

a species of school—and here is another fact for consideration, which this country has never known.

De Joinville, then having graduated in that naval school commonly known as the French squadron of evolutions was eminently qualified for the task of re-organizing the French navy. He succeeded, it is said of him, in doing what no one else had been able to do—he rendered the navy popular. On all naval subjects his words are the words of wisdom. Hear him: "The question of fitting out a fleet is not a mere question of finance. Money can always be raised by the state, and money will produce any number of craft, but money will not make sailors; gold will not make a disciplined crew nor an experienced staff of officers; and of what use are ships without the living soul to command and the ready hands to obey? To collect, form, and train these should be the first solicitude of a great maritime power, as it is the most important part of its tasks. Every other requirement will then follow as a matter of course." In 1833 the corps of *matelots-canoniers* (seamen gunners) was established, and at the same time a number of improvements adopted; but owing to certain defects in the system, it was found that trained men did not remain in the service. Various modifications were adopted till the reign of the late Emperor. "Among the first great efforts," we are told, "visible at the commencement of his reign, was a determination to augment the number of ships to an extent never previously thought of, and at the same time to enhance the efficiency of the seamen. Under the new regulation it was stipulated that every sailor must enter the service for a period of ten years, and that, with the practical knowledge inculcated on board the training ship, there should be combined a course of theoretical instruction on shore, stimulated by periodical examinations. The French marine artillery may therefore be held to be well grounded in at least the rudimentary principles of the science of projectiles. In this way a body of five hundred picked gunners is annually turned out." These fill the positions of gun captains and the several grades of petty officers throughout the fleet. England had already adopted this plan of training her men to gunnery. The name of the old gunnery ship *Excellent* has long been familiar to us. Here was a special training course established for the instruction of gun captains and the higher grades of petty officers, and from the best of the latter were selected the warrant officers. It was from the English, probably, that the French took the idea of the seaman gunner, and fully adopted her practice, possibly improving on it, and the English in their turn adopted from the French the "*Ecole de mousse*." The dates here given and the precise order of precedence may not be absolutely correct, but quite near enough to show how England and France have through long years been struggling to excel each other in naval power, first one out-stripping the other in some particular, then the other Their rivalry kept both navies on the very crest of the wave of progress.

Let us turn from this rapid glance over the modern history of the two navies we are (after our own) most familiar with, and ask what we have been doing for our sailors since 1812. If, in the language of de Joinville, it be any part of our duty to "collect and train seamen" for the organization of a permanent Navy, is it too much to say that that duty has been sadly neglected? It is not to be denied that for the navy in general we have done much within the past few

years. In looking back it seems of comparatively recent date that what were called our now steam frigates were deemed models of modern naval architecture; our guns ranked highest in naval ordnance; the educational facilities afforded our young naval officers, it is quite safe to say, are not equalled in any country in the world; and the problem which the European navies failed to solve, the devising of a new system of naval tactics, which should meet the requirements of a modern fleet, has been solved in our Navy with ease and completeness; and is in itself without so happily conceived and so simple as to command our admiration for the work and its author alike. And yet with these legitimate causes of gratulation, we have been for years persistently neglecting one of the most important elements of an efficient navy. Engaged in a naval war, by whom are our fine ships to be manned? The model naval officer, with his high culture and careful training—who is he to lead in the day of battle? And after all the patient study of the arts and sciences, and the racking of brains, and exhausting the inventive faculties of the country, that we may have the very best gun, mounted on the most perfect carriage, and loaded with the most effective powder and most destructive shell, who is to reap the rich harvest, and in one supreme moment utilize these rare contributions of brains, time, and money? It is not the one who points the gun & pulls the lock string? And does it seem wise to go to so much trouble and expense to prepare a great engine of war and not at the same time prepare for its being properly used? Does it seem the part of wisdom to neglect one member of a body, the want of which may neutralize the perfection of the remainder? Does it not seem rather the reverse of wisdom? Nor do we need the marine artillery merely—the Italians have those. Many of us may be able to bear witness to the thoroughness of their great gun drill, but "*ils ne sont pas gabiers*," the captain of the *Re Galantuomo* said, when asked if his men exercised aloft. They were not topmen, indeed, nor sailors in any sense, and with such crews it would be safe to prophesy a repetition of the disaster of *Lissa*. We need for our ships the thorough seaman, with his characteristic devotion to the flag of his country, his contempt of danger, his love of adventure, combined with the carefully-trained naval gunner. And, the prejudices of many of our officers to the contrary, we may look to our seamen of the future for yet higher qualities, but such as are sure to come by that very course of education which is to give us the best type of a modern man of war.

"Education;" it has been observed, "has reference to the whole man, the body, the mind, and the heart; its object, and when rightly conducted, its effect is to make him a complete creature after his kind. To his frame it gives vigor, activity, and beauty; to his senses, correctness and acuteness; to his intellect, power and thoughtfulness; to his heart, virtue. If you would mark the perfect man you must not look for him in the circus, the university, or the church exclusively, but you must look for one who has '*mens sana in corpore sano*,' a healthful mind in a healthful body. To make all men, such is the object of education."

Is any one prepared to say that these principles apply to one kind of education, merely, and not to another; that they apply to the university and not to the public school; to the sons of affluence and not to the children of toil? That the sailor may

not be educated to be a "complete creature after his kind?" The proposition is not to be entertained. But the views in regard to the particular methods of education have been considerably modified within the past twenty years. In 1851 took place in the city of London the great exhibition, where, in the Crystal Palace, 100,000 persons were assembled to witness the competitive industries of the civilized world; then and there it was demonstrated to that immense throng that England, in the profusion of the raw material, in the native genius of her artisans, and in the mechanical power which she exhibited, possessed a superiority which made competition with her, at that exhibition, by the other powers of Europe, hopeless.

But it taught another lesson: that what was wanting by others either in the raw material or in bone and muscle might be more than supplied by educated skill, and that technical education if inaugurated for these industries upon a liberal plan, and steadily pursued, would give to France, Germany, and Switzerland a power which would more than compensate for natural disadvantages. These countries were not slow in establishing such schools, reaching from technical training for lads and apprentices, in the various branches of industry, by a well graded system, up to a polytechnic university; and no expense was spared to give to these institutions all the appliances which could provide educated skill to labor and industry.

"The next exhibition was held in Paris in 1855. A marked change was already observable in the competitive industries of Germany and France, as compared with England. The result of this exhibition increased the zeal for technical education in those countries. They were assured by these early results that they were, indeed, upon the right track; for the successful examples in machinery and iron manufacture in which England had hitherto possessed an hereditary pre-eminence demonstrated that educated skill might successfully compete with genius and other natural advantages.

"When the next exhibition was held in London, in 1862, England was left far in the rear by the skilled labor of the continent; and mortification to the national pride was felt throughout the realm. Germany, France and Switzerland bore away the palms in those departments of mechanical skill in which hitherto England had been without a peer. This mortification was further intensified at the last exhibition in 1867; and English artisans and English manufacturers demanded an inquiry into the causes which led to this great discomfiture, and into the ways and means of rectifying it."

"It was found that in every metropolis, large town, or centre of industry in France, Germany, or Switzerland, schools for educating professional men and masters, for training foremen and skilled workmen, and for teaching apprentices, had been established, and that these technical schools had caused the rapid supremacy of continental over British industry. The testimony of such scientific gentlemen as Professors Tyndall and Franckland was that what England needed was a better provision for industrial education; a higher scientific education for those likely to be master manufacturers, so that when discoveries are made they may be rendered available by the skilled intelligence of those who command capital, and can at the same time appreciate the merits of such discoveries.

An English chair-maker, who went to the last Paris exhibition as one of a committee