ductions," but are the product of skilled "human workmanship." There to no difficulty in perceiving a striking difference between a
head and a splinter of quartz.
(16) H. C. W. asks: 1. If an engine of 100 horse power propels a boat 5 miles per hour, will an speed? $\mathbf{A}$. The power required is as the cube of the speed. It would require 8 times the power for 10 miles per hour, that would be necessary for 5 miles. 2. If
two cannon balls, one weighing 8 and the other 2 pounds, be fired with the same velocity, which will go he further ? A. The larger one.
(17) W. E. writes: 1. I have a lot of grapes that I want to keep on the stems until the middle of
the winter. How can I do it ? A. Dip the ends of the stems in melted paraffine and pack the bunches in tigh boxes, with or without a packing of cotton. 2. Can you refer me to any paper that has an article on ham-
mering saws? A. See Scientifio American, Vol. 36, page 259.
(18) T. B. asks: What is spelter composed of ? Dictionary says, an impure zinc. Is that the same purposes? A. No. Spelter for brazing copper and iron is composed of copper 1 part, zinc 3 parts. Melt the a composed of copper 1 part, zinc 3 parts. Melt the
copper, then add the zirc. When the alloy has cooled sufficiently to become solid, pulverize coarsely in an iron mortar.
(19) C. E. B. asks: 1. How can I put a hole through the bottom of a glass bottle? A. By
means of a very hard drill wet with turpentine. 2. means of a very hard drill wet with turpentine. 2,
Will a wooden rod coated with shellac varnish make good insulator? A. It will answer for some purposes,
but is not so good as glass. 3. In making the resinous but is not so good as glass. 3. In making the resinous
cake for an electrophorma I find the resin (when used alone) to be too brittle. Can you tell me of anytbing that I can mix with the resin so as to obviate the above parts, wax 1 part, pitch 1 part 4 , In min shellac jar, with what is the tin foil put on? A. Shellac var nish. 5. It is a very difficult matter to put the tin foil on the inside of a Leyden jar. Can you give me directions for anything else that I could put on with less difflculty? A. You may fill your jar half full; of crumple pieces of tin foil.
(20) J. H. S. writes: I am using a gelatine copying pad which I have made myself. I find it very
useful, but experience some trouble in washing the ink useful, but experience some trouble in washing the ink off. Can you tell me of some method which will take
the ink off easily ? A. If you allow the ink to remain it will be ahsorbed in a few hours so that it will not
(21) F. H. S. asks: 1. Which has the mos power, pressure of steam being equal and cylinder the same size, an oscillating or ordinary eccentric engine you also refer me to any number of the Scientirio American which contains plain directions for making either kind, that a good mechanic could follow ? A. tific american, nor can you find them published, ex ept perhaps scattered through a number of books.
(22) R. A. R. writes: I see mention made of graphite as a lubricant. Is it, as is claimed, fa nals, friction between wearing parts of a machine jour sit what it is claimed to be? A. Graphite or black jead, has long been used with oil as a lubricant, in troublesome cases, but care must be taken that the
raphite is clean and fine, otherwise it will not answer graphis
well.
(23) W. E. C. asks: Can you give me the ule to find the vertical height of a ball governor, the number of revolutions being given ${ }^{\text {? }}$ I am thinking of
making a different governor for our engine. The present one runs 56 revolutions, and the vertical height is 16 inches. According to the rule $\left(\frac{188}{\text { revolutions }}\right)^{2}=$ height-the height is only $11 \cdot 22$ inches. I want to run the new one 78 revolutions, but this rule don't appear a method is to calculate the number of vibrations of a pendulum of the given length, the revolutions of a gorernor will be half the number of vibrations.
(24) R. L. S. writes: In a late work on philosophy I notice the author makes a difference be moen "momentum 'is equal to the weight of the body multiplied by its velocity per second expressed in feet," and tha he "striking force of a body is equal to its weight mul iplied by the square of its velocity." Example: A bullet weighing two ounces, flred with a velocity of 1,400 ounds. Is there any difference between momentum and striking force? Please explan. A. Momentum means the mechanical effect which a body in motion will produce in a moment(second) of time, and is as the weightmultiplied by its velocity. "Striking force,"-
"Force of Impach" and "Vis Viva "-all these terms mean the same thing; the whole mechanical effect which body in notion will produce in beng brought to rest, no regard being had to the time in which the effect is produced, and is as the weight multiplied by the square of its velocity.
(25) A. D. asks: What sort of hose, rub er, cotton, linen, etc., is most durable for country use with lawn sprinklers, etc., the size being $11 / \mathrm{in}$ inch? A ried or linen; but it must be carefully drained and dried after use; but if this cannot be d,
(26) C. M. D. writes: Yesterday I watched the engineer while boiler-cleaning, and find on the botup in small pieces and left the iron voluntarily. All did not come off, and the thickness varied. I have neve ried any of the compounds advertised to prevent scale have always been warned against them. Some say that otatoes are a preventive or loosener, some say crude
il. One remedy suggested by one of the best mahinists in the city was to blow oat, half way down
wice a week. Now please give me youridea ofthelast aink preventive and such other information as you his will be beneficial. A. The blowing downis good; blow down two inches once a day. Potatoes in small uantity are good, so also is a small quantity of crude
(27) G. S. C. asks: Can you tell me the cause of the lndian summer haze, so frequently reing (fermenting) leaves, recently fallen partly tosmoke ( ermenting) leaves. recently fallen, party to smoke
(28) E. L. asks: 1. Can water through avy pressurein a heater get above212 Fah.? A. Yes. . How is the best tailor's chalk made? A. It is a naral mineral (talc).
(29) W. E. P. asks: 1. How fast should he teeth of a circular saw run in sawing hard wood into lumber, to get the best effect of the steam ? A.
8,000 to 9,000 feet per minute. 2. How fast should pair of 30 inch underrunner burrs runin grinding corn . About 260 revolutions per minute. 3. What is the cylinders \& A Ring or metallic packing has less fricion and will keep tight much longer. 4. How are $2 \times 4$ inch engines packed? A. Best packed with metallic ings.
(30) J. S. N. asks: 1. What is the least epth that paddle wheels should be immersed in water work well on a boat 20 inches deep? A. Should not buckets, if I make 100 revolutions per minute ? Should have a sufficient number that at least one bucket has constantly full dip. You cannot work successfully at 100 revolutions per minute with a paddleheel.
(31) E. W. asks for a recipe for ebonizing (31) E. W. asks for a recipe for ebonizing
ood. A. Apple, pear, and walnut, if fine grained, may ood. A. Apple, pear, and walnut, if fine grained, may ebonized by the following process: Boil in a glazed
enameled iron vessel with water, 4 oz . of ground gallnuts, 1 oz of logwood chips, and $\frac{1 / 2}{}$ oz. each of green vitriol and crystals of verdigris. Filter while warm, nd brush the wood over with this repeatedly. Dryand brush over with strong cold solution of acetate of iron
and dry. Repeat thisseveral times, and finally dry in and dry. Repeat thisseveral times, and finally dry in

Minerals, etc.-Specimens have been reeived from the following correspondents, and xamined, with the results stated:
E. H.-Scales of mica and carbonate of lime.-W.W. -C. H. C.-It is hornblendicrock.-F. D. B.-Horn--C. H.

## official. 1

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