

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

(Reported expressly for the Scientific American.)

On Thursday evening, the 22d ult., the usual weekly meeting of the Polytechnic Association was held at its room in the Cooper Institute, this city; the president, C. Mason, in the chair.

MISCELLANEOUS BUSINESS.

Grain-hulling Machine.—Mr. Bruce presented the claims of a grain-hulling machine, invented by O. P. Stevens, of Cleveland, Ohio. Mr. Stevens' machine is designed to preserve much of the valuable nutritive matter of the grain which, in other machines, is removed in the hulls. The virtue of a kernel of grain increases from the center outward to the silicious skin. Mr. Stevens claims only to separate this silicious and worthless skin.

Prosser's Boiler.—Mr. Rowell read a letter addressed to the club from Mr. Thomas Prosser, complaining of alleged erroneous statements lately made before the club in relation to his boiler. As to priority of invention, the letter states that Mr. Prosser first built the boiler in question in 1855, and that in 1856 he defended it in public before a committee of fire company umpires.

Montgomery's Boiler.—Mr. James Montgomery claims that his boiler is the most economical yet invented. He said: The boiler of the steamer *Glasgow*, for each pound of fuel, evaporates 2½ lbs. of water, and the *Vigo* 3½ lbs., while my boiler evaporates, for the same amount of fuel, 10 to 15½ lbs. of water. I have generated steam at 110 lbs. pressure, when the temperature of the escaping products of combustion was only 140°.

Mr. Godwin—Was not one of your boilers taken out of a vessel built in Boston for a Turkish Pasha?

Mr. Montgomery—Yes. The boiler was taken out and everything else, and the vessel altered. The vessel was intended to be a fast sailer, but it was a failure. It was taken to England, and English engineers said it was the fault of the machinery. The machinery was replaced with no better success, when they made the discovery that the hull was built on a wrong model. The Pasha was advised to cut the boat in two and add about a third to its length; in short to make a new one out of her. My boiler had nothing to do with the failure.

Gas and Steam Engine.—Mr. Pappay (a German) presented his plan for a new motor. The steam generated in the usual way passes by a tube leading through the fire. In the part of the tube which is heated is enclosed a material which sets free the hydrogen of the steam, which, with the steam decomposed and superheated, operates the piston. The chemical substance which decomposes the steam is a part of the invention which at present he holds as a secret. He says it is more effective than iron or coal.

The President then announced the regular subject: "Means of Transport to and from New York."

DISCUSSION.

The President read a short paper showing the importance of the subject, and suggesting the various points for consideration.

Mr. Fisher read a very able and elaborate paper on the economy of locomotion by steam, and recommending more railroads, and especially advising iron pavements for all crowded thoroughfares. He believes that iron pavements and steam carriages will remove many of the most serious ills of city life.

Mr. Latson believed that much of the over-crowding in the streets would be obviated by requiring that North and East river steamers be required to land above Canal-street. Passengers would sooner reach their destination, and freight could be easily transported down town by railroads in unfrequented streets.

The President—The objection to the up-town landing of river steamers commonly made is, that foreign vessels would be obliged to go up to meet them, or that the freight must be carried through the city. As far as passengers are concerned, an up-town landing would be preferable.

Mr. Garbanati—All things are good in their places. We cannot exterminate horses; a little more steam in the city may be well, but it can never be the only power of locomotion and transport—perhaps not the chief.

Mr. Montgomery—Iron is better than any other material for pavements. Stone disintegrates by changes of temperature, the percolation of water and the shock of hoofs and wheels. Stone never lasts longer on a road

than in the field. Most of our soil was once solid rock. Our iron sewer covers have lasted 60 years, and have lost only 1½ per cent. An iron pavement should be cast in blocks a yard square, and with grooves (to be packed with sand) so narrow that they will not disturb the even plane on which the wheel moves and yet afford foothold for horses. The under surface should be the same as the upper, so that, when it is worn, it may be turned, and the pavement be as good as new. Such a pavement would last 100 years on Broadway, and 90 per cent of the iron, better than at first, would be left for re-casting. It may be laid for \$5 per square yard. The Russ pavement cost \$5 to \$7; the Belgian, \$2 25 to \$2 37; and lasts on a street like Broadway three years.

The President—The first iron pavement was laid in Court-street, Boston, at a cost of \$5 per square yard. It has now been used seven years and is still perfect.

Mr. Montgomery—The iron pavement in Nassau-street has been ordered to be taken up. The difficulty was not in the iron, but from the fact that it was laid so near the old burying ground that it settled. Any other pavement would have been affected in the same way. [This statement was doubted by some of the members.] Iron pavement is demanded for the sake of the health of the city. Our streets now are a vast sponge which absorbs every kind of filth and uncleanness, to be given out again on warm days in poisonous stench.

Mr. Godwin advocated one-horse omnibuses, running on tramways of stone, 8 or 10 inches wide.

Mr. Garvey—No doubt we shall some day use steam for locomotion in the city, but there are many practical details to be settled. Shall we have locomotives, or get the moving power from stationary engines? But there must ever be a necessity of accommodation for horse carriages and country wagons. There are a hundred thousand horses in the city, and we cannot dispose of all of them at once.

Mr. Seely believed that a motor, in which compressed air is used, might be found practicable. Condensed gas is sold for light; why not condensed air for power?

The President—Our city government was always slow to grant charters for city railroads, but no one questions their utility now. I rank our city railroads as a blessing next to Croton water.

The same subject was ordered to be resumed at the next meeting.

APPLICATIONS FOR THE EXTENSION OF PATENTS.

Horsepower.—Norman Sheldon and Jane Cary, executors of Daniel Cary, deceased, of Chili, N. Y., have applied for the extension of a patent granted to said Daniel Cary, on the 27th of June, 1846, for an improvement in horsepowers. The petition is to be heard at the Patent Office on the 11th of June next; and the testimony closes on the 26th of May.

Netting Machine.—John McMullen, of Baltimore, Md., has applied for the extension of a patent granted to him on the 27th of June, 1846, for an improvement in netting machines. The petition is to be heard at the Patent Office on the 13th of June next; and the testimony closes on the 26th of May.

Carving Machine.—James Angur, administrator of Hezekiah Angur, deceased, of Whitneyville, Conn., has applied for the extension of a patent granted to him on the 23d of Dec., 1846, for an improvement in carving machines. The petition is to be heard at the Patent Office on the 3d of December next; and the testimony closes on the 16th of November.

THE PEMBERTON MILL.

MESSRS. EDITORS:—I noticed, on page 186 of the present volume of the SCIENTIFIC AMERICAN, an article headed "The Pemberton Mill to be Rebuilt." In this article it was asserted:—"In the architect's order allowance was made for strength to support tenfold the weight that was placed upon the pillars; but they were not in accordance with the order." This is not so. The architect's size for the largest pillars was 6 inches diameter at bottom, 5 inches near the top, 5½ inches at middle and 12½ feet long and ⅝ of an inch thick. The manner in which they were set up and designed to be set up, not being accurately fitted or fixed at top and bottom, their breaking weight is 49 tons. The weight to come upon them was estimated at 25 tons; being an allowance of only *twofold* instead of tenfold, as shown in a previous article.

Lawrence, Mass., March 27, 1860.

A COLUMN OF VARIETIES.

Indigo as good as was ever produced has been raised in South Carolina; its manufacture, however, was so fatal to the negroes that its cultivation was discontinued. It absorbs oxygen in the process of manufacture so rapidly as to render the air unfit to breathe.....To remove lead from water, put a little chalk or whiting into the water and let it settle.....The power of a triangular prism to reflect the violet rays of light more than the red rays, is called its dispersive power, and it is found that flint glass, which contains a considerable proportion of the oxyd of lead, possesses this dispersive power in a much higher degree than crown glass, which contains no lead. This property has been turned to account in the construction of lenses for microscopes, telescopes, &c..... It is calculated by Morin, in his work on mechanics, that a child growing at the rate of four inches a year, grows 0.000,000,000,9 of a foot per second.....To draw a load weighing a ton along level ground, requires a force sufficient to raise about 600 lbs., if the load is on a sledge, if in a common wagon about 70 lbs., if in a railroad car about 7 lbs.....A railroad company has purchased the right of way through the Thames tunnel, London, and will proceed to lay a track.....The London *Spectator* states that one firm in London consumes 7,200,000 corks per annum.....The fatal disease among cattle which is causing so much alarm in the towns of North Brookfield and New Braintree, Mass., is an inflammation on the lungs and of the membrane which lines the chest. A committee has reported a bill to the Legislature providing for the killing and buying by the public authorities of cattle affected by it, the owners to be paid by the State.....A man is taller in the morning than at night to the extent of half an inch, owing to the relaxation of the cartilages.... The human brain is the twenty-eighth of the body, but in a horse but the four-hundredth..... Ten days per annum is the average sickness of human life. About the age of 36, the lean man generally becomes fatter, and the fat man leaner.....Richter enumerates 600 distinct species of disease in the eye..... The pulse of children is 180 in a minute; at puberty it is 80; and at 60, only 60.....Dr. Lettom ascribes health and wealth to water; happiness to small beer; and all diseases and crimes to the use of spirits.....Elephants live for 200, 300, and even 400 years. A healthy full-grown elephant consumes 30 pounds of grain per day.Bats in India are called flying foxes, and measure six feet from tip to tip.....Sheep in wild pastures practice self-defense by an army in which rams stand foremost, in concert with ewes and lambs in the center of a hollow square.....Three Hudson's Bay dogs draw a sledge, loaded with 300 pounds, 15 miles per day..... One pair of pigs will increase in six years to 119,160, taking the increase at 14 per annum. A pair of sheep, in the same time would be but 64. A single female horsefly produces in one season 20,080,320 eggs.....The flea, grass-hopper and locust jump 200 times their own length, equal to a quarter of a mile for a man.....One of the items of foreign news states, that "no more floating batteries with iron sides are to be constructed in England, owing to the Armstrong guns having completely riddled the immensely thick iron plates of the experimental vessel." How will this conclusion affect the iron floating battery, now in process of construction at Hoboken?.....Water in large volumes is blue by reflected, and green by transmitted light.....Coprolites are the fossil excrements of extinct animals, and when found in any quantities form valuable manure. They are found in the lias, chalk, and coal formations at Bristol and Lyme Regis, and in Fifeshire, Scotland.....There are no means at present of cleaning the bottom of the *Great Eastern*, and it is probable that in consequence of fouling she would not now go as fast, by 1½ or 2 knots an hour, as if her plates were clean.....The estimated consumption of coal per horse-power per hour in steam-vessels is estimated to be one-half greater in regular working on long voyages than upon careful trials with new machinery.....As little as two square feet of surface for each indicated horse-power is now found sufficient for a surface condenser, except when condensing water much warmer than 60° has to be used.....The lime salts of the sea are taken up in the formation of coral, and, accordingly, in the vicinity of coral reefs the sea is found to be deficient in these salts.....A square metre is 10.764 English square feet.....The temperature of glass furnaces is about 21,632.