Dangers Incident to the Use of Oil upon the Waves.

According to the *Gazette Geographique*, this method of calming the waves has been long known by fishermen upon the northern coasts of France, and is still sometimes practiced there. But it should be a subject of fear to smaller boats that follow in the wake of the vessel that has used the oil; because to the absolute calm suddenly succeeds a still more violent agitation of the waves, and this constitutes a great danger, from which the vessel caught in it often cannot escape. This last fact possesses some importance, and seems hardly yet to have been awarded sufficient consideration. The following incident proves the reality of this danger. On the 20th of last September a lifeboat from Calais went out on the sea to make some studies on the use of oil as a means of quickly calming the violence of the waves. It was once more proved that oil poured upon the water around a ship suppressed radically the largest waves. Within a relatively restricted area a ship was no more troubled; but outside of the circle of action the waves became more furious, they took in a certain sense their revenge, and if another boat were near, it would have been exposed to great danger. These troubles were felt by the lifeboat. Having gone outside of the protecting zone, and no more oil being thrown on the water, one of the sailors was caught by a wave (*coup de mer*). His oar was snatched off him, it caught him around the waist and threw him in the water. Fortunately he was rescued. As we have said, this way of calming the sea is not new. In 1847, when mail service was tried at Boulogne, it was used in embarking from the dock in boats, yet did not always prevent accidents.—*Revue Scientifique.*

A Furnace and Rolling Mill.

A person who has never witnessed the process of converting ore into iron, and then rolling the metal into bars, will be interested in the impression made upon a reporter who witnessed the process, as related by him in the Philadelphia *Record:*

To trace a lump of crude pig iron through the processes that refine and shape it for use is an interesting experience, and darkness adds to the strangeness and weird aspect of the scene. This is the way it looks to an uninitiated observer. The process begins with the puddling furnaces. Ranged about the sides of the great building are a score of furnaces of peculiar construction. These furnaces, which are low and flat, are charged with some hundreds of pounds of broken pig iron, which is fused by the intense heat until it becomes semi-fluid. Then comes the hard work of puddling, which is simply kneading the half molten iron. Before the furnace the puddler stands, and, thrusting a heavy iron bar through a small hole in the door, he works and turns the pasty mass, forming it into huge balls, which must be carefully kept separate from each other, else they fuse together into a mass which cannot be removed unless the furnace be taken apart.

At night the scene in the puddling mill is weird and picturesque in the extreme. Here and there in the darkness glow the fiery eyes of the furnaces flashing a bright light upon the swarthy and half-nude forms of the workmen as they tug and pull on the molten metal with long iron bars. The roaring of the fires, the hiss of escaping steam, and the clang of iron bars add to the wildness of the scene. For about an hour and a half the kneading process continues before the metal is to be withdrawn. This means incessant labor by the puddler, and labor of the hardest and hottest kind. With no clothing but a pair of overalls, and working in a temperature of 160 degrees, the men perspire so freely that streams of water run from their bodies.

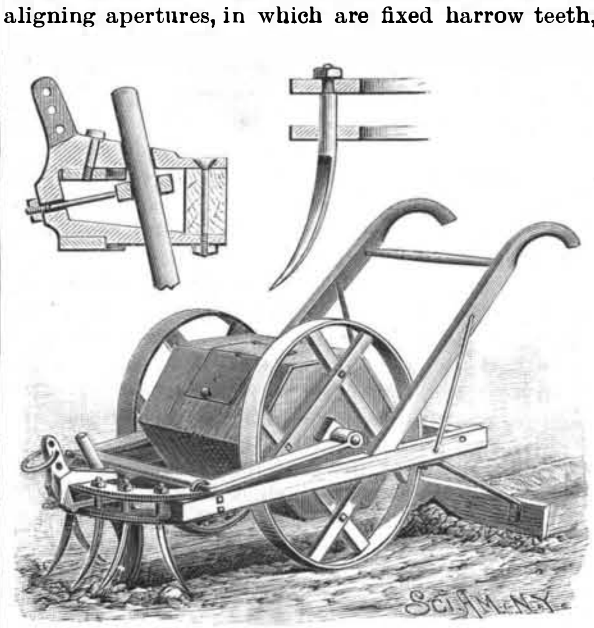
As long as the perspiration continues freely they are safe, and to insure its continuance they drink freely of water, gulping down three or four gallons in a day without any injurious results. But if the perspiration should stop and the men continue to work, prostration would soon follow. The heat is so intense and the work so enervating that the puddlers, after standing before the furnace for an hour and a half, rest three-quarters of an hour before resuming operations.

An hour and a half of puddling and the iron is ready to be drawn. Up goes the door of the furnace, showing a mass of flame too dazzling to look upon with the naked eye. With a big pair of tongs a lump of glowing iron is picked out of the flames and swung along to the "squeezer." This is a circular revolving machine that takes the misshapen mass of iron and rolls it over and over, crushing it into a rough block of solid iron. The "squeezer" is suggestive of a pair of monster jaws crunching and crushing the molten food which is thrust into it, while the melted cinder trickles out between its huge teeth. After leaving the "squeezer" the lump of iron is ready to be rolled into shape, and this furnishes the most interesting of the processes. Away across the iron floor upon an iron truck goes the lump from the furnace.

A huge engine, with its cylinder high in the air, turns the rolls, and as the lump of iron is thrust between the rolls, there is a trembling of the ground as it is caught and pulled through. Back it comes through another part of the roll, more regular in shape and much longer than when it started. Back and forward it goes and comes through the rolls, faster and faster until it comes from the last roll and rushes across the floor in a serpentine path, looking a veritable reptile of hideous appearance. A workman clutches the glowing snake by the tail with a pair of tongs and drags it aside. Another man thrusts it before a swiftly revolving saw, there is a deafening noise and a shower of sparks, and the iron bar is nearly cut in two pieces. A few blows from a huge wooden mallet to straighten the red hot bars, and they are dragged aside to cool. To one unaccustomed to such sights a rolling mill appears to be a place of wild confusion and disorder. The rumble of the rolls, the rattle and clash of the tongs and chains, the crash of the huge saws as they cut the red hot bars asunder, and the ever-flying showers of sparks, make pandemonium for a nervous person. Even a steady man is apt to be startled by a sudden yell by one of the hurrying laborers, or by an explosion like that of a cannon close by his side. A stream of water constantly plays upon the rolls, and as it occasionally gets into the cracks in the red hot iron passing through the rolls, there is an explosion that echoes far up the hill across the river.

AN IMPROVED COTTON PLANTER.

A machine which is designed to pulverize the ground, make the furrow, plant the seed at regular intervals, and cover them, has been patented by Mr. Nathaniel R. Rodgers, of Red Fork, Ark. Apertured segmental plates attached to the front end of the frame have aligning apertures, in which are fixed harrow teeth,



RODGERS' COTTON PLANTER.

triangular in cross section below the plate and circular above, as shown in one of the small figures, the teeth being calculated to pulverize the earth, but being so secured that they will turn in their sockets should any hard obstruction be met. Diagonally inward, between the plates and the front beam of the frame, is fixed the shank of a vertically adjustable plow, as shown in another of the small views. Hinged to the front part of the main frame is an auxiliary frame, in whose side bars are journaled a transverse shaft, on which is a polygonal-faced seed carrier, supported by drive wheels. The seed carrier has apertures centrally at the angles of its face which align with the plow, so that the carrier, in its onward movement, drops the seed at regular spaces in the furrow. Rearwardly extending spring arms carry a covering board, with a V-shaped slot cut centrally in its bottom edge, this board throwing the soil upon the seed and forming a ridge over the furrow when the row has been planted.

Deep Wells.

The deepest well drilled in the United States is that of George Westinghouse, at Homewood, near the city of Pittsburg, which, on December 1, 1886, had reached a depth of 4,618 feet, when the tools were lost and drilling ceased. The Buchanan farm well, of the Niagara Oil Company, drilled by Fred. Crocker, in Hopewell Township, Washington County, is 4,303 feet deep. The Rush well, of the Niagara Oil Company, in Washington County, was abandoned at 3,300 feet. The deep well of Jonathan Watson, near Titusville, was drilled about 3,500 feet. J. M. Guffey & Co.'s well, on the Walz farm, at West Newton, Westmoreland County, was drilled to a depth of 3,500 feet. The well of Isaac Willets, at Sargent's Mills, near Sycamore, in Greene County, was abandoned at 3,008 feet.

The deepest bore hole in Europe is at Schladebach, near Kotschau Station, on the railway between Corbetha and Leipzig, and was undertaken by the Prussian government in search for coal. The apparatus used is a diamond drill, down the hollow shaft of which water is forced, rising again to the surface outside the shaft of the drill and inside the tube in which the drill works. By this method cores of about fifty feet in length have been obtained. The average length bored in twenty-four hours is from twenty to thirty-three feet, but under favorable circumstances as much as 180 feet has been bored in that time. Other deep holes are as follows:

	Feet.
Domnitz, near Wettin	3,287
Probat-Jesar, Mecklenburg	3,957
Sperenberg, near Zossen	4,173
Unseburg, near Stassfurt	4,242
Lieth-Elmshorn, Holstein	4,390
Schladebach	4,515

The dimensions of the bore hole at Schladebach are as follows;

Depth from Surface.	Each Size Bore. Feet.	Diameter. Inches.
189·5	189·6	11·0
605·7	416·1	9·0
661·8	56·1	7·3
1,906·5	1,244·7	4·7
2,259·8	353·3	3·6
3,543·4	1,283·6	2·8
4,069·9	526·5	1·97
4,514 6	444·7	1·88

The various strata passed through are as follows:

	Feet.
Soil and sand, about	16
Clay	66
Sandstone (Bunter)	459
Anhydrite	59
Brine spring	—
Magnesian limestone (Zechstein)	144
Gypsum	36
Anhydrite	295
Marl slate (Kupfersheifer)	3
Sandstone (Kothliegendes)	3,435

The bore hole, which in January, 1885, had reached a depth of 4,560 feet, was commenced in June, 1880, but left after a year's work; recommenced at the end of 1882, and is still progressing. The cost up to January, 1885, was about $25,000.—*Prog. Age.*

A New Hektograph.

The latest issue of the *Papier Zeitung* gives the following instructions for making a cheap and handy hektograph: Soak 4 parts of best white glue in a mixture of 5 parts pure water and 3 parts ammonia, until the glue is thoroughly softened. Warm it until the glue is dissolved, and add 3 parts of granulated sugar and 8 parts of glycerine, stirring well and letting it come to the boiling point. While hot, paint it upon clean white blotting paper, with a broad copying brush, until the blotting paper is thoroughly soaked and a thin coating remains on the surface. Allow it to dry for two or three days and it is then ready for use. The writing or drawing to be copied is done with ordinary hektograph or aniline ink upon writing paper. Before transferring to the blotting paper, wet the latter with a sponge or copying brush and clean water and allow it to stand one or two minutes. Place the written side down and stroke out any air bubbles and submit the whole to gentle pressure for a few moments, remove the written paper, and a number of impressions can then be taken in the ordinary way. When the impressions begin to grow weak, wet the surface of the hektograph again. This hektograph does not require washing off, but simply laying away for 24 to 36 hours, when the surface will be ready for a new impression.

New Envelope Machinery Wanted.

The manufacturers of envelopes have lately united to form a trust, and have advanced the prices of envelopes. It is expected that if any new concern were to commence business independently of the trust, the latter would be able temporarily to undersell and destroy the new comer. In this land of liberty there is no protection against such combinations except the ingenuity of the inventor. What is now wanted is improved machinery for making envelopes, by which greater rapidity and economy may be secured. An opposition to the trust which could command any genuine improvements in the direction indicated would enjoy a bonanza in the line of business. The problem suggested is a very difficult one. Some of the envelope machines now belonging to the trust are marvels of ingenuity and perfection. To beat them is no easy task. A first class envelope machine now costs two thousand dollars.

Perpetual Motion Inventors.

George Stephenson, England's great engineer, began his experiences as an inventor with the perpetual motion problem, for which he constructed a machine. His biographer describes it as consisting of a "wooden wheel, the periphery of which was furnished with glass tubes filled with quicksilver; and as the wheel rotated, the quicksilver poured itself down into the lower tubes, and thus a sort of self-acting motion was kept up in the apparatus, which, however, did not prove to be perpetual."

Indeed, not a year passes but some new enthusiast lodges at the Patent Office the specifications of some machine for perpetual motion. This is not in itself considered evidence of insanity, but it is unquestionably regarded by some as proof of mechanical aberration.