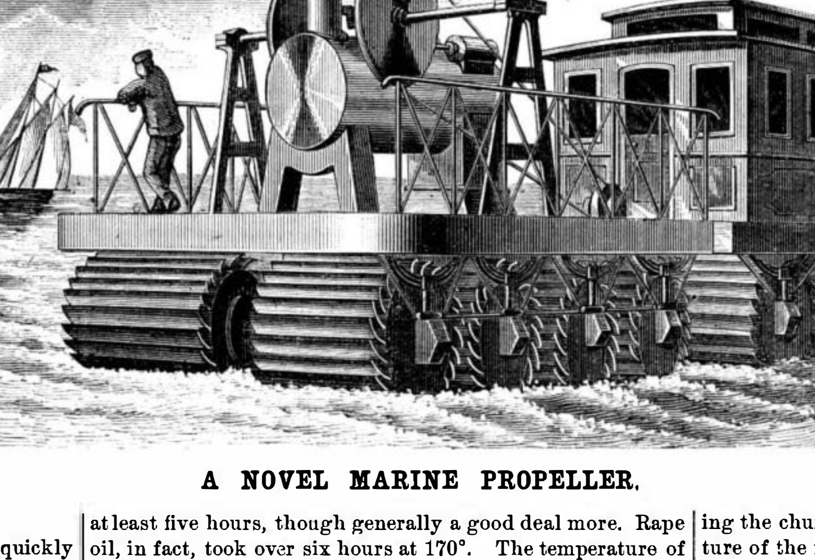
A NOVEL MODE OF MARINE PROPULSION.

M. A. Huet, a Dutch civil engineer, has invented a marine carriage; or, in other words, he proposes to propel a locomotive, with its train of cars, over the surface of a canal or river at as great a speed as upon a railway on land. How this result is to be accomplished our engraving illustrates. The locomotive and cars are separate vehicles, and each rests on a number of cylinders placed as represented, and arranged to revolve freely on axles. Each cylinder is a paddle wheel, the buckets of which are placed parallel to its axis, and are bent upwards so that the lower portion of the curve strikes the water nearly parallel to its surface, thus tending to lift the superstructure upwards as well as propel it forwards. The inventor suggests that some of the paddle wheels may be constructed with floats arranged spirally: those on one side of the car being inclined in one direction, and those on the opposite side in the other, so that the water may be thrown obliquely outwards to the rear.

The motive power is supplied by a small double cylinder engine placed horizontally upon the boiler upon the platform of the locomotive. The machine is of the simplest form. The piston rod actuates a shaft on which are driving pulleys, from which, by means of a belt, motion is communicated to the two rear paddle wheels. These are connected by an endless belt with pulleys situated on the inner ends of the other cylinders which are thus rotated. Steering is accomplished by going ahead with the paddle wheels on one side, and, if necessary, reversing the others, according to the direction to be taken up. A number of rudders may also be arranged, one in front of the locomotive and the others in rear of the cars. The platforms of the vehicles have rounded ends to admit of their turning curves, and springs are provided above all the axles to lessen the vibration caused by the paddles striking the water.



A NOVEL MARINE PROPELLER.

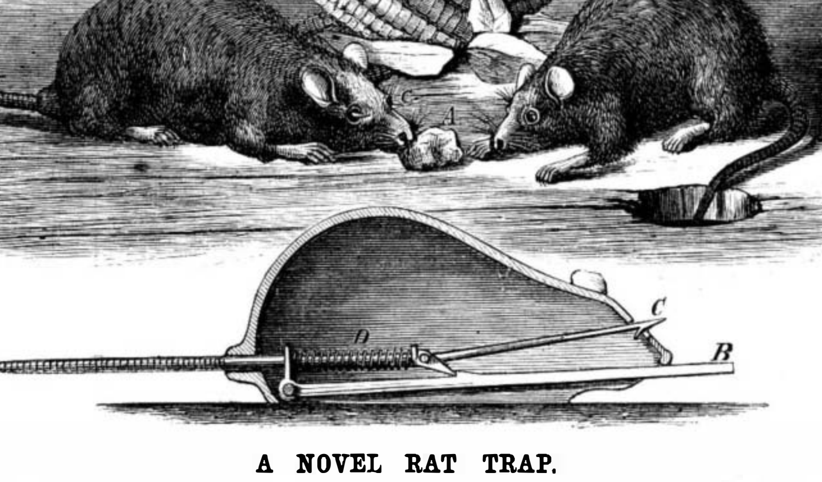
The inventor states that the machine can be quickly stopped by arresting the motion of the engine. The train, which when moving is slightly lifted up by the downward action of the paddles, then increases its draft of water, becoming more submerged, and so opposes a larger surface of resistance to the fluid. Consequently its momentum is quickly overcome. For sudden stoppage, broad boards are to be dropped at right angles to the line of advance, and the same are also to be used at either side of the vehicles when they are running with the wind abeam, in order to prevent lee way.

The plan, we think, would be plainly impracticable in a sea way, while the probability of the cars remaining upright, even in smooth water, during a strong wind seems to us very slight. The practical feasibility of the idea remains yet to be demonstrated.

NOVEL RAT TRAP.

The Spanish Inquisition, among its other diabolical implements of torture, had a life sized figure, sumptuously dressed to represent some female saint. After a victim had been put through the usual course of rack, hot pincers, etc., he was requested to kiss the image. The moment, however, he began his osculatory performance, the dummy extended its arms, enfolded him in an embrace which was lined with dagger points, and then, a convenient trap door opening, dropped him into unfathomable depths below.

This rat trap is something on the same principle, only the rodent is drawn to his doom through his unquenchable appetite for cheese. A dummy rat is constructed of any material to closely imitate the real animal. From his nose extends the rod, B, to which the bait, A, is affixed. D is another rod surrounded by a coiled spring, one end of which catches in a projection in the rod, B, and the other emerges *à posteriori*, and serves for a tail. C is one of two long needles barbed at the ends, fastened to the rod, D, and protruding from the eyes of the imitation animal. The genuine rat, smelling the bait, perceives it under the nose of a rival. He immediately prepares to capture it, collects his energies, makes a rush, and springs the trap. The keen points shoot forth from the eyes of the artificial monster, bury themselves in his body, and the barbed ends hold him fast. Then he remains and absorbs the cheese at his leisure. J. W. Ellis, patentee, of Pittsburgh, Pa.



A NOVEL RAT TRAP.

The Spontaneous Ignition of Oiled Cotton or Silk Waste.

Major Majendie has communicated to the Royal Artillery Institution the results of certain experiments, instituted to ascertain the relative degree of risk accompanying the presence of oiled cotton waste and oiled silk waste in buildings and stores.

Mr. Galletly, who made the investigation referred to, read a paper at the Brighton meeting of the British Association for the Advancement of Science in August last, on a series of experiments carried on by him, with a view of determining precisely the conditions under which spontaneous combustion takes place in cotton and other combustible material, when impregnated with animal or vegetable fatty oils. Mr. Galletly found that cotton waste soaked in boiled linseed oil and wrung out, if exposed to a temperature of 170°, set up oxidation so rapidly as to cause actual combustion in 105 minutes in the case where the action is slowest. The quantity in this instance was sufficient to fill a box 17 inches long by 17 inches broad, and 7 inches deep, but unfortunately it is by no means necessary that the waste should exist in any such bulk, a common lucifer match box full igniting in an hour in a chamber at 166° Fah.

Raw linseed oil ignited less readily. The experiment was made in a smaller case than the first one above mentioned. Active combustion took place in four or five hours. Rape oil and Gallipoli olive oil ignited somewhat less readily, taking at least five hours, though generally a good deal more. Rape oil, in fact, took over six hours at 170°. The temperature of 130° was employed in the case of the Gallipoli oil, and also in the following instances: Castor oil took over a day before ignition; lard oil took four hours; salad oil, one hour and forty minutes; and sperm oil refused to char the waste at all.

Mr. Galletly considers that the heavy oils from coal and shale tend remarkably to prevent the oxidation described, by protecting the tissue from contact with the air. It appears that the so-called spontaneous action of oiled cotton waste proceeds from the substance being exposed in a finely divided condition to the oxidizing action of the air. In point of fact it is the same action that causes the bloom in some of the direct processes for the reduction of iron to revert to the oxide when exposed in a heated state to the air, and the still more remarkable action that is said to have taken place in the iron removed from the Mary Rose, which had lain at the bottom of the sea till it became eaten into a porous condition. It appears to have been hoped that silk waste might have offered greater security, but this proves not to be the case: a little powder in the center of silk waste igniting in an hour, while under the same conditions powder enveloped in cotton only fired in an hour and a half. The silk of course did not itself fire like the cotton, but this would be a matter of little moment, unless the quantity of powder in its immediate locality was very small indeed. It is important to note results which may be of such importance to shops, and other factories than those for powder. It is to be regretted that nothing more encouraging can be drawn from them than the caution not to leave oiled waste about, even in the smallest quantities, especially in warm places.

THE ONEIDA COMMUNITY has, according to the *Circular*, been recently exercised by the posting upon its bulletin of the following conundrum: "Why does a spinning top, at the close of its whirl, apparently go into a motion in the opposite direction from that in which it started?" This inquiry set all tongues in motion, men, women, and children, and the discussion is doubtless still in progress.

THE new railway from Joppa to Jerusalem conveys passengers through in two hours. The romance of traveling in the Holy Land is forever gone.

How to make Good Butter.

Philadelphia butter is a luxury which probably a very large number of our readers know only by name, and which, like the Devonshire cream of England, is believed unattainable save in the immediate neighborhood of the place of its production. Although this idea is doubtless correct regarding the latter delicacy, still it is not true of the far famed "gilt edged" butter of our sister city; at least so says a correspondent of the *Practical Farmer*, from whose letter we extract the following hints, by observing which, we are assured, the genuine article may be made:

Premising that good cows—Jerseys are the best—and excellent feeding and management are secured, the following essential points must be noted. Stable, milking sheds, and spring house must be clean, well ventilated and free from all noxious odors. The milk must be skimmed soon enough after milking to obviate all danger of moldiness or absorption of the results of fermentation. This must depend largely upon the experience, judgment, and observation of the person in charge, though perhaps the best rule is to skim at the precise earliest moment when all the cream can be procured from the milk. Keep the vessel containing the cream down to a low temperature, stirring it daily with a long handled wood spoon. This low temperature for the cream, so as to avoid all dangers of fermentation, is very important. Avoid what is called washing the butter, as the fine flavor is thus carried off. Churn the cream at such a low temperature that, at the point of turning into butter, it will come hard; and this is entirely within the control of the dairyman, by throwing in either lumps of ice or pounded ice at the critical moment, and giving the churn a few more turns, so as to lower the temperature of the mass, and allow the butter to be taken out hard. If this is not done, and the mass of butter is soft or oily, it cannot be properly worked and will never make a good article. Two workings are required, one on taking out of the churn, to get rid of most of the buttermilk, when it is salted and laid away for two or three hours. The final working is then done on the butter table, ten or twelve pounds at a time, or on the butter worker. A fine muslin cloth is wrapped around a fine sponge, with which the flattened out surface of each lump is patted till everything like buttermilk or water is absorbed. The sponge and cloth are, of course, from time to time, wrung out as needed. The sponge is a powerful and thorough absorber—nothing equals it in this respect. The salting is at the rate of two thirds of an ounce to each pound. Butter may be worked too much, and it may be worked too little. It must be solidly and neatly printed, have a fine white muslin wrapper around each pound or half pound, and be delivered in market as solid as when it left the spring.

An Air Well.

A correspondent, G. W. G., asks the opinion of the scientific world on the following:

A tube well was driven to the depth of 53 feet for water, but instead of obtaining the object, a strong current of air came rushing out of the tube with such force that the noise could be heard at a distance of several rods. Fire at the bottom of the tube burned brightly, and the air came out with a steady flow. This continued for about five days, when the current changed, and air flowed into the tube at about the same velocity. The location is on a divide—the highest point of land between Toledo and Chicago; the country is generally level, but somewhat rolling. Professor Foster, of Chicago, has been written to for his opinion; he thought the current of air might have connection with a subterranean cave, and thence rose to the surface; but the reversal of the current, without any change of temperature above, exploded that theory. If it was in the vicinity of coal, instead of pure air, gas would naturally escape. The soil is sand and gravel, with blue clay beneath. The tube was with withdrawn and sunk in another place to the depth of 70 feet, when rock was struck, but no water was found.

The "Scientific American" Cubically Considered.

C. J. F. writes to say that he has collected his numbers of our journal, from its birth, from his shelves, and finds that the pile measures forty-three inches in hight. He could not but be gratified to think how considerable was the knowledge he had acquired by reading such a mass of information, obtained at so small a cost.

Treating Hardened Leather.

A. J. B., a practical man, says: "Mineral and vegetable oils are of no use on leather, and fish oils destroy leather when used pure. One part fish oil to three parts neats' foot is good for common half finished leather: but for highly finished leather, pure neats' foot is best. The white or yellow neats' foot oil is the proper sort; the reddish is adulterated. Sheep's foot oil, nearly white, is better still. If leather valves, etc., are made of half cured hides, they become converted into horn, and will stay in that condition. To soften hardened