



PROPOSED SINGLE-ARCH BRIDGE OVER THE THAMES.

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This involves the construction of an arch of 850 feet, the largest in the world, the bridge thus crossing the river at single span. To those unfamiliar with the progress of modern bridge work the scheme is a startling one, but it is pronounced by good authority to be perfectly practicable. Although enormously expensive, to offset this such a bridge would be correspondingly substantial and lasting, would not obstruct navigation, and would dispense with the space required for the anchorages of a suspension bridge.

ROPE DRIVING GEAR.—The *Textile Manufacturer*, of Manchester, England, says: We have in these pages frequently called attention to a movement which is now assuming considerable proportions, and which in many districts finds great favor with mill owners and engineers. We allude to the system in which the power is transmitted from the engine to the shaftings by means of ropes. This plan, unlike the one in which the transmission is by means of leather belts, is one of comparatively recent introduction. The fly-wheel is made to serve as driving drum also; it is 22 feet in diameter, and weighs about 20 tons. It is grooved for the reception of 12 hempen ropes, each six inches in girth, six of the ropes being intended to drive one line of shafting and six the other. The rope drums or pulleys on the shafting are five feet in diameter: the rims are made heavy and are grooved as is the driving drum, but of course for only six ropes. The width of the grooves is 2 7-16 inches; total depth, 3 1/4 inches; the radius of the bottom curve, one-half inch; and the inclination of the two sides to each other is about 49°. It will be apparent from these particulars that the ropes do not, even when pressed somewhat out of shape when doing full duty, rest upon the bottom of the groove, but on the sides, and the wear is, therefore, at the points of contact. At the time of our visit, although the engine had been running more than 18 months, the ropes exhibited very trifling signs of wear, the wear being uniform all around the section, thus indicating that the ropes do not, as some might suppose, present the same parts of their circumference to be continuously gripped in the grooves.

RUDDER POWER OF STEAMSHIPS.—A paper lately read before the British Institute of Naval Architects described an easy and effective method of ascertaining the rudder-power of steamships. Steamships, after being equipped, are usually subjected to certain trials to ascertain the diameter of the smallest circle in which they will turn round with the rudder in any given position; but this system of experiment is open to several objections. To obviate these the writer proposed a new plan, viz., pulling a boat into and retaining it in the wake of the ship, and from the boat observing with a sextant the angle subtended at the eye by two extreme masts of the vessel. The angle so obtained was constant, and afforded sufficient time for making the observation with accuracy. This observation having been made at a preconcerted signal, the angle of the rudder may be changed, and a fresh observation made from the boat, which may be repeated as often as necessary. The diameters of the different circles can then be easily calculated from the data at hand.

BEWARE OF FLIES.—Among the different methods of conveying contagion, says a writer in the *London Sanitary Record*, the feet of flies and their proboscis must not be underestimated especially during those portions of the year when flies are usually most numerous. The sublime indifference to consequences, says this journal, exhibited by flies in passing from the surface of the most odious substances to that of material for human consumption, is complete. But even if the flies themselves are uninjured by contact with putrefying matter, the next article of food they rest upon may be influenced by the previous contact, and may be thus either induced to undergo putrefactive changes more readily, or may even become a carrier of material of an eminently septic character. And not only this, but flies pass quickly from surfaces on one organism to another, and it must therefore be considered as highly probable that the communication of septic poisons by their agency is not by any means rare.

This suggests the question whether the cause that flies are not seen, or are scarce during the prevalence of cholera or other contagious disease, is not due to their having been killed off by the septic matter to which they expose themselves, instead of being regarded as purifiers of the air, which prevents contagion.

AN anonymous friend of humanity offers a prize of 6000 francs to be awarded in 1880, for the most useful application to the healing arts of M. Pasteur's discoveries. The Academy of Sciences will make the awards.