### American Institute Prizes.

The following are the lists of the Gold and the Silver Medals which have been awarded by the American Institute for novel machines and such like articles exhibited. A great number of good machines were awarded Bronze Medals; we would have published these with pleasure, but have followed our usual practice, and give only the gold and silver prizes, because our room is limited. A number of the machines exhibited had been awarded Gold and Silver Medals at some previous Exhibition, and only received Diplomas at this one; these we do not notice, because we published them when former prizes when granted. The Examining Committees have been rather dilatory in making their awards. This gives their actions, the appearance of great caution and due deliberation. We hope this has been so in reality.

#### Gold Medals.

Pinney, Youngs & Co., Milwaukie, Wis., Sawing Machine.
C. H. Denison, Green River, Vt., Double Planing Machine with rotary bed for wood.
H. H. Crozier, Oswego, N. Y., Barrel Machine.
N. W. Robinson, Keeseville, N. Y., Barrel Machine.
Allen & Wheelock, Worcester, Mass., Breech-loading Rifle, &c.
Ames Manufacturing Co., Chicopee, Mass., for Ball's Patent Safety Steam Pump.
Lee & Larned, New York, Steam Fire Engine.
Fairbanks & Co., New York, Iron-Frame Railroad Scales.
Alfred E. Beach, Stratford. Ct., Printing Telegraph for the Blind.
Bernard Hughes, Rochester, N. Y., Atmospheric Trip Hammers.
Chickering & Sons, Boston, Grand Action Pianos.
George H. Reynolds, Medford, Mass., Non-condensing Steam Engine.
John North, Middletown, Ct., Book-folding Machine.
Calvin Kline, New York, Marine Chronometers.
J. Gurney, New York, Photographic Portraits (untouched.)
Fire Engine No. 12. Brooklyn.

#### Silver Medals.

J. F. Starrett, New York City, Power Printing Press for Music.
James Frost, New York, Specimens of Electrotyping.
J. P. Humaston, New Haven, Ct., Compositors' Transmittors.
Calvin Kline, New York, Ships Binnacles and Compasses.
Daniels & Raymond, Woodstock, Vt., Cotton Picker.
Wm. Benjamin & Co., New York, Power Looms.
John Matthews, New York, Soda Water Apparatus.
Reeve & Co., New Yerk, Gas Regulator.
Benedict & Burnham Manufacturing Co., Waterbury, Ct., Brass Tubing, Sheet of Brass, Roll of Brass and Copper Wire.
Springfield Tool Co., Springfield, Mass., Engine Lathe.
Boston Steam Gauge Co., Boston, Mass., Steam Gauge.
Novelty Iron Works, New York, best Design of an Oscillating and Non-condensing Steam Engine.
Wm. S. Gale, New York, Steam Fire Regulator.
Steinway & Sons, New York, Grand Action Pianoforte.
Mason & Hamblin, Boston, Mass., Organ Melodeon.
R. F. Washburn, New York, Ships' Pump.
Fulton, Perkins & Co., Chicago, Ill, Taper Sawing Machine.
Wallace & George Bull, Towanda, Pa., Sawing Machine for stone or marble.
Starbuck Bros., Troy, N. Y., Stone Dressing Machine.
John Parshley, Fair Haven, Ct., Machine for Pressing Brick.
B. J. Burnett, Mount Vernon, N. Y., best Model of a Crane.
James Horner & Co., New York, best samples of Cast Steel.
E. A. Swan, Gowanus, N. Y., Marble Carving Machine.
Speed & Bailey, Jersey City, N. J., Copper Tubes.
E. N. Kent, U. S. Assay Office, New York, Gold Separator and Amalgamator.
E. M. Bullock, New York, Model of New York City.
Magnolia Cotton Gin Co., Bridgewater, Mass., Cotton Gin.
Silsby, Mynderse & Co., Seneca Falls, N. Y., specimens of Pumps.
John Matthews, New York, a self-acting machine for manufacturing soda water.
R. L. Allen, New York, Mowing Machine.
Silsby, Mynderse & Co., Seneca Falls, N. Y., Steam Fire Engine.
Taylor, Campbell & Co., Brooklyn, N. Y., Feed Pump and Fire Engine.
W. Hicks, New York, Percussion Caps.
Asa Landphere, Erie, Pa., Spoke Machine.
America Hoop Machine Co., Fitchburg, Mass., Hoop Planing and Pole Splitting Machine.
W. L. & D. L. Ormsby, New York, Automaton Sawer and Wood Splitter.
Vergennes Scale Co., Vergennes, Vt. Railroad and Hay Scales.
Sayfert, McMannus & Co., Reading, Pa., Machine for Planing and Turning Barrell Heads.

The following are the total number of Prizes awarded:

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| Gole Medals, | 19 |
| Gold Medals Certified, | 36 |
| Silver Medals, | 100 |
| Silver Medals Certified, | 64 |
| Silver Cups, | 17 |
| Bronze Medals, | 215 |
| Diplomas, | 392 |
| Books, (Vols.) | 75 |

We have not given the Gold and Silver Medals awarded for agricultural specimens, or specimens of the fine arts. This is the reason why the total number differs from the number we have published of the two classes of medals.

One of our correspondents complains, in a letter in another column, of the management of the Fair, while other exhibitors have spoken of it highly. In the awarding of the prizes we expect impartiality—not perfection. If the Committees have erred under the first head, they deserve censure; but we are far from thinking that any member of the various awarding committees would designedly recommend premiums for articles of a manifestly inferior character to others on exhibition. There can be no reason for supposing that any such motives actuated the judgment of the committees. We understand, from experience that it is a delicate and exceedingly difficult duty to arrive at all times at results perfectly satisfactory in such examinations.

### Papers on Engineering.

At the late meeting of British Engineers, held in Glasgow last month, some very excellent papers were read, and the mechanics who attended it from all parts of the kingdom, met with great attention from the citizens. The following are condensed extracts of some of the papers:—

*Steam Riveting Machine*, by R. Harvey.—The principle consisted of a steam piston acting through a lever and an eccentric cam, by means of which the power was greatly increased at the end of the stroke, when the extra pressure was required for finishing the rivet. The machine was also adapted for punching and shearing the boiler-plate, so as to effect all the operations of boiler-making with one machine.

*Compressed Air Engine in a Coal Mine*, by Charles Randolph.—This engine was constructed to compress air to 30 lbs. on the square inch, for working a winding and pumping engine, fixed underground at the extremity of the colliery, the compressed air being conveyed from the surface by a pipe about half a mile in length. The object of the arrangement was a convenient mode of conveying power from the surface to the place required, as a steam engine underground was inadmissible, and it had answered the purpose satisfactorily, having been in constant use for upwards of six years without causing any trouble or stoppage. The pumps for compressing the air were of peculiar construction, having water constantly upon the valves, to prevent leakage and heating from the compression of the air.

*Dr. Boucherie's Mode of Preserving Timber*, by J. Reid.—This process consists in injecting the tubular fiber of the timber with a solution of sulphate of copper by hydraulic pressure from an elevated tank, the injected liquid driving before it the sap of the timber, and occupying its place. The process was most efficiently applied to the timber in the log before it was cut up, to insure the whole being fully saturated, and the effect had been found to be very satisfactory.

*Grooved-Surfaced Frictional Gearing*, by J Robertson.—This was a construction of wheels for transmitting power in place of cog-wheels. by having the surfaces grooved so as to fit into one another, and communicate the power by their friction or bite. The grooves were V-shaped, and formed so as to fit exactly into one another, the size of the grooves being proportionate to the velocity and power required. The advantages obtained consisted in the smoothness and uniformity of the motion.

*Steam Boiler with combined Internal and External Furnaces*, by John Stephen.—The principal object of this boiler is to economise space and cost of construction, by reducing the size of the boiler requisite for a given supply of steam, which was effected by a combination of internal and external firing furnaces being placed under the boiler, and also in internal flues. These were fired alternately, so as to effect a more complete combustion of the smoke; and it was anticipated that an advantage in the durability of the boiler would be obtained from the more equable heating of the exterior and interior portions. A self-acting feed apparatus was applied to the boiler, consisting of a small detached engine, the working of which was regulated by the hight of water in the boiler.

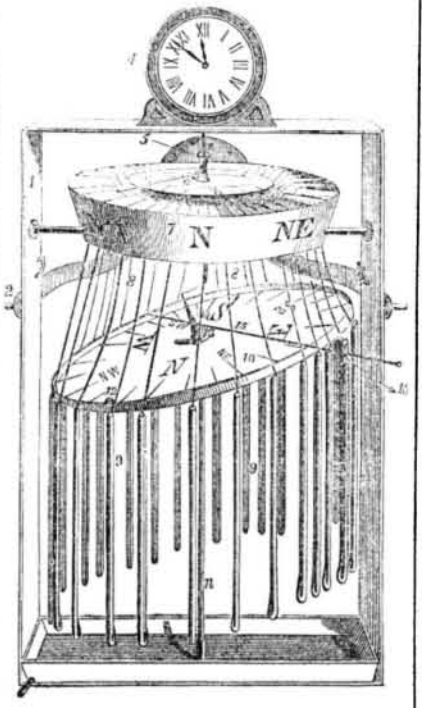
*Improved Locomotive Boiler*, by Walter Neilson. In this boiler a smaller semi-cylindrical portion was added along the top of the boiler, for the purpose of obtaining additional steam space, and the roof of the internal fire-box was made concave instead of flat, as usual, with the object of maintaining a greater depth of water upon the top, and increasing the depth of the centers of the roof-girders.

*New Locomotive Boiler*, by Alexander Allan.—This boiler was entirely cylindrical, containing the fire-box in the interior, and was designed particularly with a view to economy of construction, and increased strength and lightness.

*Steam Dash Wheel for Bleaching*, by J. Wallace.—This was a modification of the ordinary dash-wheel, by the introduction of steam into the interior, by which the bleaching process was enabled to be effected in a greatly reduced time.

### English Patents.

*Register for Indicating and Recording the Course of Vessels.*—This invention consists of a box about 18 inches square by 3 feet deep, supported on gimbols, 2, and secured to a bulkhead; on the top is fixed a meter, 4, turned by clock-work, which drops a small shot about every two seconds into the cup of a small tube, 5, fixed to a compass card, 6, secured horizontally on the radius of the true north point, and on the same plane as the center of support. The tube conveys the shot to the circumference over a cistern, 7, divided into cells, representing every quarter point of the horizon; from the cells the shot are conveyed by short tubes, 8, to a like number of bags, 9, suspended at every quarter point round the circumference of a disk, 10, poised on a pivot, 11, the disk having a raised rim, a ball, 12, resting on its surface, which is marked with the points and degrees of the horizon; its center, 13, is made to protrude or to recede by a screw, and is surmounted by a tongue, 14, attached at its end by a piece of silk to a point under the center of the cistern, and vertical to the pivot which supports the disk. Across the disk, and working round the center is a balance beam, 15, with its weight, 16, similar to the common steelyard; under the bags is a pan, 17, with its spout for collecting the shot when the bags are emptied.




By this arrangement, the north point of the cells and disk being placed in a line with the keel of the vessel, any course the ship may steer is registered, the disk being marked in reverse, the westerly points on the easterly side, any deviation of the north point of the needle with its tube from the line of the keel will cause the shot to fall into the cell, denoting the course the ship is steering, and thence fall into the bags; the small ball, by its gravity will show at sight the point of greatest dip or the mean direction the vessel has gone, but is more accurately shown (taking the small tubes out of the bags in which they work, and placing them on the hooks at the side of the box; the disk is then perfectly free, resting only on its center,) by applying the beam and its weight to balance the disk, which is correctly shown. When the point of the tongue is under the point on the cistern's center, the true course is shown to a degree at the point the beam crosses, and the distance in the same proportion may be obtained thus:—the weight of the shot being known, and the whole distance by one of Massey's Patent Logs, as the whole distance run is to the weight of the shot run out, so is the weight of shot shown on the balance beam to the true distance.

The distance and bearing may be obtained by means of a vane passing through a tube from the deck to the keel of the vessel—the action of the vane being brought into the vicinity of the instrument. This is not shown in the illustration; it shows the instrument's use in connection with Massey's Patent Log only The value of this contrivance, which is by no means expensive, is obvious. The course of a ship through the water is most generally variable, as also the rate of speed; much is consequently left to the judgment of the shipmaster and the officer of the watch, who are liable to great error in thick, stormy, unsettled weather, necessarily causing delay, care, and anxiety on approaching port; most reliance being placed on astronomical observation, which is often unattainable for some days, when making the land. By its means, the dead reckoning is much more certain; its advantage is further manifest in helping to elucidate the action of currents on the surface of the ocean.

The illustration shows the disk divided for the sake of clearness into points of the horizon, only the slight vibration caused by the falling shot, assists in keeping the needle more susceptible of directive force, and they may be so reduced in size as to cause little or no vibration. The intervals of time in their dropping being lessened, the same weight obtained for distance and direction as with the larger shot (the largest size being much less than a grain) the pivot which supports the compass card is made with a socket similar to a pencil case for renewing the point, as after much action it becomes blunted, and is liable to set in smooth water, as may be seen by comparing two ordinary compasses under such circumstances. The course obtained will be corrected for variation of the compass, the tube being placed over the true north point. The application for obtaining the leeway may be much simplified, and conducted to any part of the ship where the instrument may be placed. By the application of an oscillatory box divided into cells, the true angle of ascent and descent from the plane of direction, caused by the swell of the ocean, may be obtained and applied as a correction to the distance by Massey's Patent Log. The application of the instrument on board iron vessels in obtaining the error for local attraction when placed in different parts of the ship and the course registered is obvious.—[London Engineer.

### Great Earthquake and Volcanic Eruptions.

By the latest news from Europe we learn that severe earthquakes had occurred in Egypt, and that the shocks were felt in Greece and Italy. Two hundred houses were demolished in Cairo. The city of Rhodes was in ruins. Some damage was also done in Smyrna. The earthquake also did great damage in Malta, Messina, Pozzalo, Syracuse Candia, and other places in the Mediterranean. Several vessels in the Mediterranean felt the shock severely, and on board many of the steamers the machinery was stopped. The shocks extended from the 11th to the 16th of October. During the whole time Mount Etna was emitting dense volumes of smoke.

The seats of old earthquakes appear to be the localities of the most recent in the Old World. Thus the city of Rhodes, famous of old for its commerce, had the entrance to its harbor spanned by a brazen statue of such hight that ships sailed under its legs, which, history tells us, was overthrown by an earthquake 224 B. C. The city itself, by the same earthquake, was reduced to ruins.

But how different was the Rhodes of old from the modern city. Two thousand and eighty years ago it was one of the most distinguished cities in the world for sculpture, painting, science, learning, and commerce, and its calamity created the deepest sensation throughout all Greece; but the destruction of the modern Rhodes has caused no general sensation whatever, because it was but an insignificant place—"fallen from its ancient high estate." Destruction has come upon many distinguished cities in a single night It was the case with Babylon, Rhodes, and Pompeii.

### Bronze for Small Castings.

Take 95 parts of copper, by weight, and 36 parts of tin, and fuse them together in a close crucible.