

Horsley's powder explodes at about 450 deg. temperature; it can be exploded by *excessive* friction or by the action of sulphuric acid.

Horsley's powder can be manipulated, it is said, with much greater ease and safety than common gunpowder, and can be stored as common gunpowder. And moreover, if the two ingredients be stored together, *unmixed*, no explosion would ensue if the magazine were fired, although the chlorate of potash would of course give off an abundance of oxygen, which would make the conflagration very violent and brilliant at the spot.

A Telescopic Ladder.

The *Hereford Times* says that a very ingenious and admirable invention, called the telescopic ladder, has just been patented by the inventor, Mr. G. H. Morgan, surveyor and builder, New Market-Street, in that city. This ladder, which might be made to a great length, shuts up like a telescope, the uppermost *floor*, so to speak, shutting up in the next and so on to the bottom; in like manner, the first floor is easily projected, and may be turned against a wall at any angle: then follows the second, third, fourth, &c. The whole series shuts up into a small compass.

Means to Prevent the Rotting of Woods.

In order to prevent wooden posts and piles from rotting while in the ground, the following receipt has been sent to the Societ  d'Encouragement, Paris. A certain paint is used which has the hardness of stone, which resists damp, and is very cheap. It has been in use for the last five years—50 parts of resin, 40 parts of finely-powdered chalk, about 300 parts of fine hard sand, 4 parts of linseed oil, 1 part of red oxide of lead, and one part of sulphuric acid, are mixed together. The resin, chalk, sand, and linseed oil are heated together in an iron boiler; the red lead and the sulphuric acid are then added. They are carefully mixed, and the composition is applied while hot. If it be not found sufficiently fluid, it may be made thinner by adding some linseed oil. This paint, when cold and dry, forms a varnish the hardness of stone.—This varnish may be useful in other ways than by being applied to prevent the rotting of woods. Coal tar serves that purpose admirably. So also would crude petroleum if introduced into the pores of the wood, by proper and well known appliances. Charring the posts or piles is an excellent artifice.

The Atlantic Telegraph.

Periodically, and as if by necessity, the great question of uniting Europe and America by telegraph, surges up and demands a practical solution. And it is quite natural that it should do so. No scientific industry of modern times has been more economically successful than the electric telegraph. There are now at work in the United States of America, 40,000 miles of telegraph, extending from San Francisco, on the Pacific, to Newfoundland, on the verge of the Atlantic Ocean—where it is again proposed to land a cable which shall have its other end at Valentia Bay. There are upwards of 150,000 miles of working telegraph in Europe. A telegraph spanning the Atlantic would unite the electric wires of America with those of Europe—as those in Europe are now united with many in

Asia and Africa. Establish a telegraphic link between Newfoundland and Ireland, and instantly means would be taken to connect our West Indian Colonies and those of other countries with the mainlands of North and South America—thus bringing the whole industrial system of the two Americas into connection with that of nearly all the rest of the world. This question of an Atlantic telegraph is not merely economically and morally interesting to England and the United States, but it involves world-wide results. It would not only be the greatest triumph of science, but it would be the means of bestowing a rich inheritance of blessings on mankind. It is a benefit which the statesman, the capitalist, the economical reformer, the philanthropist, and philosopher, may heartily join hand-in-hand to promote.

It is almost certain that the Atlantic cable failed from controllable causes. It was manufactured and laid down with undue haste.

Out of the total number of 51 different submarine telegraph enterprises, which are all that have been entered upon, 44—comprising 5,133 miles of cable, and 8,906 miles of conducting wire—are at the present moment in perfect working order. Thirty of these 44 successful cables were laid by Glass, Elliot and Co.—*Mec. Mag.*

Aluminum.

Aluminum is now being manufactured on a large scale by Messrs. Bell Brothers (the only licensees in England for Deville's patent). This metal was first discovered by Sir H. Davy, Wöhler obtained it in June, 1827, and of a specific gravity of 2.5 (the same as glass). In 1854, Deville published the properties of aluminum. His process for manufacturing it, which is the same method as Messrs. Bell use, is as follows. Having obtained the chloride, Deville introduces into a wide glass or porcelain tube, 200 or 300 grammes of this salt between two plugs of asbestos, and allows a current of hydrogen to pass from the generator through a desiccating bottle containing sulphuric acid and tubes containing chloride of calcium, and finally through the tube containing the chloride, at the same time applying a gentle heat to the chloride, to drive off any free hydro-chloric acid which might be formed by the action of the air on it. He now introduces at the other extremity of the tube a porcelain boat, containing sodium, and when the sodium is fused the chloride of aluminum is heated, until its vapour comes in contact with the fused sodium. A powerful reaction ensues, considerable heat is evolved, and by continuing to pass the vapour of the chloride over the sodium, until the latter is all consumed, a mass is obtained in the boat of the double chloride of aluminum and sodium in which globules of the newly reduced metal are suspended. It is allowed to cool in the hydrogen, and then the mass is treated with water, in which the double chloride is soluble, the aluminum being unacted on. Bell (Brothers) exhibit this metal in the exhibition, and which shows the value of it for ornamental purposes, by the difficult castings exhibited, which run in one piece. Among the different things shown, is a balance, sextant, and other philosophical instruments. Aluminum forms, with copper, a very beautiful alloy named aluminium bronze. In colour and polish this substance re-