

Business and Personal.

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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.

For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y.

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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 This is for our information and not for publication.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.

(6143) E. A. C. says: Given an old-fashioned breast water wheel 8 feet diameter, head and fall 6 feet, gate about 12 inches under top of water, what would be the proper speed of wheel at circumference... or the number of revolutions per minute to get best effect of water? A. The wheel should have one-half the rim speed due to the velocity of the water under the gate head, which is 8 feet per second theoretically, but practically only 6 feet. The wheel rim for best effect should have a velocity of feet per second, or 7 1/2 revolutions per minute.

(6144) G. H. F. writes: Will you kindly decide a matter between A. and B.? A. asserts that the receiver of a rain gauge placed horizontal, gathers all the rainfall, even though the wind deflects the rainfall 45 degrees. B. claims such deflection (45 degrees) would cause a large portion of the rainfall to go over the receiver, as a less area would be presented to catch the rain. Which is right, and why? A. B. is correct. The effect of a slanting rain on the actual rain catch is the same as if the gauge was turned up to an equal angle for a vertical rainfall. The difference in area of gauge is equal to the difference of area between a circle and an ellipse, proportioned on the angle of descent of the rain drops.

(6145) F. J. H. asks: What is the best way to learn to read mechanical drawings? Is there any book that will give this information to one who does not care to take a course in drawing? A. There is no better way of learning to properly and correctly interpret the exact meaning of mechanical drawings than by making a study of mechanics and practice in drawing. Familiarity with drawings and personal explanation of their meaning from a draughtsman will do much to give you a general idea of the methods of expression in mechanical draughting, but it is only a superficial education. You can also do much toward this yourself by a study of books on draughting.

(6146) F. E. D. says: To settle a dispute will you please answer through your paper which has the most traction surface on the rail, a locomotive with 3 1/2 feet drive wheel or one with 7 foot driver, the weight being the same? A. The larger wheel has the largest bearing surface, but as surface does not count in friction with a given weight, the smaller wheel will have slightly the greatest pull because of the increased bite on the rail, due to smaller bearing surface.

(6147) R. P. J. asks: 1. What should be the specific gravity of the liquid in storage battery? A. Uncharged 1.20; charged 1.210. 2. How long should 26 cells, each 4 plates, 4 inches by 5 inches, light one 16 candle power 50 volt lamp? A. Ten hours.

(6148) L. L. Y. asks: Please tell me how the gear of bicycles is calculated? A. Divide the number of teeth on the large sprocket by the number on the small, and multiply the quotient by the diameter of the driving wheel.

(6149) O. L. S. asks: 1. A says that No. 12 wire has only twelve times more electrical carrying capacity than No. 36 wire B says that the electrical carrying capacity of No. 12 wire is more than twelve times

greater than that of No. 36. Which is right? A. No. 36 wire, 0.044 ampere; No. 12 wire, 10.2 amperes. 2. What number of Crowfoot battery cells would be required to fuse No. 12 wire? A. It depends on the material of the wire and its length. In any case it would be a very large number. For copper wire allow.

Communications Received.

- "On Mr. Garner and Simian Speech."
"On Nature's Most Invincible Creatures." By E. M. A.
"On a Sunken Double Tubular Railway Across the English Channel."
"On Isaac Pitman." By S. M. M.
"On the Black Calla." By B. L. P.
"On Reduction of Car Weight." By S. E. W.

TO INVENTORS.

An experience of forty-four years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled 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 26, 1894.

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

Table listing various inventions with their respective dates and inventors. Includes items like Accumulator plate, Adding machine, Animal trap, Anvil, etc.

Table listing various inventions with their respective dates and inventors. Includes items like Door sealer, Dough raising apparatus, Draught beam fastener, etc.

Table listing various inventions with their respective dates and inventors. Includes items like Oven, bake, J. Middleby, Oyster dredge, A. D. Post, Package wrappers, etc.

TRADE MARKS.

Table listing trade marks and their corresponding owners or products, such as Accordions, W. Spaeth, Antiseptic powder, B. L. Maitie, etc.