

## Closing of the Fair of the American Institute.

On Friday, November 6th, the Crystal Palace, wherein the above-named Fair has been held, was officially closed, and the exhibition terminated. In the afternoon of that day the prizes were awarded by the managing committee, and the distribution was followed by a grand concert in the evening.

As a Fair, the one just closed has had many drawbacks—the bad weather, hardness of the times, &c.; but taking it altogether, we are inclined to place it among the most, if not actually the most, successful exhibitions ever held in this city. The Palace is still open to the public, and for the depositing of machinery; but in every respect it is a desert compared to what it has been, for visitors, managing officers, reporters and exhibitors, have all retired to recuperate their energies and improve their talents, so that when the next Fair arrives, they may enter on their duties with freshness and renewed vigor.

We now publish an accurate list of the gold and silver medals that have been awarded to exhibitors in the Machinery Department, as they will, doubtless, possess the greatest amount of interest to our readers:—

## I. RAILROAD MACHINERY AND FIXTURES.

Fowler M. Ray, 102 Broadway, New York: "Elliptic and Rubber Springs."—Small silver medal.  
L. B. Tyng, Jersey City, N. J.: "Chilled Locomotive Tire."—Small silver medal.  
J. H. Swan, 323 Fourth ave., New York: "Car Seats and Reclining Chair."—Small silver medal.  
Ward & Sinclair, 102 Broadway, New York: "Bailey's Car Seat."—Small silver medal.  
Horace Boardman, 181 East 13th street, New York: "Coal-burning Locomotive Boilers."—Small silver medal.

## II. LATHES, PLANERS, BORING AND SLOTTING MACHINES, BOLT CUTTERS, DIVIDING AND CUTTING ENGINES FOR IRON, AND MODELS AND DRAWINGS OF MACHINES FOR THE SAME.

Newark Machine Co., Newark, N. J.: "Universal Slabbing Machine."—Large silver medal.  
Milo Peck, New Haven, Conn.: "Drop Press and Atmospheric Hammer."—Large silver medal.  
Snow, Brooks & Co., Meriden, Conn.: "Punch Presses."—Small silver medal.

## III. MACHINES FOR WORKING WOOD, AND MODELS AND DRAWINGS FOR THE SAME.

McNish & Butler, Lowell, Mass.: "Stave Machine."—Large silver medal.  
William V. Studdiford, 49 Wall st., New York: "Barrel Machinery." (Livermore's patent).—Small silver medal.  
H. B. Smith, Lowell, Mass.: "Power Mortising Machine."—Large silver medal.  
Lysander Wright, Newark, N. J.: "Scroll Saw."—Small silver medal.  
A. D. Waymouth, Fitchburgh, Mass.: "Spool Lathe."—Large silver medal.  
J. A. Woodbury, Winchester, Mass.: "Planing Machine."—Small gold medal.  
Jones & Crowell, 299 Broadway, New York: "Wood Planer."—Large silver medal.

## IV. STEAM PUMPS, GAGES, VALVES, LUBRICATORS, &amp;c.

Roberts & Crumie, 72 Water st., Brooklyn, N. Y.: "Steam Pump."—Large silver medal.  
Gail, Garrison & Co., Williamsburgh, N. Y.: "Steam Pump."—Small silver medal.  
Taylor, Campbell & Co., Brooklyn, N. Y.: "Safety Feed Pump."—Small silver medal.  
John Sutton, 114 Cannon st., New York: "Oil Cups for Journals."—Small silver medal.  
Forest Agricultural Steam Engine Co., Brooklyn, N. Y.: "Portable Steam Cross-cut Saws" and "Portable Farm Engine."—Small gold medal.

## V. HYDRAULICS.

A. Power, 124 Broadway, New York: "Power and Hand Pump."—Large silver medal.  
C. & G. M. Woodward, 77 Beckman st., New York: "Steam Pump."—Small silver medal.  
John Patton & Co., 61 Fulton st., New York: "Carpenter's Rotary Pump."—Small silver medal.  
William D. Andrews, 414 Water st., New York: "Anti-friction Centrifugal Pump."—Large silver medal.  
Thomas Hanson, 137 Third ave., New York: "Pump and Pressure Machine and Hydraulic Rams."—Small silver medal.  
Sawyer & Carr, 3 Bedford st., New York: "Water Closets."—Small silver medal.  
Sawyer & Carr, 3 Bedford st., New York: "Cut-off for Kitchen Boilers."—Small silver medal.  
McNab, Carr & Co., 95 and 133 Mercer st., New York: "Superior Valve Couplings, Cocks, &c."—Small silver medal.  
Strickland & Hildreth, Worcester, Mass.: "Globe Valve Cocks."—Small silver medal.  
James H. Wright, 835 Broadway, New York: "Water Filters."—Small silver medal.  
William V. Ayers, Worcester, Mass.: "Cylindrical Filter."—Small silver medal.  
Ferrini & Boyle, 51 Pitt st., New York: "Hydrant."—Small silver medal.  
John Johnson, 111 East 13th st., New York: "Water Governor."—Small silver medal.

## VI. PRINTING PRESSES.

Lowie Printing Press Co., Boston, Mass.: "Conical Printing Presses."—Small silver medal.  
A. & B. Newbury, Windham Center, N. Y.: "Repro-acting Cylinder Printing Press."—Small silver medal.

## VII. GRIST AND SAW MILLS.

[In this division no gold or silver medals were awarded.]

## VIII. SEWING MACHINES.

I. M. Singer & Co., 453 Broadway, New York: "Embroidery Sewing Machine."—Small silver medal.  
Watson, Wooster & Co., 449 Broadway, New York: "Single Thread Family Sewing Machine."—Small silver medal.

## IX. MISCELLANEOUS NEW INVENTIONS.

W. McKenzie, New Jersey: "Patent Blower."—Large silver medal.  
Seyfert, McManus & Co., Reading, Pa.: "Steam Boiler Flues."—Small gold medal.  
Arad Woodworth, (3d), Boston, Mass.: "Cordage Machinery."—Small gold medal.  
Thomas G. Boone, Brooklyn, New York: "Rope Machine."—Small silver medal.  
W. R. Dutcher, Lansingburgh, N. Y.: "Rope and Cordage Machinery."—Small silver medal.  
Z. Butt, Lincoln, N. C.: "Excavator."—Small silver medal.  
Kean & Co., Worcester, Mass.: "Bookbinders' Shears."—Small silver medal.  
James & Hathaway, Milford, Mass.: "Machine for Cutting Sole Leather" and "Boot-treating Machine."—Small silver medal.

A. Bernard & Co., 51 Dye st., New York: "Patent Bakers' Oven."—Large silver medal.

X. GAS, SODA WATER MACHINES AND ELECTRIC MACHINERY.

W. W. Batchelder, 34 West 34th st., New York: "Argand Gas Burner."—Small silver medal.

## XI. COTTON MACHINERY.

George G. Henry, Mobile, Ala.: "Machinery for Manufacturing Yarns for Plantation use."—Large silver medal.

Union Roller Cotton Gin Company, 6 Liberty street, New York: "Sea Island Cotton Gin."—Small gold medal.

Benjamin & Reynolds, Stockton, N. Y.: "Improvement in Weaving Cotton Goods." (Reynold's patent).—Small gold medal.

## XII. WOOLEN MACHINERY.

R. Kitson, Lowell, Mass.: "Wool Picker."—Large silver medal.

B. T. Nichols, Newark, N. J.: "Piece-hosiery Machine."—Large silver medal.

Frederick Schott, 78 Hunter st., Brooklyn, N. Y.: "Power or Hand Knitting Machines."—Small silver medal.

## MECHANICAL DRAWINGS.

Theodore Krausch, Susquehanna Station, Pa.: "Mechanical Drawing."—Small silver medal.

Samuel Stanton, Newburg, N. Y.: "Drawing of a Marine Engine."—Small silver medal.

## MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS.

Kline's Patent Compass Manufacturing Co., 92 Wall and 301 Pearl st., New York: "Compasses to overcome local attraction on ship-board."—Small gold medal.

H. W. Hunter, 1 Chambers st., New York: "Surveying Instruments."—Small silver medal.

## Descriptive Index to Chemical Patents.

An Index to the chemical patents issued by the United States Patent Office during the year 1853. Prepared for the SCIENTIFIC AMERICAN by Dr. D. Breed, solicitor of patents, Washington, D. C. Continued from the SCIENTIFIC AMERICAN of October 17, 1857:—

**Alcohol**—Separated from water by pressure of a high column of mixture: B. F. Grenough, December 20.

**Alcohol**—Use of manganates and permanganates existing in soluble compounds in purification of: Luther Atwood, August 23.

**Chronic Iron Ore**—Reduced by carbonaceous materials, and iron removed by sulphuric acid; for making chromates: J. C. Booth, July 19.

**Fats**—Treatment with alkalis and sulphuric acid, to harden for candles: Monnier and Boutigny, February 8.

**Filters**—Composition of animal charcoal, glass and starch: Wm. H. Jennison, May 31.

**Glue**—Scraps preserved by washing in lime, and laying inclined to drain and dry; before using wash, using some sulphuric acid: David A. Janes, July 26.

**Gutta Percha**—Coating metals with: Charles Goodyear, October 11.

**Gutta Percha**—Use of sand, pulverized soapstone or plaster, for molds to preserve shape of modeled articles during vulcanization: Charles Goodyear, April 12.

**India Rubber**—Smooth surface produced on vulcanized, by use of oil on surface or on metallic plates or molds: L. Otto P. Meyer, December 20.

**India Rubber**—Milk from tree treated with aqua ammonia, to preserve in liquid state: Henry L. Norris, July 26.

**India Rubber**—Fabrics made from mixture of pulverized and vulcanized rubber with rubber of commerce: Richard Solis, February 1.

**Ink**—Use of "colophonic tar" as ingredient: Samuel H. Turner, September 6.

**Oil**—Rosin; treated with bases and then distilled odorless: Samuel L. Dana, April 19.

**Oil**—Derived from coal tar by repeated distillation and treatment with caustic soda and with sulphuric acid; boils at 450° to 475° Fah. Also the use of, to liquify concrete oils: Luther Atwood, March 29.

**Oil**—Steam at red heat passed through coal under distillation. 2. Fractional distillation of first product. 3. Purification of eupione and paraffine by sulphuric acid, chromate of potash, peroxyd of manganese, caustic soda, decantation, filtration, re-distillation, pressing, &c.: William Brown, September 27.

**Oil**—Rosin; purified by mingling with steam during distillation: Madison Page, May 24.

**Painting**—Treatment of cloth with sulphomuriate of tin, (mordant), then with chlorine, preparatory to painting different colors and figures: Leon Garosson, June 7.

**Paint**—Graphite (black lead), charcoal, tallow and gas tar, for preventing corrosion or incrustation in steam boilers: Charles F. Sibald, May 10.

**Paper**—Use of concentrated solution of hypochlorite of alumina, for separating fibers of straw: Coupier and Mellier, August 2, France, May 7, 1851.

**Potash**—Preparation for dyeing, made by treating manganese and common salt with dilute sulphuric acid, then heating to expel chlorine, which is passed into a solution of prussiate of potash: Frederick G. Vettercke, July 26.

**Stone**—Artificial; use of silex, alumina and salt: Hornig and Suess, June 7.

**Soap**—Use of sal ammoniac with wheat flour, potatoes, borax, sal soda, "meen fun" or satin white, and fuller's earth: Ira F. Payson, December 6.

**Type**—Stereotype; use of shellac mixed with tar and sand, as type metal. Also use of clay mixed with gum arabic, beeswax, stearine, tallow, oil for molds for engraving, (apparatus): Josiah Warren, re-issued July 26. Patented April 25, 1846.

**Veneers**—Sawdust cemented with mixture of lime and curd of milk; earth or fragments of minerals cemented in same way: Carl L. Gran, April 26.

**Wool**—Treated with mixture of oil (2-3) and alcohol (1-3) for cleansing: Hubbell and Barrett, June 7.

**Zinc**—Coated with lead; fused zinc poured upon fused lead, to form a thick plate, which is afterwards rolled out: E. Morewood, June 28.

## The Rate at which Thought Travels.

Who but a Frenchman would ever have thought of trying to measure the rate at which our ideas flow? One has thought of it, and three gentlemen of France have experimented and discovered—not exactly the rate at which our ideas travel, for that is infinite—but the time which elapses between the moment we think of a thing and the moment our muscles are affected to do it; or, in other words, what time it takes for the brain to exert its influence on the senses, and the senses on the brain. We compile the following information from a French journal:—

If a cylinder divided into 360 degrees be caused to rotate 1,000 times in a second, it is evident that the passage of one of those degrees before a given point is equal to the 1-360,000th part of a second; this may be divided by a microscope so that a period of time equaling the ten millionth, or even the one hundred millionth part of a second may be measured. By this arrangement it is possible to measure the rate of nervous impulse.

Suppose an electric shock be given to the arm, it produces a sensation and a contraction of the muscles; then by noting the interval of time between the shock and the contraction, the time occupied by the action of the brain to produce the contraction, however quick, will be ascertained. By trying this experiment on various parts of the body, the amount of sensibility of the different leading muscles may be determined.

M. Helmholtz, a Swiss gentleman, has made some very interesting experiments, with the utmost care, and has arrived at the following results, which we copy from Professor Silliman's *American Journal of Science*:—

Sensations are transmitted to the brain at a rapidity of about 180 feet per second, or at one-fifth the rate of sound; and this is nearly the same in all individuals.

The brain requires one-tenth of a second to transmit its orders to the nerves which preside over voluntary motion; but this amount varies much in different individuals, and in the same individual at different times, according to the disposition or condition at the time, and is more regular, the more sustained the attention.

The time required to transmit an order to the muscles by the motor nerves is nearly the same as that required by the nerves of sensation to pass a sensation; moreover, it passes nearly one-hundredth of a second before the muscles are put in motion.

The whole operation requires 1 1/2 to 2 tenths of a second. Consequently, when we speak of an active, ardent mind, or of one that is slow, cold or apathetic, it is not a mere figure of rhetoric, but an absolute and certain fact that such a distinction, with varying gradations, really exists.

## Vibration around Water Dams.

A correspondent in Vermont writes to us stating the following case:—

"There is in this place a new dam 65 feet long, nearly level on the top, with a smooth edge; and when the water flows over it in a thin and unbroken sheet, there is always a vibration of the water from the bottom to the top of the dam, and back in the pond for three or four feet; it also causes the windows of houses about the falls to jar and rattle. What is the cause of it?"

The vibration is caused by the water falling on to the ground from the dam or into the lower water; and it will, of course, affect all bodies in its neighborhood that are capable of moving. However evenly the water may pass over the dam, it will be uneven in its descent, and so cause the substance on which it falls to vibrate, and by concussion affect the dam itself.—Eds.

## Musk.

This well-known scent is imported from China, Bengal, and Russia. It has a bitterish and somewhat acid taste, and in color resembles dried blood. This scent is obtained from the musk deer, and possesses a most penetrating and diffusive odor, rather agreeable when feeble, but when concentrated it is decidedly offensive; so diffusive is its power that a few grains will scent a room for years, and it never seems to fade in strength. Tonquin musk is the most esteemed. Pod musk is the natural bag containing the musk, and each one weighs about six drachms having in each about eight scruples of pure musk. It is generally more or less adulterated, but the adulterations are easily detected under the microscope or by analysis.

## Extensive Iron Government Building.

The owners of the Trenton Locomotive Works have been awarded the contract for building a marine hospital for the United States government at New Orleans, the material to be of iron. Its length is to be three hundred and forty-eight feet, with wings each of two hundred and four feet. The main building will be three stories high and the wings two stories; both the main building and the wings will be surmounted with domes. A verandah, two stories high, will extend around the entire structure. The exterior walls, roof and verandahs, are to be entirely of iron. That the walls may be rendered non-conductors of heat, unburnt prepared clay will be used for the filling. The work is done at Trenton.—*Philadelphia Ledger*.

## Leprosy in Australia.

It is asserted that this frightful disease has made its appearance among the Chinese in Australia, and that it is likely to extend to Europeans. A letter from a gold digger contains the following:—

"Three days ago the troopers turned the Chinese out of their camp, but allowed them to take their tents, and then set fire to the rest. There are lots of them dying with the leprosy, and their camp was a regular nuisance. A carrier got \$30 for burying one of them; he took the disease from the dead man, and the carrier is now dead. The doctor had the camp set fire to, as the stench used to come into the township, although the camp was three-quarters of a mile away."

## Philadelphia.

The Quaker City has at last determined to try for herself the experiment which has been so successful here and in other places, namely, a city passenger railroad. It is to run along Sixth street, and men are now at work laying down the tracks, much to the disgust of some, and approbation of the remainder of the inhabitants. The quiet Philadelphians are much astonished at the proceeding, and their newspapers say that hundreds of spectators are there at all hours of the day, looking earnestly on. Should this one prove successful, many others are to be laid. The cars will prove a great convenience to the inhabitants and business-men living in the suburbs and doing business in the city.