

NEW BOOKS AND PUBLICATIONS.

LOCKWOOD'S DICTIONARY OF TERMS USED IN MECHANICAL ENGINEERING. London: Crosby, Lockwood & Son. Pp. 417. Price \$3.

This work does not assume to be a general reference book for terms used in all mechanical branches, but only for such as are directly connected with the practice of engineering, as in the drawing department, pattern shop, and foundry, in the fitting, turning, and smith's shops, and in all kinds of boiler work.

PHOTOGRAPHY APPLIED TO SURVEYING. By Lieut. Henry A. Reed, U. S. A. New York: John Wiley & Sons. 68 pp. quarto, with illustrations. Price \$2.50.

The author claims that, in themselves, photographs present all the data necessary for the construction of an accurate map, thus rendering other field work unnecessary, while at present photographs are only used in the United States as an addenda to the field work.

THE WATCH JOBBER'S HANDYBOOK. London: Crosby, Lockwood & Co. Pp. 144. Price 80 cents.

THE WOOD TURNER'S HANDYBOOK. London: Crosby, Lockwood & Co. Pp. 144. Price 80 cents.

These manuals are of a series of handybooks for handicrafts, the first object in all of which is to be practical and elementary, so that they will be of valuable assistance to an apprentice just commencing to learn a trade in either of the departments to which they relate, or to an amateur seeking to do such work for himself.

Any of the above books may be purchased through this office. Send for new catalogue just published. Address MUNN & Co., 361 Broadway, New York.



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 This is for our information, and not for publication.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.

(1) T. W. V. asks: What is the best kind of material to make cores for steel castings? Cores used for cast iron do not do very well for steel, as the steel being much hotter than cast iron, cuts into the cores and leaves a rough casting.

(2) T. G. R. writes: I. T. H. claims to have a hydrometer which, when suspended in a silver or gold solution, will denote the quantity of metal in said solution. Is there any such hydrometer? I have Baume's hydrometer, but I cannot tell the quantity of metal in a solution with that, and I find, by inquiry, it (Baume's) is generally used by platers around here.

(3) H. G. H. writes: 1. At sunset we see a band of stratus clouds in the west, seeming to rest upon the horizon. How far distant from the point of observation is the place where those clouds are directly overhead? A. Stratus clouds are variable in height. Generally low in winter and higher in summer.

(4) A. S. B. writes: 1. If, in making a dynamo after the plans of the motor in SUPPLEMENT, No. 641, I wind the armature with No. 24 wire and the field magnet with No. 16, about how many pounds of each will I need? Are these the right size of wire? A. We think the sizes of wire are about right. You will require about 3 pounds of each kind of wire.

the horizon before a thunder or rain storm? Of the cumulus? Of the cirrus? A. Thunderstorm clouds are very variable in height—500 to 2,000 feet. The clouds in thunder storms may be very deep, two to five miles, and more. Hence the appearance as to distance is very deceptive. Cumulus clouds are intermediate, and generally occupy a position from 2,000 to 5,000 feet above the earth. Cirrus clouds are the highest, and are from 10,000 to 30,000 feet above the earth.

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(5) R. W. writes: I have made a dynamo according to the directions in SUPPLEMENT, No. 161, only I used No. 26 wire instead of No. 18, as recommended in the paper. It works well enough, could it be made to work better by using No. 18 wire? A. It depends entirely upon the use to which you apply the dynamo. No. 18 wire on the armature will give a current of fewer volts, but more amperes.

(6) W. H. L. desires a good remedy for moths in furniture. A. The continual use of Persian insect powder will drive them away. The noxious principle of the powder, however, soon evaporates, so that its frequent renewal is necessary until all of the moths are killed.

(7) W. R. K. asks if there is any known compound, which will, without material injury, aid in the rapid growth of hair on a young man's face? A. Mixtures containing stimulants, such as cantharides or Spanish fly, are said to be somewhat efficacious, if persistently applied in moderate quantities for a considerable period.

(8) F. T. H. asks: 1. What vehicle should powdered soapstone be mixed with, when brick outside walls are to be painted? A. Boil with linseed oil and a small quantity of resin. 2. What to mix it with when iron work is to be painted? A. Linseed oil. 3. Also please explain why, when a 3/4 inch glass tube is introduced into water, the water level in the tube is always about an eighth of an inch above the normal level?

(9) F. L. D. asks the power required to drive a 30 foot boat at a speed of 12 miles per hour. It is built on what is known as the "skip jack" model, is 8 feet beam and 33 inches flat on bottom. It was built by an experienced boatman, and cuts the water very smoothly.

(10) J. R. B. writes: 1. I have an ivory rule which has become yellow from age. Is there any way to restore it white again, without injury? A. Place for a short time in a gently heated thin lime paste. 2. Do spoke manufacturers use good glue alone on their sand belts, or do they put something in to make it elastic? A. Common brown glue is better than the best glue, and will answer alone.

(11) C. T. C. asks: 1. How can certain unsightly objects in a photograph be removed, for instance, a lock of hair, a mole, etc.? A. Only by retouching the negative, or using powder, etc., on the

face before taking the picture. 2. What oil should be applied to shoes to make them more flexible, impervious to water, and durable? A. Use neat's foot oil moderately and well rubbed in after the leather has been sponged off, and while it is still damp. 3. Where is a good place for buying chemicals and scientific apparatus for amateur experiments in the home circle? A. Consult our advertising columns.

(12) W. H. D. desires a recipe for a first class office mucilage. A. Use the following preparation: Gum dextrin 2 parts, water 5 parts, acetic acid 1 part; dissolve by heat and add 1 part of alcohol.

(13) C. D. A. desires directions for moulding small articles of soft rubber. A. The process is analogous to that described under "The Making of Rubber Stamps," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 569. See also the series of articles giving very full details on the manufacture of rubber in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 249, 251, and 252.

(14) L. J. J. asks what the common leader used for fishing is made of? A. Silk worms are broken in two and drawn apart, and the silk-forming matter, which is pulled out into a thread between the two pieces, hardens in the air, and forms the so-called "gut" leaders.

(15) W. S. asks (1) how breaking strain on suspension bridge cables is computed. A. The strains are generally computed on the assumption that the curve is a parabola. 2. What cheap and effective way to destroy or drive small red or brown ants from and around the house? A. Try a good insect powder. 3. What is your charge for assaying ores for gold and silver, etc., also for analysis of ores? A. From five dollars upward.

(16) H. & W. ask: 1. What is the best walnut stain? A. Take of spirits of turpentine 1 gallon, pulverized asphaltum 2 pounds, dissolve in an iron kettle on a stove, stirring constantly. Can be used over a red stain to imitate rosewood. The addition of a little varnish with the turpentine improves it.

(17) A. M. M. writes: 1. I have a small rule made of bone, which I broke. Is there a cement that will mend it? A. Take of isinglass 1 ounce, distilled water 6 ounces, boil to three ounces, and add rectified spirit 1 1/2 ounces, boil for a minute or two, strain, and add while hot, first a milky emulsion of gum ammoniac 1/2 ounce, and then tincture of mastic 5 drachms.

(18) A. G. and others ask: When does the next century begin? Some claim that it is January 1, 1900, while I claim that it commences on January 1, 1901. A. It commences January 1, 1900. The Christian era was not promulgated until long after the birth of Christ, the Roman calendar being then used—its beginning being assigned as the first of January, in the fourth year of the 194th Olympiad, the 753d from the foundation of Rome, and the 4,713th of the Julian period.

(19) H. W. D. asks (1) if the coil described in SUPPLEMENT, No. 160, is wound with No. 35 instead of No. 36 wire, will it do just as well, and what size spark should it give? A. The increase in the size of the wire is so slight as to make no material difference in the action of the coil. 2. If I should make a coil the size of the figures instead of twice the size, wound with No. 36, what size spark will it give? If coil is made as in question 2, but wrapped with No. 35 instead of No. 36, what size spark will it give? A. From 1/2 inch to 3/8 inch. 3. What is cartridge paper? A. Heavy, highly calendered manila paper.

(20) T. W. asks for some metal or alloy that will neither expand nor contract with heat or cold. And which metal expands most with heat, and the amount of expansion in a piece of the same metal ten feet long? A. No such metal is known. The condition is obtained by a combination of metals in the gridiron pendulum. Of common metals zinc expands the most; between freezing and boiling temperatures, 32° and 212° Fah., it expands 1/16 of its length—about 1/16 inch for a piece 10 feet long.

(21) B. J. H. asks: What is the simplest method for finding the altitude of a given place? Is a barometer used? And if so, where can the same be obtained? A. The mercurial barometer may be used with reasonable accuracy, or a line of levels may be run with still greater exactness. Any dealer in scientific instruments can supply you with desired requisites.

(22) G. A. V. asks whether three small screw wheels running side by side and geared together from center shaft would be better than stern paddle wheel for light draught flat bottom river boat drawing one foot of water. A. No. It is well established by trial that the stern or side wheel only will do well with shallow draught vessels.

(23) C. H. F. asks the English and also the American standard of pipe tops, the pitch of thread taper, and size of point of tap? A. 1/2 inch pipe 27 threads to 1 inch, 3/4 inch and 1 inch pipe 18 threads to 1 inch, 1 1/4 inch, 1 1/2 inch and 2 inch 11 1/2 threads to 1 inch, 2 1/2 inch up to 8 threads to 1 inch. All threads taper 1/8 inch to 1 foot on each side. End of taps should be one-sixteenth inch smaller than diameter of bottom of thread at end of pipe, using pipe thread as a gauge.

(24) C. H. L. asks: Can you tell me whether quicksilver standing a long time in a brass tube will injure the metal? What effect, if any, does it have upon brass? A. It will quickly amalgamate the brass, destroying its strength and forming a soft and brittle alloy.

TO INVENTORS.

An experience of forty 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 5, 1888, AND EACH BEARING THAT DATE.

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

Table listing various inventions and their corresponding patent numbers. Examples include: Abrading pad, J. H. Riedell (384,076); Acid and heavy magnesia, manufacture of carbolic, H. Lefmann (383,957); Adding machine, C. C. Moore (383,973); Adjustable handle, W. A. Faber (384,028); Air heater, D. Grove (384,203); Air ship, E. P. Johnston (383,889); Alarm, See Boiler alarm. Low water alarm. Animal trap, C. H. Mittler (383,972); Annunciator, electric, C. E. Scribner (384,068); Annunciator, pneumatic, R. P. Garsed (384,144); Automatic sprinkler, C. W. Kersteter (383,890); Bag fastener, H. W. Comstock (384,180); Bag holder, I. H. Weaver (384,104); Bar. See Claw bar. Battery. See Electro-therapeutic battery. Bearing, anti-friction, F. Corbett (384,023); Bed bottom, A. H. Cleaveland (384,127); Bell ringer, steam, G. B. Snow (384,096); Berth, chair, etc., P. Davey (383,868); Berth for cars, vessels, etc., A. D. Hobbie (384,162); Bicycle lighting, W. T. Bowers (384,120); Bleaching and dyeing apparatus, T. Davies (383,859); Blind, Venetian, S. S. Patterson (383,978); Bloom shear table and crop end conveyer, F. H. Treat (384,220); Blowpipe furnace, F. J. McLaren (381,971); Board. See Game board. Boat. See Paddlewheel boat. Boiler alarm, J. J. Ghegan (383,946); Boiler feeder, A. Blatchley (384,119); Bolt lock, W. A. Jordan (384,206); Boot, felt, H. W. Hathorn (384,155); Bottle filler, W. H. Comstock (384,022); Bottle washer, J. C. Mackintosh (383,964); Box. See Letter box. Paper box. Signaling box. Box or receptacle, E. J. Hauck (384,156); Brake. See Car brake. Brake lever, T. Dilger (384,027); Bread machine, Bitterman & Bernstein (383,868); Breaker and crusher, F. L. Preston (383,966); Brick kiln, W. & S. H. Alsip (383,966); Brick or tile for building purposes, W. J. Pringle (383,987); Bridge, W. Harman (383,880); Bridge, metallic, M. L. E. Duval (384,186); Buffet for housekeeping, A. L. Dey (383,871); Burner. See Hydrocarbon burner. Burners for incandescent lighting and making the same, stock for skeleton, E. Moreau (383,888); Bustle, H. P. Olmstead (383,903); Button, W. F. Niles (384,064); Button, H. Vollmer (384,007); Button fastener, Clark & Ingraham (384,019); Buttonhole cutter, J. R. Hopkins (384,164); Button manufacturing machine, G. Heidmann et al. (383,881); Buttons, making, S. Cottle (384,226); Buttons, etc., making, S. Cottle (384,192); Cable and car propeller, elevated, H. Casebolt (384,124); Can filling machine, G. H. Perkins (383,981); Cans with oils and other liquids, box for filling. G. H. Perkins (383,970); Car brake, G. B. Quigg (383,904); Car coupling, W. R. Chadsey (384,018); Car coupling, J. Coup (384,193); Car coupling, Olmstead & Wemple (383,174); Car coupling, G. M. Robbins (383,941); Car coupling, W. O. Rutledge (384,217); Car heater, F. C. McElroy (384,055); Car heating apparatus, street, M. Cleave (384,126); Car motor, street, L. B. Gibson (384,145); Car seat, H. S. Hale (384,153); Car unloader, H. M. Barnhart (384,111); Car ventilator, W. Wright (384,184); Car wheel, H. R. Allen (383,846); Car wheel, W. G. Richards (383,989); Cars, frame for railway, M. A. Zurcher (384,225); Card hanger, H. S. Hack (384,034); Carpet fastener, G. Barrow (383,849); Carriage bow, J. B. Fox (383,876); Carriage top, M. D. Taylor (384,219); Carrier. See Cash and package carrier. Cartridge loading machine, G. M. Peters (383,905); Cartridge loading machine, P. Selby (384,069); Cartridge, photogenic, H. G. Piffard (383,694); Cartridges, loading apparatus for ordnance, J. T. Jefferson (384,059); Case. See Show case. Cash and package carrier, S. W. Barr (383,937); Cash and parcel carrying apparatus, S. W. Barr (384,113); Cash register and indicator, Heady & Patterson (384,158); Castrating instrument, J. Phillips (384,215); Cement, composition for making, J. Wolff (383,932); Check protector, W. I. Best (383,854); Checkrein loop, E. R. Cahoon (384,017); Chloroform from acetone, manufacture of, G. Rumpf (383,932); Churn, W. H. Crawford (383,866); Clamp. See Jar clamp. Claw bar, A. R. Wylie (384,223); Clip. See Whitetree clip. Clock striking mechanism, C. E. Burnham (384,191); Clothes drier, E. S. Sutton (384,179); Clothes rack, J. Danner (384,194); Coat, W. H. Osmer (384,214); Coat and hat hook, F. Taylor (384,001); Coffin fastener, W. H. Torbeck (384,181); Collar fastening, horse, Davis & Keith (384,227); Collar for cattle, bell, J. R. & E. R. Hill (384,037); Commode, Tolman & Roberts (384,006); Commode, toilet jar, Swafford & Burns (384,218); Corrugating machine, S. Fox (384,031); Corset, C. A. Griswold (r) (10,385); Cot, folding, J. C. Porter (383,966)

