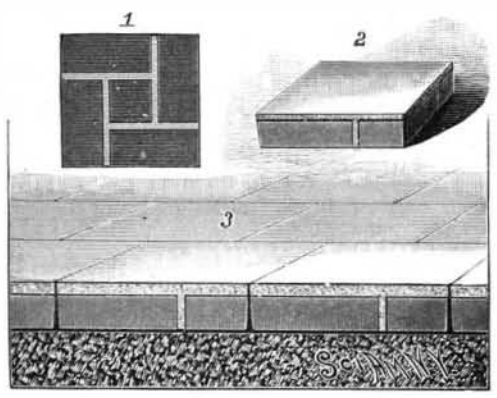
THE BERRIE PAVING BLOCK.

A cheap, simple, durable, and easily made paving, which can be economically manufactured in connection with brick yards, is shown in the accompanying illustrations. It forms the subject of a patent issued to Mr. Robert B. Berrie, of Lexington, Mo. The blocks consist of common rough hard-burned brick, and are 12 inches or one and one-half bricks square, and are placed in moulds, so as to admit of the bricks being cemented together with any good cement, applied as shown by the illustrations. These blocks are brought to a smooth surface on top side with any desired thickness of cement, by troweling with steel trowel, using a little dry cement to give a hard glazed finish.

The advantages claimed for this pavement are that it



THE BERRIE PAVING BLOCK

is cheap and strong and will not be injured by the action of frost or changes of the weather. The blocks are so constructed as to allow for any expansion caused by the frost on the bottom side. They will withstand a much greater strain or jar without breaking on account of the hardness of the brick for a body, and the cement being thoroughly keyed between the brick, forming a solid block of hard brick and cement.

This pavement is being manufactured and put into practical use, and is said to give satisfaction. For further particulars and references address R. B. Berrie, Lexington, Mo.

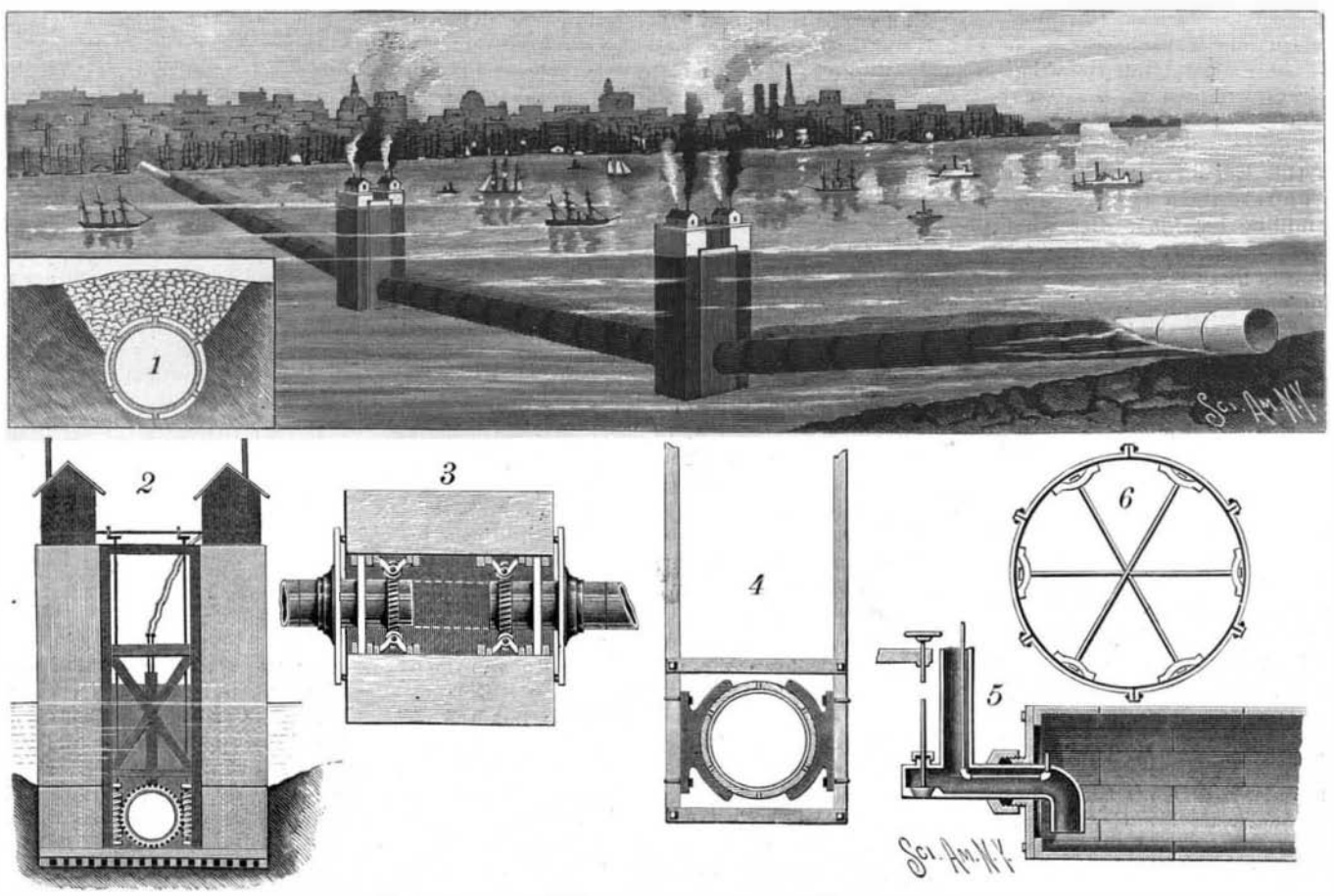
STRAUB'S PLAN FOR A SUB-RIVER TUNNEL.

The accompanying illustration represents a novel form of sub-river tunnel, more especially designed for use in the Hudson and East Rivers, at New York City, and which forms the subject of a patent recently issued to Mr. A. W. Straub, of No. 23 South Thirty-seventh Street, Philadelphia, Pa. It is proposed to construct such tunnel of several long sections of steel tubes, about eighteen feet in diameter, with heavy strengthening flanges passing around the tubes at intervals of five or six feet, while there are also ribs running lengthwise of the tube. These tube sections are to be constructed above ground and lowered into a prepared line of way previously dredged or otherwise made in the river bottom. Fig. 1 shows a cross section of such tunnel in position, with its top weighted by stone and cement covering, to hold it firmly in position, this covering extending about five feet over the tunnel and down its sides. Fig. 6 shows a cross section of the tunnel with removable cross-rods therein for bracing the sections while being conveyed and sunk to the river bottom. The tunnel is preferably constructed with two extended lengths or sections constituting the bank or shore approaches, which, when placed in position, have a downward grade, and are connected with the intermediate or central sections by short sections, these connections being accomplished within removable caissons built in the river around the adjacent ends of the shore and central sections. These caissons are arranged at right angles to the line of the tunnel, Fig. 3 being a plan of the meeting terminals of a central and a shore section, and Fig. 2 being a sectional view of a caisson with its upwardly extending columns, upon which are located the engines required for pumping out the tubes, lowering them into position, etc. Fig. 5 shows a longitudinal section of one of the tunnel sections with its removable ends or heads and the air and water pipes therefor, while Fig. 4 shows part of the bearing frame for the tunnel section within the caisson.

The temporary piers or caissons to retain the tube at its proper location over the trench previously dredged to within a few feet of its future location are formed of two great boxes, some 50 feet square and 70 feet in height, standing upon a strong platform of timber, 50 feet wide and 130 feet long, leaving a space of 30 feet between the boxes or piers. They are filled with stone and anchored in their proper location, when the tube is floated, with its ends between these boxes, which sustain it over the trench. A framework with a journal bearing in it is then built around the end of the tube, which is fitted into guides, which carry the tube down plumb to the desired depth. A gearwheel is placed on the end of the tube, meshing into two worm wheels, to revolve the tube while sinking into a perfect foundation, thus fitting itself to place from end to end. The frame when down forms a water-tight gate against the two boxes and the platform in the bottom. In order to pump water into the tube and still permit it to revolve, it is necessary to carry the pipe through the bulkhead in the center, through a stuffing box.

After a section is sunk on each side of the piers, and the frames or gates are down, they form a water-tight basin between the gates and the piers above the platform. The end of a section will extend through each gate. After the water has been pumped out of this caisson, a short section of tube can be built within the caisson to unite the long sections. After all are united, dredge the silt from the top and sides of the tube and anchor it to the river bottom with a saddle of broken stone and cement, which will retain the tube round the bulkheads and stay rods are removed, and prevent it from floating when the water is pumped out.

After the tube has been laid and anchored, the stone can be removed from the boxes, when they will float away, leaving the platform remaining beneath the tube.



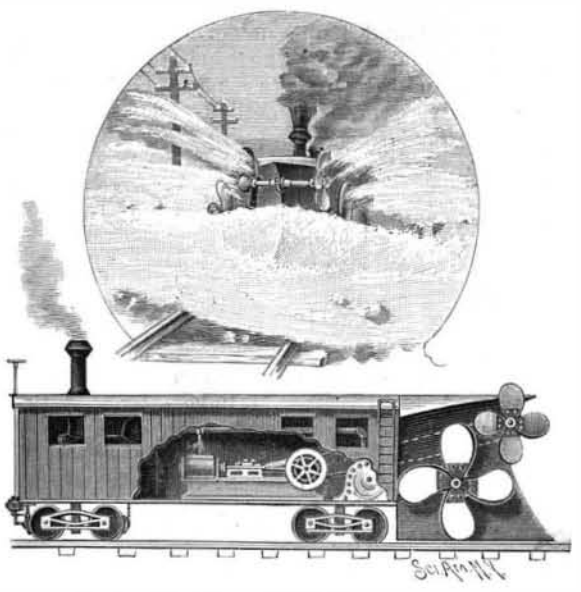
STRAUB'S PLAN FOR A SUB-RIVER TUNNEL.

Telephones in Sweden.

In probably no country in the world has the telephone come into more general use than in Sweden. Not only can Stockholm boast the most perfect telephonic arrangements of any capital, in addition to the largest percentage of telephone subscribers, but the east coast and the west coast will soon be in telephonic communication, a line between Stockholm and Gothenburg being in course of erection. Many small towns are in telephonic communication with each other, and the number of subscribers is constantly increasing. In Malmo, for instance, which has about 40,000 inhabitants, there are six hundred subscribers; this town is connected with about thirty smaller towns and country places, with subscribers ranging between two hundred and ten. In Norway also there are several new lines in course of construction.

AN IMPROVED RAILROAD SNOW PLOW.

The plow herewith shown has been patented by Messrs. Charles A. McCarthy and John P. Moran, of Sault de Ste. Marie, Mich. It has at its forward end a nose, consisting of steel plates arranged to form essentially a triangle, the forward end of which is concaved from top to bottom. Within the sides of the nose, at or near the center, two shafts are journaled, each having at its outer end a hub, to which spaced twisted arms are rigidly secured, projecting from the hub. The hub and arms are preferably made of steel, and the blades are given a pitch best adapted to the angle at which the snow is to be thrown. Within the body is a boiler to supply steam to three engines, two of which are rotary, and placed at the forward end, one on each side, while the third engine is a horizontal one, and placed in the center of the body, just in front of the boiler. The two side snow wheels are each rotated from a separate engine, while the horizontal engine operates an upper set of snow wheels, located one on each side above the center of the nose. As this plow is pushed through the drift by the engine of the train, or an engine employed to push the plow, the cutting edge of its nose divides the snow, and the several wheels, which are to be driven at the rate of two hundred or more revolutions a minute, blow the light snow to each side of the track, while if the snow be hard it will be thrown to a greater distance away.



McCARTHY & MORAN'S SNOW PLOW.

New Coloring Matters.

Primuline when diazotized and combined with an alkaline solution of β-naphthol forms a red coloring matter. Hitherto this could not be applied directly for dyeing or printing purposes on account of its insolubility. The present invention consists in dissolving primuline in water, acidifying the solution, diazotizing it with nitrous acid, and pouring the mixture into an alkaline solution of β-naphthol. The insoluble coloring matter is then filtered, washed, pressed and dried, and rendered soluble by heating it (in a closed vessel or in one connected with an inverted condenser) with about 2½ times its weight of sodium bisulphite of 50° Tw. to 100° C. The filtered solution is treated with salt, which precipitates the new product in the form of a yellow powder, which is very easily soluble in water and is decomposed by caustic alkali, with the formation of the above red coloring matter. If the coloring matter be used for printing and afterward developed by steaming, a red color is produced. Similarly, maroons and oranges can be produced by substituting α-naphthol and resoreinol for the β-naphthol.—*C. Dreyfus, Manchester.*