tate. The only English treatise on ship-building that can lay any claim to a scientific character was published by Mungo Murray in 1754 ; and he, though his conduct was irreproachable, lived and died a working shipwright in Deptford dock-yard.

A most palpable instance of the ignorance of all the principles of naval architecture among the authorities who were charged with designing our royal navy, even up to the close of the last century, may be quoted from an article in a recent periodical publication, the Papers on Naval Architecture, which was devoted to the advancement of this science, and which was for some years conducted by two gentlemen who were educated at the School of Naval Architecture at Portsmouth. The article in question was written by Mr Wilson of the late Navy Office, now Admiralty, a gentleman whose judgment, talents, and sound professional knowledge as a naval architect, contrasted with the humbleness of his situation, that of draughtsman to the surveyor of the navy, may also be cited as affording an instance of the mistaken policy of the successive naval admi- nistrations of England, as to the encouraging the application of science to naval architecture.

Mr Wilson, speaking of the cutting down of the Anson, a sixty-four-gun ship, to a frigate of thirty-eight guns, says, “ she was cut down in the year 1794 ; and although in all other maritime states the science of naval construction was well understood, yet so culpably ignorant were the English constructors, that this operation, so well calculated, when properly conducted, to produce a good ship, was a complete failure. Seven feet of the upper part of the top-sides, together with a deck and guns, making about 160 tons, were removed, by which her stability was greatly increased ; but, by a complete absurdity, the sails were reduced one sixth in area. In her first voyage the rolling was so excessive that she sprung several sets of top-masts. To mitigate this evil, in 1795 her masts and yards were increased to their original size ; but as there was no decrease of ballast, she was still a very uneasy ship, and, as a necessary result, her wear and tear were excessive.

“ Other sixty-fours were cut down, masted, and ballasted in exactly the same manner, and, it need scarcely be added, experienced similar misfortunes ; and although they were improved by enlarging their masts and yards, they were still bad ships. Had their transformations been scien­tifically conducted, a class of frigates would have been continued in the navy, capable, from their size, of coping with the large American frigatcs ; and thus the disasters we experienced in the late war, from the superior force of that na- tion, would, without doubt, have been not merely avoided, but turned into occurrences of a quite opposite character.”

Several attempts have been made in England to alter this state of things, and to establish a system of scientific improvement in our ships. One was the formation of a Society, in 1791, for the Improvement of Naval Architecture, which numbered among its members the late sovereign, then Duke of Clarence, and many noblemen and gentlemen of rank, influence, and talent. This society arose out of the patriotic exertions of a bookseller of the name of Se- well, the proprietor of the European Magazine, who in an excursion to one of our seaports, heard such universal complaints as to the inferiority of the British ships compared with those to which they were opposed, that he devoted the covers of his magazine to correspondence on naval architecture, and gave a room in his house for discussion on the same subject, and for the reception of plans and models connected with it, which were always open to public inspection. The papers that were by these means collected were republished in two volumes ; and, among much trash, there are several valuable articles contained in them. The society conducted a course of experiments on resistances of fluids, in the *G*reenland docks, on which they appear to

have exhausted their resources and their energies, and that too without deducing any results which added to the previous knowledge on that subject. We are not aware that more than the first year’s Report of their proceedings was ever published. Of this we have only met with one copy ; and in consequence of the probability that the results of the society’s experiments might be completely lost, they were republished in the Papers on Naval Architecture. They have been since republished in a most splendid form, and in a most patriotic spirit, solely for gratuitous distribution to scientific societies and individuals, by Mr Beaufoy, the son of the late Colonel Beaufoy, the gentleman to whom the task of conducting them was intrusted by the society, and on whom, it appears, a great portion of the expenses devolved.

Another effort to improve the scientific knowledge of naval architecture in this kingdom was the establishment, in 1811, of a School for Naval Architecture in her majesty’s dock-yard at Portsmouth. This was in consequence of the statements and recommendations contained in the Report of a Commission of Naval Revision appointed in 1806. These recommendations were founded on an inquiry into the edu- cation and attainments of the shipwright officers then in the dock-yards, “ from their first entry as apprentices, to their elevation to the rank of surveyor of the navy.” The Report stated as follows :—“ In the whole course we have described, no opportunity will be found of acquiring even the common education given to men of their rank in life ; and they rise to the complete direction of the construction of the ships on which the safety of the empire depends, without any care or provision having been taken, on the part of the public, that they should have any instruction in mathematics, mechanics, or in the science or theory of marine architecture.”

The Report stated it to be among the most important parts of the duty of the Commission to endeavour “ to put an end to that want of foresight and due consideration, which may finally lead to so much danger to the country ; and to bring into our dock-yards apprentices of more liberal education than has hitherto been required.”

The Commissioners recommended the establishment of two classes of apprentices. They proposed the arrangments necessary for putting their recommendations into practice, and also laid down a system of education for the first class. These proposals were directed to be carried into effect, by an order in Council of the 20th of September 1809, which was complied with in the establishment of the School of Naval Architecture on the first of January 1811.

The arrangements of the school were modified by a se- cond order in Council on the 30th of January 1816, in consequence of a building for the reception of the students having been completed. By this order the establishment was incorporated with the Royal Naval College, and the number of students limited to twenty-four, that number be- ing considered as “ sufficient to supply the place of officers who may die or be removed,” and therefore to fulfil the intentions of the Board of Naval Revision. This second order in Council stated, that the object of the institution was to introduce “a better and more skilful description of ship- wright officers in his majesty’s royal dock-yards ;” and the “ regulations established relative to the admission of stu- dents into the Sch∞l of Naval Architecture,” for the infor- mation of the candidates, stated that, “ on the expiration of the apprenticeship, the students will be eligible to all situ- tions in the ship-building department of his majesty’s service; and in the event of there being no vacancy in any of his majesty’s yards, they shall be employed as supernumeraries in the yards, until vacancies do occur,” “ provided the ap- prentice shall, at the expiration of the time above mentioned, have completed the plan of education, and shall be certified by the professor to be properly qualified.”