

chamber, and thus forcing the contents of the well into the vacuum, whence it is discharged by the combined action of the compressed air and the pressure of the atmosphere acting on a vacuum. The same apparatus can be used for separate wells, or mines, there being always a surplus of power for contingencies. It has been applied to house pumps and works admirably, the pump never fouling nor freezing.

Those interested are referred to the description in No. 23 of Vol. XII., SCIENTIFIC AMERICAN, or to F. S. Pease, Buffalo.

#### New Steamboat Fuel.

The Cleveland (Ohio) *Herald* says:—"The other day, at the Islands, we noticed a novel kind of steamboat fuel. When the *Philo Parsons* was wooding at North Bass Island, she took on board a large number of sturgeon which had been landed from the fish ponds in that vicinity. As these fish had been lying a day or more in the sun they were, like the exploded dog, not good for much as fish. Curiosity as to the design of such freight was soon satisfied on seeing a huge sixty-pound sturgeon go head foremost into the furnace. Inquiring into this novel species of steamboat fuel, we were told that the oil from the fish assists the combustion of the wood very much, and that the boatmen are glad to clear the docks of sturgeon, which would otherwise be deemed worthless, unless to enrich the soil.

"It is said twenty sturgeon make as much steam as a cord of wood, though we do not know that the wood-measure tables have been 'reconstructed' so as to read, 'a score of sturgeons make one cord.'"

#### Low's Shingle Machine.

In the description of Low's shingle and barrel head machine, which was illustrated in No. 25, Vol. XIV., SCIENTIFIC AMERICAN, an error occurred in regard to its capacity. Instead of sawing from 1,700 to 2,500 shingles per day of eleven hours, we have seen certificates from concerns using the machines which state that they cut from 15,000 to 22,000 per day of ten hours, and that they are capable of doing even more. These machines are in use in all the Western States, in California, and in New Brunswick. They seem to give excellent satisfaction. For the convenience of our readers interested in the lumber manufacture we give the prices: with 36-inch saw and jointer, complete, \$275; with 40-inch saw, \$300. S. J. Ahern, 88 Wall street, is the agent in this city.

#### The Non-Recoil Gun.

It will be recollected that in our last number we stated the facts, in brief, in regard to experiments with an open tube as an instrument for propelling projectiles. The *Engineering* states that "Mr. Harding, the inventor, has brought it under the notice of the French and Belgian Governments, who have each appointed a commission to examine and report upon its merits. Mr. Harding is drawing, at the Hydraulic Tube Company's Works, a gun of 4-inch bore with 2-inch thickness of steel around the chamber, and we hope soon to be able to give the practical results of a conclusive trial of the most extraordinary system of ordnance known to modern times." The result of experiments on a scale that promises useful and practical effects will be awaited on this side the water with a degree of interest noways inferior to that of our cousins on the other side.

#### The Ames Gun.

Mr. Horatio Ames, the patentee and manufacturer of the gun which bears his name, and which has been repeatedly tried with extraordinary results by the ordnance officers of the American Government, has lately brought it under the notice of the Emperor of Russia. The resources of the Russian gun factories were at once placed at Mr. Ames's disposal, together with a liberal appropriation of money to establish the manufacture in that country; but, we believe, the offer has been declined, and indeed no experienced iron-master would think of commencing such an undertaking in a country so lacking in skilled labor and in general facilities for special manufactures of iron as Russia.—*Engineering*.

DURING the war over one thousand ships of our mercantile marine were transferred to foreign flags.

#### MISCELLANEOUS SUMMARY.

THE Hamilton Manufacturing Company, of Lowell, has entered upon a new department of business, that of manufacturing delaines. The machinery for this purpose was mainly imported from England at a cost of \$400,000, and the company is now able to turn out delaines that will not suffer from comparison with the products of older concerns. The manufacturing companies of Lowell have introduced into their mills Francis's apparatus for extinguishing fires—by which the entire building can be flooded in a very brief period of time, and which can be effectually operated when it would be impossible to affect the flames by efforts from the outside.

THE people of St. Louis are again bestirring themselves to an extension of the North Missouri Railroad through Iowa via Cedar Rapids and into Minnesota, so as to tap the seven east and west lines in those States, and afford an easy and effectual cut-off for the benefit of St. Louis. They have hitherto relied upon the Mississippi as a cut-off, but are abandoning that idea with the multiplication of railroad bridges over the stream, and now propose a subscription of a million dollars in aid of a railroad extension to Cedar Rapids.

OLD MINES RE-DISCOVERED.—In Brazil, in the town of Rio Grand de Sul, old silver mines worked by the Jesuits have been re-discovered. There are said to be in the southern part of California, also, silver mines of the greatest richness which were worked before the formation of the Mexican Republic with great results, all traces of which were carefully concealed when the priests, who had taken the profits of them, were compelled to leave the country. The Indians were put under oaths, with fearful penalties, not to disclose the locations of them.

A VEIN of tripoli, twenty feet in thickness, fifty rods wide, and a mile in length, has been discovered near the town of Stillwater, Minn. It is said to be free from acids, mica, or calcareous earths, and equal to the Mount Eagle tripoli, so celebrated in this country and Europe. Nothing has ever yet been discovered equal to the pure tripoli for cleansing and burnishing all metallic and glass surfaces. Tripoli is composed of the exuviae of infusoria, and is entirely an animal production, although found in the earth.

CRYPTOGRAPHY.—C. B. S., of Conn., sends a table intended to be used in cipher writing, which is precisely like one sent us by an Ohio correspondent, and which we referred to in No. 25, Vol. XIV. Like that, its value depends upon key words agreed upon by the parties in communication, and it is one of the most ancient forms of the art. An arbitrary transposition of the letters, guided entirely by the key words, constitutes its value.

THE city of Hartford, Conn., has produced no less than 821,000 volumes of books relating to the civil war, whose aggregate value is about \$2,500,000; turned out more fire-arms than any other city, and built \$1,500,000 worth of steam engines during the war.

MR. HUGHES gets for his telegraph 200,000 francs from France, 120,000 francs from Italy, and something from Russia, besides the Order of St. Anne. He can afford to frank a few dispatches for his friends—he can if any man can.

IT is stated that New Haven is the only place in the United States where fishhooks, needles, and steel-bowed spectacles are manufactured. Needles, however, are now made in Bridgeport and other places.

A NEW HAVEN company has begun the manufacture of a compressed stone for building purposes. It is made of sand, pulverized quartz, and silicate of soda, and hardens within 24 hours from the consistency of putty to the solidity of stone.

LEWISTON, Me., has eight cotton factories, with eighty thousand spindles and five thousand operatives. The mills are now all running on full time. The Androscoggin Mill there is one of the largest in the world.

THE first bushel of wheat ever grown in Minnesota was raised in 1829; last year the yield was 10,000,000 bushels; and this year, with a good harvest, the crop is put down at 16,000,000 bushels.

THE Jewish synagogue just completed at Berlin, but not yet consecrated, is one of the most gorgeous buildings in Europe. The entire cost of the structure is estimated at \$750,000 in gold. It is surmounted by a huge dome of the Oriental type, which can be seen from every house-top in Berlin. It is not less conspicuous for its Eastern form, than for the heavy gilding which covers it in every part. Besides, there is also a minor dome, also richly gilded. The interior is broken up into the great central hall of worship, not far from a hundred feet in length, and provided with 3,000 chairs for the worshippers. These are of oak and richly carved. To occupy one of these chairs costs about \$500 yearly.

ODORS OF DISEASE.—The odor of small pox has been compared to the smell of a he-goat; that of measles to a fresh-plucked goose; scarlatina to cheese. The smell of plague has been compared with the odor of May flowers, and that of typhus with a Cosack. That the typhus odor resembles ammonia, I have often observed, and the best and most recent investigators agree that it is a compound of ammonia. Probably the more intense the smell, the more operative the poison; hence the necessity on the part of the attendant to avoid inhaling this concentrated poison.—*Prof. Banks, Medical Press and Circular*.

THE origin of the earth's heat is the subject of a communication from H. L. of N. Y. He assumes it is caused by the impact of the earth upon whatever resisting medium in the line of its orbit tends to retard its motion. The idea is not new, and the subject is not really of practical importance. Until the existence or nature of a resisting medium is established and understood, all discussion of the question must partake more or less of conjecture.

A NEW PRESIDENTIAL MANSION.—It is proposed in Washington to erect a new dwelling for the President on the elevated plateau at the east of the Capitol, the present White House being deemed unhealthy and inconvenient. Probably the cost of building a roomy and permanent structure in the locality proposed would be hardly more than the expense of the continual repairs which seem to be required on the present edifice.

MEASURING GRAIN.—The variation between weight and measure of grain in different States has induced the Albany Board of Trade to recommend to the Boards represented in the Detroit Commercial Convention of 1865, the measurement of grain by the cental of one hundred pounds, with the object of uniformity.

THE grounds of the Portland Rolling Mills Corporation comprise eighty-five acres. This tract is divided by avenues into lots, and with a multitude of neat and substantial houses constitutes a pleasant little village. The mill has a capacity of 10,000 tons per year, has an engine of 400-horse power, seven heating and three puddling furnaces.

IN speaking of city reforms, some weeks ago, we alluded to the fact that the new Excise Board intended to get enough from licensed liquor dealers to nearly pay the police expenses of the city. This Board went into operation on the 1st of May, and the Treasurer now reports over one million dollars on hand.

THE new bridge over the Schuylkill at Chestnut street, Philadelphia, is rapidly approaching completion. It is a splendid structure of cast iron, the total weight of the material being seventeen hundred and fifty tons. It will be opened for travel July 4th, and will be entirely finished in the ensuing September.

AN exchange says that a sure sign of rain is the rising of moisture to the surface of the ground where it has before been dry, and accounts for it by the fact that as a storm approaches, the density of the atmosphere decreases, and the pressure upon the surface of the earth is lessened.

STEEL RAILS.—In consequence of being made too hard, several steel rails have broken lately. It is imprudent to attempt to obtain great durability by making over-hard steel. In the cases to which we refer, the engine weights were very heavy.

WATER in which indigo has been dissolved is recommended to remove smoke stains from walls before whitewashing, but common lye made from wood ashes is believed to be equally as efficacious