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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 This is for our information and not for publication.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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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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.

(6938) A. E. H. says: Will you please reply through the columns of your paper or otherwise the best and most practical receipt for making gelatine moulds for casting in plaster? A. A good gelatine mould may be made in the following manner: Soak the best white glue in cold water for 24 hours, then drain off all the water. Melt the soaked glue in a water jacketed kettle, then pour the glue upon the object, the latter being incased in a lead or pasteboard box. Let it cool for 12 hours, then separate the cast from the object. If the object be a statuette, a thread should be attached to the back, and extended out of the mould at both ends, so that it may be used for cutting open the mould after it is cooled, to permit of taking out the statuette. A good material for a mould is made in the following way: Dissolve 20 parts of fine gelatine in 100 parts of hot water, and add 1/2 part of tannin and the same amount of rock candy. It is said that a mould made of gelatine or glue alone may be made more durable by pouring over it a solution of bichromate of potash in water, 1 part of bichromate to 10 parts of water, and afterward exposing it to sunlight. Most objects require oiling slightly before being covered with glue or gelatine.

(6939) E. R. asks how to find the gear of a bicycle. A. Divide the diameter of rear wheel, in inches, by the number of teeth in rear sprocket and multiply by number of teeth in front sprocket.

28 INCH WHEELS.

Table with 4 columns: Teeth in Sprockets, Gear, Feet per Revolution, and Revolutions per mile. Rows list gear ratios from 16x6 to 24x8.

(6940) J. B. says: Please give the formula or process of dissolving or softening the rubber rollers which are used in clothes wringers. I have several rubber rollers of clothes wringers to repair, they having become loose from the shaft that runs through them. I have tried several processes to dissolve or soften the rubber of the rollers, but find none to do it. A. The rubber of the rollers, being vulcanized, is insoluble. To fasten rolls on wringers proceed as follows: 1. Clean shaft thoroughly between the shoulders or washers, where the rubber goes on. 2. Give shaft a coat of copal varnish, between the shoulders, and let it dry. 3. Give shaft coat of varnish and wind shaft tightly as possible with 5 ply jute twine at once, while varnish is green, and let it dry for about six hours. 4. Give shaft over the

twine a coat of rubber cement, and let it dry for about six hours. 5. Give shaft over the twine a second coat of rubber cement, and let it dry for about six hours. 6. Remove washer on the short end of shaft, also the cog wheel if the shaft has cogs on both ends. 7. See that the rubber rolls are always longer than the space between the washers where the rubber goes on, as they shrink or take up a little in putting on the shaft. 8. Clean out the hole or inside of roll with benzine, using a small brush or swab. 9. Put the thimble or pointer on the end of shaft that the washer has been removed from, and give shaft over the twine and thimble another coat of cement, and stand same upright in a vise. 10. Give the inside or hole of roll a coat of cement with a small rod or stick. 11. Pull or force the roll on the shaft as quickly as possible with a jerk, then rivet the washer on with a cold chisel. 12. Let roll stand and get dry for two or three days before using same. Cement for use should be so thick that it will run freely; if it gets too thick, thin it with benzine or naphtha.

(6941) W. E. says: Would you please inform me through your columns what chemicals you would use in toning a photograph to produce a dark print which resembles a carbon? A. To Obtain Black Tones on Silver Prints.—Scholzig prints on sensitized albumenized paper under green or dark yellow glass, and tones with borax, 90 grains; uranium nitrate, 4 grains; gold chloride, 3 grains; water, 21 ounces. Teape prints under green glass, and tones with gold chloride, 1 grain; saturated solution of borax, 1 ounce; water, 6 ounces (Phot. N., xxxiv, 628). Slightly washed prints absorb more gold in toning and give more permanent images than well washed prints (ibid., 639). The effects observed when silver printing is carried on under green glass are due to the specific action of the rays transmitted by the glass. Signal green absorbs the greater part of the rays that act on silver chloride, but transmits rays that act upon silver albuminate or silver citrate. When albumenized paper is printed under green glass, the image consists almost entirely of altered silver albuminate, while with gelatino-citrochloride under similar conditions the image consists of altered silver citrate.

(6942) H. B. M. says: Will you kindly answer the following queries in the SCIENTIFIC AMERICAN: 1. What is the safest and best remedy for removing freckles? A. Hydrokinone Wash for the Skin.—Hydrokinone..... gr. xlviii. Acid phosphoric glac..... gr. xxx. Glycerine..... dr. ii. Aqua dest..... oz. vi. Misce.

This lotion is stated to give excellent results. It is to be applied to the skin of the face, etc., in the usual way at least twice in the course of twenty-four hours, after it has been washed and dried carefully. If the skin be of the nature known as "greasy," a preliminary wash with tepid water containing a few drops sal volatile or liq. ammon. fort. is advisable. 2. Please suggest a remedy for heat breaking out over the body. A. Lotion of Borax.—1. Borax (powdered), 2 1/2 drachms; distilled water, 1/2 pint. Mix, apply twice a day. Drink plenty of plain carbonated water (plain soda) to which a little sodium bicarbonate is added.

(6943) J. P. M. says: I should be pleased to know some easy way to mark negatives, mark them to show on print. I try to do it by using a sharp point, but the film is roughened too much by it. A. To print the name on the photograph, several methods may be adopted. The simplest is to write the title of the subject on a slip of paper with aniline copying ink or with ordinary copying ink mixed with gamboge or vermilion. Then slightly dampen the surface of the negative near the bottom right or left hand corner in as unobtrusive and unimportant a portion of the picture as possible. Press down the paper with the writing upon it. Leave for a few minutes and then remove the paper, when the writing will be found to have adhered to the negative. When printed the name will print out white. Another way is to write backward on the negative, while another and better plan is to write the name in Indian ink on the surface of the paper before it is printed on. The ink will wash off in the after operations and leave the name in white where the surface of the paper has been protected by the ink.

(6944) Q. T. E. asks: 1. Constructed as directed, which motor will give more power with the same battery power, No. 759 or No. 641, with a drum armature? A. Motor No. 759, we consider the more powerful of the two mentioned. 2. How can I calculate the voltage and amperage necessary to drive a motor? A. The amperage you can calculate from the size of wire used and its carrying capacity, remembering that the armature is wound in parallel. In an approximate way to get at the voltage multiply the amperage by the resistance. In practice the voltage may be much higher, owing to counter electromotive force, and the amperage proportionately less. 3. In a drum armature, (a) which is the best, carriage washers, tin disks, or charcoal iron punchings? (b) Do the disks have to be insulated from the shaft? A. Charcoal iron punchings, if as thin as the others. The thinner the disks are, the better. They need not be insulated from the shaft. 4. Which is the best for the field of motor 641? Laminated field as shown, a cast field, or a wrought iron strip of the required dimensions bent to shape? A. As a motor a solid wrought iron core is best, but cast iron is quite good enough. 5. What battery power does 641 need—759? A. Ten to twenty watta.

(6945) W. S. and others write: Will you inform me where I can get a mineral rod that will locate a hidden treasure? It is gold and copper. If you can, inform me if there is such a thing and where I can get one and if it will tell the spot. I have heard of a thing of this kind, but do not know any firm that makes them, but I thought you would. You will greatly oblige me by giving me full particulars, and where I can get one, and the cost of it. A. If there were any such thing as an operative mineral or divining rod, wethink the owner would refuse to part with it; certainly no price would be too great for it. Any money spent on a divining rod is wasted; neither gold nor copper will affect the so-called "magnetic" rods, the needle of which turns when passing over beds of iron ore. See the article entitled "Divining Rods, Scientific and Unscientific," in the SCIENTIFIC AMERICAN, No. 8, vol. 67.

(6946) W. O. K. says: Will you kindly let me know how to boil a meerscham pipe that has been in use some time, so as to color readily? Also how to fix the color in the pipe when it is once there? A. Ordinarily the pipe is boiled for coloring in a preparation of wax which is absorbed, and a thin coating of wax is held on the surface of the pipe, and made to take a high polish. They are first soaked in melted tallow, then in white wax. Under the wax is retained the oil of tobacco, which is absorbed by the pipe, and its hue grows darker in proportion to the tobacco used. A meerscham pipe at first should be smoked very slowly, and before a second bowlful is lighted the pipe should cool off. This is to keep the wax as far up on the bowl as possible, and rapid smoking will overheat, driving the wax off and leaving the pipe dry and raw. A new pipe should never be smoked outdoors in extremely cold weather. Where the color has once existed it can be brought back by careful heating, which will drive the color out toward the surface.

(6947) P. C. says: Do you know of a remedy which will promote the growth of hair or prevent it falling out? A. Quinine Hair Tonic:

- Quinine sulphate..... 20 grn. Tincture of cantarides..... 2 fl. drm. Fld. ext. of jaborandi..... 2 " " Alcohol..... 2 " " Glycerine..... 2 " " Bay rum..... 6 " " Rose water—enough to make..... 15 " "

The quinine is dissolved in the alcoholic liquids by warming slightly, then the other ingredients are added.

(6948) G. P. asks (1) for a remedy for warts upon the hand. A. It is said that the daily application of whale oil to the wart for two or three weeks will cause it to disappear. 2. Also which is the greatest distance, a mile or a knot, and what is the difference in a nautical mile. The land mile contains 5280 feet. The United States coast survey has adopted as the value of a nautical mile the length of an arc of one minute on a great circle of a sphere whose surface is equal to that of the earth. This gives it a length of 6080.27 feet. The British Admiralty Office have adopted as their hydrographic mile, 6080 feet. The term knot is not universally approved as indicating a mile; it is better to express it as a nautical mile, leaving knot to indicate the divisions of the log line.

TO INVENTORS.

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For which Letters Patent of the United States were Granted

August 11, 1896,

AND EACH BEARING THAT DATE.

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

- Advertising electrical phosphorescent letters or 665,775 Air compressing apparatus, E. Chaquette..... 665,775 Air duct, R. Patton..... 665,490 Air moistening apparatus, H. Cooper..... 665,604 Air ship, C. A. Smith..... 665,806 Alarm. See Time alarm. Armature for dynamo-electric machines, Thomson & Armstrong..... 665,647 Auditor device, E. Spaulding..... 665,872 Auger, A. V. Pearl..... 665,500 Automatic signal, J. P. Coleman..... 665,839 Axle box, car, H. E. Welsh..... 665,870 Axle, car, P. Neagle..... 665,863 Axle skein, R. L. Finley..... 665,677 Bag, H. S. Whitehead..... 665,522 Bag, B. Krell..... 665,887 Baling press, A. Barrett..... 665,686 Baudage, C. Von Stammer..... 665,700 Basket, J. H. Ruet..... 665,510 Basket handle, detachable, A. Hourdeaux..... 665,460 Basket, J. H. Ruet..... 665,510 Batteries, charging and discharging secondary, E. N. Dickerson..... 665,727 Battery system, storage, F. D. Good..... 665,741 Bed folding, Fay & McNab..... 665,536 Bedstead, folding, A. H. 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