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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 This is for our information and not for publication.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.

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(7967) I. W. C. asks: Can a ball (steel or any other kind) be made so round, and some flat surface made so smooth, that there will be no friction caused by the ball rolling over the smooth surface; or would there be friction by their not being perfectly round or smooth? A. Friction cannot be entirely eliminated in rolling bodies, however apparently perfect the surface of ball and plane may be made, but it may be made so small as to be practically immeasurable and less than the air friction on the surface of such rolling bodies.

(7968) G. W. R. asks: 1. An armature coil as in SUPPLEMENT, No. 641, but with only eight coils each having 34 convolutions of No. 18 B. S. single cotton-covered magnet wire, about 15 feet of wire in each coil, would it work all right wound this way? A. There is no reason why the motor should not work all right, but there is no reason also why it should not give you less power. You reduce the magnetic force by reducing the number of turns on the armature. 2. Would it make any difference if the coils are not exactly the same distance apart? A. No great difference. They should however be equally spaced. 3. How much wire must be wound on magnet core, the same as in SUPPLEMENT, No. 641, and what size wire? A. Wind as described in SUPPLEMENT No. 641. You would better rewind your armature if you want a motor like the one described in SUPPLEMENT. We have to say a great many times, do not change the printed designs. It is not likely that the change will be an improvement. The designs were made by men of experience and skill, and are right as they are. Any change is likely to result in a reduction of efficiency. 4. Is single cotton-covered wire the best for motor, or is the double the best for motor? A. Single covered wire is good enough for use in a motor to be run with eight cells of battery. 5. Is a commutator with eight segmental parts $\frac{5}{8}$ inch diameter, $\frac{3}{8}$ inch wide, large enough for the above motor? A. A commutator with eight segments and eight coils of the same size as when twelve segments are used has only two-thirds as many turns as in the original design, and therefore only two-thirds as much power is produced at the armature. 6. What does this mean—30 ampere hours on battery? A. Thirty ampere hours means one ampere working thirty hours, or any number of amperes which the current has working long enough to give thirty when the amperes and the time are multiplied together. The battery for this motor will give perhaps five amperes at best working strength. Five multiplied by six gives thirty. The battery will in such a case be exhausted in six hours. 7. What horse power would this motor be? The armature and magnet core are the same as in SUPPLEMENT, No. 641. A. The horse power is determined as follows: Eight cells of the battery have about sixteen volts. If they are drawn upon to the rate of five amperes, the output is $16 \times 5 = 80$ watts. Now 746 watts are one electrical horse power. The battery will yield about one-tenth of a horse power for six hours.

(7969) W. E. H. asks: 1. How could I make a liquid air motor at a moderate cost? A. We do not know, since no such a thing has been put upon the market as a liquid air motor at moderate cost. 2. Where will I find a description of the same? A. Apply to the Liquid Air Companies which advertise that they have such a motor. 3. Where will I find a description of how to make the apparatus with which to make liquid air? A. In Sloane's "Liquid Air," price \$2.50 by mail. 4. How many horse power would you think it would take to run a sixteen foot row boat? A. $1\frac{1}{2}$ to 2 horse power is required for a 16-foot boat. 5. Where would I find a description for making one of that number horse power? A. We know of no description of a liquid air motor. An illustrated description of how to build a 16 foot boat is contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 38. Ten cents, mailed. 6. Where could I get a screw propeller? A. Any maker or dealer in steam or naphtha launches can supply you with one. 7. How large should it be? A. Propeller should be 14 inches diameter.

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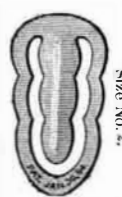
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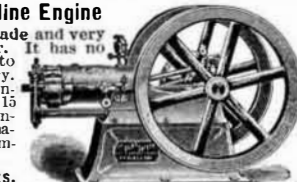
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