the whole becomes ropy or appears like the white of eggs. Apply it warm. Buff the grain off the leather where it is to be cemented; rub the joint surfaces solidly together, let it dry a few hours, and it is ready for practical use; and if properly put together, it will not need riveting, as the cement is nearly of the same nature as the leather itself. 2. Also a good dressing for same kind of belt? A. Five parts of India rubber are cut fine and melted together with 5 parts of oil of turpentine in an iron, well covered vessel; then add 4 parts of resin, stir well, melt, and add 4 parts of yellow wax, stirring constantly while melting. This mixture while warm is added with constant stirring to a melted mixture of 15 parts fish oil and 5 parts of tallow, and the whole is agitated until it has congealed. The mass is applied to old belts upon both sides in a warm place, and when the belts are in use, from time to time upon the inner side. By this treatment they become very durable. 3. Is it injurious to any kind of dynamo to run for any considerable length of time with any lamps or motors in circuit with it? A. No; unless it becomes unduly heated. 4. How can I find the horse power of a common slide valve engine? A. Multiply the square of the diameter of the cylinder in inches by 0·7854, and this product by the mean engine pressure, and the last product by the piston travel in feet per minute. Divide the last product by 33,000 for the indicated horse power. In the absence of logarithmic formulæ or expansion table, multiply the boiler pressure for ⅝ cut-off by 0·91; for ½ cut-off by 0·85; ⅜ cut-off by 0·75; 3-10 cut-off by 0·68. This will give the mean engine pressure per square inch near enough for ordinary practice, for steam pressures between 60 and 100 pounds, always remembering that the piston travel is twice the stroke multiplied by the number of revolutions per minute. 5. What is metallic packing? Is it applicable to the stuffing box of engine? A. Metallic packing is used for steam engine piston rods. It is made in metal rings or mixed with other packing. 6. What is the lubricant for commutators? A. Use a small quantity of oil.

(6531) W. H. M. asks: 1. If the rear sprocket of a bicycle were 6 inches in diameter and the front one in proportion, would it run easier than if made the usual size? A. Possibly. We understand that the principle is now being tried on some French bicycles. 2. If a bicycle had a chain on each side, would it run with less friction than with single chain. A. Data are wanting to determine this. It is so much trouble to keep one chain in order that we should be very slow to introduce a second one.

(6532) F. F. asks: What is the temperature of the bottom sheets of a tubular boiler on the side next to the fire when the boiler is forced to its full capacity? Also what is the temperature on the water side of same? The above question came up at a meeting of our association; one member claimed that it was 1,100 degrees on the side next to fire. Some said he was right, others said he was not, so to settle the matter it was left for you to decide for us. A. The temperature of the water side of fire sheets is but little above the temperature of the water when making steam, probably 150 to 200 degrees. The iron is a quick transmitter of heat, and although the fire against the fire sheet may be 1,400 to 1,600 degrees, the surface of the plate is seldom above 600 degrees.

(6533) R. A. C. writes: I have made motor No. 641, and it works so well that I write you to let you know how I made it. I have provided a bronze bar commutator and a cast field; the field is mounted to stand erect, and the bearings are made of brass and screwed to the poles. I have also made a dynamo like the eight light dynamo except it is two-thirds size, and it runs the above motor nicely.

(6534) J. J. D., Kan., writes: The inner sides of the steam chest of an engine we have are being continually eaten away. The metal becomes so soft that it can be easily cut into with a knife. We can't see any reason for it unless it be that some acid gets mixed up with the steam. But we do not know where it comes from. We use ordinary rain water in the boiler. To prevent leakage between joints the steam chest is packed with asbestos paper. Could the acid come from this, owing to the way the fiber may have been treated? As the chest has been thoroughly cleaned lately, we have no means of examining at present the product formed. If you could tell the real cause and suggest a remedy, you would greatly oblige us. A. The water from the condensing steam on the inner surface of the steam chest is an absorbent of iron and is known to disintegrate and carry away the iron, leaving the graphitic carbon in place, and in a condition to be cut away with a knife. This is notably so with very soft castings, which contain a large percentage of carbon. There is only a partial remedy in the making of engine parts that are in contact with steam to have the iron low in carbon. By cutting off a portion of the soft surface and testing, you will find it characteristic of ordinary graphite.

(6535) J. M. C. asks how to distinguish between gold and its imitations, either plated articles or alloys. A. An assay or analysis is the only good method. The following may answer for rough tests: Gold should dissolve in a mixture of one part nitric with three parts hydrochloric acid. A residue indicates silver. If sulphuric acid is added to the solution, a precipitate indicates lead. One quick method is to determine its specific gravity. Silver may be dissolved in nitric acid. It should, with excess of ammonia, give a colorless, clear solution. Sulphuric acid may be used to test for lead.

(6536) G. W. W. says: Will you kindly republish the formula for your buffalo moth exterminator? It did its work in a thorough manner, but I have carelessly mislaid your formula and would greatly appreciate its republication. A. Take strips of red or blue flannel, as these colors are particularly attractive to them, dip in solution of arsenic and lay around the edges of carpets or wherever the pests are troublesome.

(6537) T. Y. C. says: Please give me in the SCIENTIFIC AMERICAN a recipe for an elastic waterproof glue. A. Glue which stands moisture without softening. Dissolve in 8 fl. oz. of strong methylated spirit ½ ounce each of sandarac and mastic; next add ½ ounce of turpentine. This solution is then added to a hot, thick solution of glue, to which isinglass has been added, and is next filtered while hot through cloth or a sieve

TO INVENTORS.

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