inconvenience it was very soon found indispensably neces­sary to remedy, by the introduction of separate joints, or top-masts, which could be lowered in case of need.”

The drawing shows two tiers of ports. The introduction of port-holes is said to be an improvement due to a French ship-builder of Brest, named Descharges, in the reign of Louis XIL, and about the year 1500. If the drawing be authentic, the correctness of this appropriation of the merit of the introduction of port-holes may be questionable.

Again, if the drawing be a correct representation of the vessel, she would have been in danger of upsetting, ex­cepting in calm weather, and when her course was with the wind. In fact, as yet the large ships of war of England were not at all adapted to sail on a wind, and were very ill provid­ed with such sails as would enable them to do so ; they had therefore nothing to fear from the result of a measure which could not be put into execution. The fleets of war of which we have hitherto written seldom ventured out of port ex­cepting in the summer months, and then only when the wind was favourable to their intended course. But very shortly after the date of the building of the Henri Grace à Dieu, we shall find that great improvement took place, and that in the reign of Henry VIII. there is evidence to prove that sailing on a wind formed one of the qualities of the vessels composing his fleets. This fact appears to throw- some doubt upon the correctness of the drawing, for it must have required ships widely different from any of which that would at all give an idea, to have performed the evo­lution of tacking or wearing ; and as the Henri Grace à Dieu was in all probability the same ship that on the acces­sion of Henry VIII. was called the Regent, she must have formed one in fleets which were capable of performing these manoeuvres. It is true that she may have been alter­ed to adapt her to these new requirements of an improved system of seamanship ; and it must also be said, that she was burned in on action with the French fleet, which occurred as early as the fourth year of the reign of Henry VIII.

Though it is out of the question that ships with the en­ormous top-hamper which, on the evidence of all the draw­ings extant, still continued to be the fashion, could have made much progress in sailing on a wind, the letters of the time extant corroborate the statement we have made ; for they begin to contain references to this improvement in navigation. In a letter from Sir Edward Howard, “ Lord Admiral,” to King Henry VIII., upon the state of the fleet, a. D. 1513, preserved in the Cottonian Library, and pub­lished in Ellis’s collection, we find the following passage : “Ye commanded me to send your grace word how every shipp dyd sail ; and this same was the best try all that cowd be, for we went both slakyng and by a bowlyn, and a cool acros and abouet in such wyse that few shippes lakkyd no water in over the lee wales.” The Lord High Admiral Lisle, in one of his letters (1545), says the small vessels of his fleet could “ lye best by a wynde and in 1567 we have conclusive proof that there were “ fore and aft,” indeed “ cutter-rigged” vessels, on the British seas ; as in a map of Ireland of that date, published in the state-papers, two such vessels are represented, for the purpose, apparent­ly, of indicating regular packets from England to Ireland.

It has been very generally supposed, on the authority of Sir Walter Raleigh, that the “ knowledge of the bowline” was a discovery in navigation made shortly before his time ; but we think it is probable that there were, even from the time of the Northmen, craft so rigged as to be capable of sail­ing on a wind. Froissart mentions, in several instances, “ a vessel called a Lin, which sails with all winds, and without danger ;” and again, “ a vessel called a Lin, which keeps nearer the wind than any other.” Boats with a rig adapted for this manœuvre are also represented in engravings of a very early date. In the plates of Breydenbach’s Voyage to Palestine, which was published in 1483, boats and small ves­

sels arc represented with lateen sails ; and in Braun’s *civi­tates Orbis Terrarum,* published in 1572, sprit-sails are met with. It is quite certain, however, that sailing on a wind was by no means a general quality possessed by the ships of war, or to any extent even by the greater portion of the larger shipping, until about the reign of Henry VIII. We shall adduce one other instance, in the account of the loss of the Mari Rose, a ship of the “ portage of 500 tons,” not so much to corroborate the fact of sailing on a wind, as to show that the two innovations, the introduction of port­holes, and the “ knowledge of the bowline,” were, as we have just said, in advance of the qualities of the large ships of war of the time. Sir Walter Raleigh says that “ in King Henry VIII.’s time, at Portsmouth, the Mari Rose, by a little sway of the ship in casting about, her ports being within sixteen inches of the water, was overset and lost.”

The loss of this ship has been the means of giving us an­other interesting insight into the comparatively low state of nautical skill in England at this period, namely, the middle of the sixteenth century. In a letter among the state- papers published under the direction of the Record Com­mission, addressed by the Duke of Suffolk to Sir William Pagett, “ chief secretary to the kinge’s highnes,” dated the 23d of July 1545, and containing a schedule of things ne­cessary to be had for the raising of the Mari Rose, one item is “ fifty Venyzian maryners and one Venyzian carpenter;” the next item is “ sixty Englisshe maryners to attende upon them.” It would also appear that the attempt was to be made under the direction of an Italian, as the conclusion of the schedule is, “ Item, Symond, petrone and master in the Foyst, doth aggrie that all thyngs must be had for the purpose aforesaid.” The attempts however all failed ; the wreck of the Mari Rose remains to this day at Spithead, and so lately as August 1836, several of her brass cannon, of most exquisite workmanship, were recovered from the sea by the enterprise and ability of an Englishman of the name of Deane.

We may obtain some idea of the detail of ship-building rather before this period, from an account of a vessel built by James IV. of Scotland, at the close of the fifteenth or the beginning of the sixteenth century. The extract is from Charnock, but he has not mentioned his authority. “ The king of Scotland rigged a great ship, called the Great Michael, which was the largest and of superior strength to any that had sailed from England or France; for this ship was of so great stature, and took so much timber, that, ex­cept Falkland, she wasted all the woods in Fife which were oakwood, with all timber that was gotten out of Norway ; for she was so strong, and of so great length and breadth, all the wrights of Scotland, yea, and many other strangers, were at her device by the king’s command, who wrought very busily in her; but it was a year and a day ere she was completed. To wit, she was twelve score foot of length, and thirty-six foot within the sides ; she was ten foot thick in the wall and boards, on every side so slack and so thick that no cannon could go through her. This great ship cumbred Scotland to get her to sea. From that time that she was afloat, and her masts and sails complete, with an­chors offering thereto, she was counted to the king to be thirty thousand pounds expense, by her artillery, which was very great and costly to the king, by all the rest of her or­ders. To wit, she bare many cannon, six on every side, with three great bassils, two behind in her dock and one before, with three hundred shot of small artillery, that is to say, myand and batterd falcon, and quarter falcon, flings, pestilent serpentens, and double dogs, with hagtor and cul- vering, corsbows and handbows. She had three hundred mariners to sail her, she had six score of gunners to use her artillery, and had a thousand men of war, by her cap­tains, shippers, and quarter-masters.”

Several of the writers of this period mention the fact of a