## Business and Personal.

*The Charge for Insertion under this head is One Dollar a 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 next issue.*



## Notes & Queries

### HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) F. H. R. writes: I have a cylinder 3½ inches diameter and 4½ inches stroke, with ports ¼, ⅜ by 1⅝ inch. Would a ½ inch pipe for steam supply and a ¾ inch pipe for exhaust be too small or not? A. Too small. Make your steam pipe not less than ¾ inch and exhaust pipe 1⅛ inches diameter.

(2) A. T. asks if any process has yet been discovered for the preservation of timber from dry rot, and the teredo navalis, cheaper than or as effectual as the injection of creosote. A. The universal opinion seems to be that creosoting is the cheapest and most effective process in use. The method referred to by our correspondent is probably the kiln dried wood.

(3) T. G. K. asks: If a car be traveling at a high rate of speed and a gun be shot off at right angles to the train, will the shot go straight as if the car were at rest, or will it be carried forward? A. The motion of the train will carry it ahead.

(4) S. P. M. writes: I have 1 horse power engine. How can I lay up power from same sufficient to run a sewing machine three or four hours? A. By winding up a weight, that will drive your machine when running down. 2. Will a chest or closet be moth proof if lined with a veneer of red cedar, instead of being made entirely of that wood? A. The veneer does not answer as well as solid wood. 3. Where can I find directions for making a gasoline gas machine for house lighting? A. You will find a description of the "Springfield Gas Machine" in "Appleton's Dictionary of Applied Mechanics." 4. Would a mercury flask boiler, as described in SUPPLEMENT, run a 2½x4 inch engine 300 revolutions a minute (equal to say 1 horse power)? If not, how could capacity of boiler be best increased? A. You should have 7 or 8 flasks exposed to the fire; for one horse power see SUPPLEMENT No. 182.

(5) P. H. S., Jr.—Yeast cakes are prepared by stirring up beer yeast with cold water to which a small quantity of ammonium carbonate has been added. It is then allowed to settle, drained, washed, and pressed into cakes, to which is added a little starch and ground malt. Some kinds of yeast settle with difficulty. In such cases the cold water in larger quantity may be employed, or a little alum may be added to the first water, but it must be completely removed by washing. Instead of starch, flour and Indian meal are sometimes used.

(6) W. T. V. writes: 1. I have constructed a gauge for measuring gas pressure by attaching to a U-shaped glass tube a scale laid off in inches and tenths of an inch, numbering the degrees both upward and downward from a center or zero line, and filling the tube to this line with water. Is the gauge correctly made, and will the diameter of the tube make any difference? A. Your gauge is correctly made. The diameter makes no difference. The difference in the two levels is the measure of the pressure. 2. When the liquid rises one inch in one side of gauge and falls one inch in the other, does it indicate what is known as one inch pressure? A. Indicates 2 inch pressure. 3. Is the pressure in street mains greatest at the highest points, and if so, what is the rate of increase per foot in height? A. The pressure is slightly greater at the high points. The increase is one-tenth to one-fifth of an inch water pressure in a hundred feet according to the density of the gas.

(7) E. C. P. asks: 1. What horse power will a stream of water filling a three inch pipe under a fall of 100 feet furnish? What for a 4 inch pipe? What will 50 feet fall be, conditions as above? A. For 3 inch pipe 100 feet fall, 20 to 29 horse power, depending upon friction and length of pipe; and 4 inch pipe, 47 to 50 horse power; 3 inch pipe, 50 feet fall, 18 to 20 horse power, and 4 inch pipe, 33 to 35 horse power. 2. What kind of wheel or other contrivance would you recommend? A. We recommend a turbine.

(8) W. M. R. asks: Will you be kind enough to answer me the following: 1. Why is platinum not used for the conductor, instead of carbon, in incandescing lamps? A. Because the platinum is volatilized and is soon destroyed, and because a slight increase in heat over that required to produce incandescence melts the metal. Carbon is more refractory. 2. Is there a SUPPLEMENT that gives a full treatise on the subject of "Electric Lighting"? If not, would you give me the name of a book? A. Electric lamps, SUPPLEMENT, No. 162. Brush system of electric lighting, SUPPLEMENT, No. 274. Illumination by electricity, SUPPLEMENT, No. 132. Lighting by electricity, SUPPLEMENTS, No. 78, 98, 99, 103. 3. I see that Edison has formed a company for his electric railroad, and as I understand it, Marcel Deprez's experiments on conducting electricity long distances show a loss in so doing of at least 50 per cent in the transmission. If that is so, how can Edison operate a railroad long distances, practicably or profitably? A. Edison uses a very large conductor—the rail—consequently the loss is small.

(9) F. A. R. asks: What is the best paint to use on a tin roof, the water (filtered) from which is used for drinking and cooking purposes? A. For painting your tin roof use the red oxide of iron; it is sold among the dealers as "Prince's Metallic Paint." It is a dry red powder. Mix with boiled linseed oil to the proper consistence for the brush. Use no turpentine.

(10) G. L. Asks: 1. Is the motion produced by an eccentric uniform throughout the stroke, or is it slow at both ends, as some claim? Is the motion produced by a crank the same as that produced by an eccentric? A. Precisely like a crank—slow at both ends. 2. In what essential particulars is the Corliss type of engine superior to the common slide valve engine? A. Principally in fixing the rate of expansion in accordance with the actual work on the engine from hour to hour and minute to minute.

(11) C. A. W. asks what superiority flat and V-friction hoists have over gearing. A. We do not know that friction gear has any advantage over toothed gear for any purpose, except the single one of throwing out and into gear while running, which can be done properly with friction gear, but cannot be safely done with tooth gear.

(12) J. S. H. writes: I intend to make a glass speculum according to directions given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 141. How long a focus should a ten inch reflector have, and would a plane mirror do for the small reflector? A. 10 feet focus is a good proportion. A plane metallic mirror or prism for small reflector for Newtonian form. A silver faced small reflector made in the same way as the large one might answer.

(13) J. R. M. asks: 1. Is there any danger of burning the bottom of a fire box boiler when the grate bars burn down? A. We do not quite understand your first question, unless you mean to ask whether a fire that will burn grate bars under a boiler will not be likely to burn the boiler? In this case no harm can be done to the boiler if there is plenty of water in it. Grate bars have been heated so hot as to fall, without injury to the boiler. It shows a bad method of firing, such as making a deep fire and closing the ash pit tight. 2. What size steam pipe should we have to carry steam 12 feet from the boiler, to supply a cylinder 10x12 running 150 revolutions per minute? A. 2 inch steam pipe.

(14) In response to numerous inquiries concerning good non-conducting covering for steam pipes, we give following tests of Mr. G. B. Dumford of Hamilton, Ont. These may be found superior in some cases to tests of Mr. C. E. Emery (SCIENTIFIC AMERICAN July 7).

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| Combination of asbestos, hair felt, air space, and wood | 100 per cent |
| Asbestos and hair felt and chopped straw (the straw mixed with lime putty) | 87 " |
| A plastic cement manufactured by parties at Troy N. Y., with ½ inch hair felt outside | 86·6 " |
| Paper pulp mixed with lime putty 1 inch covered with sheeting of wood pulp | 85 " |
| Mineral wool cased with wood | 81 " |
| " " cased with sheet iron | 79 " |
| Charcoal | 60 " |
| Sawdust | 41 " |
| Loam and chopped straw sealed with wood | 32 " |
| Asbestos | 29 " |
| Coal ashes | 24 " |
| Air space | 20 " |
| Fire brick | 15 " |
| Red brick | 12 " |
| Sand | 93 " |

(15) A. L. McL. asks for the best method of cleaning bright iron and brass of an engine badly injured by exposure to water during late flood. A. Use flour emery cloth and oil for the bright iron and oil and tripoli or oil and rotten stone. If the brass is badly corroded, use oxalic acid and tripoli.

(16) O. E. G. asks how to clean brass. A. Make a mixture of one part common nitric acid and one-half part sulphuric acid in a stone jar, having also ready a pail of fresh water and a box of sawdust. The articles to be treated are dipped into the acid, then removed into the water, and finally rubbed with sawdust. This immediately changes them to a brilliant color. If the brass has become greasy, it is first dipped in a strong solution of potash and soda in warm water; this cuts the grease, so that the acid has free power to act.

(17) O. C.—To make court plaster, take French isinglass, 1 ounce; warm water, 1 pint; glycerine, 1 ounce; tincture of arnica, half an ounce. Soak isinglass in a little warm water for twenty-four hours, then evaporate nearly all the water by gentle heat. Dissolve the residue in a little proof spirits of wine and strain the whole through a piece of open linen. The strained mass should be a stiff jelly when cool. Stitch a piece of silk or sarsanet on a wooden frame with tacks or thread. Melt the jelly and apply it to the silk thinly and evenly with a badger hair brush. A second coating must be applied when the first has dried. When both are dry apply over the whole surface two or three coatings of balsam of Peru. This plaster remains quite pliable and never breaks.

## NEW BOOKS AND PUBLICATIONS.

DAS EISERNE JAHRHUNDERT (THE IRON CENTURY). By A. Von Schweiger-Lerchenfeld. Wien, Pesth and Leipzig.

We have received from A. Hartleben parts ii., iii., and iv., of a work entitled the "Iron Century." Each part consists of 32 octavo pages, the whole work to be completed in 25 parts, and to contain 40 full page illustrations, with maps, etc. The work is devoted to the wonderful iron structures of the present century. On the title page is a large cut of an American locomotive, with blazing head light, coming directly toward us. The parts thus far received are devoted chiefly to railways. Pictures are given of the early locomotives of Blenkinsop and Stephenson, and portraits of Stephenson, Trevithick, and other inventors. The work is intended rather for popular reading than for scientific instruction. Among the views published or to come are a front view of St. Pancras station in London, the Tay Bridge, the Rhine Bridge at Kehl, the tunnel at Trieste, the New York Elevated Railroad, the Brooklyn Bridge, the Pennsylvania Railroad depot in Philadelphia, the Great Eastern, the Elbe, the Pereire, the Normandy, an American river steamer, Pacific Railroad, coal mines, etc.

THE AMERICAN PSYCHOLOGICAL JOURNAL, ISSUED BY THE NATIONAL ASSOCIATION FOR THE PROTECTION OF THE INSANE AND THE PREVENTION OF INSANITY. Vol. I., No. 2. P. Blakiston, Son & Co., Philadelphia.

The titles of some of the principal articles will give an idea of the object of this periodical: "The Rights of the Insane." "The Insane at Home." "Legal Control of Insane Asylums." "Employment a Remedy for Insanity." These and other contributions are from the editors and others who have had experience and ample means of observation among the insane.

PAINTING AND PAINTERS' MATERIALS. A Book of Facts for Painters and those who use or deal in Paint Materials. By Charles L. Condit, supervised by Jacob Scheller, Master Painter. *Railroad Gazette*, 73 Broadway, New York. Price, $2.25.

This volume of 465 pages appears to be an almost exhaustive treatise on paints as preservatives and pigments as decorations. The subject of painting is viewed, first, as a scientific fact, involving a knowledge of substances on which painting is employed, and thus incidentally gives, in its consideration, valuable information regarding the characteristics and textures of woods and their proper preparation for the coating of paint or of varnish. The nature of the materials of pigments and of paint bodies, varnishes, driers, and other substances forms a valuable portion of the treatise. Textual instruction in the use of implements and plain directions as guides to drawing add to the interest of the volume. A general index, a copious index of pigments, and a full table of contents embance the value of the volume as a book of reference.

MODERN LOCOMOTIVE ENGINES; THEIR DESIGN, CONSTRUCTION, AND MANAGEMENT. By Emory Edwards, M.E. Illustrated by seventy-eight engravings. Henry Carey Baird & Company, 810 Walnut Street, Philadelphia. Price of volume, $2.00.

The author of this volume has written also several other books on cognate subjects: a "Catechism of the Marine Steam Engine," "Modern American Marine Engines," "Practical Steam Engineer's Guide," and this volume, which has been gotten up as an assistant to the locomotive engineer. He credits the current information conveyed by technical papers and periodicals for assistance. The only serious fault with the book is that it attempts to combine the entire history of steam in a single volume, and unnecessarily gives crude facts of the earlier investigations into natural forces which had been given in the text books, and have since become powers by modern practice. But the volume is full of suggestive and direct information to the beginner, and contains useful lessons even to the experienced engineer. The chapter on the economy of fuel and the succeeding one (Chaps. III. and IV.) are of significant value to the beginner and of suggestive information to the engineer. The chapters on the construction, service, wear, and duty of locomotives commend themselves to the master mechanic, the machinist, and the locomotive engineer. The appendix of tables enhance the value of the volume to steam mechanics and others.

## INDEX OF INVENTIONS

**For which Letters Patent of the United States were Granted**

**August 28, 1883,**

**AND EACH BEARING THAT DATE.**

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

| | |
|---|---|
| Advertising device, J. A. Knapp | 284,025 |
| Advertising match box, J. T. Appleberg | 283,741 |
| Air compressor valves, device for operating, C. A. Bennett | 283,955 |
| Alarm. See Burglar alarm. | |
| Anæsthetic mixture, U. K. Mayo | 283,800 |
| Axle skein, T. Eberline | 283,982 |
| Bagasse furnace, D. Wilde | 284,101 |
| Bait, artificial fish, E. F. Pflueger | 284,056 |
| Baling press, J. Watson | 283,835 |
| Banker's case, notebook, etc., J. Casey | 283,965 |
| Barrel head strengthening device, J. C. Keefe | 284,022 |
| Barrel heater, A. R. Hynson | 284,018 |
| Bed bottom, spring, E. D. Laraway | 283,903, 283,904 |
| Beehives, moth catcher for, I. Q. Holmes | 284,014 |
| Bell, street car, J. T. Marett | 284,032 |
| Belt tightener, A. Box | 283,856 |
| Bessemer plant, W. Hainsworth | 284,005 |
| Bin. See Flour bin. | |
| Bit stock, C. H. Amidon | 283,844 |
| Blackboard rubber, J. Dooner | 283,870 |
| Blind, window, J. Williams | 283,941 |
| Board. See Center board. Game board. Ironing board. Tally board. | |