

John C. Trautwine.

This eminent engineer, after a long and eventful career, died in Philadelphia in his seventy-fourth year on Friday, Sept. 14. He was born in that city March 30, 1810. After receiving an ordinary education he entered the office of William Strickland, and was engaged on the Delaware Breakwater. Later he was employed on the construction of the Philadelphia, Wilmington, and Baltimore, and the Hiawasse railroads. In 1844 he began a five years' engagement on the Canal del Dique, in New Granada. In 1849 he was engaged on the Panama Railroad as chief engineer, and later he made a survey for the Atrato Inter-oceanic Canal, and in 1857 he surveyed the route for the Honduras Inter-oceanic Railway, a line that was never built.

He is and will be best known, however, by his writings, which have run through several editions. His book on "Railroad Curves" is the simplest and clearest book on the subject in the English language. He also wrote a book on "A New Method of Calculating the Cubic Contents of Excavations and Embankments by the aid of Diagrams." The work, however, on which his reputation will chiefly rest is his "Civil Engineer's Pocket Book." It is a monument to his industry and versatility, and is perhaps the best single treatise on civil engineering thus far published. Owing to the time when Mr. Trautwine studied and learned engineering, his book was, even at the time of its publication, somewhat behind the times. It has fallen still further behind now, but it would be difficult to find any other one book which alone would be as useful to a young student of civil engineering as this.

While engaged in work in tropical countries Mr. Trautwine contracted one of the malignant fevers so prevalent in those climates, from the effects of which he never recovered entirely, and which finally caused his death.

He was a prominent member of several scientific societies. He leaves two sons, William Trautwine, a conveyancer, and John C. Trautwine, Jr., who has been engaged with his father in his book work—*Railroad Gazette*.

Old Steel Pens.

Says the New York *Sun*: "Pens are made of the very finest steel, and can be remelted and used again for many purposes. They can be turned into watch springs and knife blades, and can be dissolved and made available in the manufacture of ink. The suggestion is made that the children of the poor should be taught to collect cast-away pens, and thereby save valuable material and earn money."

The steel from which steel pens are made is so thin that it can be torn like stiff paper. It goes through such tormenting processes in the rolling, cutting, pressing, slitting, and forming, that it is a wonder that enough of energy is left in to stand the bath of fire, water, and the subsequent heat of the annealing furnace to have any of the original life of the steel left in it. And, in fact, there is little of the *vivre* of the original metal left when the steel pen has done its brief duty. It would be much more sensible to gather up the oxidized scales from about the smith's anvil for making into "watch springs and knife blades" than to collect rejected steel pens for these purposes.

IMPROVED QUILTING FRAME.

The Davis quilting frame is the subject of a patent issued February 6, 1883, to H. T. Davis. It is intended as a convenient substitute for the old-fashioned, cumbersome quilting bars, which required an entire room, necessitated the gathering of the feminine neighborhood, or encumbered the house for a week. Mr. Davis' invention permits the use of any sewing machine, and by its means a quilt or a comfortable may be finished by one operator in two or three hours. The bars of the frame are of brass pipe or of iron pipe japanned or bronzed; the frame stands on two light legs, and may be retracted or expanded at will, and when not in use it may be stowed away, occupying but little space. The entire frame weighs but little over sixteen pounds, and, as seen in the engraving, it occupies but a small portion of the room. It is adapted not only for large articles, as coverlets, but also for cloaks, linings, skirts, and children's hoods—any article that requires stretching on a frame for quilting. These frames are made by the Davis Quilting Frame Company, 320 and 322 Broadway, New York city. Address as above for further information. See advertisement on another page.

Another Electrical Boat.

The *Moniteur Industriel* gives an account of the trial of an electric boat at Geneva on July 22. It was constructed by Messrs. Meuron & Cuénod, and was 20 feet long by 14 feet beam. The boat was driven for several hours at a speed of from $5\frac{1}{2}$ to $6\frac{1}{2}$ miles per hour, by three bichromate batteries of six cells each. The motor—which was on the Thury system—acted directly on a small two-bladed screw, there being no intermediate gearing.

THERE are in New York city 824 miles of gas pipes, 486 miles of water pipes, 391 miles of sewer pipes, $14\frac{1}{2}$ miles of steam supply pipes, and 15 miles of underground electric wires.

SURVEYOR'S LEVELING ROD.

In this invention it has been the aim of the patentee to make the use of the telescope unnecessary by placing the rod in a vertical position, as compared with as many horizontal planes as there are divisions in the rod. The rod consists of a board marked with the usual graduations, and to its center is attached another board with its plane at right angles to the first. A cross section of the rod would be shaped like a T. The outer edge of the second board is graduated to correspond with the first.

In an opening in the first board is placed a small bulb level, and in a similar opening in the second board is another

**SURVEYOR'S LEVELING ROD.**

level. These levels are in the same horizontal plane, but at right angles to each other, and at such a height as to be conveniently watched by the rodman. To the back of the first board is attached a handle by which the rod is held in position. When the rod is in an exact vertical position, as shown by the small levels, elevations can be made at sight in explorations, or by the aid of a spy-glass or telescope without the use of a reticule, for the reason that the division on the edge of the second or central board, which is in the same horizontal plane as the observer's eye, will coincide with a division on the other board, the two uniting to form a continuous line, thus doing away with the horizontal line in the reticule. All of the remaining divisions will form broken lines.

The rod is light and convenient, may be made in two or

**DAVIS' IMPROVED QUILTING FRAME**

more pieces to obtain the desired length, and may be graduated by any system. With this rod the level can be modified by removing the leveling attachments and reticule, a horizontal and vertical movement being sufficient.

The rod has been patented by Dr. Jesus Muñoz Tébar, of Caracas, Venezuela.

Imitation Amber.

Roessler's recipe is to melt one part of rosin (colophonium), then add two parts, by weight, of shellac. When the mixture becomes sufficiently fluid one part of white rosin, that should be clear as water, is then added.

English Railways.

At a recent meeting of the American Society of Civil Engineers, a discussion by Mr. Charles Douglas Fox, of London, Corresponding Member of the Society, "On the Increased Efficiency of Railways," was read by the Secretary. Mr. Fox referred to the fact that English railway managers and engineers have long realized the great importance and economy of a thoroughly substantial road bed. The formation widths on their chief railways are now made 30 feet, both in cuttings and on embankments for the double lines, and very great care is taken to thoroughly drain this formation in cuttings by deep ditches on each side with earthenware drain pipes in them, and fill in with broken stone or other dry material. The ballast, consisting of broken stone, clean gravel, coarse sand, burnt clay, or ashes, is not allowed to be less than one foot in thickness below the bottom of the tie. For lines of constant and heavy traffic, the bullhead grade, double headed rail, having a large top member for wear, and a very small bottom member, is found to be the best section for steel rails. The weight of these rails is 84 pounds per yard. The chairs are from 40 to 46 pounds each, and the rails are secured in them by keys of compressed oak. The tendency of the English companies is to expedite traffic, both passenger and goods, not by higher rates of speed, but by reducing the number of stoppages.

The traffic lines are gradually quadruplicating their tracks—in some cases throughout, in others by sidings seven miles in length. There is a very general feeling in England in favor of identifying the driver with his engine, and holding him responsible for its working. On some lines the name of the driver is conspicuously attached to the engine. Mr. Fox forwarded also the railway regulations of the English Board of Trade, which give very minute directions in reference to the construction and running of railways.

Progress of Sorghum Sugar Manufacture.

The new Kansas Sugar Refining Company, located at Hutchinson, Kan., turned out its first batch of sugar on the 12th of September. This company has invested \$125,000 in works here, and proposes making its headquarters at Hutchinson, while they will establish branch mills over the State and ship the product here for refining. The result so far to-day settles all controversy about the possibility of making sugar from sorghum cane. The run to-day was a bright grade, and crystallized perfectly without the sorghum taste. The mill will be run from this on at a full capacity, which is over one hundred barrels per day of sirup. This season's product will aggregate 9,000 barrels of sugar and 7,000 barrels of sirup. All grades of white sugar will be made, but the machinery for granulating is not up yet. To run this mammoth establishment requires two hundred men day and night. The *Cleveland Leader* says the works at Hutchinson and at Sterling are both operated on the same principle, and both have met with the same successful result. Hutchinson and Sterling will soon be able to supply Kansas with her sugar.

Artificial Nourishment.

Some of our foreign exchanges relate a novel method for administering nourishment to invalids and persons with weak digestion which, it is alleged, has been practiced in Paris with great success. Diseases and enfeebled health commonly owe their origin to the imperfect assimilation of food. When the digestive functions are impaired the body is insufficiently nourished, and is unable to resist the encroachments of disease. For the maintenance of health and for restoration in sickness it is of the first importance that the food be not only of the most nourishing kind, but that it be administered in a form easy of digestion and assimilation. In a paper recently communicated to the Medical Hospital Association of Paris by Dr. Debove, he describes a form of alimentation which has attracted much attention. His system is to apply nourishment in form of powder instead of in bulk. Uncooked meat, from which the fat has been removed, is minced finely and allowed to dry in an oven at about 90° Centigrade until it becomes perfectly hard without being burnt. It is then reduced to impalpable powder by pounding in a mortar and passing through a fine sieve. The powder so obtained represents about four times its weight in flesh. The fiber and the large percentage of water contained in flesh are thus removed, and the essential properties of the meat retained and presented in a form the least difficult to digest. Other alimentary substances, such as lentils, beans, peas, etc., can be prepared in the same way.

In cases of consumption the treatment is said to have proved marvelously successful, and in general debility and nervous disorders, arising from weakness, restoration is rapid and permanent. A few spoonfuls of the powder are equal to the meal of a person with a healthy appetite. The powder, when bottled, will keep an indefinite time, and may be taken with a little milk, gravy, wine, water, or other liquid.

GALVANIZED iron pails for drinking water should not be used. The zinc coating is readily acted upon by water, forming a poisonous oxide of zinc.