NEW BOOKS AND PUBLICATIONS.

LOCKWOOD'S DICTIONARY OF TERMS USED IN MECHANICAL ENGINEER-ING. 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. The definitions cover some six thousand terms, embracing those in most common use in the workshop, as well as a vast number of technical terms of comparatively recent origin in the science of modern engineering.

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

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. In France, however, photography has been more generally applied to surveying, with a great saving of time and labor. The subject is presented by the author in a plain and concise manner, according to the experience obtained in his own practice, and with reference to the contributions of numerous foreign writers.

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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 This is for our information, and not for publication.

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Winerals sent for examination should be distinctly marked or labeled.

- (I) 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. A. Try ground fire brick with the dust blown out. Make the cores in the same way as with sand.
- (2) T. G. R. writes: 1. 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. A. All hydrometers are based on the same general principle, and usually differ only in graduation. They will not indicate the amount of gold or silver in a plating solution with any approach to accuracy. 2. Silver plated ware is advertised as single, double, triple, and quadruple plate, now what is the definition of above terms. Is there a given weight of the metal deposited on a given surface to denote each term? A. As used in this country, they are simply arbitrary terms, not denoting absolute, but only comparative weight of metal deposited, the double plate of some manufacturers equalmg the triple plate of others, etc. 3. What is the weight of a gramme in Troy weight? A. A gramme is equal to 15:43235 grains, 4. In a great many mechanical as well as electrical calculations I meet with, letters are used which I cannot understand. How are such calculations made? A. You will have to study the subject of electricity from the beginning. We recommend Watt's Electro-Deposition, which we can send you by mail for \$3.50.
- (3) H. G. H. writes: 1. At sunset we see a band of stratus clouds in the west, seeming to rest upon the horizon. Howfar 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. Their height may be from 800 to 5,000 feet. Clouds 800 feethigh may be seen on the horizon at 36 miles distance. At 2,000 feet high they may be seen 50 or more miles, and at 3,000 feet 70 miles. 2. What is the average height above the earth's surface of the approaching storm cloud, as we see it creeping up from

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. 3. What rule may be given for finding the distance of clouds from the place of observation, when their angular distance above the horizon and their approximate height above the earth's surface are known? A. Calculations for the distance and height of clouds are very uncertain, from the difficulty of obtaining correct observations; simultaneous trigonometrical triangulation from a known base, and computation, are the only method of determining the distance.

- (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. 2. What is the reason of using cast iron for the field magnet? A. Because cast iron retains sufficient magnetism for starting. 3. I made a galvanometer of a 11/2 inch compass placed over 30 feet of No. 24 wire. When connected with a cell of gravity battery, it was deflected about 95°. I read that a galvanometer was never deflected more than 90°. Is this wrong? A. We think you are mistaken about the deflection of 95°. 4. I made a bichromate battery of two pairs of electric light carbons with a zinc 2 inch by 1 inch. How strong would one cell be? A. Probably 11/2 volts. 5. Must the resistance of the wire on the field magnet equal the resistance of the wire on armature on a motor or dynamo? A. Not necessarily.
- (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 armsture will give a current of fewer volts, but more amperes. 2. How could I change it to electroplate? A. Wind the armature with No. 10 wire, and the field magnet with No 14. 3. I am also making an eight light dynamo according to directions in a previous number of your paper, but I have used vulcanized fiber between the commutator bars instead of mica. Will the spark burn it out or not? A. Mica is preferable, as vulcanized fiber is ant to burn. 4. I see in the cut of the complete machine that all of the magnet terminals are connected to what seems a switch board. Does this mean, that if the current is shunted through one pair of coils on the field magnet. that the machine generates current enough for two lamps, and so on? Until four are shunted in circuit the machine runs to its full capacity of eight lamps. A. The part you take for a switch is only a support for the wire. By connecting all the wires in series and using the machine as a shunt machine, with some added resistance in the shunt, you will be able to run from one to eight lamps.
- (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. Among the mixtures recommended forthat purpose is: Cologne 2 ounces, liquid ammonia 1 drachm, tincture cantharides 2 drachms, oil rosemary 12 drops, lavender 12 drops. Apply to the face daily.
- (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 1/2 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? A. On account of capillarity, for a description of which see Sir William Thomson's lecture in the SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 562. 563, which we can send you for ten cents each. 4. In running electric, wires through gas mains, is there any insulation in the market that will effectually resist the chemicals usually found in gas mains? A. A wire insulated and coated with lead over the insulation would be most effectual. Most other styles would quickly or slowly deteriorate.
- (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 watervery smoothly. A. It is extremely doubtful if you can a commodate engine, boiler, and wheels of sufficient size to drive your boat 12 miles per hour. We do not know how much draught nor the kind of wheel you propose. A 6 x 12 cylinder with 8 horse power boiler, carrying steam at 100 pounds pressure connected direct to a stern wheel 8 feet diameter, will realize 10 miles per hour at 50 revolutions per minute.
- (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 betterthan 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 brittle alloy.

the horizon before a thunder or rain storm? Of 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 ass 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 Supple MENT, No. 569. See also the series of articles giving very full details on the manufacture of rubber in Screen ENTIFIC AMERICAN SUPPLEMENT, Nos. 249, 251, and
- (14) L. J. J. asks what the common ader 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. 2. What is the best preparation, and how made, for putting on the strings used in sealing fruit jars, etc.? A. Dissolve one pound of sulphate of zinc in 40 gallons of water, and then add 1 pound of sal soda. After these ingredients are dissolved, add 2 ounces tartaric acid. The cord should be soaked in this solution for twenty-four hours and then dried without wringing.
- (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 11/4 ounces, boil for a minute or two, strain, and add while hot, first a milky emulsion of gum ammoniac 16 ounce, and then tincture of mastic 5 drachms. 2. Which will give the most heat, a gallon of gasoline or a gallon of kerosene, for steam boilers? Which would be the safest to burn? A. Kerosene is the safer, and will give most heat.
- (18) A. G. and others ask: When does the next century begin? Some claim that 🕻 is January 1, 1900, while I claim that it commences on January 1, 1901. A. It commences January 1, 1900. The Opristian era was not promulgated until long after the birth of Christ, the Roman calendar being then used—its byinning 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. By the computations of several authors, the date of the birth of Christ varies several years before and after the assigned date of the Christian era.
- (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 ¼ inch to ¾ 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 Fah., it expands 100 of its length—about 100 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 tific instruments can supply you with desired requications apparatus for ordnance, J. T.
- 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, % inch and % inch pipe 18 threads to 1 inch. 16 inch and 34 inch pipe 14 threads to 1 inch. l'inch. 114 inch. 116 inch and 2 inch 1116 threads to 1 inch. 216 inch up 8 threads to 1 inch. All threads taper % 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

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Jar clamp, F. G. Tallman	Seat. See Car seat. Separating machine. A. J. Miller	Chains, filled gold, W. H. Robinson & Co 15,579 Cigars, M. Barranco & Co
Kiln. See Brick kiln. Knitting machines, device for adjusting the stitch	Separator. See Electro-magnetic separator. Mag-	Cigars, El Modelo Cigar Manufacturing Co 15,568 Cigars, cigarettes, smoking and chewing tobacco
wheels of, F. P. Holt 384,163 Ladder, step, J. T. Miller 384,210 Lamp and stand, candle, S. Clarke 383,862		and snuff, M. D. Neumann
	Sewing machine, C. E. Tibbles	Hair tonic, M. M. Harper
Lamp, railway gate, A. J. McDonald	Frankenberg	liquid, B. Fragner. 15,569 Paper, toilet. J. T. Moore. 15,577
man 383,891 Lantern, Matthews & Ireland 384,053	Ships, etc., construction of, C. G. Lundborg 384,047	Soap, toilet and laundry, Beaver & Co
Last, C. H. Buchanan	Shore protector, T. O'Connell	Toilet, preparations for the, J. Ascough 15,562 Whiser Plate Prope & Co. 15,567
ings, device for securing wire, M. Hegborn, 383,951, 383,952	Signal. See Railway semaphore signal.	Whisky, Blake, Bruce & Co
Lead and rule holder, A. A. Low383,959 to 383,962 Leather board, machine for stripping, W. E.	Skiving machines, knife sharpening attachment for, Clark & Klingler	A printed copy of the specification and drawing of
Frost	1	any patent in the foregoing list will be furnished from this office for 25 cents. In ordering please state the
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Ghegan	Soap, antiseptic, G. C. W. Belcher	inventors for any of the inventions named in the fore- going list, provided they are simple, at a cost of \$40
the physical condition of, G. H. Perkins 383,980 Lock. See Bolt lock. Nut lock. Railway switch	Dunham	
lock. Seal lock.	Spring. See Vehicle spring.	1 New York. Other foreign patents may also be obtained.

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	384,051 383,863	Strauss	_ T
	383,918	Stone sawing machines, feeder for, P. Christa 484,125	Ī
3el-		Stop motion, H. J. Johnson	at
ırg-	384,075	Store service apparatus, E. G. Bates 383,851	D C
	383 ,915	Stove, self-feeding cooking, C. E. King 384,207 Stove, vapor, Z. Davis 383,870 Strap edging machine, J. N. Farlow 384,029	11
	;	Stringed instruments, bow for, E. Latchmore 384,045	
	384,165 383,885	Supporter. See Garment supporter. Suspending device, E. Blackman	
	383,896	Suspending device, C. R. Fay	c
ay-		Switches and semaphores, mechanism for operat- ing derailing, W. Gravit	t
• • • •	383,911 383,878 383,908	Syringe, A. W. Brinkerhoff	
	383,910	Thill coupling, M. G. Conrad	-
bit-	383,847	Thill coupling, Howland & Allen	
	384,036	Tongs, A. Biber 383,855 Towel, F. Leake 384,046	
	383,993 384,204	Towing machine, Shaw & Spiegle 383,917 Track lifter, G. Rainnie 383,988	
	384,122 384,177	Transom litter, J. F. Wollensak	
	383,897	Truck, W. W. Roche	
	383,883 384,038	Tug, bame, R. F. Russel	(
	383,922	Taylor 384,002 Type writing machine, G. L. Ferris 384,142	r c h
	383,920	Peters	b
, C.		Valve, P. W. Meehan	İ
	393,942 383,909	Valve gear, R. Mackay 383,963 Valve, rotary, J. O'Donnell 383,976	
for,		Valve, steam engine. W. J. Allen	3
	384,151 384,121	Vaporizer and burner, hydrocarbon, Patterson & Noteman	t
	383,884 383,865	Varnish, E. N. Todd	1
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	384,065 383,994	Vehicle wheel, G. E. Broyles. 383,189 Vehicle wheel, L. H. Donkel 384,135	
	384,110 383,997	Velocipede, L. H. Donkel 384,134 Velocipede, C. H. Goodsell 384,150	
om-		Veneer cutting machine, C. L. Merrill	
	384,114 383,939	Ventilator. See Car ventilator.	
	383,877	Vessels, shock arrester for the rigging of, F. Wheeler	
. н.		Wagon, dumping, D. A. Williams 383,930	1
рго-	384,216	Washer. See Bottle washer. Water closets, construction of troughs for, W.	í
	384,014	B. Parsons, Jr	1
	384,185 384,086	McPartland	1
	384,050 383,996	Water heater, D. Grove	
	883,975	Weather strip, Thomson & Stephens	
	384,160 383,969	384,081, 384,082 Wheel. See Car wheel. Vehicle wheel.	
	383,967 384,061	Wheel, T. Groom. 384,083 Wheel, H. Q. Maurino. 383,966	•
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