

sticks cut from the woods, and not even divested of bark; the legs of the trestles are braced with round poles. It is in four stories—three of trestles and one of crib work. It carries daily from 10 to 20 heavy railway trains in both directions, and has withstood several severe freshets and storms without injury." This bridge has excited to a high degree the admiration of several European military officers who have visited the scene of military operations in Virginia.

QUESTIONS ON SUBJECTS CONNECTED WITH THE MARINE STEAM ENGINE; by Thomas J. Main, M. A., Professor of Mathematics in the Royal Naval College, Portsmouth; and Thomas Brown, Chief Engineer, R. A., attached to the Royal Naval College. Published by Henry Carey Baird, 406 Walnut street, Philadelphia. Price \$1 50.

This is a republication of a London work, the chief object of which is to afford practical solutions to questions relating to the construction and working of steam engines: especially the marine engine. It constitutes a valuable help to engineers who design to enter the American navy, although intended for those of the British navy. It contains the questions from the examination papers, for engineers before the naval board, with hints for their solution. The following is an example of the questions and answers contained in it:—

"The stroke of an engine is 7 feet 6 inches, and the diameter of the paddle-wheel is usually about eight times the length of the crank; find the diameter of the paddle-wheel.

(1). $7\text{ feet } 6\text{ inches} \div 2 = 3.9\text{ inches}$ the length of crank.

(2). $3\text{ feet } 9\text{ inches} \times 8 = 30\text{ feet}$ the diameter of paddle-wheel."

PAPER-MAKING IN AMERICA.

In the very interesting communication on the history of paper-making, which was published in our last issue, we stated that the first paper-mill in America was erected on Chester Creek, Pa., by a Mr. Wilcox. This information was derived from the invaluable treatise of Mr. Joel Munsell, of Albany, N. Y., on "The Chronology of Paper and Paper-making." Since then we have learned that Mr. Horatio Jones, of Philadelphia, read a paper on this topic on the 5th instant before the New England Historical-Geological Society, Boston, in which he claimed an older paternity for the manufacture of American paper than is claimed for Mr. Wilcox. He said "the idea had been generally propagated that the first paper-mill in America was established by Thomas Wilcox, on Chester Creek, Delaware county, Pa., in the year 1714. Standard historical writers have so stated it. That mill was, however, the fourth or fifth in America, and was not built till 1729 or 1730. From 1690 until 1710, there was but one paper-mill in all British America—the Rittenhouse paper-mill. It was situated in Germantown, Pa. The first manufacturer of paper in this mill was William Ryttinghuisen, now anglicised into Rittenhouse. He was born in the principality of Broich, in 1644, came to Pennsylvania soon after his arrival in America, and was among the early settlers of Germantown. In 1700 or 1701 the pioneer paper-mill of America was carried away by a freshet. So important did William Penn regard the mill, that he wrote a letter or certificate recommending the citizens of Pennsylvania to aid in rebuilding it. This was done about the year 1702. It has been in possession of, and worked by the descendants of Rittenhouse, as late as 1855. It is now the property of Peter Rittenhouse, who has lately converted it into a cotton factory."

Mr. Jones said that the water-mark so much used by the early paper-makers had enabled him to discover, in an old blank book, some of the paper made in this mill before 1690, on part of which his sketch was written.

A NEW RAILWAY DANGER.—Swarms of locusts have, in many cases, lodged on the Ottoman railway, and compelled the engine-drivers to proceed with great caution. The locusts on being crushed by the engine on the rails, make them excessively greasy and slippery, so that the wheels will scarcely bite. The consequence is some degree of danger, and sand has to be dropped on the rails to give the wheels a hold.

Correspondence

Music by Telegraph.

MESSRS. EDITORS:—The idea of introducing music into families within the limits of a city, by means of electricity, has at times been the *beau ideal* of my inventive speculations for the last several years. That every parlor of a city could be furnished with music, and music too of the highest order, as the most of houses are furnished with gas and water, should not be considered one of the impossibilities of the age. From the attention I have given to the subject, I believe the plan is highly practicable, its merits being—simplicity in mechanical construction, perfection in operation, and affording a novel, but most exquisite pleasure to many private families and social circles, at a trifling expense.

To explain what would constitute the mechanical construction of this happy invention. In some central part of the city locate the musical depot or studio, say of a highly skillful performer on the piano, melodeon, or organ; we will select the piano. To this instrument there is an electrical attachment, which may be made to communicate with a thousand other pianos in the city, these again having their own peculiar magnetical attachments. In this arrangement there would be a half an inch thick electrical conductor or poles, running through different parts of the city, as the means of communication from the operator's piano to those connected therewith throughout the city. Here is a state of affairs where one person may be playing a thousand pianos at the same time! There would be no speculation as to the perfect success of the operation. From what we know of electrical velocity, and its precision of action, there is a certainty, that as the music is performed at the depot chamber, so will it be reproduced precisely at the player less piano in each dwelling with which it may be connected.

In regard to the financial character of this invention, it would not require much of an effort to be made popular; and to make it popular would be to make it profitable. We are of the opinion, it would be a stock operation that would pay, probably better than any other. Those taking an interest in this invention who wish further information on the subject, may address the subscriber.

G. P. HACHENBERG, M.D.

Springfield, Ohio, Aug. 9, 1863.

[The above is certainly a novel use for the electric current. But there is probably no practical difficulty in the way of its successful accomplishment. Things more wonderful are done every day through the agency of electricity. We would, however, advise all our young lady friends to continue the study of music with as much zeal as ever; for there is no more likelihood that this telegraphic music will take the place of ordinary performances, than that telegraph writing or messages will supersede ordinary correspondence.—EDS.]

Molasses from Indian Corn.

MESSRS. EDITORS:—The present high price of sugar should be the means of directing attention to the production of sugar or molasses from Indian corn, which is so abundant and cheap. In repeated trials, I have obtained $5\frac{1}{2}$ gallons of molasses from one bushel of corn, weighing 56 pounds; and I have purchased the corn at 25 cents per bushel. From 50 pounds of corn meal I have made 6 gallons of molasses of 28° Beaume, which is equal to about $31\frac{1}{2}$ pounds of sugar. Such molasses are not so sweet as those of the sugar cane; but their taste is pleasant and not quite so bitter as those made of the sorghum.

F. A. HOFFMAN.

Beardstown, Ill., Aug. 12, 1863.

BLACKBERRIES are the only luxury of the soldier, at present. Virginia is one vast blackberry field, and it is said, in consequence of living on this diet, the army never was in a better sanitary condition. The surgeons say that since the army returned to Virginia, the free use of blackberries had saved the Government nearly a million of dollars in medical and hospital stores.

Trial of the "Manhattan" Steam Engine in London.

The *Mechanics' Magazine* has the following paragraph on this subject:—"This engine, which has received a partial repair at the hands of Messrs. Shand and Mason, underwent some experiments on Saturday, in the presence of a numerous body of engineers and others concerned in such matters. The trials were conducted at the Shadwell entrance to the East London Docks; the site was extremely convenient for testing alike the drawing and forcing powers of the machine, the vertical distance from the rotary pump to the surface of the water in the basin being nearly 15 ft. Steam was got up a little after 1 o'clock; the times and pressures were nearly as follows:—In 11 m. from the application of the match, the engine got to work with steam at 20 lb., drawing water immediately, without priming the pump; in $14\frac{1}{2}$ m. the pressure was 40 lb.; in 15 m. 45 lb., when the engine was stopped for a short time; in $15\frac{1}{2}$ m. the pressure was 55 lb.; in 16 m. 60 lb.; at 62 lb. the engine started, throwing a very steady jet through a $1\frac{1}{2}$ in. nozzle to a distance of about 150 ft., with a pressure in the air-vessel of about 80 lb.; in 18 m. 40 s. a pressure of 100 lb. was reached, with 140 lb. in the air-vessel. The engine making about 280 revolutions per minute, some very fair work was done; but at this juncture a leak was sprung in the boiler, which, though very trifling, so far damped the fire as to render it impossible to keep steam. After a little time the leak stopped itself, and the fire was re-lit, but without producing any very good results. Whether from a defect in the quality of the coal, or that the boiler has been more injured than appears at first sight, it was found impossible to keep up the water supply and the pressure in the boiler at the same time; the introduction of the feed pulling down the pressure with a rapidity which was very remarkable. The engine and pump of the machine leave little to be desired; but the boiler, if it cannot accomplish better results than any we have seen, must, we fear, be pronounced a failure. After a couple of hours, the coal provided having been consumed, all further trials ceased, the engine returning to London.

A Rainy Month.

July, 1863, will be remembered as the rainy month, especially by farmers, who paid \$56 a month to hay-makers. J. P. Hall, of Hancock street, Boston, informs us that, during the month of July 12 36 inches of water fell in this city; the average fall for July, for 38 years here, having been 3.42 inches. Excess 8.96 inches. During the present year, at the end of seven months, 42 31 inches of water had fallen. The average for the first seven months, for 38 years, is 24 37 inches. Excess in the present year, 17.94 inches. In August, 1826, 12 10 fell; that was a remarkably unfavorable month for haymaking in western Massachusetts. That year the 'September scythes' rung to an almost unprecedented rate. In November, 1840, 11 63 inches of water fell; and in August, 11.11 inches fell. Thus, July stands ahead of any corresponding month in the record that we have access to at the time of writing. Down to the 8th day, only .03 of an inch had fallen. In Lowell, from the 6th to the 29th, 10.023 inches fell, or about one-fourth the usual annual amount. In Lawrence, the amount was 8.75 inches. Farmers have been great sufferers, and it is feared the herds and flocks will be, on the coming foddering season. As the quality of the grass must have been greatly impaired, both by the rains and the ripening thereof, before it can be cut and made, as the season is quite advanced; the time having come when haying, for the last ten or fifteen years, has been finished, though formerly it was much later. At Harvard College Observatory, Cambridge, the fall of rain in July was 12.43 inches, or very nearly the same quantity as in Boston. The extremes of the thermometer in July were 87° on the 3d, and 55° on the 24th—range 32°.—Boston *Cultivator*.

SMALL as Connecticut is, she can boast of having nearly 3,000 industrial establishments, and a capital to the amount of \$46,000,000 invested in manufacturing business, giving employment to 60,000 hands. If we add together all the industrial products of North Carolina, South Carolina, Georgia, Florida, Alabama, Texas, and Mississippi, then Connecticut is \$20,000,000 in advance of them all.