

"When there was considerable wind, we observed that the breakers were higher within the edge, to the westward, than on the edge; and I have no doubt that the water there was still shoaler, and that we should have seen the sand, had it not been for heavy sea. The breakers were high, unless it were entirely calm, that it was impossible to go among them with boats; nor was it considered safe to attempt it with the vessels. For besides the danger of striking on the hard sand-spits, the vessels would have been liable to have been filled by the breakers. Even on the eastern edge, and at nearly slack water, the vessels were at times nearly covered with them. It was not thought necessary to attempt it, as the object of the survey, to ascertain if there was danger on the shoals, and the situations and extent of them, could be accomplished without this risk."

"Had not the sea been very smooth, and at high water, we should not have been able to have gotten on where we found 3 feet, reducing it to low water. The prevailing wind was to the eastward; and I have no doubt but that this place would have been bare, with any continuance of an off-shore wind."

"I think there are no rocks about the shoals. We had one cast on the S.W. side, which indicated rocky bottom, in 15 fathoms; but I believe it to have been some sharp stone that the lead struck on, although I have marked it according to the appearance on the Chart."

"The centre of the northern shoal is in latitude $41^{\circ} 53' 30''$ and longitude $67^{\circ} 43'$. It extends east and west about four miles. The shoal at part having 6 fathoms, is very narrow, and composed of hard sand. But there is not more than 12 fathoms of water for three miles south of the above latitude. On the north side, at two cables' length from the shoal, the sloop dropped into 33 fathoms. The breakers on this shoal are very heavy; and when there should be a sufficient sea to endanger a vessel, they might be seen some miles, and heard at a very considerable distance; and, as the shoalest part is not more than a cable's length inside, and no danger near it, a vessel might avoid it."

"To the eastward of the last-mentioned shoal, in latitude $41^{\circ} 51'$, and longitude $67^{\circ} 56'$, is another small shoal, with 8 fathoms of water, having, however, considerable breakers. There are but 17 fathoms for three miles north of it. But very near to the east of it, are 31 fathoms, and from 20 to 30 fathoms to the south and west."

"The centre of the East Shoal is in latitude $41^{\circ} 47'$, and longitude $67^{\circ} 19'$. It is about two miles long from east to west, and has 7 fathoms of water. To the south there are but 17 fathoms for two miles. In other directions there are from 20 to 30 fathoms."

"The above-described shoals, I am confident, are all which are on George's Bank. Their positions and sizes may be relied on, as well as the places of the soundings which I have laid down in the Chart. They were ascertained by a vast number of celestial observations, taken with good and well-adjusted instruments, on board the two vessels, and very carefully and faithfully calculated. The rates of the chronometers were found by a transit instrument previously to sailing from Boston, and after our return; and all the observations re-calculated for the small variation which appeared."

"At anchor, in different places, and on different days we determined the set and strength of the tides, and, as nearly as possible, their rise and fall. The rise of them is from one to one and a half fathom. They set round the compass every tide, setting S.E. nearly at full moon, and running from one to four knots per hour, at a mile's distance from the breakers. The mean rate, however, is materially varied by the winds."

"They set strongest at W.S.W. and E.N.E., and which is, undoubtedly, the strength of the flood and ebb. From these causes and variety in the tides, arises a principal danger in approaching the shoals. When under weigh about the shoals, in a few hours' time, we found ourselves drifted far out of our reckoning; and to ascertain our situation when both vessels were under weigh, we took continued observations for the longitude by the chronometers, and at the same time double altitudes for the latitudes, which latter were calculated by Brossius' new and certain method. By allowing for the

"In some remarks which he has made on the 'Shoal Ground of St. George's Bank, Mr. Lockwood says, 'The pilot of the Bulwark declared, in the presence of Captain Milne, myself, and others, that he had landed on the shoal part of George's Bank, and that he believed it dried for at least six miles, and was composed of fine sand. Many of the Cape Cod fishermen assert, that they have seen the gulls sitting on it; while others positively insist, that the only danger exists in the heavy and cross sea, caused by the current running forcibly over the uneven ground.'"

set