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The Life of a Grea Inventor.

A work has recently been published in London, giving a minute account of the origin and progress of the mechanical inventions of James Watt—embracing his biography. To this great inventor has been assigned, and justly we think, the same position among mechanical discoverers, that Shakspeare occupies among poets, and Newton among natural philosophers. Every mechanic and inventor throughout the world has an affectionate regard for his memory. The work referred to—edited by J. P. Muirhead, a relative of the family—opens up the every day life of Watt, and presents in full, for the first time, the great number and value of his inventions and discoveries, and shows to us how much the world is indebted to the genius and skill of a single man. James Watt was a native of the town of Greenock, in North Britain, and was of an exceedingly delicate constitution. He soon exhibited great reflective powers and mechanical skill, and at an early age learned the trade of a mathematical instrument maker, and went to London to perfect himself in his art, by paying a hundred dollars and his labor for a years' instruction. In 1756, being twenty years of age, he left London and came to Glasgow, full of professional knowledge, and esteemed the best mathematical instrument maker in Scotland. The old fashioned trade privileges prohibited him from setting up his humble shop within the city limits, but he found an asylum within the gates of the College where he was provided with a shop, and where he practiced his trade for a number of years, beloved and respected by all, making Hadley's quadrants and other instruments, till those lights burst upon his mind which ultimately led him to fame and fortune. While working at his trade, he offers, in one so young, a noble example to all mechanicians. He never spent his time in nonsensical amusements of any kind, but was fond of those which were innocent and ennobling. He studied music, and was fond of it; and he acquired a knowledge of chemistry, mechanical science, and natural philosophy surpassing all the students in the college, who looked up to him as an oracle.

It was while repairing a model of an old-fashioned steam engine used for experimental purposes in the college, that he made the grand discovery—that improvement which has made the steam engine "the iron apostle of civilization." The steam engine dates as far back as Hero, but in 1765 it was but a single acting machine, condensing the steam within the cylinder. The first reciprocating steam engine condensed the steam under the piston, by application of cold water to the outside of the cylinder, when the piston had made a full upward stroke. The steam being then shut off, the cold water, by condensing the steam, formed a vacuum under the piston, which was open to the air at the top, when down came the piston with the atmospheric pressure of fifteen pounds on the square inch. An improvement on this slow mode of condensing was discovered by accident. It was noticed by the attendant on one engine that steam condensed more rapidly in consequence of a crack in the cylinder, by which some of the condensing water was forced into the interior and mixed with the steam. This led to condensing the steam by injecting the condensing water into the inside of the cylinder. In this state the steam engine involved a vast expense for fuel, because the cylinder had to be cooled down from 212° to 100° in one stroke, before the vacuum was complete, and then heated up to 212° for the next stroke before the steam began to act to elevate the piston. In this state the steam engine was found by James Watt, and the improvements which he made on it during the years that he lived, left it nearly in the same condition in which it is found at the present day.

He invented the separate condenser, the double stroke, working the steam expansively, the steam jacket, the cutting off at various parts of the stroke, the use of the puppet valve and the dash pot to prevent slamming. In his specification he also described a locomotive, and his friend W. Murdoch, constructed a working model, with no other guide but this, as far back as 1787. Watt's inventions are not circumscribed by the steam engine; he invented quite a number of other useful machines; but it is upon the improved steam engine that his fame rests, because it has become the universal lord of commerce and manufactures. He died wealthy, full of years and honors, in 1819, aged 84 years. But his life was not—at least for many years—an easy one. He suffered long from the want of money, neglect, and much opposition, before he could obtain means to construct his engines and get them introduced, and even after their complete success was demonstrated, ignorance and selfishness caused him many cares, many sleepless nights, and much loss and grief. His engines effected vast savings over the old ones. In one mine—Wheal Virgin—his first engine effected a saving of $37 500 in one year, and yet the owners grumbled to pay him one-third of this, although he asked no pay but part of the savings his engine effected.

It may be supposed by some that the government of Great Britain fostered and encouraged such a genius and benefactor; but Britain does not owe its success in manufactures to government patronage, but to the enterprise of the people, and even a dark spot remains upon the escutcheon of that great statesman, Edmund Burke, in speaking and voting against the extension of Watt's patent, when he was still poor and needy.

The Russian government has always encouraged genius, and has employed its agents to buy the best skill in every country, and when James Watt could not find a patron in his own land, he was offered a lucrative situation in Russia, through Sir John Robinson, his countryman, chief engineer in Russia, and came very near embracing the offer.—Had he done so it is possible—but we do not think probable—that Russia, at this time, might have been in advance of England in manufacturing industry.

The great benefits which Watt's inventions have conferred upon the world are now generally acknowledged, but to estimate their value is beyond the power of figures. We have thus briefly alluded to this great man and his inventions as a duty. Every mechanic may well be proud of him as the representative of their craft. He was so ingenious, simple, learned, and generous, that we cannot but hold him up as a noble example to all young men possessed of a turn of mind for mechanical pursuits.

Beware of Colored Fire Works.

On the 16th ult. a destructive fire, attended with loss of life, took place at No. 10 Maiden Lane, this city. An examination into the causes of that fire has revealed a fact which should be known throughout the length and breadth of the whole land. It is this: "Colored fire works take fire by spontaneous combustion, (unless properly prepared) at certain temperatures of the atmosphere."

The following testimony of one of the witnesses, whose fire works were observed to be the cause of the fire, is clear on the point:

John W. Hadfield testified: I am a pyrotechnist; I have manufactured all kinds of fire works for 28 years past; I have sold fire works to Dunkiu & Robbins, No 10 Maiden Lane; my experience in reference to the class of fire works liable to spontaneous combustion is in colored works; blue is the most liable to take fire, also purple; they are both about the same thing, made of the same ingredients; green will also explode, so I am told; I never have seen any instance of it, yet I have no reason to doubt those who informed me; I never knew red color to explode, nor yellow; I never put anything into pot wheels but red and green, but red mostly; there is sometimes large quantities of sulphuric acid in the sulphur we purchase, which is very dangerous if used for colored fire works without washing; we frequently discard articles purchased of chemists; most of our chemicals are of French importations, some we purchase in Philadelphia, mostly for making green and red fire, it is *nitrate of barytes;* the blue and purple fires are made from a preparation of copper; the different states of the atmosphere must be carefully regarded; in damp, warm, sultry weather we keep our shops closed; this kind of weather is more likely to produce spontaneous combustion of colored works when not properly made; I have a room expressly set apart for the manufacture of colored fires, which my son and myself attend to entirely; every article is properly tested before being brought into this room; about the 5th of June I made twelve dozen of pots and lance-wheels, of which Dunkin & Robbins had between three and four dozen, and Martin Bennett of No. 96 Front street had the balance; since the fire I have seen some of these same wheels hanging up in Mr. Bennett's store. I think there ought to be more care used by the dealers; I think they expose too many fire works at one time in their stores; if one work becomes ignited by any accident, all those exposed must of course be set on fire; I should think, as a general thing, the dealers could sell by blank sample; it is very dangerous to have so many fire works exposed or stored in a city surrounded as they must be by valuable property and jeopardizing the lives of so many people.

Steamer Ocean Bird

The steamship designed by John W. Griffiths, editor of the *Nautical Magazine*, which was to have been named the *William Norris*, and to have crossed the Atlantic in six days, is now finished, and has made a trial trip, under the name of *Ocean Bird*. It has not been completed in detail as was originally contemplated, owing to it having been sold by the failure of Mr. Norris, and having passed into the possession of others. It however made most extraordinary time on the trip—stated to be equal to twenty knots per hour. The hull is beautiful, and it is supposed that it will make an extraordinary fast voyage across the Atlantic. It is intended to be sent to Europe for sale in a few weeks.

Its dimensions, as completed, are 222 feet on the load line, 225 feet on deck, 36 feet 10 inches beam, and 22 feet hold, or 7 feet deeper than her hull was designed for. The machinery is proportioned as follows:

Diameter of cylinder,	65 inches.
Stroke of piston,	12 feet.
Diameter of wheels,	33 feet.
Length of bucket,	8 ft. 9 in.
Breadth of bucket,	22 inches.
Number of buckets,	28
Dip of bucket,	4 ft. 8 in.

She is furnished with four single return flue boilers, two forward and two aft. Both of the forward boilers are 20 feet long, and the after two 22 feet in length. Width of boilers 9 feet 6 inches, and 10 feet 2 inches in hight. The entire surface is 4,500 44 superficial feet. Messrs. Guion & Boardman built the engines.

Ames' Patent Polygraph.

We are pleased to learn that a company of gentlemeu have invested considerable capital and engaged in the manufacture of these excellent instruments. The invention was so fully illustrated and described in our number for April 11th last, that we need not now enter into any detail of its parts. We have lately had an opportunity of testing its merits practically, and the result is, that we are more than ever convinced of its utility. By its use an exact fac simile of a letter or other written document, may be produced simultaneously with the original and without extra labor or trouble. In fact both copies are originals, for both are actually written with pen and ink, and are precisely alike. If desired, the merchant may, when writing his letters, cause one of the copies to be inscribed in a book for preservation, while the other is mailed in due form—both being produced by one writing.

For copying maps, drawings, diagrams, and all kindred subjects, this invention is admirably adapted. We think it will prove useful for the young as well as for business people, and all writers. Mr. H. Brown is the agent for this city. By reference to the advertisement in another column it will be seen that his depot for their sale is at No. 9 Canal street.

The Heat of Steam.

The *Railroad Advocate* of the 23rd ult. says, respecting the article on the above subject on page 315, SCIENTIFIC AMERICAN, "We presume the AMERICAN does not dispute the fact that 1700 volumes of steam, *all* (ah!) of which is of 212° heat, may be formed from one volume of water at 212°. We will admit that the process of arriving at the number 360,400°, was unnecessary—it really *represented nothing* after it was found."

This does tolerably well, as a confession; but after it comes nearly half a column of *voluntary and unnecessary wrong statements*, which, for the honor and integrity of our cotemporary would have been better to have remained unsaid. Without the least intention of injuring his feelings, it has caused us no little surprise to witness the wrong constructions which he has put upon some of our language. His onslaughts upon us do us no harm whatever, but in the form of *back lash* they must tell upon his own mind, as he appears to be charged with 360,400° steam heat, and pops off like a pea on a hot gridiron.

Instantaneous Fire Engine.

A. Guthrie, of Chicago, has given an exhibition of an instantaneous method of extinguishing fires, by applying strong pressure of air to the water in the common hydrant pipes, so as to direct a great flood at once on a building which takes fire. The experiment is stated to have been successful. The necessary force is given to the water by air which is kept constantly in a high state of compression, in a large stationary chamber in some part of the city. This pressure is shut off till an alarm of fire is given by signal or telegraph, when, by simply opening a valve which forms a communication between the air chamber and the street pipes, and attaching hose to the nearest hydrants, streams of water are thrown to any desired spot.

A Dispute Respecting Reaping Machines.

The Washington *Evening Star* has stated that Isaac J. Hite, of White Post, Va., is the original inventor of the raker's seat and reel in reaping machines, as embraced in the patent of McCormick, of 1847. It states that Dr. Jones, as agent for Hite, applied for a patent in 1844, which was refused by Mr. Ellsworth, then Commissioner of Patents.—When new men came into office, it states McCormick obtained a patent for the very combination embraced in Hite's model. This is strange news. We never heard of this before. It may be true, and yet there is probably some mistake about it.

Commissioner of Patents Resigned.

Just as we were going to press we received information of the resignation of the present Commissioner of Patents. This causes us much regret, and our readers will be sorry to learn it. Judge Mason was so liberal, just, and energetic in the fulfillment of his duties, that it will be difficult to fill his place. S. T. Shugart, the Chief Clerk, will act in the capacity of Commissioner until a successor is appointed.

A Great Railway.

The Grand Trunk Railway, in Canada, is to be 1,100 miles in length; of this, 392 miles are completed, and the rest is in course of construction. The debt of Canada is $24,350,000, the most of which has been contracted for this railroad. The part of it which has been built, and now in running order, pays very good dividends.

American Sewing Machines in France.

Numbers of American sewing machines (Avery's patent) are manufactured France. Quite a number are employed by the government for making clothes for the soldiers, under the superintendence of Miss Ames, from this city, who has long been familiar with operating them.