

generally regulating its care and stowage. The storing of gunpowder, materials for fireworks and the like, except under particular conditions and at certain prescribed distances from inhabited places, was especially prohibited by statute; and although petroleum, being until recently an unknown substance, could not be included within the prohibition, yet, as he was advised, the common law would interpose, as in the case of naphtha, to prevent its being deposited in such quantities or in such circumstances as to endanger life or property. It seemed to him that it would not be desirable to put any law into execution, which might discourage the importation of this article. It appeared to be a gift of Nature, and we ought gladly to avail ourselves of its introduction; but it would be for the Legislature to regulate its introduction and use, accompanied as these were with a great element of danger.—*Mechanics' Magazine.*

#### THE ATLANTIC TELEGRAPH COMPANY.

The following is a description of the cable just submitted by Messrs. Glass, Elliot and Company to the Atlantic Telegraph Company as the one they would propose to lay, and to a considerable extent to guarantee, as to working efficiency, between Ireland and Newfoundland, requiring a length of 1900 nautical miles.

The electrical conductor is composed of seven copper wires, each  $\frac{1}{8}$  inch diameter and laid into a strand rendered perfectly solid by the six outer wires being embedded in Chatterton's Compound upon the centre wire. The conductor weighs 510 pounds per nautical mile, and is calculated to transmit under the *old* system of working 22 letters equal to  $4\frac{1}{2}$  words per minute, but is certified by Mr. C. F. Varley to be capable of being worked by means of recent improvements at the rate of 60 letters, or 12 words per minute, between Ireland and Newfoundland.

The conductor is insulated by eight coatings, four of the purest gutta-percha, and four of Chatterton's compound, laid on in alternate layers, forming together a thickness of  $\frac{1}{2}$  of an inch from the centre; the external diameter of the whole cable being  $\frac{3}{4}$  of an inch, weighing with conductor 1060 pounds per nautical mile.

It is proposed to do away with the tarred hemp hitherto surrounding telegraphic cores, and as a protection to the core, to use strands consisting each of three best charcoal iron wires, gauge, .055 each strand being separately covered with Chatterton's compound and gutta-percha to prevent decay. These coated strands, thirteen in number are then laid around the core spirally by the usual machinery, and the finished cable passes out of the covering machine into tanks filled with water, there to wait till the whole length required is ready for shipment, water tanks will also be provided on board ships so that from the very infancy of the cable to its final submersion, it will be continuously every moment under tests of the most certain and delicate description.

The dispensing with the tarred yarn hitherto in use, renders the instant detection of any flaw in the gutta-percha core, an absolute certainty. These were often temporarily concealed by the wrapping of tar which is to some extent an insulator, and

only broke out after the cable had been laid and worked through for some short period. Every part of the external surface of the cable being thus also of a nature quite indestructible in and impervious to water, there is no fear of deterioration either before or after submersion and none of the original strength being lost by decay, it would be possible to lift this cable if required even from very deep water.

## Miscellaneous.

#### Red Sea Telegraph.

So much has been said about the instability of submarine lines laid in comparatively shallow water that the raising of this wire, was looked forward to with considerable interest; yet, when brought to the surface, even after having been subjected to the action of the waves over the coral rocks for three years, it was found to be but slightly altered in outward appearance.

A close examination showed that in some places the wires were corroded slightly, but still the black coating of mud and oxide with which it was covered so closely resembled tar that it seemed at the first glance impossible to believe that the wire had been down more than a few months. The Gabari then continued to underrun the line till within a mile and a half of Jubal Island, and the accounts state that it is difficult to imagine anything more beautiful than the mass of zoophytes, of every tint and colour, which had cased round the whole cable to the thickness of several inches. These being mostly of a soft tenacious nature would tend most materially to preserve the outside iron wires from decay. On the 26th the Gabari underran the shore end of the cable to Cosseir, in order to remove it and lay it to Jubal Island. Though the portion of this line had only been down some 14 months, yet it was found on raising to be completely encased in a protecting sheath of coral and zoophytes.

#### Rock Oil in Shropshire.

Mr. G. Shepherd, C. E., is of opinion we have an abundant supply of paraffine in England, which can be obtained at a cheap rate. In the Shropshire iron districts, he says there is a rock known to the miners as the "stinking rock;" this rock yields a great deal of mineral tar; it is found in sinking to the coal and ironstone, and it is many feet thick.

#### Safety Matches.

The consumption of lucifer matches in this country, at a moderate estimate, exceeds fifty millions daily. This fact alone sufficiently indicates the importance of an invention by Messrs. Bryant and May, of the Safety Match Works, Fairfield Middlesex, the primary effect of which is to lessen the danger of fire—arising from the use of an article indispensable requisite in every household—whilst it also protects the health of thousands, chiefly children, employed in this branch of industry. The "special safety" of the patent match is that it cannot be ignited by friction, except on the prepared surface of the box, whilst (as is well known) all other lucifer matches not only can be ignited on any hard surface, but combustion frequently occurs