JOHN ERICSSON.*

"THE story of the development of special faculties under favoring conditions is always interesting, always instructive; and this is the story of John Ericsson. In him nature and opportunity combined their forces to produce the great engineer. The good seed falling upon good ground brought forth abundantly." Thus Mr. Church begins his admirable biography of the builder of the "Monitor." Few memoirs of great men who have distinguished themselves in pure or applied science have so many elements of interest as belong to the career of the famous Swede who spent fifty years of his life as a citizen of this country, and had the good fortune to do more for its salvation in the Civil War than any other private citizen.

There is, indeed, no other incident of the struggle between North and South so thoroughly dramatic as the appearance of the "Monitor" in Hampton Roads on the eighth day of March, 1862, and her contest with the "Merrimac" the next morning. "The cheese-box mounted on a raft" turned the fortunes of the war, astounded the great maritime powers of Europe, and rendered foreign intervention improbable, and French control in Mexico impossible. This was the achievement of the greatest engineer of the country; he designed the "Monitor" in its every part, and labored with the strength of a giant and the skill of a genius to hasten the mechanical construction. "Within one hundred working days from laying the keel-plates of the hull, the vessel was completed, and the engines put in motion under steam. No greater dispatch is recorded in the annals of mechanical engineering. . . . Though the work was done in haste, it was not done carelessly or incompletely."

The "Monitor" was preceded and followed by many remarkable plans and constructions for marine warfare. The ideas which controlled their inventor were such as to give him a high place among the apostles of peace and humanity.

The end he had constantly in view was to make the ocean such an uncomfortable place for

*The Life of John Ericsson. By William Conant Church. Illustrated. Two volumes. Charles Scribner's Sons. $6.00.

the maritime bully that a consensus of opinion would finally compel its recognition as neutral territory. Just as the invention of fire-arms has put the weakest saint upon an equality in physical contentions with the bullies of the prize-ring, so the possibilities of subaquatic attack have placed the weakest of maritime nations upon a par with the strongest. If, as Ericsson believed, it is in the power of science, by the expenditure of thousands, to neutralize the vessels upon which wealthy nations have expended their millions, and with the labor of half a dozen men to counteract the less skilled efforts of as many hundreds, of what profit is naval warfare? "The art of war," he said, "is positively in its infancy. When perfected, man will be forced to live in peace with man." . . . It would not be difficult to show that we are more indebted to the professional soldier than to the peace advocate for our advance beyond the original condition of barbarism, when every man was on his defense against his neighbor, and peaceful industry was unknown.

But the screw-propeller is as indissolubly associated with the name of Ericsson as the "Monitor." Like many other notable inventions, it is not to be credited entirely to any one man. Many speculated with the idea of screw propulsion, others experimented, but "Ericsson alone invented a submerged screw, so complete at the outset in its mechanical details that it was capable of immediate use. . . . In the end his name will be associated with that great advance in steam navigation, as the name of Watt is associated with the steam-engine, Fulton's with the steamboat, and that of Morse with the telegraph."

Had Ericsson done no more than build the "Monitor" and invent a practical screw propeller, his life would deserve to be written as that of one great in peace and great in war. But these were only two points of commanding brightness in the long career of a man of the highest order of inventive genius, who was a prodigious worker and so wedded to his great task of engineer that nothing, neither the pursuit of fortune nor the endearments of love, could distract him in his laborious passage of eighty-five years from the cradle to the grave. He was born in Vermland, a district of Sweden, in 1803; like many other great men, he had a remarkable mother, but unlike most of them he had a father who cherished his great and precocious abilities with the most thorough instruction from private teachers. As a child "John was the wonder of the neighborhood. From the very first he exhibited the qualities distinguishing him in later life. He was ceaseless in his industry; busied from morning till night, drawing, planning, and constructing. The machinery at the mines was to him an endless source of wonder and delight. In the early morning he hastened to the works, carrying with him a drawing-pencil, bits of paper, pieces of wood, and his few rude tools. There he would remain the day through, seeking to discover the principles of motion in the machines, and striving to copy their forms." Before he was fourteen years old six hundred Swedish troops worked on the Göta Canal under his orders as leveler, he being then too small to reach the eye-piece of his instrument without the aid of a stool! He had a brief experience as ensign in the Swedish army, deserting it, technically, by overstaying his leave of absence in England. He was allowed to remain there on an honorable discharge. His flame-engine did not prove a success, but he built a locomotive engine in seven weeks that ran faster than George Stephenson's at the Rainhill competition, and only failed to receive the prize because of defects which a little more time would have discovered and repaired.

Ericsson's steam fire engine and his steam condenser were the early fruits, in his English residence, of an inventive faculty which worked ceaselessly throughout his long life; others, to be counted by the tens and hundreds, one cannot even name here. A substitute for the wasteful steam engine was the object of years of effort with him. His caloric engine was a great step in this direction, and its economic and moral effects in counteracting the evils of a machine epoch are emphasized by Mr. Church in a noteworthy passage (Vol. I, pp. 214–217). The sun-motor, designed to utilize the sunlight as a motive power, occupied Ericsson's attention in his very last years; and his powerful scientific imagination hinted at some of its possibilities when he prophesied that the mills of Europe will be removed some day, when coal has failed, to upper Egypt, where never-ceasing sunlight will furnish an amount of motive power far beyond all that now employed in the manufactories of Europe!

Ericsson wrought incessantly, like one possessed by a demon, such as great painters and poets have known. The only time that he appreciated rest was when he was on his death-bed; an hour before his decease he said: "This rest is magnificent; more beautiful than words can tell!" He was a most original man in every respect, and the chapters which describe his working habits and the surroundings of his home are curiously interesting. Home life proper he had none, as his wife lived in England, apart from him. After her death he wrote to his brother, Nils: "My future and my success in the world required that I should not be troubled with children, or with a wife who had a full right to live with me." Work was home and marriage, and, in fact, almost everything to him. He was generous, and bound his friends to him with links of steel; but the masterful engineer was supreme, and dictated his religious beliefs as well as formed his career. The Universe was too wonderful a machine for him to disbelieve in a Great Constructer; but as this body was also a machine to him, he found it hard to believe that life can be renewed in any way beyond the grave; to the philosophical defects in such theology he was constitutionally blind.

Mr. Church's ample biography fills two stately volumes, furnished with three striking portraits and numerous other illustrations. He has done his work with great sympathy and high ability. He sides with Ericsson in all the controversies about priority of invention, or other matters; and he is disposed, we think, to overrate the office of mechanical as compared with moral forces in the civilization of this earth. But his argument is put powerfully, and it is reënforced by the example of a wonderful life. The partial moralist could not do better than read carefully every word of this very readable, instructive, and stimulating biography.