

sheets of the admiralty, it is practicable to run these channels and sounds in good weather without a pilot; but on account of the liability to fogs, it is desirable and safer to trust to a pilot.

In 1867 the Lincoln, with the coast survey party on board, made the interior passages to Fort Simpson, in latitude $54^{\circ} 34'$ at the eastern extremity of Dixon Sound; thence through Dixon Sound to Cape Kygune and along the coast to Sitka Sound. This shortens the passage, but in thick, heavy weather, it is difficult to make the capes about Sitka, and dangerous to approach too close because of the absence of the usual aids to navigation. Moreover, no off-shore soundings have been obtained off that section of coast to enable the navigator to judge of his position.

For the interior passages the admiralty charts are completed to the north end of Vancouver, and in part finished and published in December 1867, as far as Fort Simpson. Admiralty Chart No. 1917 gives the interior channels from Fuca Strait to Cape Calvert in $51^{\circ} 24'$ at the north side of Queen Charlotte Sound, with all the ocean shores, bays, and harbors of Vancouver Island. Besides this there is a series of charts of the passages on a larger scale. Chart No. 1923 exhibits this interior navigation from Cape Caution in Queen Charlotte Sound in latitude $51^{\circ} 10'$ to latitude $52^{\circ} 26'$. Part of this is there published in detail for the first time since Vancouver's explorations, and is very important as exhibiting many of the dangers of Queen Charlotte Sound, Smith's Inlet, and the entrance to Fitzhugh Sound, several harbors of retreat in that vicinity, several anchorages in Fitzhugh Sound; but especially as exhibiting in detail the Lama and Gunboat Passages leading westward and northward from Fitzhugh Sound to Seaforth Channel and Milbank Sound. These passages are barely indicated by Vancouver and very erroneously laid down on Admiralty Chart No. 2430, where a passage is placed in latitude $52^{\circ} 01'$. In seeking for the Lama Passage at night the Lincoln was misled by this error of the chart, especially as an islet lies in a small cove in this latitude, and gives at night the appearance of an opening. There is not space for a steamer to turn in this place, hardly room to swing to a short scope of chain, and the passage inside and around the island is dangerous. This little opening received the appropriate name of "The Trap."

Northward of Milbank Sound, through Finlayson Channel, this chart is only in outline. It includes the southern part of the Queen Charlotte Archipelago with the Houston Stuart Channel through the islands in latitude $52^{\circ} 06'$ to $52^{\circ} 09'$, and a survey of Rose Harbor in this channel, with the position of Stinecutt Channel through the same archipelago indicated in latitude $52^{\circ} 13'$ to $52^{\circ} 18'$. Admiralty Chart No. 1923 A, with corrections to January, 1868, gives the interior navigation by one main line of channels only, from latitude $52^{\circ} 57'$ to the waters between Alaska and British Columbia in latitude $54^{\circ} 40'$. The main channels are in outline only, but several anchorages are indicated; Ogden Channel has been partially developed, leading from the north end of Grenville Channel, in latitude $53^{\circ} 55'$, to the ocean, via Hecate Strait, lying between these islands and Queen Char-