

a transverse distance of only 10 feet, or the extent of the wings of a single bird. On this principle various models were made, all of which, when held in a breeze, gave great supporting power for their size. The sustaining effect was found to be the same whether the planes were extended in one length, or superposed. A model was then constructed of sufficient size to raise the weight of a man. The plane surface was 18 inches broad, and consists of webs of thin holland stretched in a frame. The length of fabric was 90 feet, but, instead of extending in one length it was cut into five pieces, which were arranged equidistantly, one above the other, in parallel planes; the whole weighed about 45 lbs. This contrivance, when held against a breeze estimated at about twenty miles an hour, easily raised the experimenter, but not being provided with any propelling arrangement it quickly descended again, with no worse accident than the fracture of the apparatus. For the last six years other pursuits have prevented the author from continuing these investigations, and till very recently nothing further has been done. Experiments are now in progress for the purpose of ascertaining the force required to propel a series of superposed aeroplanes through the atmosphere, at speeds exceeding twenty miles per hour. Should this prove to be within the compass of manual power, there is some probability that an active man might be enabled to perform extended flights, as the system of fixed wings or aeroplanes may be very light, and at the same time abundantly strong for sustaining weights. An arrangement of planes, fitted together within the last few days for the purpose of experimenting, weighs about 40 lbs., and will bear a load of 3 cwt. with safety. The planes extend 10 feet from end to end, and there is a series of h'min light, with an interval of 8 inches between them. At a speed of thirty miles per hour, six tuns of air per minute will pass through the apparatus, which will give great supporting power, by running on a stratum of this weight.—*Mechanics' Magazine.*

MISCELLANEOUS SUMMARY.

A scientific way of lighting pipes and cigars has been recently introduced in Paris under the name of *poudre de feu*. It consists of pyrophorous, which is preserved in a small tin case with narrow orifice. When a little of this black powder is poured out on the end of a cigar, or on the tobacco in a pipe stem, and then gently breathed upon, it becomes incandescent, and is in a condition to light said pipe or cigar. What next? Why, there are little tubes sold containing pellets of potassium, and they are recommended to the juvenile Parisians as a means of forming splendid Gregorian fireworks on any convenient piece of water! Could Sir H. Davy see this he would be as much astonished as we should in seeing him.

THE Chicopee Manufacturing Company used during the year just closed, 5,872 bales of cotton, and made 9,007,325 yards of goods. The revenue tax of 6 per cent on sales amounted to \$110,863 36, or 26 per cent of the capital stock. Dividends of 45 per cent have been paid during the year. The company have purchased the water power of the Massachusetts Arms Company, at Chicopee Falls, adding a 15,000 spindle power to that previously owned by them.

CHEAP YELLOW GLASS FOR OPERATING ROOMS.—To some thick spirit varnish add a small quantity of iodine sufficient to render the varnish of the requisite deep color. When a glass is warmed, and a coating of the varnish applied, it will be found to be beautifully transparent. In the case of a globe for a lamp or gas it should be warmed, and a little of the varnish poured in and turned round before a fire till properly covered.

THERE are at present twenty-five grain-elevating warehouses in Buffalo, having a storage capacity of 5,495,000 bushels and a transfer capacity per day, of 2,616,000 bushels. Statistics show that more grain is handled at Buffalo than any other one point, not excepting Chicago.

THE manufacture of paper is about to commence in Oregon city. The machinery is on the ground and buildings are now in progress.

BUTTER MAKING.—A machine for making butter, just announced among the new inventions in the English Patent Office, consists of a movable metal cylinder suspended from a small cast-iron frame. The bottom of the cylinder is a loose piece of galvanized iron, and above this it is perforated by a number of small holes. This cylinder is suspended in a bowl of water, and the cream is placed in the cylinder and pressed by a screw piston, the result of which is that the butter is forced through the holes into the water, in the shape of vermicelli. By this means all the buttermilk is excluded, and the butter is found to be much closer and sweeter than when made by hand.

[It is not very clear how this excludes the buttermilk.—EDS.]

TUNNELING THE MISSISSIPPI.—The project of bridging the "Father of Waters," at St. Louis, has met with such strenuous objections that it has been abandoned, and the railroad companies, whose roads center there, have conceived the idea of tunneling the river. Consent to construct the work will be asked of Congress, and as soon as it is obtained, it is proposed to begin the work. The cost is estimated at \$3,000,000, and the time required for the completion of the work three years. The tunnel will not be more than three-fourths of a mile long.

In 1860, there was not a furnace or rolling-mill nor forge nor foundry in Cleaveland; now there are twenty-one, having an aggregate capital of \$3,000,000, an aggregate capacity of 60,000 tuns per year, giving employment to 3,000 men, whose total wages last year, were \$1,080,000. There are in process of erection other iron and steel works which will increase the product nearly one quarter for the year 1866. The iron is all obtained from the Lake Superior mines.

AN exchange says that when a piece of iron is thrown into a trough where chickens drink water they are not affected with chicken cholera. A gentleman who has tried it, says that his chickens are thriving, while those of his neighbors are dying daily. As the chicken cholera is raging to some extent throughout the country, it might be well to try it. Iron will not hurt fowls, and a trial of it might be beneficial.

TO RENDER WOOD UNINFLAMMABLE.—Make a saturated solution of potash, and thicken it with paste as for distemper painting, then add sufficient clay to give it the consistence of thick cream, adding yellow or red ocher or other mineral coloring matter, if desired, for the sake of appearance. Wood painted with this composition is said to be proof against rain, and to be incapable of being inflamed, although it may be carbonized by a fierce heat.

THE Government authorities at Cologne have issued a circular cautioning the public against variegated slate pencils. Schweinfurt green, which contains arsenic, is used for the green, chromate of lead for the yellow, and red lead for the red varieties. The circular points out the danger of this practice, especially to children, by whom slate pencils are chiefly used.

DURING five years ending with 1861, the carrying trade of New York amounted to \$1,644,000,000, over 1,000,000,000 of which was done under the American flag. In the four years which followed, out of the 1,700,000,000 of foreign trade of the city of New York, 1,300,000,000 was carried under foreign flags.

THERE are in the United States about nine hundred railroad corporations that operate steam-power roads; the joint length of the steam-power roads in the United States is about 32,000 miles, and their joint cost is about \$1,280,000,000—equal to an average of \$40,000 for each mile.

ENGLISH locomotive builders have adopted a method long in use on marine engines for fitting up certain connections. On the parallel rods of locomotives they use a solid bush instead of the usual box, and gib, and key. When the bushes are worn out others are supplied. This plan has been introduced on the New Jersey Railroad, and makes a very neat-looking piece of work.

THE burnt district in Portland has been accurately surveyed, and found to cover an area of three hundred and twenty-seven acres.

It is said that Mr. Gale, the discoverer of the process of rendering gunpowder non-explosive, has invented a contrivance for increasing the velocity of discharges from fire-arms. It consists of a longitudinal piece of steel, perforated for bullets, and fitting into a pistol between the stock and the barrel at right angles to the weapon. It is worked by the action of the lock and traverses a certain distance after each discharge. The device is not new. We saw it successfully applied by E. C. C. Kellogg, in Hartford, several years ago, to a rifle barrel mounted on a carriage.

THE sugar house of John B. Brown & Sons, at Portland, consumed in the recent fire, was one of the largest in the United States. The property burned was valued at \$700,000, on which there was insurance for about half the amount. This was one of the few establishments in the country in which refined sugar and sirup are made from molasses. The process is a secret very little known. It has been for many years a flourishing trade in Portland, conducted principally with the island of Cuba, and especially with Cardenas. Nearly four million gallons of molasses were consumed at this sugar house in one year. The works are to be rebuilt.

THE Beet Sugar Manufacturing Company, at Chatsworth, Ill., have six hundred acres of beets growing this year. They estimate the crop at ten tuns to the acre, which would yield full one million pounds of sugar. The machinery of the company is all new, was brought from Germany, and is in the most perfect order. They will commence operations about the first of October. If this enterprise proves a success—of which there is not much doubt—the business will be sure to spread with rapidity through that State and the Northwest.

THE Italian Government has given orders for the manufacture of cuirasses of aluminum for their cavalry regiments. A series of experiments made under various conditions demonstrate that a cuirass of this metal, while possessing the great advantage of being as light as a coat, cannot be pierced by a musket ball at the distance of forty paces, nor by the thrust of a bayonet. The war, however, so far as Victor Emanuel is concerned, having come to a sudden end, we presume he will not spend his money on aluminum cuirasses.

THE Pittsburg *Price Current* has seen a certificate allowing the use of steam of 183 lbs. per square inch, in a boiler that has been proved to the enormous pressure of 270 lbs. The boiler was built to test thoroughly the economy of high-pressure steam, five times expanded. The initial steam in the cylinder is intended to be 165 lbs. per square inch, and 40 indicated horse-power is calculated upon being realized with 60 lbs. of combustible per hour, or 1.5 lbs. per hour per horse-power.

FLY KILLER.—We have tried a great many plans to get rid of flies, but none has proved so effective as the fly paper made by Peck & Nash, of Bridgeport, Conn. A piece of this paper placed in a plate containing water, will invite the flies to a death banquet.

AT Lazell, Perkins & Co.'s works, at Bridgewater, Mass., a mold is being made for casting a monster sea water condenser for one of the Boston and Liverpool packets now being built at Newburyport. It will require twenty tuns of iron, and will be the heaviest single casting ever turned out by these works.

THE bricklayers of Memphis have struck work. They ask an advance of wages which will amount to seven dollars per day. The strike will have the effect of putting a stop, for a time at least, to many of the buildings now in course of erection in that city.

THE Michigan Central Railroad uses, and has fully tested and proved, the superiority of the six-wheel truck instead of four commonly used, and that in all casualties happening upon the road, no passenger inside of a car has been injured.

THE exports from the port of New York, for five months ending May 1, 1865, amounted to \$127,367,973, of which sum \$29,891,174 was in specie and bullion. The imports amounted to \$140,666,379—leaving a balance against us of \$13,298,406. Our tariff is now very high, yet we find a large party clamoring for free trade.