to their pecuniary profit, and that if it is really worth while to provide Sextants and Chronometers, it is not less so to place them in hands trained to their use. Thus the stand­ard of the characters of commanders of vessels is raised in proportion as their scientific acquirements are advanced, and, in the end, the whole community is benefited, by the increased security, expedition, and profits of commercial enterprise.

When enumerating the scientific instruments which have been introduced into the art of seamanship, we must not forget the Marine Barometer ; an instrument, the principle of which, so long well known on shore, has: only very lately been adapted to sea uses. This adaptation is accomplished in the simplest way imaginable, by merely contracting the throat of the tube which holds the mercury, at some con­venient point of its length, in such a degree, that the os­cillations of the fluid which the motions of the vessel would otherwise cause, are sq much checked, that the height of the column can be observed, if not quite as accurately as on land, at least with sufficient precision to give the sea­man indications of changes in the winds and weather.

We must repeat once more that it is not our purpose to write a complete treatise on seamanship, but merely to give a sketch of the most material advances which have been made since the Encyclopedia was first published, in this thoroughly practical science. It will be enough, therefore, to mention that the use of the barometer at sea consists in giving the seaman information, before hand, of the changes likely to take place in the direction as well as force of the wind; or, which is often fully as useful, to let him know that, in spite of appearances to the contrary, there will be no change. Cases intelligible to unprofessional persons may easily be fur­nished by any seaman’s memory. We remember once, rounding the Cape of Good Hope, on a voyage from China, in a crazy bark, short-handed and ill-found, but with a fair wind, and the weather so moderate that every sail could be carried with advantage. To all appearance, squally, and perhaps stormy, weather was coming on ; so that, had we not possessed a barometer, ordinary nautical prudence would have induced us to shorten sail before night, and thus we should have lost the charming fair wind which was co-operating with the current to sweep us rapidly across the bank of Lagulhas. But as the mercury indicated a conti­nuance of fine weather, we carried on, sent the people to bed, rounded the Cape in safety, and reached the trade winds in time to accomplish a successful voyage to St. Helena and home. Nearly in the same region, and under circum­stances very similar, we were once grievously tempted to trust rather to appearances than to the more substantial as­surances of the barometer, and on the approach of night to make more sail instead of taking it in. As the darkness began, however, the confidence and pride of personal expe­rience gave way to the warnings of the instrument. The sails were reefed, and every thing made snug for a breeze, greatly to the surprise of the sailors, who saw no cause for these precautions. Towards midnight a gale came on, which, had it not been anticipated, would speedily have taken in our sails for us, by blowing them from the yards ; and the success of the voyage in this case also was chiefly due to the barometer.

Without dwelling further on this tempting branch of the subject of seamanship, we may venture to give one practical recommendation, which may possibly prove useful both to the owners and commanders of ships. It is, that as much re­sponsibility as possible should always be made to rest on those instrumental parts of the equipment which science, and an adequate experience of its application, show to be really useful. Thus, we would have the owner of a ship, free, and even generous, in his supply of sextants, chrono­meters, barometers, and charts, to his captain, sure that, if he be chosen for his capacity, the paltry cost of such sup­

ply will, in the end, be repaid fifty fold. On the other hand, a commander so confided in, should study to use such means of instruction, as not abusing them. The captain should be possessed of a certain knowledge of their prin­ciples, in order to have that degree of faith in their ap­plication to practice, without which they may well prove worse than none at all. We have known some ships totally lost, and many voyages doubled in duration, merely by the ignorant misapplication of a figure, or of an algebraic sign. But if the captain knows the proper use of his instruments, he should trust to them, as he is himself trusted by his employers; and by resting upon them that responsibility which they are far more able to bear than he can be, how­ever extensive his experience, he will make out his voyage in safety, and learn, by degrees, not only to feel, but to act on the belief of the uniformity of the laws of nature, in the midst of the wildest apparent confusion.

We had almost forgotten to mention, amongst the mo­dern improvements in seamanship, the immense advantage of correct charts. To any one accustomed to use such charts as are now on board even the worst found ships, the sight of an old “ sea map” is enough to make his hair stand on end. In the first place, on looking at the dangers which really exist, but which are omitted in the old charts, he wonders how ships in those times ever escaped destruction ; and in the next, he finds the sea so thickly covered with rocks, and shoals, and those vague “ vigias,” now known to have no existence, that his admiration is great of the boldness of those mariners who could sail on at all during the night.

The government of most civilized countries having taken up this matter in earnest, and sent their surveyors abroad, like geographical missionaries, the world has been put in pos­session of charts of all those harbours, coasts, and seas which are most frequented, and so accurate is the construc­tion of their maps, that ships duly provided with nautical in­struments need scarcely ever incur the danger of running ashore, except by stress of weather, or experience any dif­ficulty in finding safe passages amongst the most complicat­ed sand banks, coral reefs, or any other description of sub­marine dangers, the terror and bane of old navigation.

It would lead us beyond our limits were we to go into further detail, in order to point out the various minor im­provements which have been introduced into the practice of navigation ; though we feel strongly tempted to describe the scientific remedies, for example, which have been ap­plied to the steering compass by Professor Barlow, to cor­rect the local attraction caused by the great additional quan­tity of iron that has lately been put on board all ships. For a similar reason, want of room, we must omit all mention of the improved methods of constructing ships, stowing their holds, making their masts, and, generally, the improved mode of rigging, fitting out, and working ships. These details being all parts of the same course of improvement, would enter naturally into an express treatise on seamanship, but are much too voluminous for this place.

There are two topics, however, on which we must be al­lowed to touch for a moment, before bringing this Appen­dix to a close. One is, the improved discipline of the Bri­tish navy, and the consequent amelioration in the charac­ter of all the seamen of the country. The other is, the change in the armament of the ships of war, and the im­provement in the training of our seamen to the duties re­quired by this change. Both of these points have so ma­terial an influence on the prosperity of the country, and have become so completely part and parcel of the seamanship upon which its glory as a nation depends, that on this oc­casion we cannot pass them over in silence.

There can be no good seamanship without discipline, for it is as essential to the correct working of a ship that there should be a well-understood subordination established on board, as it is to the correct going of a clock that all its