

COLONIAL PEARL.

A VOLUME DEVOTED TO POLITE LITERATURE, SCIENCE AND RELIGION.

Published every Friday evening, at 17s. 6d. per Annum.

VOLUME THREE.

FRIDAY EVENING, FEBRUARY 22, 1839.

NUMBER EIGHT.

BIOGRAPHIC SKETCHES.

ROBERT FULTON.

Robert Fulton, one of the most deservedly famous of modern engineers, was born in the town of Little Britain, state of Pennsylvania, in the year 1765. His family, though respectable, was not opulent, and the patrimony which fell to him as the elder of two sons, on the death of the father in 1769, was very small. He received his early education in the town of Lancaster, and displayed, even from childhood, a strong taste for those pursuits in which he afterwards acquired celebrity. All the intervals of study, dedicated usually by boys to play, were spent by young Fulton in the workshops of mechanics, or in the employment of his pencil; and by the time he had reached the age of seventeen, he had become so skilful in drawing, as to obtain considerable emolument by painting portraits and landscapes in Philadelphia, in which city he remained until he came to his majority.

In 1786, Fulton went to his native district to visit his mother, and had the pleasure of purchasing for her, with his earnings at Philadelphia, a small farm, which greatly increased her comforts for the remainder of her life. Having effected this labour of love, he set out to re-establish himself at Philadelphia, but met some gentlemen by the way, who were so much struck with the productions of his pencil, as to advise him strongly to go to England, assuring him that there he would obtain the patronage of his countryman, Benjamin West, then in high favour as a painter with the British public. Fulton followed the counsel thus accidentally given to him. At the age of twenty-two he crossed the Atlantic, and presented himself before Mr. West, who received him with the utmost kindness, and installed him at once as an inmate of his own family. Here Fulton continued for several years, practising the art of painting under the eye of his friendly entertainer. Owing to the loss at sea, some years afterwards, of a number of his manuscripts, it is not accurately known for what reason the subject of our memoir gave up the profession of an artist for that of an engineer. It would appear that he went to Devonshire in the character of a painter, and spent two years there, during which time he became known to the Duke of Bridgewater, of canal celebrity, and to Lord Stanhope, a nobleman famed alike for eccentricity and mechanical genius. The formation of such acquaintances possibly led to the alteration in Fulton's views for the future. Whatever might be the cause, we find him, from the year 1793 downwards, devoting apparently his whole mind and time to improvements in the mechanic arts. In the year mentioned, he engaged actively in a project to improve inland navigation, and in May 1794 he obtained from the British government a patent for a double inclined plane, to be used in transporting canal boats from one level to another, without the aid of locks. In the same year he submitted to the British Society for the Promotion of Arts and Commerce, an improvement on mills for sawing marble, for which he received an honorary medal, and the thanks of the society. He also obtained patents for machines for spinning flax and for making ropes, and invented a mechanical contrivance for scooping out the earth, in certain situations, to form the channels for canals or aqueducts. To conclude the account of his labours at this period in England, he published, in 1796, his *Treatise on Canal Navigation*, to which he appended his name as a professed Civil Engineer. This work, it was admitted by all, contained many ingenious and original thoughts on the subject of which it treats.

Whether these fruits of his genius were productive of much emolument to Mr. Fulton, does not seem to be well ascertained. In the year following the publication of his treatise, he left England and went to Paris, where he took up his residence with a distinguished countryman of his own, Mr. Joel Barlow. The objects to which Fulton's mind chiefly directed itself, during his seven years' stay in France, were of a remarkable cast. Under the impression, that, while individual countries maintained standing navies, the seas could never be the scene of secure and peaceful commerce, "I turned (says he) my whole attention to find out the means of destroying such engines of oppression, by some method which would put it out of the power of any nation to maintain such a system, and would compel every government to adopt the simple principles of education, industry, and a free circulation of its produce." This explanation refers to his schemes for destroying ships of war, by passing explosive machines secretly beneath them. After several fruitless attempts to call the attention of the French and Dutch governments to his plans for this purpose, Fulton was at last successful in inducing Bonaparte, in the year 1801, to appoint a commission with the view of inquiring into the practicability of his designs. Having gone to Brest, accord-

ingly, Mr. Fulton there exhibited his machines. One of these was a plunging boat (called by him a Nautilus), made water-tight in part, and otherwise so constructed, that, with three companions, the inventor could remain in it for four or five hours at the depth of many feet below the surface of the water, and could there propel it from place to place with great ease, without a ripple being seen above. At the same time, the Nautilus could sail as readily above as beneath the water, its sails being struck when the plunge was made. The other machine was named by the inventor a Torpedo, and was merely a submarine bomb, which could be exploded in water. Mr. Fulton showed to the commission these engines in actual operation, by remaining for hours in the water, and shifting from place to place in the Nautilus, and by blowing a shallow to atoms with the Torpedo. He made it clear, that, with a little flotilla of these engines, a vast fleet, under favourable circumstances, could be blown in pieces into the air.

After these experiments were made, an opportunity was sought of trying their effect on some of the British vessels then hovering around the French coasts. No proper chance, however, presented itself, and the French government became tired of the matter. At this juncture, the British ministry, who heard with some alarm of Mr. Fulton's projects, made proposals to him to give his services to Britain. Sincere in his belief, that, wherever put in force, his inventions would ere long bring to an end the war-system of Europe, Mr. Fulton conceived himself at liberty to accept of the invitation from the British government. He went to London in May 1804, but his journey was productive only of disappointment. In the single opportunity afforded to him of trying his machines on French vessels, they failed of success. The British ministry also changed members, and in 1806 Mr. Fulton sailed for America. It is impossible to regret, for his own sake, that such was the issue of these schemes of destruction, though, at the same time, we are firmly of opinion that his motives were pure, and that his anticipations would have been ultimately fulfilled. This notice of Fulton's explosive inventions may be closed, by mentioning, that he endeavoured afterwards, to apply the same engines to the defence of his native country, but did not succeed in extracting from them any practical benefit.

We have now to notice the great achievement of Fulton's life. For many years previous to this period, his attention had been turned to the subject of navigation by steam, as is distinctly proved by the following passage of a letter to him from Lord Stanhope, of date October 7, 1793:—"Sir, I have received yours of the 30th September, in which you propose to communicate to me the principles of an invention, which you say you have discovered respecting the moving of ships by means of steam. I shall be glad to receive, etc." But although this letter shows Fulton to have formed plans for steam navigation much earlier than many persons had done, who afterwards sought to wrest from him the merit which was his due, the application of steam to the propulsion of vessels on water had been suggested long before, by Jonathan Hulls, in a little work published at London in 1737. Though this person's description of the machine invented by him is amazingly clear, and though he took out a patent for it, the attention of the world does not appear to have been arrested to the subject. The idea dropped aside for more than fifty years. About 1785, Patrick Miller, Esq. of Dalswinton, in Dumfriesshire (a gentleman who had made a fortune by banking, and bought that estate), made experiments with a double vessel driven by paddle-wheels. The tutor of his children, James Taylor, a native of Lead-hills, in Lanarkshire, and a man of much mechanic ingenuity, suggested the application of the steam-engine to Mr. Miller's paddled vessel; and the consequence was, the preparation of a vessel, having a small steam-engine on the deck, which was launched on Dalswinton Lake in October 1788—the first vessel of the kind, there is every reason to believe, ever put into operation in the world. A clever mechanic named Symington, an early friend of Taylor, was the person to whom the fitting up of this vessel was entrusted. Afterwards, at the expense of Mr. Miller, and under the superintendence of Mr. Taylor, Mr. Symington made another vessel, which was tried on the Forth and Clyde Canal, in December 1789, with such complete success, that, but for the injury done to the banks, it in all probability would never have been taken off. The disgust of Mr. Miller with the expense of this experiment was the means of withdrawing him and Taylor from the pursuit of an interesting object, which was then followed up for some years by Symington alone. It has always been asserted that Mr. Fulton, when on a visit to Scotland, saw and examined a boat made by Symington, which was lying in a dismantled state on the banks of the Forth and Clyde Canal. However this may be, it is certain that the first decisive experiments of the same nature, made by Fulton himself,

did not take place until the year 1803, when he was resident in Paris. In the intervals which his Torpedo schemes at that time allowed to him, he prosecuted ardently the subject of steam navigation, in concert with the American ambassador, Mr. R. Livingstone. In July, of the year mentioned, their first experiment boat, which was sixty-six feet long by eight feet wide, and was driven by wheels, was launched on the Seine, in presence of the members of the French Institute, and a great concourse of spectators. The boat moved slowly, but in other respects the experiment was perfectly satisfactory, and Messrs. Fulton and Livingstone resolved to carry the same principles into practical operation, as soon as they met in their native country.

Fulton went to England, as has been related, and did not reach America till the year 1806. Previously to that time, Mr. Livingstone had got an act passed by the legislature of New York, granting to himself and Mr. Fulton the exclusive privilege of steam navigation in all the waters of the state, for the term of twenty years. Though they passed this statute, the senators of New York actually regarded it as a mere delusion, and made it a standing jest for more than one session. Similar feelings of scorn and derision pervaded the minds of the American public at large. Notwithstanding this, Fulton, immediately on his arrival in New York, began the construction of his steamboat. The expense proved to be great, and he was compelled to offer a share of the prospective advantages to some of his friends, with the view of getting pecuniary aid in the mean time. No man would accept his offers. "My friends (as he himself relates) were civil, but shy. They listened with patience to my explanations, but with a settled cast of incredulity on their countenances. I felt the full force of the lamentation of the poet.

Truths would you teach, to save a sinking land,
All shun, none aid you, and few understand.

As I had occasion to pass daily to and from the building-yard while my boat was in progress, I have often loitered, unknown, near the idle groups of strangers gathering in little circles, and heard various inquiries as to the object of this new vehicle. The language was uniformly that of scorn, sneer, or ridicule. The loud laugh rose at my expense, the dry jest, the wise calculation of losses and expenditure, the dull but endless repetition of 'the Fulton Folly.' Never did a single encouraging remark, a bright hope, or a warm wish, cross my path."

In spite of this painful discouragement, the boat was completed in August 1807. To continue his own affecting language, "The day arrived when the experiment was to be made (on the Hudson river). To me it was a most trying and interesting occasion. I wanted some friends to go on board to witness the first successful trip. Many of them did me the favour to attend, as a matter of personal respect; but it was manifest they did it with reluctance, fearing to be partners of my mortification, and not of my triumph. I was well aware that, in my case, there were many reasons to doubt of my own success. The machinery was new and ill made, and many parts were constructed by mechanics unacquainted with such work; and unexpected difficulties might reasonably be presumed to present themselves from other causes. The moment arrived in which the word was to be given for the vessel to move. My friends were in groups on the deck. There was anxiety mixed with fear among them. They were silent, sad, and weary. I read in their looks nothing but disaster, and almost repented of my efforts. The signal was given, and the boat moved on a short distance, and then stopped, and became immovable. To the silence of the preceding moment, now succeeded murmurs of discontent and agitation, and whispers and shrugs. I could hear distinctly repeated, 'I told you so—it is a foolish scheme—I wish we were well out of it.' I elevated myself on a platform, and stated that I knew not what was the matter; but if they would be quiet, and indulge me for half an hour, I would either go on or abandon the voyage. I went below, and discovered that a slight maladjustment was the cause. It was obviated. The boat went on; we left New York; we passed through the highlands; we reached Albany! Yet even then imagination superseded the force of fact. It was doubted if it could be done again, or if it could be made, in any case, of any great value." Well may Mr. N. P. Willis, in quoting this letter of his distinguished countryman, exclaim, "What an affecting picture of the struggles of a great mind, and what a vivid lesson of encouragement to genius, is contained in this simple narration!"

Other descriptions of the first voyage of the Clermont, as the steam-boat was named, are scarcely less interesting than the builder's own. Pine-wood was the fuel used, and the ignited vapour