PETROLEUM AS A FUEL FOR STEAM TRICYCLES.

Mr. Louis Lallemand, a skillful mechanic of Vassy, has just constructed a steam tricycle, to be heated by petroleum, and as the question of terrestrial mechanical locomotion is one that interests a large number of readers, we shall describe the apparatus.

The length of the tricycle, as well as its extreme width, is 3½ feet. The boiler is of welded iron plate. Its height is 2 feet, its external diameter is 12 inches, and its total capacity is about 4 gallons. It is provided with 30 brass tubes, and serves as a frame for the engine, the cylinder of which is 2¾ inches in diameter, with a stroke of 4¼ inches. In the center of the boiler there is a copper cylinder, forming a steam dome. The pressure gauge is placed to the left of the cylinder, under the eye of the driver, and the feed pump is to the right. The escape pipe enters the smoke stack and quickens the draught.

The throttle valve is within reach of the left hand, as is also the lever of a Prony brake fixed upon the axle. Another hand lever, fixed to the foot rest, is designed to serve as a bearing point.

The driver's right hand rests upon the steering winch, and has within its reach a lever for changing the velocity, that permits of throwing either of the two driving pulleys into gear. These latter are driven by the shaft of the engine through the intermedium of pitch chains.

The two large wheels are 3½ feet in diameter, and the small one 1¾ foot. They are provided with a rubber tire, in order to prevent noise.

The water tank, which has a capacity of about seven and a half gallons, is situated in front of the generator, and partially covers the front wheel. The petroleum reservoir, which holds 2¼ gallons, is situated over the tank.

The fire box, which is of peculiar and very simple structure, is suspended from the generator, and always keeps a horizontal position, whatever be the slope of the road.

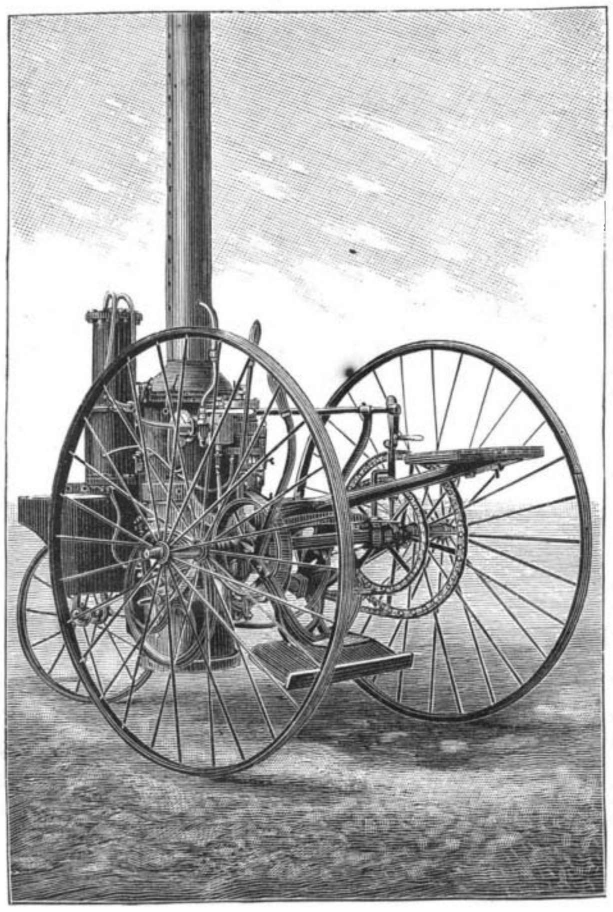
The petroleum enters the fire box through a flexible tube, and the fire is regulated at will through the intermedium of a distributing cock within reach of the driver.

The total weight of the apparatus, empty, is 500 pounds. The consumption is about three and a quarter gallons of water and three and a half pints of petroleum per hour. It takes about ten or twelve minutes to get up a pressure. Upon a good road, a speed of from 7 to 9 miles per hour may be obtained.

Mr. Lallemand has already made four trials of this tricycle, each of which lasted 12 minutes. The distance run over in each of these was about two miles, and the gradients ascended never exceeded 3 inches to the foot. On a level road, a pressure of two atmospheres suffices to run the apparatus at a speed of from 3½ to 4½ miles per hour. The constructor has not as yet been able to perform more prolonged experiments, as up to the present he has not obtained permission to run his apparatus in the streets. According to him, the use of petroleum is very advantageous as regards the regulation of the production of steam and as regards the quickness with which a pressure may be obtained; but in France this product is still too dear to prove economical.—*La Nature.*

Mechanism of the Heart.

In Dr. B. W. Richardson's recent Cantor Lectures on "Animal Mechanics," speaking of the mechanism of the heart, he described the number of the pulsations of the heart in different animals—in fish, frog, bird, rabbit, cat, dog, sheep, horse—and made a few comments on the remarkable slowness of the heart—40 strokes per minute—in the horse. Then the number of pulsations in man at various periods of life, and at different levels, from the level of the sea up to 4,000 feet above sea level, was brought under review, and was followed by a computation of the average work performed by the heart in a healthy adult man. The work was traced out by the minute, the hour, and the day, and was shown to equal the feat of raising 5 tons 4 cwt. one foot per hour, or 125 tons in twenty-four hours. The excess of this work under alcohol in varying quantities formed a corollary to the history of the work of the heart, Parkes' calculation showing an excess of 24 foot tons from the imbibition of eight fluid ounces of alcohol. The facts relating to the work of the heart by the weight of work accomplished was supplemented by a new calculation, in which the course of calculation was explained by mileage. Presuming that the blood was thrown out of the heart at each pulsation in the proportion of 69 strokes per minute, and at the assumed force of 9 feet, the mileage of the blood through the body might be taken at 207



A STEAM TRICYCLE HEATED WITH PETROLEUM.

yards per minute, 7 miles per hour, 168 miles per day, 61,320 miles per year, or 5,150,880 miles in a lifetime of eighty-four years. The number of *beats* of the heart in the same long life would reach the grand total of 2,869,776,000.

The Length of a Step.

Dr. Gilles de la Tourette has recently published a monograph upon normal locomotion and the variations in the gait caused by diseases of the nervous system. He found, from a comparison of a large number of cases, that the average length of a pace is, for men, 25 inches; for women, 20 inches. The step with the right foot is somewhat longer than that with the left. The feet are separated laterally in walking about 4½ inches in men, and about 5 inches in women. The ataxic gait is characterized by an acutal shortening of the pace coinciding with an apparent lengthening, and by a considerable increase in the lateral separation of the feet.

The Management of Lamps.

Some one has written some directions for treating lamps, and it so accords with the experience of another that we present them herewith. To insure good light, the burners of petroleum lamps should be kept bright. If they are allowed to become dull, the light is uncertain, and, owing to the absorption of heat by the darkened metal, smoke is the result. Once a month place the burners in a pan, covering them with cold water, to each quart of which a tablespoonful of washing soda should be added, and also a little soap. Boil slowly for one or two hours, and at the end of this time pour off the blackened water. Then pour enough boiling water into the pan to cover the burners, adding soap and soda in the same proportions as before. After boiling again a few minutes, pour off the water, rinse the burners with clear hot water, and rub dry with a soft cloth. The burners must be perfectly dry before the wicks are introduced. Should the wicks become clogged with the particles of dust floating in the oil, and new ones not be desired, they may be boiled in vinegar and water, dried thoroughly, and put back in the burners. If wicks have done duty all winter, they should be replaced by new ones in the spring. Nickel burners may be boiled as well as brass ones. Time spent in the care of lamps is never wasted. A perfectly clean lamp, that gives a brilliant light, is a great comfort. What more cheerless or depressing than an ill-kept lamp, which gives forth an unsteady, lurid, sight-destroying flame? The paper roses, guelder roses, and chrysanthemums, so popular for decorative purposes, are admirable for placing in the lamp chimneys to keep out the dust during the day, and the wicks should be turned a little below the rim of the burner, to prevent exudation of the oil.

A NOVEL CLOCK.

The novelty of the clock which is here illustrated consists principally in what we might term the escapement. Beneath the main mechanism is placed a tilting table pivoted upon studs projecting from the center of its long sides, so that it is free to have a seesaw movement. Upon the upper surface of the table is formed a zigzag path or groove in which travels a small steel ball. The path is made up of sixteen divisions, so that the ball, starting at the elevated end of the groove, passes across the table, forward and back, until it reaches the lower end, which is then elevated to enable the ball to run back to the starting point, which is again raised, and so on.

Attached to one end of the table is a rod leading upward to an arm placed at right angles on the end of a shaft driven in the usual way. When the ball reaches the depressed end of the table, it strikes a spring which releases a catch holding the shaft, which is thereby permitted to make a half turn, and its arm is correspondingly moved to raise or depress, as the case may be, that end of the table to which the connecting rod is attached. The ball then runs down the table, strikes a similarly arranged spring at the opposite end, when the movements are repeated and the position of the table again reversed. It takes fifteen seconds for the ball to travel from one to the other end of the table. It is evident that if the inclination of the table be varied, the time occupied by the ball in descending will be either increased or diminished, and the clock thereby regulated. This is accomplished in a most simple and effective way by slotting the arm to which the upper end of the connecting rod is attached, so that by placing the holding screw nearer to or further from the shaft, the inclination of the table may be varied as necessary.

The clock is provided with three separate dials or faces; the hand in front of the one to the right makes a revolution in one minute, so that at each change of the table it moves around one-quarter or fifteen seconds; the center dial marks minutes, and the left hand one, hours.

A NOVEL CLOCK.