

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

[Reported expressly for the Scientific American.]

On Thursday evening, June 6th, the usual weekly meeting of the Polytechnic Association was held at its room in the Cooper Institute, this city; Professor Mason presiding.

MISCELLANEOUS BUSINESS.

Brakes Operated by Steam.—Mr. A. Mortara exhibited drawings of his method of operating rail car brakes by steam. As Mr. Mortara does not speak English, the drawings were explained by Major Serrell. The working cylinder is placed on the tender or first car, and by means of suitable mechanism, the power of the piston is transmitted simultaneously to all the brakes of the train. The brakes are thus under the control of the engineer or a single brakeman. Mr. Mortara proposes the same device for operating hoisters and the wheels of ferries.

Measuring Faucet.—Mr. Whitman presented his patented measuring and registering faucet. This faucet is simply a force pump with a solid piston operated by a lever or crank. The cylinder is of the capacity of the unit of measure (pint, quart, &c.), and at each discharge an index on a dial-plate moves forward one degree. Mr. Whitman thinks this invention will supersede the use of funnels in grocery stores, abate the nuisance of flies about molasses casks, and detect frauds in the capacity of barrels. The faucet, made of cast iron and capable of measuring quarts, is sold for \$4.

DISCUSSION.

The regular subject of this meeting was the report of the committee (Messrs. Bartlett, Butler and Serrell) proposing a re-organization of the club. During the discussion, the history of the origin and operation of the club was given, from which we select the most important facts.

The Polytechnic Association, under the name of the Mechanics' Club, was brought into existence March 2, 1854, by a vote of the Institute, and placed under the immediate care and supervision of the standing Committee of Science and the Arts. The organization of the club and its rules of proceeding were of the most simple character. A president and secretary—the only officers—were appointed by the committee, to hold office one year. The meetings were public, and all persons who attended them were considered members of the club, with equal privileges of speaking and voting. The Institute assumed the payment of current expenses, and provided for the publication of the proceedings. The first hour of the regular meetings was devoted to the examination of new inventions, discoveries, or communications on science or the arts, and the remainder of the evening (till 10 o'clock) was spent in the discussion of a subject previously appointed.

The first regular meeting of the club was held January 15, 1855. In the proceedings, as published in the transactions of the Institute, the following names occur:—Renwick, Stillman, Mapes, Pell, Meigs, Maynard, Simpson, Everett, Serrell, Fisher, Pirron and Stewart. Among the subjects proposed for discussion were—"Will the addition of sand in large quantities increase the amount of steam from a steam boiler, other things being in the same condition?" and "What effect will a jet of cold air have upon the effective force of a steam engine if ejected into the cylinder of the engine while in operation?"

On March 16, 1859, the name Mechanics' Club was changed to Polytechnic Association, but no change was made in the organization; indeed, up to the present time no change in the object or machinery of the club. The few simple rules first given have been adhered to from the beginning. The presidents of the club have been H. B. Renwick, S. D. Backers, C. H. Haswell, T. B. Stillman and C. Mason. Henry Meigs has held the office of secretary from the first.

The organization of the club, proposed by the committee, is substantially as follows:—

1. Any member of the American Institute may be a member of the association, but is first required to subscribe his name to the rules.

2. Persons eminent in the sciences or useful arts may become members on nomination by the club, and approved by the Committee of Science and Arts.

3. Honorary members may be made by nomination of the club and approved by the committee.

4. The chairman may invite strangers to take part temporarily in the proceedings of the club.

5. Permission must be obtained from a standing committee, appointed for such purposes, to make a communication or exhibit an invention to the general meeting.

6. The president shall divide the members into permanent sections or standing committees on the various branches of arts and sciences.

7. The association will deposit in its archives discoveries and invention presented under seal.

8. The official report of proceedings shall be open to the inspection of any concerned on the day following the meeting.

The report elicited a lively discussion, showing a considerable variety of opinion and feeling; but at the final vote all the changes proposed were approved, and a resolution was passed referring the whole subject to the Committee on Arts and Sciences for their final action.

Subject for the next meeting—"Gas and Gas-burning."

TELEGRAPH INVENTORS.

MESSRS. EDITORS:—I noticed, on page 356, present volume of the SCIENTIFIC AMERICAN, an article on "Modern Telegraphy," in which there is a mistake in accrediting the invention of the "combination instrument" to A. A. Lovett. The combination instrument is the result of combining (by myself) of the House and Hughes patents with two patents of my own, and other improvements for which a patent has been applied for.

G. M. PHELPS.

Williamsburgh, N. Y. June 15, 1860.

NITRATE OF SILVER.—The photographer's art, we may fairly say, almost entirely reposes upon nitrate of silver. I am perfectly aware that photographs may be obtained with a variety of other substances; but, up to the present day, no professional photographer could prosper without the use of the salt just named. Large quantities of it are consequently employed; and it is astonishing to observe how, with us in France, the manufacture of this important salt has improved since photography has assumed the position it now holds. Not only, however, has the manufacture of nitrate of silver improved; various means of sophistication have been imagined, various salts have been introduced into the pure article, and a fraudulent mixture has been frequently sold to the unwary photographer or to the unchemical medical practitioner. The nitrate of silver used in medicine as caustic often contains copper accidentally, and is sometimes sophisticated with nitrate of lead, as M. Millet has lately shown in the *Journal de Pharmacie*. The addition of nitrate of lead has, indeed, been practised for many years past. But recently it was found more advantageous to introduce nitrate of potash into the silver salt; and, doubtless, other fraudulent mixtures, still more advantageous, will be sooner or later put into practice. Once for all, then, I will give you an easy method for detecting the adulteration of nitrate of silver, whatever be the substance fraudulently mixed with it:—Take some of the nitrate, dissolve it in distilled water, and add an excess of hydrochloric acid. The liquid should be heated to make the precipitate of chloride of silver cohere well together. Then filter off the supernatant liquid, and, taking a few drops of it upon a slip of platinum or a watch glass, evaporate to dryness. If the nitrate of silver be pure, no residue will remain after this evaporation. If a residue appear, nitrate of lead or nitrate of potash may be looked for; and even were these found to be absent, some other substance must have been added to the nitrate of silver to produce a residue in the above circumstances.—*London Photographic News*.

THE Trenton Iron Company have a stock of \$2,000,000. They have three smelting furnaces at Phillipsburgh, N. J., where the ore is converted into pig iron, then sent to Trenton to be puddled and rendered malleable. They employ, altogether, about 2,000 workmen in the mines and at the furnaces. The principal establishment, at Trenton, covers 3½ acres under one roof, and is said to be the largest single building in the United States. Railroad iron, beams and girders are here manufactured at the rate of 1000 tons per month. Some of the girders are 41 feet long and 9 inches thick. Connected with these works is a wire mill, where immense quantities of wire, varying in size from a hair's breadth to half an inch in diameter, are made. Some wire from this mill, a mile of which weighed but half a pound, received a prize at the World's Fair in London.

A COLUMN OF VARIETIES.

A fine needle may be floated on the surface of a bowl of water if laid down gently upon it.

No less than 200,000 hemlock trees are cut down annually in the United States to furnish bark for tanning purposes.

The price of good coal gas in the city of London is 4s. sterling (not quite a dollar) per 1,000 cubic feet, while in this city \$2 50 is charged.

When a platinum wire is heated to redness by an electric current, a peculiar odor arises, which is caused by ozone. It is formed in the air around the hot wire.

A bituminous substance has lately been discovered near Cairo, on the North-western Virginia Railroad, which contains a great amount of paraffine, and yields about 160 gallons of crude oil (similar to that obtained from coal) to the ton.

Canada balsam and turpentine, in equal parts, form a good varnish for making copying-paper for transferring. It is put on with a brush and allowed to dry.

Take three pounds of tallow, one of lard, and one of fine black lead, and two ounces of india-rubber, cut in shreds; heat them together until they are completely mixed, when it makes a most excellent anti-friction grease for the axles of wagons.

June is the great month for lobster fishing. These crustacea are caught on the American coast from the St. Lawrence river to the Gulf of Mexico. They leave the deep sea and come near the shore in warm weather, where they are taken in traps, each of which has a self-acting door that permits the lobster to come in but not to walk out. About 1,200,000 are taken into Boston alone every year.

Leaf gold is cemented to glass by saliva or a weak solution of gum arabic. Letters of gold may thus be easily put on and allowed to adhere to the glass by padding them with a wad of cotton. When dry, scrape off the superfluous leaf and allow the gilt letters to remain.

The first steam-power printing press which found its way west of the Alleghany Mountains was an Adams, built in Boston for the *Cincinnati Gazette* in 1836. It is now at work printing the *Logansport (Ind.) Journal* at the rate of 400 impressions per hour. A Hoe's eight-cylinder press will take 14,000 impressions per hour.

By saturating writing paper in a concentrated solution of neutral chloride of zinc, then washing and drying it, the sheets contract in size, become thicker, and resemble parchment. The solution may be used either cold or hot; but in all cases, the paper must be washed in water before it is dried.

Aqua regia is composed of three parts hydro-chloric acid (muriatic) and one part of nitric acid (aqua fortis). It possesses the property of dissolving the king of metals—gold. When these two acids are mixed and heated, and some tin or gold thrown in, they give off yellowish fumes, and the metal disappears like sugar in hot water.

The earliest account of mechanism, in which heat is made to perform work by means of steam, is contained in the *Pneumatics* of Hero, of Alexandria, who lived about 130 B. C. In that book the author describes a sort of a steam turbine wheel, as it was proposed to drive it by the reaction of the steam issuing through orifices in revolving arms.

The highest speed hitherto attained by steamers in Europe has been 17½ nautical miles per hour—about 20 statute miles. A new steamer, named the *Giraffe*, is building in Glasgow to run at the rate of 20 nautical miles per hour, and is to be the fastest boat in the Old World; but she can be beat in the New.

A turbine is a water wheel with a vertical axis capable of moving when immersed in the water of the lower level. This is Morin's definition, and he says that the name was first used in 1833 by M. Burdin, a French engineer of mines, who applied the name to a wheel of his own invention.

The *Commercial Bulletin* says the great manufacturing interests of New England never stood better than at present, and thinks some or many of the mills there will make such exhibits in June as will surprise people, and remind them of "the good old times."

A needle may be magnetized permanently by passing the north pole of a magnet from the eye to the point several times, the friction being always in the same direction. The magnet must always be lifted up when it reaches the point.