69. 16mo.

REPORT ON THE TOTAL ECLIPSE OF THE SUN OBSERVED AT MINA BRONCES, CHILE, ON APRIL 16, 1893. By J. M. Schaeberle, Astronomer in the Lick Observatory. Sacramento. 1895. Pp. 126. 8vo. 10 plates.

This book is printed by the authority of the regents of the University of California and forms volume No. 4 of the contributions from the Lick Observatory. The expedition to observe the total eclipse of the sun of April 16, 1893, was sent from the Observatory at the cost of Mrs. Phebe Hearst, a friend of the University of California. The book gives full details of the observations made by the astronomers.

ELECTRICITY FOR STUDENTS. By Edward Trevert. Lynn, Mass.: Bubier Publishing Company. 1895. Pp. 128. 16mo. 38 illustrations. Price $1.

The object of this little book is to explain briefly the theory and practice of some of the commoner applications of electricity. It is intended only as a popular treatise dealing with the practical applications of the science.

PRINCIPLES AND PRACTICE OF AGRICULTURAL ANALYSIS. A manual for the estimation of soils, fertilizers, and agricultural products, for the use of analysts, teachers, and students of agricultural chemistry. Vol. II. Fertilizers. By Harvey W. Wiley. Easton, Pa.: Chemical Publishing Company. 1895. Pp. 332. 8vo. 17 illustrations. Price $2.

A few weeks ago we reviewed Dr. Wiley's "Soils," the companion volume. The present work takes up the subject of fertilizers. Certainly no one could be more competent to deal with the analysis of fertilizers than the Chemist of the United States Department of Agriculture. In the present volume the general principles of fertilizer manufacture and application have been presented in so far as they seemed to throw light on the rational method of examination and analysis. The standard methods of analysis in this and other countries have been presented with sufficient fullness for the guidance of the skilled worker and the information of the student. To those who make use of a book only for routine work or for preparation for an examination, this volume will be found to have little attraction. This fact, however, will not be a cause of regret to the author, whose purpose has been avowedly to present to the busy worker and student a broad view of a great subject which each one does not have the time to search out for himself. The author's list of authorities cited is very full and the type and presswork are excellent.

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SCIENTIFIC AMERICAN BUILDING EDITION.

OCTOBER, 1895.—(No. 120.)

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The Scientific American Building Edition is issued monthly. $2.50 a year. Single copies, 25 cents. Thirty-two large quarto pages, forming a large and splendid MAGAZINE OF ARCHITECTURE, richly adorned with elegant plates and fine engravings, illustrating the most interesting examples of Modern Architectural Construction and allied subjects.

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Notes & Queries

HINTS TO CORRESPONDENTS.

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 personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(6634) C. M., Bala, Can., asks for a receipt for tempering drills for granite rock. A. Drills for granite, for best effect, should have their cutting edge at an angle of 75°, and if single blade, should have the point a little one side of the center. By this shape the side thrust of the drill gives it a clearance and prevents sticking. Careful and slow heating to as low a heat as will allow the particular brand of steel to harden is desirable. Harden in salt water; one quart of salt to a pail of water. Some smiths add a couple of ounces of yellow prussiate of potash to the pail of salt water. The principal aim should be to work the steel at a low red heat, avoid burning the corners and not draw the temper.

(6635) J. M. R. asks: Will a bicycle run easier and cut the bearings less with oil on bearings, or without oil, or with plumbago on bearings instead of oil? A. The best lubricant for bicycles is cylinder or dynamo oil of the trade, mixed with 10 per cent of finely ground graphite for the bearings. This mixture should flow from the spout of the oil cup. For the chain, graphite should be made into a soft paste with the above oil. We do not recommend dry bearings or dry chain.

(6636) D. W. H. asks which side of rubber belting should be run next to the pulley—the face side or the lap side. A. The face side of a rubber belt should be next the pulley; it gives a more perfect contact and is less liable to slip and wear at the lap seam.

(6637) C. H. says: I wish to etch a design on a pair of skates. Will you please tell me the quickest and easiest way of doing it? A. For etching on cutlery a ground wax is required, composed of equal parts asphaltum, Burgundy pitch and beeswax, melted together and thoroughly incorporated. In applying it, use a dabber, or ball of cotton covered with silk. Warm the piece of cutlery so that a stick of the wax will readily melt by touching. Smear a small quantity of the wax on the blade or articles, and dab it evenly all over the surface. When cold, scratch the required design or name on the surface and touch the parts with acid (nitric acid 1 part, water 4 to 6 parts), using a camel's hair pencil to cover the surface and bring the acid into contact with all the lines. In a few minutes the biting is done. Dip in hot water to wash off the acid, and the surface may be cleaned by wiping with benzine. Another way is to make a varnish of asphalt and turpentine, with a few drops of linseed oil to make it tacky. Have a rubber stamp made of the required design, with a border, so as to stop off around the design. Stamp the goods, and with some of the varnish thinned down with turpentine and a brush stop off the surrounding parts; or surround the design with a small rim of beeswax, and apply the acid as above.

(6638) H. B. J. says: Will you kindly tell me what preparation is used in stiffening felt hats? A. Mix 18 pounds of shellac with 1½ pounds carbonate of potash and 5½ gallons of water. Put in a kettle and boil gradually until the shellac is dissolved, when the liquid will be as clear as water. When cold dip the hats, and when nearly dry dip in a weak solution of acetic or sulphuric acid, in order to neutralize the potash and cause the shellac to set.

(6639) R J. asks: What two metals will slide the easiest, one upon the other? Say a bar one inch wide to slide across another bar of the same width, the weight to be one hundred pounds. A. With dry surfaces the hardest metals with smooth or polished surfaces have the least sliding friction when two surfaces of the same kind of metal are rubbed together. Hardened steel surfaces have the least friction of the metals most convenient for general use. Antimony on hard steel has a low per cent. of friction, as has also nickel upon nickel or nickel upon hard steel.

(6640) G. R. R. asks: Will you inform me through your paper the year in which the first railroad sent out a train, and whether the B. & O. was absolutely the first? A. The first trial of a locomotive in the United States was in August, 1829, with the Stourbridge Lion, built in England for the Delaware & Hudson Canal Company. It was tried alone without cars, Horatio Allen being the engineer. It was set aside and never used again. Peter Cooper built the first locomotive that drew a train of passenger cars in the United States. It was built during the year 1829 and used with a train of two cars on August 28, 1830, on the B. & O. Railroad. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 371, for a History of Early American Railroads and Locomotives.

(6641) B. H. C. asks how to prepare sheepskins for mats A. Make a strong lather with hot water and let it stand till cold; wash the skin in it, carefully squeezing out all the dirt from the wool; wash it in cold water till all the soap is taken out. Dissolve 1 lb. each of salt and alum in two galls. of hot water, and put the skin into a tub sufficient to cover it; let it soak for twelve hours, and hang it over a pole to drain. When well drained stretch it carefully on a board to dry, and stretch several times while drying. Before it is quite dry, sprinkle on the flesh side 1 oz. each of finely pulverized alum and saltpeter, rubbing it in well. Try if the wool be firm on the skin; if not, let it remain a day or two, then rub again with alum; fold the flesh sides together and hang in the shade for two or three days, turning them over each day till quite dry. Scrape the flesh side with a blunt knife and rub it with pumice or rotten stone.

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October 8, 1895,

AND EACH BEARING THAT DATE.

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Zinc from complex ores, extracting, C. V. Petraeus 547,587

DESIGNS.

Buckle, W. A. Schleicher 24,731, 24,732
Clock case, E. Roth 24,736
Eyeglass case, J. G. Koenen 24,735
Lamp, T. Ferguson 24,737
Lamp, D. H. Watts 24,738
Medal, Jackson & Hammond 24,733
Mirror plateau, H. E. Biggins 24,739
Sifter, Paulman & Sensabaugh 24,741
Slop jar, C. E. Haviland 24,740
Spoon, G. W. Shiebler 24,734
Stove, heating, F. Kaempen, Jr 24,744
Tinning machine grease pot, Brandham & Harris 24,743
Vehicle step pad, J. Hummel 24,742
Woven fabric, H. E. Parkhurst 24,746
Woven fabric, J. Phillips, Jr 24,747, 24,748
Woven fabric, W. T. Smith 24,745

TRADE MARKS.

Antiseptic lotions and dressings, Electrozone Company 27,136
Baking powder, Ransom Brothers Company 27,137
Baking powder, cakes, bread, and salt, G. Weddell 27,138
Bicycles and bicycle supplies, Liberty Cycle Company 27,145, 27,146
Bicycles and parts thereof, F. C. Rockwell 27,147
Blood purifier, A. F. Gwinner 27,132
Cocoa, chocolate, and broma, and similar goods, Brewster Cocoa Manufacturing Company 27,140
Corsets and ladies' underwear, Bortree Corset Company 27,129
Food for infants and invalids, F. E. Tenney 27,139
Glass chimneys and reflectors, Gill Brothers & Company 27,144
Lemons, C. O. Brown 27,141
Lozenges and candy, O. H. Peckham Candy Manufacturing Company 27,142
Remedies for diseases in hogs, J. Garrett 27,149
Roofing felt, Mica Roofing Company 27,143
Salve, E. W. Wheaton 27,133
Soap, perfumery, and cosmetics, C. R. Bailey 27,134
Wash for the face, mouth, and throat, A. Kjollerstrom 27,135
Water closets, washdown, F. A. Wells 27,148
Whisky, Steinhardt Brothers & Company 27,131
Wines, L. Gandolfi & Company 27,130
Woolen goods, piece, Firm of A. Knops 27,128

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.

Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of $40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.