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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 This is for our information and not for publication.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.

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.

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(4559) T. R. asks: How can I make a machine to demagnetize watches? A. Make a sling like a small scale that will hold the watch in a horizontal position; to this attach a string, twist the string and allow it to untwist. While the watch is whirling rapidly, gradually lower it toward the poles of a strong permanent magnet; then while it is still whirling, gradually remove it from the sling. If the first treatment does not thoroughly demagnetize the watch, you will be obliged to try it the second or third time.

(4560) C. T. McM.—The plant popularly known as ragweed is *Ambrosia trifida L.* It is a plant with a rough hairy stout stem from 3 to 12 feet in height. The leaves are large and deeply three-lobed. The plant is common on moist river banks and has no medicinal properties.

(4561) F. P.—What you send is the seed of some species of milkweed (*Asclepias*) with their tufts of long silk hairs (*coma*). The material has been used for stuffing pillows, but is worthless for any other purpose.

(4562) P. J. H. asks: How do you find the theoretical value of a pound of coal in pounds water evaporated? A. The value of the combustion of coal is found from the known value of its chemical elements in their combination with the oxygen of the atmosphere in terms of the value of the amount of heat required to raise 1 pound of pure water at the temperature of greatest density one degree on the thermometric scale. This value is called a heat unit or thermal unit. The heat units of the various substances found in coal have been the subject of experiment by various chemists who do not exactly agree. The process is by burning a given amount of any element of combustion and ascertaining the number of pounds of water it will heat to some observed degree, and from these observations assign the heat units for each element. In this way coal is assigned an average of about 14,200 heat units per pound. In an experimental way it was also found that to evaporat 1 pound of water at, atmospheric pressure at its boiling point (212°) required as much heat as would raise 966 pounds of water 1 degree on the thermometer, which is called the latent heat of steam at atmospheric pressure. Then the total heats units in 1 pound of coal divided by the heat units of evaporation gives the number of pounds of water evaporated by one pound of coal, viz., $\frac{14200}{966} = 14{\cdot}7$ lb.

In the practical operations of steam testing, the figures must be varied to suit the real combustion value of the coal and the amount of heat imparted to the water to raise its temperature from the normal temperature to the atmospheric boiling point, or to the temperature of evaporation. These points are illustrated in works on combustion and the generation of steam.

(4563) D. L., Jr., writes: In answer to query No. 4519 you state that the longest working electric railway is some five or six miles. Three have been running constantly here for a year past that exceed that length. The San Francisco and San Mateo Electric Railway has been running between San Francisco and Baden, a distance of 12 miles, from one central station, and over exceedingly heavy grades. The road is rapidly being pushed, 8 miles further, but whether or not it will be run from the same supply station I do not know. Another road runs between Oakland and Haywards, a distance of 10 miles; and another between Oakland and Berkeley, a distance of 8 miles. The extraordinary grades on the San Francisco and San Mateo road make it of peculiar interest. I think the Thomson-Houston system is used.

(4564) W. M. K. asks how to make modeling wax.

A. Best yellow wax ..... 50 parts.
Venice turpentine ..... 7 "
Lard ..... 3¼ "
Bole, elutriated ..... 36 "

Mix and knead thoroughly.

(4565) C. H. asks: 1. What would be the result if a 50 volt lamp was placed on a 75 volt circuit? A. The 50 volt lamp would absorb 1½ times the current and would not last long. 2 What is the amperage of each, a 50 volt, and a 110 volt, 16 candle power lamp? A. The 50 volt lamp requires 1 ampere and the 110 volt lamp ½ an ampere. 3. What is the amperage of the Edison dynamo, described in SUPPLEMENT of March 5? A. When running 9 lamps, 4½ amperes.

(4566) Engineer says: I am a locomotive engineer, 38 years of age, no family. I am out of work at present, with ample means to support me five years if necessary. Now I want to change my business. Do you think, by taking a couple of years course in mechanical engineering and draughting, that I could improve my prospects much? What pay does a draughtsman get? Is the business crowded? Am I too old to begin? A. If you have a mind that you can control for study and business, you can do much to forward your position in life. You must be your own judge as to the drift of your mind toward mechanical work and construction. With this propensity you can get along quite fast, but remember there should be no idle hours at your time of life, although it is never too late to learn. We advise you to take a position in some machine shop near home at any kind of work or price, and go to work with your eyes open to all that is going on around you. Use all your evenings for study and draughting. Select from our catalogue such books on mechanics as you may need from time to time, and start in draughting with the SCIENTIFIC AMERICAN series, then take up a more advanced work. With perseverance and a love for your work you cannot fail. Salaries for draughtsmen, like engineers, depend upon talent and experience, say $1,000 to $2,000 per year.

(4567) G. F. H. writes: 1. Will the pieces of carbons that have been used in electric lights (coppered) do for making small bichromate tumbler battery without removing copper plating? A. The carbons will do, provided you remove the copper. This may be done by placing them in nitric acid for a few minutes. 2. Will you give numbers of any back issues of SUPPLEMENT giving instructions how to make a small motor sufficient for propelling small hunting and fishing boat? A. We think SUPPLEMENT No. 641 contains the information desired. 3. Would plunge battery, Fig. 394, p. 401, in "Experimental Science," answer the purpose for the running of same? A. Yes. 4. Is liquid ammonia ever used as a fertilizer for fruits or flowers? A. Yes; when diluted with ten volumes of water.

(4568) J. C. writes: By placing a disk of wire netting in the bottom of a dinner plate sprinkled with sugar, and covering the plate with another disk of wire netting and running a wire from each disk to an induction coil or shocking machine, flies and other insects and small animals can be effectually shocked. The holes in the netting should be only large enough to allow the insects to reach the sugar through its meshes. By lighting upon the upper disk and reaching to the sugar or lower disk, the electric circuit is completed through the body of the insect.

TO INVENTORS.

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October 4, 1892,

AND EACH BEARING THAT DATE.

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