

A Burning Lake.

It is said that from one of the chief naphtha wells of Russia, the liquid shoots up as from a fountain, and has formed a lake four miles long and one and a quarter wide. Its depth is, however, only two feet. This enormous surface of inflammable liquid recently became ignited, and presented an imposing spectacle, the thick black clouds of smoke being lighted up by the lurid glare of the central column of flame, which rose to a great height. The smoke and heat were such as to render a nearer approach than one thousand yards' distance impracticable. Suitable means for extinguishing the fire were not at hand, and it was feared that the conflagration would spread underground in such a manner as to cause an explosion. This supposition led many inhabitants of the immediate vicinity to remove to a safer distance. The quantity of naphtha on fire was estimated at four and a half million cubic feet. The trees and buildings within three miles' distance were covered with thick soot, and this unpleasant deposit appeared on persons' clothes, and even on the food in the adjacent houses. Not only was the naphtha itself burning, but the earth which was saturated with it was also on fire, and ten large establishments, founded at great expense for the development of the trade in the article, were destroyed.

Largest Gasometer.

The dimensions of the gasholder for South Metropolitan Gas Company, London, Eng., is as follows: Inner lift, 208 feet diameter, by 53 feet 6 inches deep; middle lift, 211 feet diameter, by 53 feet 3 inches; outer lift 214 feet diameter, by 53 feet, thus having a total height of 159 feet 9 inches. This, it is said, is the greatest height and the largest capacity of any gasholder that has ever been made. There is, according to Mr. Rees (*English Mechanic*), another gasholder 220 feet diameter, but has only a height of 90 feet. It has a capacity of 5,500,000 cubic feet. The total weight of standards and body for this gasholder is 1,400 tons.

Women's Silk Culture Association.

The second annual meeting of the Women's Silk Culture Association was held in Philadelphia, April 18. Among the exhibits was a piece of brocaded satin for a dress pattern to be presented to Mrs. Garfield. Fifty pounds of cocoons, contributed from fourteen States, and yielding fourteen pounds of silk, were used in it. Some silk was also shown, spun by worms fed upon osage orange. Three pounds of the osage orange cocoons are said to yield one pound of silk. In her annual report the president asserted that enough had been accomplished to insure success to the movement inaugurated by the society.

NEW ELECTRIC LOG.

This apparatus provides for a continuous registration, on board the ship, of the actual distance traveled by her through the water. The distance run is shown on dials

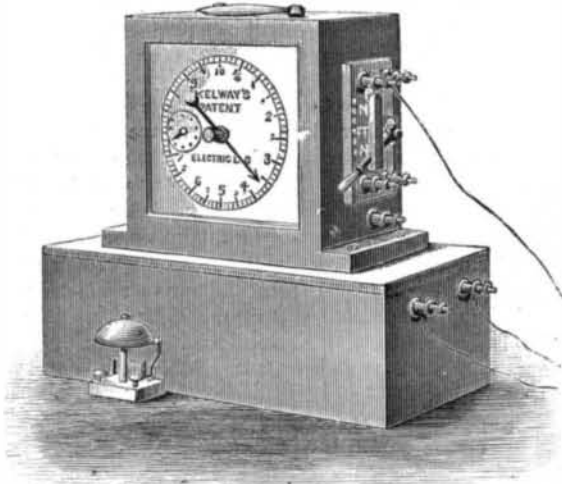


Fig. 2.—KELWAY'S ELECTRIC LOG—THE RECORDER.

placed in the captain's cabin and elsewhere; each indication being also announced on a single stroke electric bell within audible distance of the officer on watch. The electric log, which has received favorable attention from the Admiralty, seems calculated to be of service in navigation, scientific speed, trials of vessels, nautical surveying, the testing of various forms of screw propellers, and in naval range finding. The Kelway's electric log screw or rotator, which actuates the electrical portion, is placed in a cylinder below the bottom of the vessel, where, by a passage of the vessel through the water, it rotates in a body of water of uniform pressure or density, thus eliminating, even in the roughest weather, the well-known inaccuracies of ordinary towing logs, which are notably affected by the disturbing influence of the ship's propeller or by surface waves.

Fig. 1 shows the interior of the electric log. At its lower part is a sluice valve bolted to the bottom of the vessel; the sluice valve is shown open and allowing the sea full access to the iron box, D D. This iron box is bolted to the upper flange of sluice valve, and is closed at its top by the metal plate, E, which effectually prevents the ingress of water to

the ship's hold. Through the stuffing box, F, in plate, E, passes the metal rod, G, the screw thread on which raises or lowers the metal cage, H H. To the bottom of this cage is affixed the cylinder, having its opening for the passage of water in a fore and aft direction or in a line with the keel of the vessel.

The passage of water through the cylinder causes the screw, R, to rotate with the spindle, L. On this spindle is

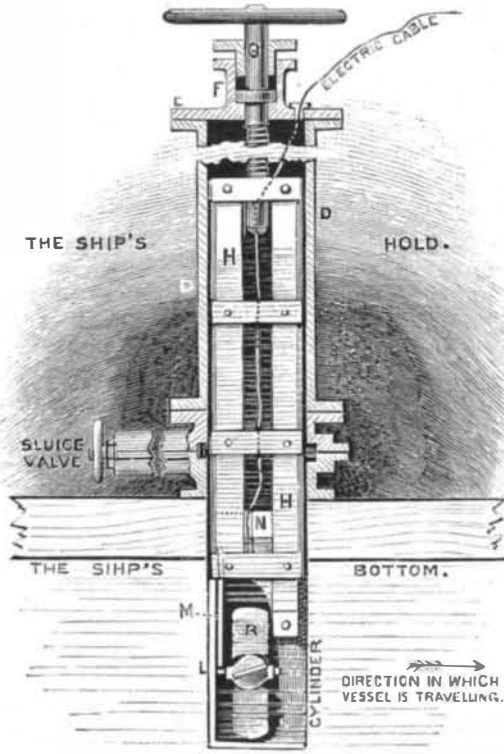


Fig. 1.—KELWAY'S ELECTRIC LOG.

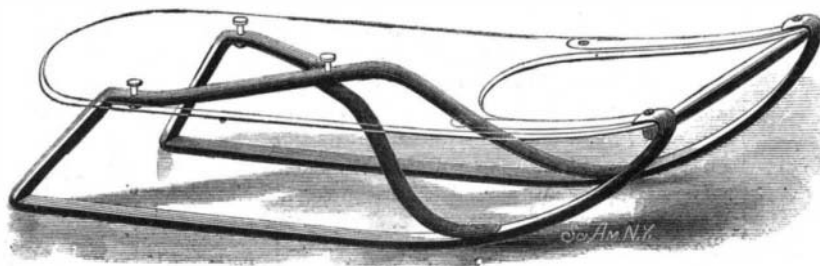
also an endless screw which revolves, by the intervention of a wheel, the vertical spindle, M, which in its turn actuates a series of wheels in the box, N. The last of these wheels, termed the "mile" wheel, makes one revolution while the vessel passes through the water one nautical mile. On the spindle of this "mile" wheel is affixed a second wheel, having eight ratchet teeth; and these teeth, by moving a lever, cause an electric circuit to be completed—obviously eight times in the mile, the current passing through the electric cable to the indicating dials and bells. Referring to the dial, Fig. 2, it will be seen that there are eighty graduations on the outside circle; and, as the pointer in front of the dial jumps one graduation at each completion of the electric circuit, one revolution of the larger pointer represents ten miles. Ten revolutions of this pointer cause the smaller one to make one revolution, recording one hundred miles. The mechanism of this dial is similar to a gas-meter index.

The Australian Drought.

Late mails from Australia report the prevalence of fearful heat and drought. For several months scarcely any rain had fallen, and the heat in the inland districts had been terrific, the mercury once reaching 124° in such shade as was obtainable. Morning after morning, for weeks together, the sun had risen in a cloudless sky and set at night "like a huge red ball of fire at the edge of a copper dome." The losses of station owners are extraordinarily heavy, and the grain harvest will be below the average all over the continent, though in isolated districts the crop is a good one, owing to heavy local rainfalls. In Queensland the drought had broken up, and heavy floods had done much damage; at one station alone two thousand sheep had been drowned by a freshet. It has been said that Australia is a land of contradictions; this, according to the nineteen years' cycle theory, was to be a wet year; thus far, in four of the five colonies, it has been a year of drought.

A NOVEL SLED.

The engraving shows a new iron sled recently patented by Mr. Asa S. Russell, of Ellenville, N. Y. The novelty in this device consists in a frame made of two bars of iron,



RUSSELL'S IMPROVED SLED.

each forming a runner. Each bar is attached to the front of the board, and extends thence downward in a curve and passes back, forming the runner. At the back of the sled it is bent and extends upward, at an angle to the board to which it is fastened. It extends thence under the board diagonally across it until it meets and crosses the other bar at the center of the board, where the two are fastened together and to the board; it extends diagonally forward downward, and outward to the opposite runner, on which its end rests, and to which it is fixed by a bolt.

In the engraving the board of the sled is indicated only in outline to show the form and arrangement of the iron-work more clearly.

This sled is very strong and entirely free from liability to twist and become loose jointed; it is, therefore, more durable than the ordinary sled. As the two parts may be readily bent over a form, the sled may be easily and cheaply made, and as several of the parts which are necessary in ordinary sleds are omitted in this, it may be made very light without impairing its other qualities.

License Fees of Officers of Steam Vessels.

The recent act of Congress reducing the license fees of officers of steam vessels was approved by the President, April 5. The new charge for certificates is uniformly fifty cents for all classes. A treasury circular, dated April 11, authorizes inspectors of steam vessels to refund to all masters, engineers, pilots, and mates, licensed on or since April 5, all sums in excess of fifty cents exacted from such officers for their licenses. The form of licenses now in use, indicating grades of officers, will be continued.

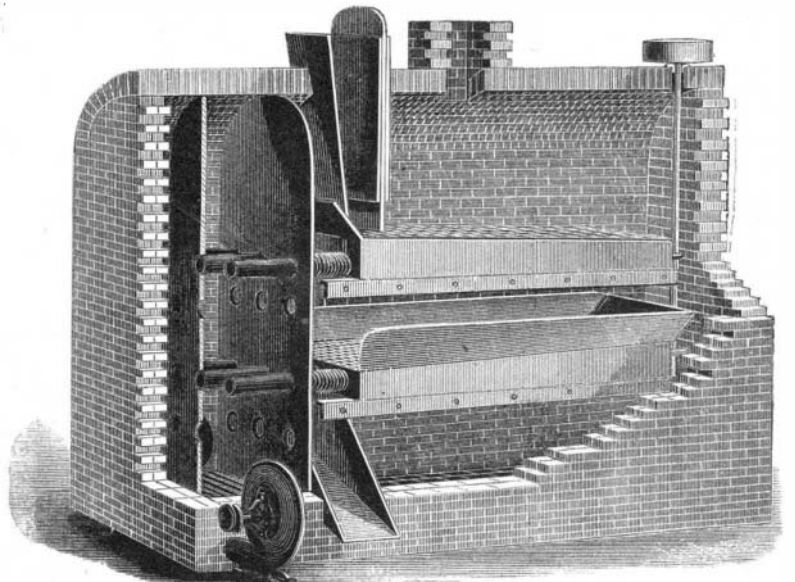
Tempering by Compression.

The author heats metals, and especially steel, to a cherry red, compresses them strongly, and keeps up the pressure till the mass is perfectly cold. The metal acquires an excessive hardness, and a striking fineness of grain. Steel thus treated acquires a coercive force, which enables it to become magnetic. The durability of this property requires to be studied.—M. Clémendot.

NEW GRAIN DRIER.

The engraving shows an apparatus by which oats and other grain may be dried by the direct application of the heat from the fire without being injuriously affected by the smoke ascending therefrom. It is so arranged that the grain may be thoroughly dried while passing through it, without requiring any manual labor from the time it enters the machine till it is discharged.

In this drier there are two movable screens, placed one



BARCLAY'S GRAIN DRIER.

above the other and inclined in opposite directions, so that the grain which is supplied through the spout at the top of the chamber passes toward the rear of the drier on the upper screen and is delivered to the rear end of the lower screen, along which it passes to the discharge spout near the front of the furnace.

Each screen forms the top of a wind chamber which receives air from a blower at the front of the furnace. The wind passes from these trunks upward through the grain, and the heated air and products of combustion pass upward from the furnace over the grain on the lower screen, thence upward and forward over the top of the upper screen on its way to the flue. The screens are constantly agitated by wipers on the revolving vertical shaft at the rear of the drier.

Although the smoke is admitted into the space immediately over the grain it cannot come in contact with it, as the pressure of the heated air escaping through the perforations in the screens prevents so undesirable a result, while the heat from the smoke is fully utilized for the purpose of assisting in drying the grain.

This invention was recently patented by Mr. John Barclay, of Toronto, Canada.