

ment of ephelis, and always greatly ameliorating lentigo, even if it does not entirely decolorize the patches in the latter case. A general whitening of the skin is produced by this lotion without any irritation. It is as well, however, not to apply it to any abraded surfaces. It has been found far superior in practice to a preparation which is somewhat resembles—said at a high price in Paris under the name of Lait Antipheleque.

(6508) H. N. M. says: How can I ink typewriter ribbons? A. Take vaseline (petrolatum) of high boiling point, melt it on a water bath or slow fire, and incorporate by constant stirring as much lamp black or powdered drop black as it will take up without becoming granular. If the fat remains in excess, the print is liable to have a greasy outline; if the color is in excess, the print will not be clear. Remove the mixture from the fire, and while it is cooling mix equal parts of petroleum, benzine, and rectified oil of turpentine, in which dissolve the fatty ink, introduced in small portions by constant agitation. The volatile solvents should be in such quantity that the fluid ink is of the consistency of fresh oil paint. One secret of success lies in the proper application of the ink to the ribbon. Wind the ribbon on a piece of cardboard, spread on a table several layers of newspaper, then unwind the ribbon in such lengths as may be most convenient, and lay it flat on the paper. Apply the ink, after agitation, by means of a soft brush, and rub it well into the interstices of the ribbon with a tooth brush. Hardly any ink should remain visible on the surface. For colored inks use Prussian blue, red lead, etc., and especially the aniline colors.

Aniline black 1/2 oz. Pure alcohol 15 " Concentrated glycerine 15 " Dissolve the aniline black in the alcohol, and add the glycerine. Ink as before.

(6509) W. B., Jr. says: Will you please tell how I can make a gallon of perfumed violet writing ink? A. One and one-sixth ounce of so-called prima violet is dissolved in 3 quarts boiling distilled water. This may be converted into a copying ink by adding 4 ounces sugar, 4 ounces glycerine. N. B.—Prima violet is known also as dahlia or Hofmann's violet, of which there exist a number of different shades. Perhaps the finest is that known as No. 6. This coloring matter consists of salts of trimethyrosaniline and triethyrosaniline. Other tints may be prepared from other aniline colors. It is best to add to the solution of an aniline color a small percentage (3 to 5 per cent) of alcohol, and also of glycerine (1 to 4 per cent). To perfume it add the essential oil, which will give the desired odor.

(6510) A. B. D. asks: 1. Why does the whistle of a locomotive in motion sometimes sound higher than it really is? A. Because the engine approaching virtually shortens the sound waves. 2. Are heat and light molecular or atomic forms of motion? A. "Radiant heat" so called and light are forms of ethereal energy; heat, properly speaking, is a form of molecular energy. 3. Is either an atomic or molecular body? A. The ether is hypothetical and cannot be termed atomic or molecular. 4. If heat and light are molecular forms of motion, is electricity to be considered so also, as it can be changed to either of the former? A. Electricity is best treated as undefinable, and seems apt to remain so for a long time.

(6511) Gravity asks: What will prevent the formation of sulphate of zinc on the outside of the jars of a gravity telegraph battery? I am informed coal oil will give the desired result. Do you think it affects the working strength of the battery? A. Coal oil is used for the purpose named and has no ill effect. Simply coating the edges of the jar with melted paraffin wax will prevent creeping to a considerable extent.

(6512) W. G. R. asks whether there is a dynamo yet made that has no revolving wire. One without a commutator of any kind and producing constant current (not alternating) of high or low voltage. A. There is no dynamo answering fully your description. There is a theoretical or experimental one, Faraday's copper disk dynamo, described in the text books.

(6513) G. S., Jr., writes: I have got some armature punchings for the sewing machine motor described in SUPPLEMENT, No. 759. Can these punchings be wound the same as the carriage washers, and do the projections on them add or take from the efficiency of the armature? Are they ever used in large machines? A. Projections such as you allude to are often used on the armatures of large dynamos. Projections facilitate winding and diminish slightly the reluctance of the magnetic circuit. They have but little influence on the efficiency of the machine, tending to increase it.

(6514) P. C. T. asks: Can you give the size of German silver wire that will equal in resistance 5 strands of No. 20 German silver? Also what size, using 2 strands, will equal 5 strands of No. 20? The nearest calculation and the probable variance. A. A single lead of No. 13 wire is about 1 1/4 per cent too large; a double strand of No. 16 is about 1 1/2 per cent too large.

(6515) H. R. O. asks: When the commutator of a dynamo is turned off there is almost always one segment worn deeper than the rest. What causes it to be so? A. Possibly the winding is a little out of balance, and sparking and arcing is accentuated at that point.

(6516) W. W. M. writes: I send a sample of a deposit which we think to be sulphur. It must have been deposited on the night of the 19th of March, as it was not noticed until the 20th, when it was seen to be accumulating at the edges of ponds and all other bodies of water throughout this section. It drifted in some places till it reached a depth of 1/4 inch, wherethe water left it high and dry, and I gathered the inclosed sample to-day by picking it up with my fingers. Some of the old inhabitants say that this deposit occurs here every spring just after a big rainfall. But this time there was no rainfall. It seemed to come with a hard west wind. We have a sulphur mine west of here some 75 miles in Calcasieu Parish; it probably is the source of this deposit. We want to know exactly what it is, and how it came to be here. To-day, while gathering the sample, I noticed thousands of small bugs which seemed to be feeding on the material. A. The yellow powder which you send consists of the spores of a species of

pine. The pine trees flower in spring, and this accounts for the presence of the spores as a sulphur-like deposit in your neighborhood every year at that season. Hardly a year passes in which supposed "rains of sulphur," such as this, are not reported from some part of the country.

(6517) A. A. S. asks how to figure the horse power of gas and gasoline engines. A. The proper way to obtain the mean engine pressure is with an indicator and card register in the same manner as with the steam engine. The variation of initial pressure of explosion varies very much, say from 100 to 150 pounds per square inch, and the mean pressure from 50 to 75 pounds, averaging a mean pressure of about 60 pounds. Square the diameter of the cylinder and multiply it by 0.7854 for the area. Then, if the explosive effect is every other revolution, one-half the number of revolutions per minute multiplied by the length of the stroke in feet or decimals of a foot will be the active travel of the piston under pressure. Then

pressure x area x stroke x 1/2 revolution = h. p. 33,000

If the explosion is at every revolution, the full number must be put in the formula. If there is cushioning or compression of the air and gas in the cylinder, it must be deducted from the mean pressure. See "Gas and Petroleum Engines," by Donkin, \$6.50 by mail. For the method by Prony brake see SCIENTIFIC AMERICAN SUPPLEMENT, No. 992; 10 cents mailed.

(6518) R. B. D. writes: For the past two days we have experienced a succession of heavy vibrations with a simultaneous roar as of a distant explosion. The sky in the direction of the sound (W.S.W.) is clear with a light S.E. wind. Is it possible for us to hear the reports from the Sandy Hook grounds? If not, what can it be? We are at least 60 miles from Sandy Hook light. A. The vibrations and noise were probably from the gun trials at Sandy Hook.

(6519) F. W. S. asks: What preparation would you recommend to be applied to the bright steel and nickel parts of a bicycle to prevent rust? A. Try a colorless lacquer. You can find such in the market made from celluloid. It is very hard and durable. If you want only temporary protection, use vaseline.

(6520) H. P. says: Please give formula for best black varnish for small wooden articles, and the best method of tempering small wire spiral springs. A. Black Japan varnish: Naphes asphaltum50 lb. Dark gum anime 8 "

Fuse, add 12 gallons linseed oil; boil, then add of dark gum amber, 10 pounds, previously fused and boiled in 2 gallons linseed oil; next add q. s. of driers and thin with oil of turpentine. How to temper a small spring: 1. Heat the spring to a light red, plunge in cold water; hold the spring over the flame of a small fire of shavings until it becomes black, then hold in the fire until the black disappears. Cool the spring by swinging it in the air. 2. Heat the spring to a cherry red, plunge in cold water, and hold over a small fire until warm. Cool with tallow and burn off the tallow over the fire; repeat this process two or three times, cool in water.

(6521) F. E. H. writes: Will you please give me information on the following subject? I have a spring of water that furnishes 21 cubic feet per minute with a fall of 100 feet in a distance of 300 feet. Please tell me the size of pipe necessary to carry this water. How much power would there be if one of Leffel's new jet wheels were used, and what size nozzle would use all of the water? How much power could be procured with same water, 21 cubic feet with a head of 60 feet, and what size nozzle would it take? A. A 2 1/2 inch pipe will deliver the quantity flowing from the spring with an open end pipe. For power purposes you require a pressure head, for which a larger pipe, 3 inches or 3 1/2 inches, is a better size. Use a 3/8 inch nozzle, which will spout 140 gallons per minute, which will run an impact motor of the Pelton or Leffel type at 400 revolutions per minute, and give you 3 horse power. You will lose head by trying to use all the water on the motor. At 60 feet head with the same quantity of water you may use a 1 inch nozzle and realize 1 3/4 horse power.

(6522) E. J. P. asks: About how much coal does one of the great ocean steamers like the City of Paris burn in twenty-four hours, at the usual five and a half or six day rate of speed? A. The great ocean steamers burn about 400 tons of coal per day.

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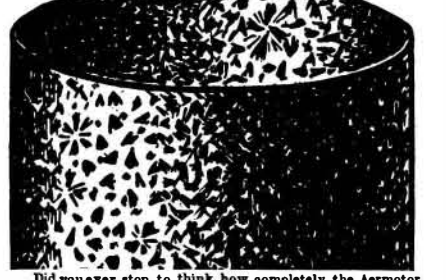
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