

Scientific Museum.

The Progress of Invention.

The arts were the offspring of necessity. The first labor is enforced by natural want; then to rudeness succeeds convenience, and afterwards elegance and nicety. As formed by Nature, man is helpless and unprotected; but spurred by the necessity of his situation, he calls his intellect into exercise and invents; and thus arise in succession the useful and ornamental arts. Surrounded by images of the beautiful, the proportionate, the graceful and the sublime—by objects, every one of which appeals, suggests, and incites, he discovers laws and bodies forth ideas. The substances placed at his disposal are of a nature to conspire with the harmonies and glories of creation to invite him to an exercise of his skill. But comply with natural he must, even while emulating her beauties.

The character of genius is productive and inventive; but the power of invention is the result of acquired habits and not the original gift of nature. To represent truth in a sensible form—to bring to light some new idea, is the object of invention; the contrivance for producing an effect, the invention itself. But there must be

An egg before an eagle, a thought before a thing,
A spark struck into tinder to light the lamp of knowledge

All which truly exists is a series of antecedents and consequents; hence invention requires acuteness to discover hidden aptitudes, and shrewdness to follow on the trail by guessing on the hint. Success in invention sits at the head of a long flight of stairs.

Nature, in her productions slow, aspires
By just degrees to reach perfection's height;
So mimic art works leisurely, till time
Improve the price, or wise experience give
The proper finishing.

Invention, therefore, is progressive. The telegraph is not the work of one man, but the "concrete wisdom of the wisest." All great works form a series. "One soweth, and another reapeth." In the division of labor, it is found that, without any preconceived scheme, the hewn and sculptured stones, which the laborers have brought from their respective quarries, only need to be put together to form a magnificent temple of the most harmonious proportions. An effect argues a cause; a falling apple, gravitation. There is greatness in a trifle. Some natural object or incidental discovery is often found to be susceptible of extensive application to the affairs of life. Every department of modern science exhibits illustrations of the complicated and remote correspondences between the objective system and the preconceptions of the mind. A truth requiring, in order to its discovery, a degree of elaboration and abstraction of which few are capable, is often found when elicited to admit of a number of useful applications, to which all are competent. We should contemplate, therefore, the experiments of scientific men, not as a waste of time, or the mere gratification of an idle curiosity, but as embodying the germs of those improvements, by which civilization, domestic comfort, knowledge, and moral principle may be diffused among the nations.

Every machine is a combination of antecedent inventions, and the progressive stages through which they have to pass ere they arrive at their final state of perfection, is truly astonishing. One illustration will suffice. Previous to the year 1767, every thread used in the manufacture of cotton, wool, and flax, throughout the world, was spun singly by the tedious process of the distaff and spindle. Now, from the genius of Hargraves sprung the eight-handed spinning; to this succeeded the spinning-frame of Arkwright; and five years' labor, the happy thought of combining the principles of the two inventions struck the fertile mind of Crompton. By more finished mechanism, the machine was made to exercise a Briarean power. Then Kelly yoked to it the strength of a rapid river; and Watt, with the agency of steam, moved an iron arm, that whirls arounds 10,000 spindles. Finally, to consummate the wonder, Roberts dismisses the spinner, and leaves the machine to its own

infallible guidance. These successive improvements were but the applications of former inventions. Consider now the numerous parts and subordinate contrivances in this series of machinery; how many principles were discovered and countless inventions made, ere the mechanical fingers of this automaton were formed unceasingly to move, and with unflinching precision, patience, and strength, convert into use this staple of our country.

J. W. O.

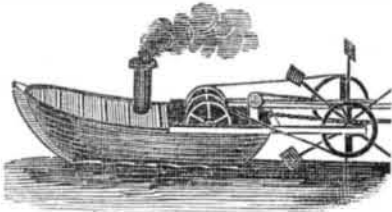
History of Propellers and Steam Navigation.

[Continued from page 72.]

PAPIN, WORCESTER, SAVERY, ALLEN, HULLS.

One of the most eminent and ingenious men that ever lived was Dr. Papin, a Frenchman. Both Papin, Savery and the Marquis of Worcester, proposed to propel vessels by steam power applied in some way to paddles, but the testimony which is left to posterity of their contrivances for that purpose, is so unsatisfactory and vague that little can be made out of it.

FIG. 3.

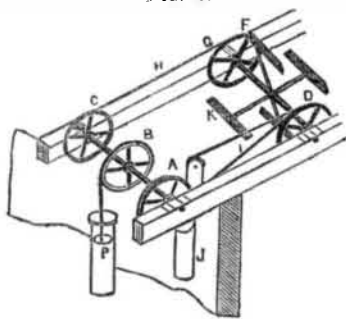


In 1726, a Dr. John Allen published a work in London, in which he proposed to propel a vessel by having a horizontal pipe open at the stern, into which air or water was to be forced, to force the boat forward by its re-action. The Doctor tried his scheme on a boat upon a canal, and he states that if steam was used as a power he had no doubt but it could be moved at the rate of three miles per hour.

The first patent on record to propel a vessel by steam power, is that of Jonathan Hulls, who published a pamphlet in 1737, describing it, and for which posterity is not a little obliged to him. Some have claimed for him very high honor. His invention is certainly a nearer approach to a steamboat than all that had been invented before him, but without an opinion expressed, for or against, his steamboat is here presented.

The mind of Hull looked only to the use of his boat as a means of towing other vessels out of harbor against tide and winds, a purpose for which they are now greatly used in every part of the world.

FIG. 4.



As there have been many plans brought forward as substitutes for the crank, it may be new to many, to be told that the crank was not the first contrivance used to convert a reciprocating into a rotary motion, but it was adopted from its beautiful simplicity after many other plans failed. Hulls mode of converting the reciprocating motion of the engine into a rotary one, is depicted in the annexed diagram, fig. 4; in which A, B, C, are three wheels, on one axis; and D, E, two others, hung loose on a parallel axis, with ratchet wheels attached, so as to move the axis only in the forward direction. P is the piston of an atmospheric steam-engine, connected to the middle wheel, B, by a rope passing round the latter. H is another rope, connecting the wheels C, E, so that both must move in the same direction; and I is a rope which connects the wheels A, D, diagonally, so that they move in opposite directions. The rope I, proceeding from the wheel A, is continued round the wheel D, and passed over a small pulley; a weight, C, being suspended from the end of it. When the piston descends, the wheels A, B, C,

move forward; and, by the ropes I, H, turn the wheels D, E; that is, the wheel E forward and the wheel D backward. The paddles K are therefore moved round, in a forward direction, by the wheel E; while, at the same time the weight, J, is raised by the wheel D. When the piston is, in the next place, ascending, the motion of the whole is reversed, except that of the paddles, which are moved in the same direction, by the action of the descending weight J, upon the wheel D. By this alternate action, the axis A, B with the paddle-wheel, is constantly moved round in the same direction, and by an equable force.

This is the first paddle wheel driven by steam power, and the idea of placing the wheel in the stern occurred to the inventor as being the proper place for it, "because that water fowl, ducks and geese pushed their web feet behind them."

(To be Continued.)

To Reproduce Photographic Impressions.

The image is received in the camera obscura on a plate of silver, strongly iodized; the plate is then exposed to the vapour of mercury, but not to the action of hyposulphite of soda. It is then plunged into a solution of sulphate of copper, placing it for a few instants in communication with the negative pole of a battery and closing the circuit with a platinum wire.—The copper deposits itself only on the parts covered by the mercury. The iodide of silver not being a conductor of electricity. The plate is then washed with distilled water, then with the hyposulphite of soda to remove the iodide, and quickly dried over a spirit lamp. The image, in which the copper represents the light parts and the silver dark, is transferred, at least the copper, on very thin plates of gelatine.—An inverted image is thus obtained, since the copper, which is opaque, represents the light parts. The transfer is made by running on the plate a clear solution of gelatine, and allowing it to dry; after which the gelatinous foil on which the copper adheres, is attached. The negative proof obtained, the next part of the process is, to re-produce a positive image; for this purpose a sheet of photographic paper is taken, on which is carefully applied the proof in gelatine the face on which is the copper underneath. The whole is then exposed to diffused light during a quarter of an hour; the paper is then plunged into water in order to be washed, and then into a solution of hyposulphite of soda to remove the salt of silver; it is then washed in a large quantity of water and dried, by this a perfect and positive reproduction of a daguerreotype image is obtained. If it be desired to obtain the reproduction of a drawing or an engraving, a negative proof is taken on a prepared iodized plate, in placing it over the design or engraving and exposing the whole to the light. It is then passed through the mercurial process and the series of operations above described.

Enamel for Pins, Hooks and Eyes, &c.

The articles to be enamelled, after being thoroughly cleaned and freed from dust and dirt are spread or placed in a basin dish, or other fit receptacle, where they are wetted with the spirit or oil of turpentine; they are then dried, if required, by artificial means; when dry, the enamel or japan is applied, it taking effect and spreading a coat upon the whole of those parts of the articles previously covered by the turpentine; should it be required to give the articles more coats than one, the same process of applying the enamel is to be repeated but omitting to apply the spirit of turpentine. The compositions are as follows for blue, the best varnish or gums, three-quarters of a pint; of spirits of turpentine, half-a-pint; flake white, 1 lb., and prussiate of iron, 1 oz.; for red, —Persain vandyke, 1 lb.; varnish or gums, half-a-pint; spirits of turpentine, quarter of a pint; for green, —pale chrome, 1 lb.; varnish or gums half-a-pint; spirits of turpentine, quarter of a pint; other colours or tints may be composed and applied in like manner by varying or altering the proportions of the materials.

Mr. J. Galbraith, of Wisconsin, has undertaken to introduce the cultivation of flax into that State. He has been about two years in Wisconsin, and is well versed in the methods followed in Ireland, Holland and Belgium. His

first trial was made at Musquinago, with 50 acres, and this year he has harvested the products of 100 acres. The fabric is stated to be quite equal to that of Irish and Belgian flax.

LITERARY NOTICES.

GODEY'S LADY'S BOOK.—The December No. of this popular Magazine has been received, and is truly a superb number. Godey has surpassed his usual elegance this month, and produced a better number than has ever issued from a periodical press in this country. It contains 100 pages of reading matter from the pens of forty different contributors, and 24 engravings—some of which are very fine: "The Secret," a mezzotint, by Welch, is a charming picture; and the engraving of Mrs. Jos. C. Neal, with her pretty face and easy attitude, is perfectly bewitching. A new volume of Godey commences with the next No., and we assure those who subscribe to it that they will never regret it. Messrs. Dewitt & Davenport, Agents, Tribune Buildings.

HOLDEN'S DOLLAR MAGAZINE, December No.: W. H. Deitz, Publisher, New York.—This unrivalled and justly popular monthly, comes to us as usual, filled with choice contents. The view of Maux, on the rail road between Paris and Eprenay, constitutes the leading feature of this No. It also furnishes a good likeness and biography of Geo. P. Morris—well known to literary fame. Dr. Peck, an eminent divine of the Methodist denomination, is also represented in looks, character and qualifications. This number completes the volume, and our sincere wish is that its present conductor will find his efforts repaid by a largelist of subscribers.

PICTORIAL NATIONAL LIBRARY. Wm. Simonds, Publisher: Boston.—The November No. of this valuable miscellany of art, science and literature, has appeared upon our table. The plan of this work is extensive, embracing all the subjects profitable for the human mind to study, and is worth all the trash of the novel school ever published. It is a matter of regret that a work of such real and substantial merit as this, and kindred publications, cannot fully supply the place of insane literature to a greater extent than it does at present. We are pleased to know that the Library has a large circulation.

GLEANINGS FROM THE PORTFOLIO OF THE "YOUNG UN." Third Edition: R. B. Fitts & Co., 22 School street, Boston. Price 25 cts.—Geo. P. Burnham, Esq., has collected a series of humorous sketches, together with several illustrations of like character, which are enough to split the sides of any good natured individual. We do not mean by this that it is a dangerous book; on the contrary, every one is benefitted by a hearty laugh, and this is just the work to effect it.

MOTHERS AND DAUGHTERS.—Is the title of Mrs. Gore's new novel, just published by the enterprising house of H. Long & Bro., 43 Ann st., this city. Price 25 cts. The writings of Mrs. Gore are an exception to the general character of romantic literature, and are marked by a refined sense of delicacy and chaste sentiment, honorable to her character as a novelist.—This new work is another honor to her well earned literary reputation.



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