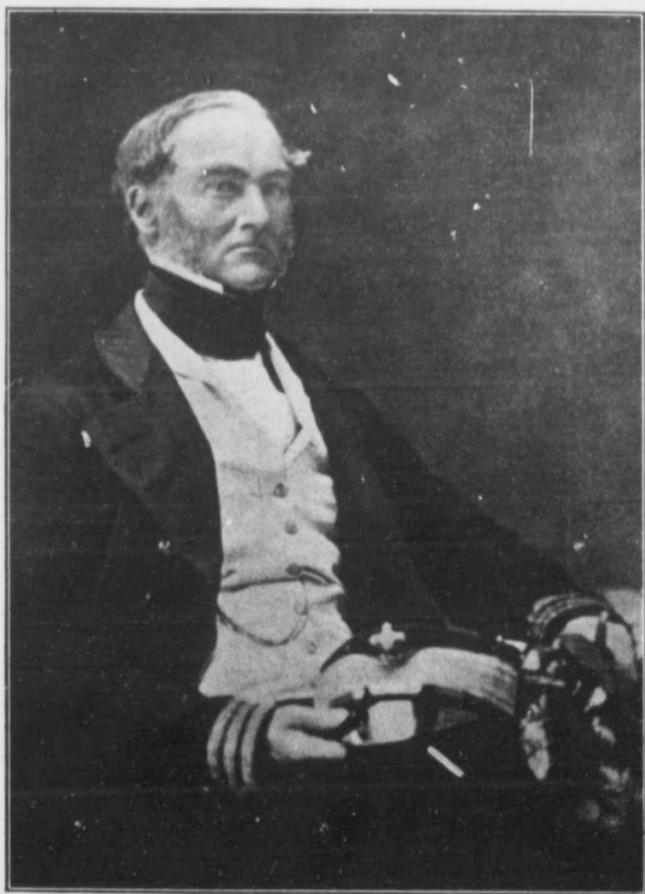


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ADMIRAL BAYFIELD

Literary and Historical Society of Quebec

A paper on Admiral Bayfield, read in Morrin College Hall before the Literary and Historical Society of Quebec, on the 4th day of January, 1909, by retired Captain J. G. Boulton, R.N., Hydrographical Surveyor, the President, Dr. G. W. Parmelee, in the Chair.

Mr. Chairman, Ladies and Gentlemen:—I fear you will derive less pleasure from the reading, than I have from the writing of this paper on Admiral Bayfield, partly because bad caligraphy does not conduce to good reading, and partly because this paper is nothing more than a scanty and disjointed account of the services, principally in Canadian waters, of a scientific naval officer, appealing more to surveyors and seamen than to the mixed audience who have honoured me and the memory of the late Admiral, with their presence here to-night.

But being anxious, as I am sure are many others in this city and Canada generally, to have the Admiral's useful services in this country recorded ere it be too late (and there being in my opinion no fitter repository for such than the archives of this Society, of which the late Admiral was a prominent member for some fourteen years) this wish cannot well be complied with, unless I afflict you for a short time with a portion (about two-thirds) of what I have written, in order that the President and Council of the Society may judge whether it is worth the expense of publication. Should it meet with their favour, access can hereafter be had to the complete paper when laid upon the Reading Room table of the Society.

The method pursued in the compilation of this rather fragmentary memoir has been, first, to relate Bayfield's services, from his entry in the Royal Navy to his comple-

tion of the Hydrographical Survey of the Canadian shores of the Great Lakes.

Then a brief account of the Services of Admiral Owen, under whom Bayfield commenced his surveying career, and with whom he was afterwards associated in similar work, later, in the Gulf of St. Lawrence (though time does not allow me to read it). Next, a short description of the method of hydrographic surveying as pursued by Bayfield. Finally, an account of part of his services in the River and Gulf of St. Lawrence, from extracts from six journals and a letter book, which unfortunately only cover about two-thirds of the Admiral's time in that district, but are all that appear to exist. I am much indebted to the Admiral's son, Edward Bayfield Esq., barrister-at-law, residing in Charlottetown, P.E.I., for his kind assistance, and to Dr. Doughty C.M.G. Dominion Archivist, and James White Esq. F.R.G.S. Geographer, for the loan of the six journals.

Admiral Henry Wolsey Bayfield, the subject of this memoir, was born at Hull in the County of Norfolk, England, on the 21st January, 1795, being descended from a very ancient family, the Bayfields of Bayfield Hall, in the village of that name and in the same county. Bayfield received an ordinary education, and, in 1806, at the early age of eleven years, entered the Navy as a supernumary volunteer on board His Majesty Ship *Pompée* of 80 guns, bearing the flag of Sir William Sidney Smith, and was in action with a French privateer six hours after leaving Portsmouth. Mr. Bayfield was transferred to H.M.S. *Queen* of 98 guns, the flagship of the great Collingwood. From her he was appointed to the *Duchess of Bedford*, hired armed ship commanded by Lieutenant F. B. Spilsbury, and was slightly wounded in a severe action in the Strait of Gibraltar, in which that vessel beat off two Spanish feluccas with double her crew. For Mr. Bayfield's conduct in this action, he was made a first-class volunteer and appointed 29th September, 1806, to H.M.S. *Beagle*, called the *Golden Beagle* from the number of prizes she cap-

ture. In her, commanded by Captain Francis Newcombe, he assisted in compelling the enemy to abandon an English vessel laden with naval stores, stranded on the Spanish Atlantic coast.

He also assisted at different times, in the capture of the Hazard, Vengeur and Fortune, privateers, and participated in Lord Cochrane's action in Basque roads in April, 1809, being present at the operations of the 11th, 12th and 18th of that month. On the latter date, the Beagle, in company with other ships, was engaged with the French vessels, Ocean, Regulus and Indienne, aground in the mouth of the Charente, the English ships being exposed to a heavy fire from the battery on Isle d'Aix. The Beagle, which gallantly posted herself on the Ocean's stern and quarter in barely more water than sufficed to float her, fought hotly for five hours and suffered more severely than any of her consorts.

In the autumn of 1808, Mr. Bayfield accompanied the Waleheren expedition, and in 1811 as midshipman, he rejoined Captain Newcombe, now commanding H.M.S. Wanderer of 21 guns, in which he served in Spain, Portugal, the West Indies and North America. Mr. Bayfield was promoted to Lieutenant on March 3rd, 1815, and while his ship was in Quebec that summer, Captain Owen, R.N., who was making a survey of Lake Ontario and in want of an assistant, was so taken with Lieutenant Bayfield's note books that he was ordered to accompany Captain Owen back to Kingston forthwith. He did not go willingly, because he thought for a young naval officer it would be burial alive now that peace was declared. It should have been stated, that while on board the Beagle, Bayfield had for messmates two young officers who had received a college education. Bayfield taught himself from their books, there being no Naval Instructor in those days. Lieutenant Bayfield remained with Owen until the latter returned to England in 1816. On June 17th, 1817, Bayfield was made Admiralty Surveyor, and eventually extended the survey over all the Canadian shores of the Great Lakes. I

regret to state that I have not had access to any journals or reports of his work upon the upper lakes, extracts from which would, no doubt, be extremely interesting; but we know that his survey of Lakes Erie and Huron was carried on by very inadequate means in two six-oared open boats, his sole assistant being Mr. Midshipman P. E. Collins, R.N. We also know that in 1823 he commenced the survey of Lake Superior, having the use of the Hudson Bay Company schooner *Recovery*, the only vessel on that lake. Ex-Surveyor-General Lindsay Russell, informed me recently that during his explorations in that region he heard that the name of the *Recovery's* sailing master was Lamphere, construed by the French voyageurs into *L'Enfer*, his temper being anything but angelic upon occasion. Bayfield, by the Indians, was known as the "Great," Collins as the "Little Chief."

Bayfield made Fort William his headquarters for Lake Superior, and in winter the survey of the shore line was proceeded with on the ice, as was done in Lakes Erie and Huron before, Bayfield living in camp with his French voyageurs.

On 10th May, 1825, at Fort William, Lieutenant Bayfield met Captain (afterwards Sir) John Franklin R.N., and his party of 33, on their way to the Arctic coast of Canada from England, via New York and Penetanguishene. The object of the overland journey was to gain time over the alternative passage to York Factory by one of the two annual Hudson Bay Company's ships. Among Franklin's officers was Lieutenant George Back R.N., whom as Commander on his way to the mouth of the Great Fish River for tidings of Captain (afterwards Sir) John Ross R.N., Bayfield again meets at Quebec in 1833.

Towards the end of the year 1825, Bayfield having completed the survey of the Canadian shores of the Great Lakes, returns to England, and is employed at the Admiralty, preparing for the engraver his lake charts, and no doubt appreciating the rest and change of scene after

ten years incessant toil on shores mainly inhabited by Indians and a few fur traders.

Bayfield was promoted to Commander in November, 1826, and, in recognition of his services in Canada, was appointed in the autumn of 1827, to the command of the Survey of the River and Gulf of St. Lawrence, making this city his first winter quarters. Before relating his services in this part of Canada, I shall, in accordance with previous announcement, say a little about Admiral Owen, followed by a brief description of the nature of hydrographic surveying pursued by Bayfield.

Admiral William Fitzwilliam Owen, born in 1774, entered the Navy as a midshipman in June, 1788, serving in the West Indies and Home Stations until the end of 1794 in H.M. Ships Culloden, Libra, Assistance, Vengeance, Hannibal, and Culloden again. In the latter ship, he was present at Lord Howe's victory. He afterwards served in the London, and was promoted to lieutenant for his conduct during the mutiny at Spithead, and given command of H.M.S. Flamer in June, 1797. After serving in various ships in the English Channel, he commanded H.M. brig Seaflower in the East Indies, when he captured in July, 1806, the French ship *Le Charles*. He explored part of the Maldivé Islands and the west coast of Sumatra. He conducted Sir Edward Pellew's squadron into Batavia roads, and distinguished himself on that occasion in command of a division of boats. In September, 1808, he was taken prisoner by the French and detained at Mauritius until June, 1810, after which he was superintendent of transports at Madras. He became commander in May, 1809, and served through the Java campaign in 1811 in H.M.S. *Barracouta*. In December, 1811, he was promoted to post rank and appointed to H.M.S. *Cordelia*, in which ship he captured the island of Palembang. He returned to England in June, 1813, and in March, 1815 was appointed for survey of the Canadian lakes. After completion of the survey of Lake Ontario, Owen returned to England in the following year, and was for a short time attached to the

Hydrographic Department of the Admiralty. From 1821 to 1826 he was employed in H.M.S. *Leven* in surveying the west and east coasts of Africa, losing in the rivers on the latter coast more than half his complement from fever. Later he was employed in the survey of the Bay of Fundy and Nova Scotia until promoted to Rear Admiral in 1847, when he gave up the survey. He obtained the rank of Vice Admiral in 1854, retired with that rank in 1855, and died at St. John, N.B., 3rd November, 1857, aged 83 years.

On Admiral Owen's arrival at Sheerness to pay off the *Columbia*, a slight misunderstanding occurred. H.M.S. *Columbia* was a paddle-wheel vessel, and her proportions anything but yacht-like; and, on Owen's arrival at Sheerness he had good reason to know that the Commander-in-Chief at the Nore was temporarily absent, and the port in charge of an officer of much lower rank than Owen. This officer, never dreaming that a "clumbungy" of a craft like the *Columbia*, could contain a live Admiral, got very angry that he was not waited upon by the Lieutenant or Commander, at most, of the *Columbia*, and made signals to her in accordance with his feelings. Nothing coming of them, the port officer boarded the *Columbia* to know why his temporary authority was set at defiance, and much to his surprise, was received at the gangway by Rear Admiral Owen, whose temper I have heard could be very short in the grain upon occasion. Admiral Owen possessed property on Campobello Island, Passamaquoddy Bay, New Brunswick, from which circumstance he was sometimes known as "Campobello" Owen.

Although coasts and harbours had been surveyed by the celebrated Captain Cook and others, the surveying service only became an organized branch of the British Navy on the 12th August, 1795, when the first Hydrographer, Mr. Alexander Dalrymple, a retired East India Company officer, was appointed. Before this date, however, there were two "Marine Surveyors to the Admiralty" employed in surveys of the English coast. The first, from 1771 to 1778, was Lieutenant Murdoch Mackenzie, R.N.,

and afterwards his cousin, a civilian, Mr. Graeme Spence.

In 1808, Dalrymple was succeeded by Captain Thomas Hurd, R.N., who held the office until 1823, when the celebrated Arctic navigator Captain (afterwards Admiral Sir) W. Edward Parry, R.N., became hydrographer, holding the office until 1829, a couple of years after Bayfield commenced the survey of the River and Gulf of St. Lawrence.

Captain (afterwards Admiral Sir) Francis Beaufort, K.C.B., succeeded Sir W. Edward Parry, and held the post until the year before Bayfield retired.

The important distinguishing feature of hydrographical surveying, as the term implies, is that its operations are carried on principally upon that unstable element water, dependent upon wind and tide, which, we know, "wait for no man." When a geodetic survey is carried across a country, such as the Ordnance Survey of Great Britain, or the Coast and Geodetic Survey of the United States, an elaborate base line, 3 to 5 miles in length, is measured with the greatest possible accuracy, the operation occupying a party the best part of a year, and costing much money. Differently from this, Bayfield would measure small bases a quarter of a mile long or even less, every 20 or 30 miles, the same being measured by a chain or well stretched lead-line. The coast between would be triangulated by the land features, if suitable. If flat and wooded, use of the ship and boats would be made as temporary stations. In either case, the ultimate scale of the chart would be determined from the distance calculated between stations determined by latitude and longitude, and not from the triangulated distance, though the difference would not be great. Bayfield took nearly all the observations for latitude, and mostly by meridian and circum-meridian altitudes of stars, with sextant. As regards longitude, he made the Quebec citadel his secondary meridian, determining its longitude west of Greenwich during the winter months, principally by moon occultations, and eclipses of Jupiter's satellites, keeping his chronometers rated for the local time, and precious cold it must have been for their fingers in the ab-

sence of an observatory. The longitude of the Citadel was also determined by chronometric measurement with Cambridge Observatory, United States, through Halifax, alluded to further on. The marvellous skill of Bayfield as an observer, is shewn from the fact of his position of the present Time Ball on the Citadel being retained to this day on the latest chart of Quebec harbour. His differences of longitude between the Citadel and other points east and west of Quebec were determined by chronometers, of which at one time he had as many as thirteen on board his schooner. Bayfield would not likely be in error more than 500 feet in any of his astronomically determined positions. Every opportunity would be taken by himself and assistants to observe by theodolite the astronomical bearing of stations on prominent headlands, from each other. The above-mentioned possible error, therefore, for practical purposes of navigation, would amount to nothing. Everything being relative, it would simply mean a practically inappreciable difference of scale. The sextant observations for difference of longitude were usually taken by day, those for latitude by night, both dependent upon cloudless skies, a consummation devoutly to be wished for but seldom attained on the Labrador shore of the Gulf, as his journals show.

A large proportion of Bayfield's time would be absorbed in the attainment and calculation of these observations. The rest of his time would be occupied in sounding in the ship with the aid of Massey's sounding machine, the plotting of the stations on various large scale plans of harbours and smaller scale coast sheets, together with the superintendence and waiting upon his detached parties putting in the shore line and coast details.

Considerable ground would have to be gone over in the course of these operations, and the *Gulnare*, being a sailing vessel, had very little rest or any one in her, when a fair wind offered. The winters were occupied in completing the plotting of the remaining details on the rough sheets and plans; the construction of more comprehensive small

scale charts on Mercator's projection, on which the astronomically determined stations would be laid down by Bayfield himself, and between which the coast details and soundings from the roughs would be squared in. Fair copies would be made of the whole, and in the spring be transmitted to the Hydrographer of the Admiralty for publication.

Accompanying Sailing Directions embodying information that cannot be written upon charts without causing confusion would also be written, and thus summer and winter would be fully occupied.

From the time of Bayfield's appointment to the Survey of the River and Gulf of St. Lawrence in the autumn of 1827, until July 1829, I have seen no journal, but the *Quebec Gazette* of the 19th May, 1828, says: "The hired schooner *Gulnare*, 146 tons, built for Captain Bayfield, R.N., as a surveying vessel, was launched yesterday from Mr. Taylor's shipyard. She is a fine vessel, owned by Mr. Stevenson, merchant, and after the season will be employed in the West India trade."

The same paper of 20th October, 1828, states: "The hired schooner *Gulnare*, Captain Bayfield, R.N., returned yesterday, having been employed since June last in surveying the river under the orders of the Admiralty. She has been engaged the greater part of the time in surveying the North Channel below Quebec, but has been as low as Anticosti and Gaspé. The *Gulnare* is to be sold by auction on Saturday next." She was advertised in the same number of the *Gazette*, in English and French for sale, the terms being £1,050 in cash, and the balance in sixty days, "the sale to carry certain advantages which will be transferred with her register." This probably alluded to the hire by the Admiralty. The agents of sale were James Bell Forsyth and Francis Bell, Esqrs. During the winter of 1828-29, Bayfield read before the Literary and Historical Society of Quebec a paper on the Geology of Lake Superior, which will be found among the Printed Transactions. This exhaustive treatise on so abstruse a

subject extraneous to his profession, is a good instance of his studious and observant nature.

In July, 1829, Bayfield was in Ellis Cove, Anticosti, which seems to have been his principal rendezvous while surveying that island, and says: "Found that the wreck on West Point is the *Hibernia*, a merchant brig, whose master had died here of fatigue and is buried on the island. We were informed that another vessel, a barque, got ashore about 20 miles to the south-east, and that about half her crew had perished. This, added to the crew and passengers of the *Granicus*, who all perished miserably from cold and hunger after eating each other, is tolerably well for one year."

In August, 1829, Bayfield was in Fox Bay on the north coast of Anticosti, and near East Point. From the crew of a Magdalen Island schooner, and from Mr. Godin in charge of the Provision Post maintained by the Government; also from his personal inspection of the place, Bayfield tells the following story of the wreck of the ship *Granicus*, which sailed from Quebec on the 29th October, 1828, for Cork, Ireland: "In November, the *Granicus* struck on the reef from the south point of Fox Bay. The crew got her off, but she soon after became unmanageable and ran ashore on East Point. The crew, from the sails, constructed tents, in which they lived until early in March upon what they saved from the wreck. It is said they saved rum, which destroyed discipline and led to their ruin. Being able to get no more provisions from the *Granicus*, they came in a boat to Fox Bay, where they found nothing, the post not being supplied that winter, and consequently no one living at it. They lived, it appears, in the large building, being in all, seventeen men, two women and three children, who all perished. The fishermen who discovered the bodies in April last, found, upon opening the door of the large house, putrid and mutilated bodies, for as fast as any died the others appeared to have lived upon their remains. In this building there appear to have been most horrible scenes enacted. The bed places and bedding

were smeared with blood, and there were stabs of knives in the clothes. The partitions of the rooms and windows were broken as if by violent contention. I saw many articles of male and female clothing still remaining, and one hammock appeared to be smeared with blood. There was a pot in the fireplace with human flesh in it, and some pieces in a large chest. I saw a species of almanac on the wall in chalk, which appeared to be formed by first writing the number of days in the month, as 1, 2, 3, 4, etc., and rubbing out each day until the month was finished. The same was done for the days of the week, which were represented by their capital letters. In the small building, not larger than 12 feet by 8 feet, was found the body of a man of uncommonly powerful and muscular frame, who appeared to have died more recently than the rest, and not many days before the arrival of the fishermen. He was lying in his bed with his clothes on, and was the only body whole and uninjured. In the same room with him were four bodies suspended. Whether the man found dead in his bed murdered these, or merely survived the rest from superior strength, is not known and never will be."

The Quebec Mercury of 23rd June and 30th of June give practically the same account, with the addition of the enumeration of articles, including money and a gold ring, taken by the fishermen to the Magdalen Islands. From the above sources of information and by Bayfield (who was no doubt, singularly able to sift evidence and draw correct conclusions) being on the spot soon after the tragedy, we have the truest account it is possible to get. Still, one would like to know how the facts of the vessel striking twice, together with the time of their repairing to the empty Provision Post, were arrived at, seeing that there were no survivors and that the first fisherman did not arrive on the scene till April. The date of Mr. Godin's arrival, is not stated.

The natives of Anticosti (black flies and mosquitoes) shew a deplorable want of appreciation of hydrography in their treatment of Bayfield on his landing for astronomical

observations near North Point: "I could not see, having received the most miserable biting imaginable from black flies and mosquitoes, and came on board half blind and bloody."

The middle of August, 1829, finds him again in Ellis Cove. He says: "Mr. Gamache's schooner, and a merchant schooner which he had brought down from Quebec to take thence the cargo of the ship *Hibernia* wrecked on West Point of Anticosti, anchored just before us. We now learnt from Gamache's people, that three schooners had been seen off West Point, and that their people had plundered and burnt the wreck and cargo. It is well for these miscreants that I did not catch them at this work."

At the end of this month, Bayfield is working in the vicinity of the Manicouagan River and advises the master of a ship of his proximity to danger, the disregard of which lands the said master in a tight place: "Observed the barque hailed last night to be close to the Manicouagan Shoals, with boats ahead towing for several hours. The obstinate fool might have saved himself all this trouble, had he minded what was said to him."

Rivière du Loup was Bayfield's headquarters, for a few years for letters and provisions, and in calling for the same in the early part of September of the same year, 1829, he hears of the appointment of Captain (afterwards Admiral Sir Francis) Beaufort as Hydrographer to the Admiralty, from whom Bayfield received his orders. Beaufort succeeded Parry of Arctic fame. The second week in September sees Bayfield and the *Gulnare* at Tadousac, the anchorage at which for a sailing vessel, he does not consider any too safe: "I conceive the vessel sufficiently secure for me to leave her and proceed up the Saguenay, in which opinion I am joined by Mr. Douglas, the master. At all events, there is no better harbour, and the Saguenay must be surveyed.

He says of Tadousac, in 1829: "The trading post (the Indian fur trade) is on a larger scale than usual on the

coast. The buildings are good, and there is a chapel in which prayers are read after the Roman Catholic ritual, a very uncommon circumstance among fur traders, and very creditable to Mr. Moreau, in charge of the post."

The *Gulnare* carried two boats for her own use, and, in addition, there were two larger boats 25 feet long, $6\frac{1}{4}$ feet beam and pulling six oars, for the detached parties. These were capable of carrying their camp outfit and provisions for three weeks. Bayfield's staff, now and for some years later, consisted of Lieutenant P. E. Collins, R.N., who, as midshipman, was with him on the lakes; Mr. A. F. J. Bowen, mate R.N., and Dr. William Kelly M.D. R.N. The latter, in addition to his medical duties, assisted Bayfield in his accounts and correspondence.

Mr. A. Gagy appears to have been the owner of the *Gulnare* in 1829, Mr. William Stevenson acting as his agent. The vessel was hired by the Admiralty from 20th May to 1st November, the owners supplying a master and a proportion of the men. The Admiralty paid £300 sterling per month, the owner being at liberty to trade to the West Indies in the winter, but the latter not being satisfactory, the owner in the autumn of 1829 was to keep the vessel all winter in Quebec and be allowed the additional sum of £250 pounds sterling, compensation.

Towards the end of October, 1829, Bayfield allows himself a short holiday: "Finding that the sudden change from being constantly in the open air surveying, to the constant writing or work in the office, has damaged my health, I determined upon allowing myself a few days' respite, and accompanied the Hon. J. Caldwell on his yacht *The Maid of the Mill* to Crane Island to shoot, and I also piloted him among the shoals and thus increased my own knowledge of the river."

On the 2nd March, 1830, we find that Bayfield presented to the Literary and Historical Society geological specimens of the river below Quebec and from Anticosti, all arranged by Dr. Kelly, R.N.

Before proceeding to sea each spring, it was Bayfield's custom to make out four bills on the Accountant-General of the Navy, dated 21st June, July, August and September, and lodge them with the Deputy Quartermaster-General at Quebec, to be delivered to the owner of the *Gulnare* or his agent, as they became due. The balance to the 1st November, Bayfield paid himself on his return to Quebec.

The early part of June, 1830, finds Bayfield working in the vicinity of Hare Island and the Brandy Pots, and an entry in his journal on the 7th, shews that he was not altogether idle: "Plotted soundings obtained yesterday, into the plan, having worked all day until 11 p.m. at night. Very hard work. I never left the deck from 5 a.m. until 7 p.m. except for a few minutes at a time." The following shews his confidence in the handiness of his vessel: "During the day we had occasion to examine several places in the vicinity of the Brandy Pots never before entered by a vessel of any size. Trusting to the known qualities of the *Gulnare*, we fearlessly stood in, to within two cables of the rocks, whether the wind was fresh or light. In wearing or staying, she equally answered our expectations, working like a vessel of 30, instead of 150 tons. There was, however, no small degree of nervous excitement in this sort of thing, for the coast was so bold that we had no bottom with 50 fathoms of line at a quarter of a mile from the shore. Yet there were rocks above water, with 20 to 30 fathoms water alongside of them, and why not under water too? Now, to have got on such a rock, if such existed, would have meant certain destruction in such a tideway."

The officer conducting a marine survey has many things to distract his attention. On this occasion, Lieutenant Collins' boat came to grief. He was detached near the Brandy Pots with one of the large boats: "Mr. Collins' coxswain on the 23rd June carelessly left the plug out of his boat, which was aground at low water after having been cleaned out. At night when the flood made, the boat filled and all his books and sextant were damaged, and

about ten days' provisions destroyed. The coxswain must make this good, in part, out of his wages."

On Bic Island, Bayfield measures a base line, and on account of the slight inequalities of the ground, prefers to use a well stretched lead-line of 25 fathoms, to the 66 feet chain, checking it by the latter before the line had time to contract or expand. Bayfield, at this time (July, 1830) had six chronometers.

August, 1830, finds him again at Ellis Cove, Anticosti, with the wind in, and a heavy sea. He says: "In this bay, with the wind in, a heavy sea and thick weather, there is nothing left for it but to hold on. We have tried the ground well before this, but this night we will try it more; there is nothing like being able to speak from experience in these matters."

Bayfield tries to be philosophical under the wretched weather he is experiencing in Anticosti, in August, 1830, and writes: "In such abominable weather, as we have been plagued with during the month, it is clear that little can be done in the way of surveying. In short, we are all out of patience and perfectly disgusted with the winds and weather, which cross us at every turn; query, Is it a sign of wisdom to rail at the winds and weather?" On the 18th August, he writes: "While at sea, spoke the ship London, the master of which vessel hauled towards us with his ensign half-mast and informed us of the death of our lamented sovereign, George the Fourth." A fortnight later, Bayfield "spoke the Colonial Government brig Kingfisher, Captain Rayside, who came on board."

Bayfield, soon after this, was anchored in St. Nicholas Harbour, a few miles west of Point des Monts and says: "I had just finished observing and was returning on board the Gulnare, when I met Mr. McLeod's boat, belonging to the fur traders of the King's Posts, and was both alarmed and astonished to perceive in her, Lieutenant Collins and two of his men. Lieutenant C. informed me that he had lost his boat, and had been travelling all day over the mountains until he met Mr. McLeod, who had

kindly lent him his boat to come to me. Lieutenant C., tho' tired, had evidently suffered more in mind than body. The circumstances of this somewhat laughable affair were these: Lieutenant Collins was camped in St. Pancras Bay, and at daylight found his boat was not to be seen; and he and his men having shouted for some time, without having an answer, Lieutenant C. concluded that his boat, from the carelessness of his coxswain, had been carried out of the cove by the wind or tide during the night. All the provisions, chronometer, records and instruments were in the boat. Lieutenant C. posted four of his men on high land within sight of the cove, and came on to me with the other two, the remaining two being adrift in the boat. The laughable part of the business was, that the boat was never out of the cove and not a quarter of a mile from the tents; and had Lieutenant C. sent a man along the rocks on each side of the camp, he would have seen the boat immediately.

"The boat had been moored at low tide with too short a scope of cable, and as the tide rose, she lifted her anchor and quietly drifted out of the cove, while the boat-keepers slept. The boat's anchor, after drifting for a while, got foul of the rocks, which, when cleared, the boat returned to the camp and the keepers were as much astonished to find it deserted as Lieutenant C. had been to find the boat absent."

The 12th September, 1830, finds Bayfield off Quebec in the *Gulnare*, on her way to finish the season between Lake St. Peter and Montreal, and he says: "For fear of delay which might arise from communication with Quebec, I suffered no one to leave the vessel excepting the steward, whose wife was sick."

The following entry shows that Bayfield did not work on Sundays, except from necessity: "The angles taken to-day, I could only obtain under favourable circumstances of wind and weather like those of to-day. I therefore, seized the opportunity; otherwise I did not work to-day, Sunday." Under date of September 29th, he alludes to the

Berthier Channel above Quebec, having been surveyed in winter, which must have been that of 1827-1828, or 1828-1829.

Bayfield, for the more convenient prosecution of the Survey of the St. Lawrence River, leaves the ship and lives in tents at the west end of Lake St. Peter, remarking: "My sailors are not so well accustomed to encamping in the woods as the Canadians of the surveying boats, and could, therefore, neither make themselves nor me as comfortable as circumstances admitted; we therefore passed a wet and comfortless night. Up, as usual with the sun."

In regard to the Richelieu River, Bayfield says, in middle of October of this year, 1830: "If I survey the River Richelieu, it will be done on the ice, as it is too narrow to triangulate, and cannot be done otherwise, in summer, with sufficient accuracy." The end of October finds the party in winter quarters, and Bayfield with his officers attending the Levée of Lord Aylmer, the Governor, at Quebec.

On the 16th November, 1830, he says: "About sixty sail of merchantmen which had been wind-bound for a long time, took their departure. 'Twas a beautiful sight to see them all going round Point Levis in a crowd." Undaunted by the cold, we find him, on the 19th February, 1831, trying to obtain the longitude of the Citadel. Bayfield states: "At night, Dr. Kelly and I sat up until midnight endeavoring to obtain an occultation of Aldebaran with the moon. After sitting for an hour in the snow, with the thermometer near zero, we were disappointed by the star's just passing along the moon's edge without touching."

The latter part of that winter seems to have been severe, for Bayfield says: "Lieutenant Collins and Mr. Bowen measuring and making observations, etc., on the ice. Two regiments were reviewed on it, and the artillery practised at a target with round shot and shrapnell shells.' During this winter, Bayfield read before the Literary and Historical Society, a paper on the coral animals

in the Gulf of St. Lawrence, and which is among the Society's Printed Transactions.

An entry of the 30th May, 1831, states: "I made my cash accounts up to this day, and thereby dismissed from my mind that part of my duty till next autumn, which will enable me to turn my undivided attention to the Survey, observations, etc., etc."

While working his way down the river in the spring of 1831, the *Gulnare* gets badly ashore near the Stone Pillar north-east of Goose Island, and the following extract of 7th May shews the reason of her going ashore, precautions taken to prevent injury, measures for refloating her, and his coolness during the time she was high and dry. He says: "Being anxious for the assistance of Mr. Hall the master (Mr. Walter Douglas had left to command the steamship *John Molson*) immediately after dinner, I requested him to go down to dinner with me, leaving Mr. Parry quartermaster in charge of the deck, cautioning him to mind South Rock, which I felt convinced he knew as well as I did.

"We had just finished dinner when the vessel struck on South Rock. All precautions were taken to meet the case of her falling over towards the deep water as the tide fell. The chronometers, journals, public money, papers, etc., were landed on the Stone Pillar, and an approaching small schooner was detained. At 5 h. p.m. having made preparations for all circumstances, and finding there was nothing more to be done, except wait with patience for the tide to flow, I went ashore upon the Stone Pillar about a third of a mile distant, and made a series of observations for the heights of mountains, variation of the compass, etc., etc. At 7 p.m., I returned to *Gulnare*, and found her completely dry fore and aft, which gave us an opportunity of examining her bottom. She was resting upon three points of rock; that upon which she appeared to be resting most heavily being abreast the fore part of the main hatchway, causing a slight dent in the bottom.

"To release this pressure as much as possible, we got large blocks of wood under her bottom between the point of rock and the bilge, but further aft, and wedged them in with great force by means of a heavy spar slung over the side and worked like a battering ram. We did the same under the keel aft, as, from the after part of the main chains to the stern post she rested on nothing until we had done this. At 3 a.m. we were afloat and anchored opposite the Wood Pillar, the vessel not making a drop of water. I was extremely annoyed at this accident, because I considered that those who did not know the circumstances of the case would justly consider it discreditable that we should get ashore upon a part of the river that we had surveyed several years ago. Many vessels passed us, beating down with the ebb, but not one offered us the least assistance. The Gulnare, however, put a good face upon it in her misfortune, and I ordered the ropes to be hauled taut, yards squared, and the ensign and pennant to be kept flying, in order that they might see that we were not frightened out of our senses—the rascals."

Messrs. Collins and Bowen both have trouble with their boats' crews in June of this year, as the following extracts show: "At 7, Mr. Bowen rejoined me, having been much detained by the desertion of four of his men, two of whom he had caught and brought back, but the other two escaped and warrants were out against them in Quebec." The next day, the 10th June, he says: "Lieutenant Collins rejoined me, having had trouble with his men, and lost one of them. The best boatmen have engaged this spring in the service of the Hudson's Bay and King's Posts Companies. These fur traders being in a state of fierce opposition, give very high wages; hence, we had a very indifferent set to choose our boats' crews out of."

The next day Bayfield says: "Lieutenant Collins returned from Rivière du Loup with three men who had never pulled an oar in their lives; we shall have to teach them." Bayfield is off Matane on 7th July, and says of the weather: "Continued sounding in a variety of lines, by

the patent-log and compass all night. Extremely disagreeable on board this small vessel in this weather. Everything wet, or at least damp on board, rolling and tossing about incessantly; besides, it is so cold that we can scarcely keep ourselves warm with thick flushing dresses on."

Towards the end of July, 1831, Bayfield is sounding off Cawee Island on north shore of the Gulf, and says: "Sounding off Cawee Island in 191 fathoms, the patent sounding machine was used in this great depth contrary to my orders and the wings burst from pressure in consequence."

On the 12th September, Bayfield rescued the master Mr. Marnock, and crew of the ship *Jane* of Belfast which was wrecked on Bicquette Island landing them at Rivière du Loup at much inconvenience. In the middle of the same month he passes Quebec on his way to resume the survey of the river below Montreal, and says: "We did not stop at Quebec, wishing to get on with our work without delay. The latter must have occurred had I permitted any of the crew to go on shore at the city, as they would have got drunk as a matter of course." To qualify him for promotion to acting lieutenant, Mr. Bowen has permission to proceed to Halifax to undergo his examination in seamanship: "The *Gulnare* was towed up the St. Lawrence by the steamboat *John Molson*, commanded by Mr. Walter Douglas, our master of last year."

In returning to Quebec on the 19th October, Bayfield states that he had 14 feet water in crossing Lake St. Peter. The temptations of Quebec prove too much for a portion of the crew, as shown by the following: "Lieutenant Collins, leaving the men to find their own way on board after hauling up their boats in Sir J. Caldwell's store, River St. Charles, they became intoxicated as a matter of course, hence a scene of disorder and drunkenness at night. The truth is that our men are not under martial law, and we can never get much good out of them in port, in consequence."

Bayfield finds it difficult to punish hired men for misconduct: "Mr. William Stevenson, the agent for Mr. Guky, paid off the crew to-day. There was one man, La Vallé, in Lieutenant Collins' boat, who had been drunk, insolent and disobedient; but, upon reflection, I could not punish him by stopping his wages, the only mode in my power, without being subject to a lawsuit, the result of which would be doubtful, and even, if decided in our favour we should have to pay the costs, as he would sue me in forma pauperis. This took place last year, when one of Mr. Bowen's men was declared to have partly forfeited his wages, but Mr. Guky had to pay nearly double the wages forfeited, in the way of costs. Such is the Court of Admiralty. I had another motive for letting this man off, which was, that it appears discreditable to be, every year, in litigation with these blackguards, and the matter being misrepresented in the parishes, might give the service a bad name and render it difficult for us to get men, another year."

The boatmen's wages in 1831 appear to have been eleven, and the coxswain's wages fifteen dollars a month, and found, of course. Bayfield's assistants seem to have had usually a week for settling down in their winter quarters before commencing office work.

The remark on the 26th November, 1831, "calculating observatoins till midnight," looks as if Bayfield had not much spare time. On the 16th December of that year, he says: "Commodore Barrie, R.N., stationed at Kingston, Ontario, departed for that place, leaving his son Mr. William Barrie, under my charge. He is midshipman of the Cockburn, on Lake Ontario, and is to be considered as lent to me for the present. He is a fine talented boy of fourteen."

On the 16th January, 1832, there is an entry: "Wrote officially to Lieutenant Collins, the senior assistant surveyor, censuring him for not paying more attention to scientific subjects connected with his profession." This re-monstrance was, of course, entirely for the good and fu-

ture advancement of his assistant. On the 1st February, 1832,, he notes: "The first anniversary dinner of the Literary and Historical Society of Quebec was given to-day, at which Lord Aylmer presided." On the 4th: "Dr. Kelly, R.N., read his paper on Mirage and Terrestrial Refraction to-night before the Society."

Mr. Bowen had returned from Halifax, and we will hope, had passed a satisfactory examinatoin in seamanship; for on the 15th of March Bayfield commends his zeal, as follows: "Mr. Bowen still on the sick list, as well as Lieutenant Collins; the former with a zeal which does him credit, although unable to attend the office, sent for his work and continued it in his own lodgings. This, Mr. Bowen did of his own accord." The office was in the Union Building, on the northwest side of Rue du Fort, leased to the Government for the Civil Service.

On the 1st May, 1832, Bayfield records: "Received letters by the March Halifax mail, conveying to me the painful intelligence of the death of my much loved and revered mother." On the 4th of the same month: "Solemn fast ordered today on account of the cholera. A great fire near Diamond Harbour, sixteen buildnigs burnt down." On the 23rd May: "Commodore and Mrs. Barrie arrived from Kingston to see their son off in the Gulnare, he being lent to me from H.M.S. Cockburn, bearing Commodore Barrie's broad pennant on the lakes."

While at anchor in St. Patrick's Hole, Orleans Island, 9th June, Bayfield says: "The cholera is undoubtedly established at Quebec, fifteen cases having occurred in all since the commencement yesterday morning, and, I regret to add, five have ben fatal. Thus, the quarantine established to board, examine and stop all suspected vessels, has proved ineffectual. No case of cholera has yet occurred at the Quarantine Station. We ought to consider ourselves fortunate in leaving Quebec at the commencement of this fearful disease, but any satisfaction of this kind is swallowed up in concern for our friends whom we have left behind us."

July 27th: "Lieutenant Collins pulled his boat the Cockburn, against Mr. Hall the master, in the ship's launch, with ten double-banked oars, the Cockburn beating by fifteen seconds. This race created a great deal of excitement and rivalry among the boats' crews, and served to enlighten the tedious monotony, to them, of the service."

The climate of Anticosti is not very warm even in August, for on the 8th of that month Bayfield writes: "I managed to calculate some observations to-day, but everything is so damp below and so wet on deck, and the vessel tumbles about so, that it is almost impossible to sit still for any length of time without being chilled through, or rendered very uncomfortable."

In the last week of August, Bayfield is anchored in Kegashka Bay, Labrador, and says: "The roar of the surf was deafening and broke over the point nearly to the vessel's bow. The roar of the breakers all round and their nearness to us, gave a particularly wild appearance to our anchorage, which might not have been agreeable to weak or unpractised nerves. Never saw the moschettoes and black flies thicker; their bites covered us with blood while observing, and we could not open our mouths without swallowing them. The torment of them was beyond description: the men, painting and working at the rigging, smeared themselves with paint-oil and tar, in vain."

Bayfield had intended spending the balance of the season in the more sheltered waters of the river about Lake St. Peter, as usual, but he says: "It is the opinion of the surgeon that our duties which cause us to be exposed to wet and cold constantly, would render us (and particularly the men) very likely to take the disease, cholera, and it is this consideration which has induced me to proceed to Gaspé, it being quite immaterial which place is surveyed first, or, if there be any difference, Gaspé is of more importance."

In the middle of September, being at Gaspé, he says: "Measured a base of about $1\frac{1}{4}$ miles, and observed at night the immersions of Jupiter's first and third satellites,

for longitude. Blundell the quartermaster, who had it in charge to issue the provisions, had been for some time since suspected of watering the men's grog, to make up for what he plundered for his own drinking. He was this day convicted of this dishonest practice, for which I disrated him and reprimanded him severely before the crew, who were called aft on the quarterdeck for the purpose."

The 29th September, being Sunday: "Gave leave to men to walk on shore, the first they have had, or, I have had an opportunity of giving them, this year, excepting one Sunday, at Mingan." Shewing the Gulnare's fast sailing qualities, Bayfield, on the 10th October, says: "At 6.30 p.m., tacked off Great Boule Island (Seven Islands). At 8 a.m., there was a large barque about 4 miles on our beam. She carried a heavy press of canvas all day on the same tack as ourselves; nevertheless, at 4 h. p.m., she was half courses down on our lee quarter. When we tacked she was out of sight to leeward." On 19th October the Gulnare picks up her mails on her way to Quebec for the winter. He says: "At 5 h. a.m., anchored off Rivière du Loup and sent boat for letters, after which I retired till 9 h. a.m., having been up all night piloting the vessel."

In furnishing his office, Bayfield seems to have been actuated by necessity, rather than luxury, for he says: "Paid A. S. Frazer the sum of £8. 3s. 6d. currency for a carpet for the office, the cold being so severe we could not do without it." On January 6th, he says: "There is a custom in Canada that, at New Year everybody calls upon everybody, requiring two days at least, during which nothing can be done, for people are coming in or knocking at your door all day." February, 1833: "Mr. Barrie calculating the triangles of the survey of Gaspé, principally to teach him how a regular survey is made and conducted." April 22nd: "Received a letter from Captain Back, R.N., requesting me to lend him a mountain barometer. (He had lost his barometer in the fire at his hotel at Montreal.) We had none I am sorry to say, nor could I find one in good order in Quebec. Captain Back is going on an expedition

to look for Captain Ross, R.N." Commander Back, accompanied by Dr. Richard King, led a search expedition by land to the mouth of the Great Fish River, for tidings of Captain John and Commander James Clark Ross. Back commanded H.M.S. Terror in 1836, returning in 1839 to Ireland with his ship in a sinking condition, and was knighted.

Relating to a chart prepared during the winter of 1832-1833, Bayfield says: "This chart, Point des Monts to Bay Chaleur, has been a work of very great labour, but it will also, I trust, be one of great utility, for it is very complete in soundings and detail of every kind; and, I have reason to believe, there is no point in it that will be found in error more than five seconds of latitude or ten seconds of longitude." (500 to 600 feet.) May 28th, 1833, Bayfield was preparing for sea, and says: "Our greatest trouble is with the men; the fellows ship readily for so favorite a service, but they are always in debt and their creditors will not let them go until they pay. Hence, it becomes necessary to give a month's advance. A drunken bout follows, as a matter of course, and, until that is over, there is no chance of keeping them on board a vessel alongside a wharf with grog shops close to it."

On the 29th, the Gulnare proceeds down the St. Lawrence: "The Royal William steamer towed us and our new tender the Beaufort, 30 miles in 4 h. 20 m., against the flood stream, but in coming near to take us in tow, she unluckily smashed our gig at the davits, to pieces. But Mr. Stevenson, the agent for both vessels, kindly offered the loan of another gig in her place, and would make no charge for towing us." The Royal William crossed the Atlantic this summer to England. In the middle of June, 1833, the Gulnare had a stormy passage from Gaspé to the Magdalen Islands, and Bayfield says: "Few of us could sleep much under such circumstances, for we have not room to hang in cots or hammocks, and are therefore tossed about in standing bed-places at a great rate." On arrival at the

Magdalens, Lieutenant Collins is left there with the tenders Beaufort and Cockburn, with eight men.

Bayfield, in the *Gulnare*, then proceeds to Little Natashquan Harbour, on the Labrador Coast, where, on the 22nd June he meets with Mr. Audubon, the celebrated American naturalist. He relates: "Mr. Audubon the naturalist we found here in the American schooner *Ripley*, with several young men, two of them being medical students. Mr. Audubon has come principally to study the habits of the water fowl, with which the coast of Labrador abounds, and to make drawings of them for his splendid work on the birds of America. We found him a very superior person indeed. On returning Mr. Audubon's visit, was delighted with his drawings, the birds being represented of life size and beautifully painted. Mr. Audubon dined on board the *Gulnare*. It is said there are 300 vessels employed in the fisheries on this coast, averaging 75 tons each, and manned by 50 men to each six vessels, equal to 2,500 men. Of these, one half are French, one fourth British and the rest Americans. Each vessel takes away on an average, 1,500 quintals of codfish, at 112 pounds per quintal. The fish average about 4 pounds each in weight, being small on this coast.

"We heard from the Americans about the Eggers, a set of people, we, to-day, first heard of spoken of as a body. We had previously no idea of the extent of the egging business, as our informants termed it. It appears that, in some seasons, 20 small schooners or shallops, of 20 to 30 tons, load with eggs from this coast. Halifax is the principal market for them, where they at times fetch a much higher price than hens' eggs. They are stowed in the hold in bulk and kept for several weeks without any preparation. These men, the Eggers, combine together and form a strong company. They suffer no one to interfere with their business, driving away the fishermen or anyone else who attempts to collect eggs near where they happen to be. Might makes right with them, it is clear. They have arms, and are said by the fishermen, not to be very scrup-

ulous about using them. As soon as one vessel is loaded, she is sent to market, others following in succession, so that the market is always supplied, but never glutted. One vessel of 25 tons is said to have cleared £200 by this egging business in a favorable season."

In proceeding out of Little Natashquan Harbour, the *Gulnare* touches upon a rock, and Bayfield says: "The western channel appeared to be the widest, and Mr. Bowen thought he had found all the rocks, but we soon added to his knowledge, for on the second board to the westward, in the narrowest part of the channel, we struck just after the helm was put down to tack. We were not aground more than a minute or two, and it was dead low water. No injury was done, even to the rates of the chronometers, for Dr. Kelly instantly ran down and took them in his hands until we were afloat."

Bayfield is away from the ship with tents and boat between Cape Whittle and the Meccatina Islands, and experiences very miserable weather. He says: "Thus, day after day pass miserably away without advancing the service in the least, so constantly are we persecuted with these easterly and southerly winds, with rain and fog. This is the fifth day of our detention on this barren island, without a bush, wild fowl, or anything but moschettoes, during the whole of which time I have not been able to obtain a single observation. Yet, to the Meccatinas we will survey before we return, if it be possible. We began to-day to catch puffins and young gulls, and to collect mussels and clams, to make our provisions last out as long as possible. These are but indifferent food, and my men would not use them until they learnt my determination of not returning to the vessel till the work was finished, and the consequent possibility of their being on short allowance if they did not now economise their regular allowance."

Having attained his object, Bayfield takes the *Gulnare* into Meccatina harbour at the end of July, and writes: "Depending upon the accuracy of Lane's survey, I shot her into Meccatina Harbour, and was astonished to find it not

more than one-half the size represented in his particular plan of it." Mr. Michael Lane was Captain Cook's assistant in his survey of Newfoundland, and carried on the work in Newfoundland and Labrador when Cook left to undertake his Pacific ocean voyages. Lane, however, had not the genius of Cook or Bayfield.

In the first week in August, Bayfield proceeds to Green Island, Newfoundland, and of the Gulnare's sailing qualities, says: "In running across the Strait of Belle Isle to Green Island, Newfoundland, the Gulnare averaged ten knots; at times, eleven knots, wind abeam."

Bayfield, on the 9th August, remarks: "Cook's plan of Red Bay, as well as of Chateau Bay (Labrador) is excellent."

On the 12th of the same month, being in Forteau Bay, Labrador, he says: "This morning, I turned James Davis on shore for mutinous, disrespectful and abusive language and manner to Mr. Hall the master, given publicly when Mr. Hall was on the quarterdeck and in the execution of his duty. This man had amused himself yesterday in spritsail yarding' dogfish, a cruelty which I disapproved of, and ordered not to be allowed. When desired by Midshipman Barrie to cast loose a fish which Mr. Barrie had caught and which the man was about to torture, he complied, but said he could catch more, in a disrespectful manner. Soon after, Mr. Hall saw him committing the forbidden cruelty, and ordered him to desist, informing him that my orders were it should not be done, upon which he answered in an insolent way, and Mr. Hall ordered his grog to be stopped in consequence. This morning, when ordered to cease making more noise than necessary when washing decks, he burst out into the mutinous language which caused me to send him ashore." Sailors, though usually humane, have a deep-seated enmity to sharks. "Spritsail yarding" is passing a spar through the shark's gills to prevent its sinking after being thrown back into the sea.

On the 17th August, Bayfield is off the entrance to Port Saunders, west coast of Newfoundland, in which a French

war-schooner was anchored for the protection of the French fishermen, who, until the year 1904, had, as they interpreted the Treaty of Utrecht of 1713, the exclusive right of fishing and landing on the Newfoundland shore from Cape Ray northward and eastward to Cape St. John. Bayfield says: "The French man-of-war schooner's boat came off with a very polite note from her commander, conveyed by the master of the fishing brig Phoenix, who offered to pilot us in. We availed ourselves of this kind offer, for, as it was getting dark and the channel is very narrow, it was not easy to beat in, even with the assistance of Cook's excellent chart.

"Lieutenant Mazé, the French officer commanding the schooner *Hirondelle*, paid us a visit on board and made a very favorable first impression. Mr. Duville, master of the Phoenix, informed me that there are 300 sail of vessels from France employed in the fishery on the Newfoundland coast this season." (I presume this included the bankers which fished, and do still fish from St. Pierre.) "High encouragement," he goes on to say, "is given to this fishery by the French Government, with the obvious view of forming seamen for their navy. Fifteen francs per quintal of fish, are given as bounty, and another bounty nearly equally high, if reshipped to their colonies. Moreover, a hundred francs are given to every man shipped each year from France, if under 25 years of age. This is certainly forcing a trade, but the intention is obviously that of forming seamen.

"The French all leave this coast before the commencement of winter, leaving their fishery establishments, buildings, fishflakes, etc., in charge of a guardian, usually an inhabitant of Newfoundland (British) who is half hunter or fur trader and half fisherman. In the latter capacity the guardians are employed to fish the rivers and brooks for salmon, retaining one-half the salmon caught as payment for their labour, and delivering the other to their employers. Cook's chart of Port Saunders is excellent, and so is his chart of the coast as far as we have yet seen."

In the early part of September he takes up the survey of Gaspé, and on the 8th is the following remark: "Last night several of the men took the second gig on shore to purchase rum, and were discovered, upon inquiry, this morning. William Shannon and Byrnes, being the offenders, and having robbed the grog keg in the boats on a former occasion; and being insolent worthless fellows. who had shipped as able seamen without being able to take either helm or lead, I turned ashore as an example to the rest. I also stopped the grog of all those who were drunk with the liquor smuggled off."

On the 19th of September, 1833, the *Gulnare* is anchored off Quebec on her way to finish the season in the more sheltered waters of the St. Lawrence below Montreal. Bayfield says: "I remained on board all day and suffered no one to leave the vessel, nor any boat to come on board without leave, in pursuance of a rule which I have adopted and observed on all former occasions, to prevent all those irregularities arising from the men drinking with their friends after a long voyage. If I do not indulge myself on shore, the officers who know my reasons, cannot with propriety expect it, and if they are not allowed to go ashore, the men will not consider it hard that they are left on board."

The vessel is again laid up in Quebec, and Bayfield and his staff are plotting their field work, and drawing fair charts for the engraver. On the 3rd January, 1834, he remarks: "On the 1st and 2nd no work was done in the office, everybody calling upon everybody that they knew ever so slightly, such being the custom of the country." On the 23rd January, he relates: "On this day at noon, the Castle of St. Lewis, the residence of the Governor-in-Chief, Lord Aylmer, was discovered to be on fire, and although every exertion was made to stop it, yet, such were the difficulties opposed by the severe cold which froze the water in the engines, and the great height of the building which caught fire first in the upper story, that it was completely consumed after burning all day and all the following night."

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As the fire burnt downwards, time was given to remove most of the property which it contained. Nevertheless, much was destroyed in the confusion."

By an entry on the 12th May, 1834, it is evident the party is not idle: "We also attended to the fitting of the boats, repairing gear, drawing and purchasing stores, and principally before and after office hours."

On the 2nd June, before sailing, Bayfield says: "I parted from my young friend Barrie with much regret, and I believe it was mutual, but his father, the Commodore, justly considers that he ought to serve the remainder of his time" (as midshipman) "on board a regular man-of-war, where he will learn the routine and etiquette of the service, which cannot be very strictly attended to on board a small surveying vessel, with a hired crew changing every season."

In middle of July, 1834, he continues the survey on the north shore of the Gulf of St. Lawrence, and leaving the Gulnare anchored in Mistanoque Harbour, he proceeds in company with Mr. Bowen, along the north coast of the Strait of Belle Isle with boats and tents, and has a miserable time. Speaking of their drinking water, Bayfield says: "The water was brown and full of small water insects, which would doubtless have afforded good study to an enterprising entomologist, but which we did not consider very agreeable—at least, alive—so we boiled our water and allowed it to cool before we drank it."

Bayfield was, on this boat expedition, stormbound on Wood Island between Bradore and Forteau Bays, and says on the 22nd July: "Everything being wet in tents and boats, we accepted Mr. Bray's offer to sleep in his house, the men taking shelter in a store. It required hard weather to drive us to this, for these fishing people never clean their houses, which are shockingly dirty and smell abominably of putrid fish, seal oil, etc. They never remove the offal of the fish or the carcasses of skinned seal, which remain in scores around their establishments, frying

in the sun, and alive with maggots, tainting all the air around."

On Bayfield's return to the *Gulnare* in Mistanoque Harbour, he found two of the men had deserted: "On returning to the *Gulnare* I found that during my absence the boatswain and a man Thomas Paul, had deserted, stealing the second gig at night, in a thick fog. They had been concerned in stealing grog from the hold, and Mr. Hall the master told them he should report the affair to me on my return. They carried off what provisions they could steal from the messes, the *Gulnare's* binnacle compass, etc., etc., and the best of the clothes belonging to their absent messmates. The chances of catching them now are very remote, and the loss of time certain; I do not, therefore, feel myself at liberty to sacrifice the progress of the service for the mere chances of catching these rascals."

A month later, Bayfield has to examine into the conduct of one of the crew of the tender *Beaufort*. He says: "Found that Thomas Dwyer had done his best to generate a spirit of mutiny among the crew. I took him on board the *Gulnare*, to remain as prisoner until I arrived at some inhabited part of the country" (he is now anchored in Harbour au Liévres, Labrador) "when he will instantly be sent on shore."

In the middle of September of 1834, Bayfield calls at Rivière du Loup, and on his way thither is pleased with the speed of his ship. "The vessels which had left Pte. des Monts with us were all out of sight, so that the *Gulnare* has beaten everything that she has sailed with during the summer, both free and on a wind."

A couple of days later he stops at Grosse Isle, and writes: "Mr. Nicholas, the boarding officer, visited us and passed us, of course, as we had no sick. From this gentleman we found that at least one-twentieth of the population of Quebec had been swept away by this second visitation of cholera. I regret to add that many of our friends are among the sufferers; thankful, indeed, ought we all to feel

that our duties have kept us out of the way of this scourge."

In calling at Quebec next day on his way up the St. Lawrence River, he remarks: "I allowed no one to leave the vessel, according to custom."

On the 21st September, Bayfield says, in passing to Montreal across Lake St. Peter: "The waters of the St. Lawrence are lower than we ever before noticed them; there is only 10 feet in the lake over the flats."

Being at Montreal, on the 10th October, 1834, he writes: "We all went ashore for a walk to see our friends, the first holiday we have allowed ourselves since we sailed in the spring."

Bayfield returns in the fall to his winter quarters at Quebec as usual, and on the 15th January, 1835, remarks: "At the Castle last night, a large party, an agreeable relaxation when it does not come too often." Two days later he adds: "Attended the Literary and Historical Society at night, and afterwards extracted remarks on winds, tides, currents, etc., to be inserted in my fair Sailing Directions."

The heating arrangements in Quebec at this time were not as perfect as we have them now, for in February, 1835, he says: "Could not keep a fire in the office, and therefore could not work there to-day" [It was blowing a gale].

On the 8th March, is the following entry in his journal: "I gave Mr. Bowen leave for the day on Saturday, which he well deserves, having worked with much zeal and assiduity. By the measurements of Lieutenant Collins on the ice, the northeast corner of the King's bastion of the Citadel was found to be 308 feet 10 inches above high water of ordinary spring tides. The top of Wolf and Montcalm's monument, 260 feet 9 inches, the summit of Ste. Anne's mountain, 20 miles below Quebec, 2,684 feet."

On the 5th June, 1835, Bayfield is in Gaspé Harbour, and in reference to sextant observations for difference of longitude, says: "If the observations to be compared together be always on the same side of noon, and at alti-

tudes nearly similar, any errors in the instruments will be similar, and, consequently, not affect the difference of times between the observations, the thing to be obtained."

On the 20th June, the same year, he experiences bad weather off Cape Gaspé, and writes: "The doctor and Mr. Bowen both seasick in bed, together with the steward, cook, boy etc.; in short, the whole of our domestic establishment. I should have felt the cold and disagreeables more, if I had not other things to think of. The fog and uncertainty of the position of the vessel did not suffer me to mind much else."

On the 23rd June, Bayfield is at the Magdalens, and enters the following: "At 8 a.m. we were just about to tack, when, by a mistake in the orders by the people forward, she took the ground, but soon got off again, having received nothing more than a salutary lesson to be more careful in future." Five days later, having left Lieutenant Collins with tender Beaufort to complete the survey of the Magdalen Islands, the Gulnare is at Red Island, Newfoundland, west coast, for verification of its astronomical position. Bayfield eulogizes Cook's work here, as follows: "The chart of Red Island and adjacent coast, soundings, etc., by the celebrated Captain Cook is extremely correct. If, in the style of drawing his charts, the nature of the coast, cliffs, etc., had been shewn, the survey would have been perfect. He has, however, made up for this, by numerous views of the land, and by the remarks and directions for navigating the coasts which he surveyed." I might incidentally mention here, that while assisting in the survey of the coast of Newfoundland, from 1871 to 1881, we had the same opinion of Cook's work. Here, too, it may be mentioned that Captain Cook was employed on the survey of the coasts of that colony and the Strait of Belle Isle from 1763 to 1767, under the orders of the two successive Naval Governors at that time, Captain (afterwards Lord) Graves, and Captain Sir Hugh Palliser, Baronet. Cook's last assistant in the survey of Newfoundland was Michael Lane, Esq., who had been a naval schoolmaster,

and who was given charge of the work on the selection of Cook for the voyage to the Pacific. The name of Cook's vessel in Newfoundland was the Grenville, at first schooner, afterwards brig rigged.

A brisk shore fishery was, in 1835, carried on by the French nation at Red Island, on the western coast. Bayfield relating that "there were twenty-seven sail of French schooners of 25 to 50 tons at anchor under Red Island. They all shewed their colours to us, and otherwise displayed the politeness of their nation."

On July 8th, the *Gulnare* is again at Mistanoque, on the Labrador, and Bayfield finds very similar weather to that he experienced exactly a year ago. He says: "Nine days have passed since our arrival, in which time we have done but one day's work; such is the climate of Labrador for surveying."

In the middle of July Bayfield is anchored in Bonne Espérance Harbour, north shore of the Strait of Belle Isle, and writes: "Many of the French schooners put to sea yesterday, and I am told they were induced to do so for fear of a visit from our boats, which they saw with ensign and pennant up, sounding in the offing." The French treaty fishing rights did not extend to the Labrador.

Towards the end of July, the *Gulnare* is anchored in Chateau Bay, where there is little improvement in the climatic conditions: "We found it extremely cold here, the temperature of the water outside the bay being at freezing point, 32 degrees Fahrenheit, and the air, 43 degrees Fahrenheit. The first plants are just springing up, and the grass is only just beginning to show a shade of green. Yet, this is the 25th July!"

Bayfield leaves the vessel in Chateau Bay and surveys the coast to St. Lewis Sound in boats, and on the 17th August returns to the *Gulnare*, saying: "We were all glad enough to be on board again, for rougher work than the survey from this to Cape St. Lewis we have seldom experienced. 'Tis, however, done, and well done, and there is a gratification in this which makes up for anything else."

At the end of August the rum trouble breaks out again, Bayfield saying: "Two men, Robinson and Fleming, the former my coxswain, drunk. Upon enquiry, found that some of the men and boys give or sell their grog to others, contrary to my orders early in the season."

On the 11th September, 1835, he is at Trinity Bay, on the north shore of the gulf, and remarks: "Here we met with some pilots not long from Quebec, and heard that our tender, the Beaufort, had passed up two or three weeks ago, and that it was reported in Quebec that Lieutenant Collins had died in the Magdalen Islands of apoplexy. We cannot, of course, learn any more of the circumstances of this melancholy event till we arrive in Quebec or Rivière du Loup. There seems, no doubt, however, that my old friend and assistant, who, with the exception of two years while he was at sea in the Herald, has been with me for eighteen years, is no more. He was but a boy of sixteen when he first joined me" (on the lakes). "I have seen him grow up to manhood, and thought to have seen, with pleasure, his further advance in the service, but it has pleased God to otherwise dispose of him, and who shall murmur at His will."

Four days later, Bayfield is anchored at the Pilgrims, and says: "I received to-day an account from Mr. Doucette, magistrate at the Magdalens, of the death of my lamented friend and assistant, Lieutenant Collins. He was taken ill very suddenly while sounding in the Beaufort off the islands, and ordered his coxswain to run the vessel as soon as possible into Amherst Harbour. He, then, says the inquest, threw himself into the arms of his coxswain and died instantly. He had complained of a great headache several days before."

On the 19th September, the Gulnare calls at Quebec on her way to continue the survey near Montreal, and Bayfield remarks: "Found lying here (Quebec) H.M. Ships President and Forte, the first being the flagship of the Right Honorable Vice Admiral of the Red, Sir George Cockburn; the second bearing the broad pennant of Com-

modore Pell. The Admiral appointed Lieutenant John Orlebar, R.N., of H.M.S. Forte to assist me, taking his chance of the Admiralty allowing him to remain with me as assistant surveyor if he qualifies himself during the autumn and following winter." The officers of the survey at this time were all on the flagship's books as supernumeraries. Orlebar married, 5th February, 1838, Miss Elizabeth Harriet Hale, sister of Jeffery Hale, Esq.

At the end of October, 1835, the staff being once more in winter quarters at Quebec, we find Mr. Bowen is preparing for his departure to England on leave of absence to pass his examination at the College (Portsmouth).

On the 13th November, Bayfield says: "Wrote to Captain Beaufort, R.N. (Hydrographer), requesting that Lieutenant Orlebar's appointment might be confirmed, and he be allowed to stay as assistant surveyor."

On the 2nd January, 1836, he writes: "Paid more than a hundred visits, and received as many in the two days."

There is an entry against the 17th February of that year, as follows: "I supplied to Mr. Henderson a trace copy of the St. Lawrence from Quebec to the Saguenay River, upon a very small scale; also, the latitude and longitude of Montreal and Three Rivers. The object, being to serve as a base for making a map of the routes of the various exploring parties that have been sent out from time to time to examine the country north of the St. Lawrence. The map is for the Literary and Historical Society."

Against the 4th April, 1836, there is the following entry: "I received a letter from the Secretary of the Admiralty, informing me that I and my officers had been placed on half pay in common with other officers employed in the Surveying Service on shore. I answered representing that our case was that of officers employed at sea during the whole of the navigable season, and the same in every respect (excepting that our vessel is hired) as that of officers employed in a man-of-war surveying vessel. I therefore prayed that the new regulation would not be extended to us."

There is unluckily a gap in the journals here of four years and eight months, during which time no doubt many interesting events occurred. There was certainly one of great interest to himself, for on the 2nd April, 1838, Captain Bayfield was married in Quebec to Fanny, only daughter of Captain (afterwards General) Charles Wright, Royal Engineers.

In January, 1841, Bayfield's assistants are Lieutenants Orlebar and George Augustus Bedford, R.N., the latter in place of Mr. Bowen probably, and on the 15th of that month, he says: "I write in my own home when I have accounts to settle, bills to draw, or trigonometrical and astronomical calculations to make, because I find that I can proceed with such work when alone and uninterrupted much better than I can at the office, where also our accommodation is only good for drawing, for which the tables are made."

On the 8th April of that year, Mr. Stevenson, now the owner of the *Gulnare*, introduces Lieutenant Twiss, R.N., half-pay, to Bayfield. He is engaged as sailing master.

A little later the *Gulnare* is examined: "Agreeable to my request, Mr. Munn, one of the principal shipbuilders of Quebec and a man universally esteemed, is to inspect the *Gulnare* as to her efficiency, and Mr. Stevenson will abide by his opinion. She will be opened along the water line and at the covering board."

At the end of April, Bayfield is making preparations for the transference of the headquarters to Charlottetown, Prince Edward Island, the work now lying in the eastern part of the Gulf. On the 1st May, he writes: "We were obliged to evacuate our office because the Union Buildings, in which the Colonial Government assigned us an office, are to be given up to the proprietors, and are to be let as an inn or an hotel."

Under date of the 20th, he says: "Our boats' masts are not finished, the recent fall of the Cape Diamond cliff having crushed the mast-maker's house, and killed part of the family of one of his workmen."

On the 27th May: "Gave Lieutenant Orlebar orders to take command and charge of the *Gulnare* and all which she contains, and proceed to Charlottetown, P.E.I."

On the 28th, he states: "Painful leave-taking of our numerous friends of thirteen years' standing. Received the thanks of the Trinity House of Quebec on the 26th, in a set of resolutions of that body, very handsomely worded and delivered to me by the Honorable J. Stewart in person. Wrote a letter of thanks."

The resolutions and Bayfield's reply, taken from the *Quebec Gazette* of 2nd June, 1841, are as follows: "Resolved that this Board entertain a high sense of the talents and scientific acquirements of Captain Bayfield. Resolved that the thanks of this Board be tendered to Captain Bayfield for the advice and assistance he has on different occasions rendered to this corporation; that, while they express their regret that the province is so soon to be deprived of his valuable services, the Board offer their best wishes for his future prosperity and happiness. Ordered, that the Master be requested to wait upon Captain Bayfield, and communicate to him the foregoing resolution."

Bayfield replies: "Dear Sir:—I request that you will receive yourself and favour me by communicating to the Trinity Board of Quebec, my best thanks for the highly honourable testimonial, contained in the resolutions, which you have this day delivered to me. Whilst, in my official capacity, I place the highest value upon the favourable opinion which the Board has done me the honour to express of my public services, I receive with no less gratification the expression of their regret at my approaching departure from the Province, and their kind wishes for my future prosperity and happiness. Begging that you will accept for yourself and them, the assurance of the same good wishes, I have the honour to be, Sir, your humble servant, Henry W. Bayfield, Captain R.N."

The *Quebec Mercury* of 1st June, 1841, writes, in connection with the departure of the party: "It is almost superfluous to say that Captain Bayfield's services are held

in the highest admiration by professional men and by the Lords of the Admiralty; since, during his employment upon this duty, he has been successively promoted to Lieutenant, Commander and Post Captain, and received other flattering proofs of the value set upon his able and unremitting exertions in the service assigned to him; in the execution of which he has added largely not only to professional information, but has amassed geological facts relating to the extensive regions he has surveyed, in which little scientific investigation has previously been made. Captain Bayfield has passed the last fourteen years in Quebec, and is, with his accomplished lady, whom he here married, highly esteemed in the leading society of the place. It must not be omitted to be stated that he was a warm supporter of the Literary and Historical Society in this city, and of which, we believe, he was one of the original members, and the contributor of some valuable papers. Dr. Kelly of the same service, has likewise been long a winter resident of Quebec, and is equally esteemed by a numerous circle of friends and acquaintance. To him, also, the transactions of the Society are indebted for several valuable papers." (He was President for the years 1839 and 1840, and Vice-President for several years after.) "We have spoken of these officers particularly, because their long residence and part borne in literary and scientific pursuits has, in some sort, rendered them public characters. The Lieutenants attached to this service are equally estimable men, and the party now withdrawn from Quebec is an additional loss to the diminishing circle of its society."

On May 29th, Bayfield leaves Quebec for Charlottetown, and says: "At 11.50 a.m. the Royal Mail Steamer Unicorn cast off from the Government wharf, and we proceeded down the river with all those feelings which are experienced by most people when leaving a place and friends with whom they have been intimately associated for many years. We looked upon the magnificent scenery of the Basin of Quebec as what we might ne'er see again. I had with me on board the Unicorn my own family, and

those of Lieutenants Orlebar and Bedford; Dr. Kelly also accompanies me. There are, therefore, three ladies, five children, five nurses, two men servants and the wife and child of one of them; two horses and innumerable cases, boxes, chests, etc. Captain Walter Douglas of the Unicorn, was formerly master of the Gulnare, serving under me in the years 1828-29. He was extremely kind to me and our party. The steamship Unicorn is a very fine vessel of nearly 700 tons, and magnificently fitted up."

On the 1st June he arrives at Charlottetown, and says: "My house not being in a habitable state, my friend the Honble. T. Heath Haviland kindly received me and my family, also Dr. Kelly. Mrs. Orlebar and Mrs. Bedford went into lodgings until the arrival of the Gulnare. Waited upon the Lieutenant-Governor, Sir Charles Fitzroy."

The survey appears to have been principally carried on in Prince Edward Island this year, 1841, and the following entries show that some of the crew give trouble:—

"June 11th. Two men deserted from the Gulnare; advertized them, threatening to prosecute anyone who might receive or harbour them;" and, again, on the 26th: "The boatswain, in the second gig, was sent to the Island" (the ship is in Bedeque Harbour, P.E.I.) "to cut brooms, but instead of landing, they proceeded over to the mainland. Mr. Twiss, the master, found him in a public house with the boat's crew, drinking, for which he forfeits his extra ten shillings pay per month. He stopped ashore all night, got drunk and lost his silver 'call' on the 17th at Charlottetown, which I looked over because he seemed to have been led into such conduct by the boatswain of H.M.S. Ringdove, whom he was with. The price of the 'call' will be charged against him, however, unless his conduct is better. The truth is, that we have not sufficient power by the 'Merchant Seamen's Act,' and what we might have, is thrown away by the pernicious system of giving a month's pay in advance."

Again, on the 17th July: "The boatswain, Forster, and a seaman, Campbell, whom the former seems to have in-

duced, were detected in tapping the rum cask, which has not been secured as I desired. I directed both to be sent on shore and any wages they might have due, to be detained."

On the 5th of August, the *Gulnare* is at Pictou, and Bayfield says: "There was a large French man-of-war brig lying here, but the service I am engaged upon not admitting of delay or waste of time, I did not communicate with her."

In the middle of the same month, at the same port, he states: "Robinson, the coxswain of my gig, came on board drunk and threatened to knock the second master down and throw the master overboard. The man ought to have been taken out of the vessel to jail immediately, but little exertion of any kind to repress such conduct appears to have been made by the master. On the matter being reported to me, I ordered Robinson to be dismissed from the vessel without his wages, and with a discharge stating it was for mutinous conduct."

The party and ship winter at Charlottetown, and on the 13th November, 1841, Bayfield says: "The small steamer *Pocahontas* from Pictou brought the new Lieutenant-Governor, Sir H. V. Huntley."

On the 13th May, 1842, he notes: "Wrote to Mr. Stevenson a letter to await his arrival in the *Unicorn* at Pictou, informing him that no seamen were to be obtained here, and pointing out the necessity of his sending express to Halifax for seamen, if he had not brought down the requisite number from Quebec."

It appears that the contract time for hire of the *Gulnare* is still from 20th May to 1st November.

On the 24th May, he says: "We could do but little today, being obliged to attend the Lieutenant-Governor at the Review and Levée held on the Queen's Birthday. It was a holiday, and the *Gulnare* was decorated and covered with flags, looking very pretty on the occasion."

On the 26th, Bayfield mentions the birth of his second son, and under date of the 28th: "The Honble. James

Peake will act as Mr. Stevenson's agent at this place, with full powers in all matters relating to the Gulnare."

By an entry on the 16th June, Mr. Parry appears now to have superseded Lieutenant Twiss, R.N., as master of the Gulnare.

The survey during the summer of 1842 was prosecuted in Northumberland Strait about Pictou, and on the south coast of Prince Edward Island.

On the 11th July, Bayfield says: "We gave ourselves and all hands a holiday to-day" (they are at Charlottetown), "the third in fourteen years; all the early part of the day, however, was occupied in cleaning the ship completely, fore and aft. We sailed three of the boats in the afternoon."

Under date of the 17th, he remarks. "This, if it had not been the Sabbath, would have been a day in which we could have sounded over 70 miles. I am convinced, however, that there is nothing lost in the long run by doing right, although I do not vainly and presumptuously expect that the course of nature should be altered by Him who sendeth the rain upon the just and the unjust."

Under date of 29th July, he says: "I had to descend to my cabin to plot the angles for each of these 41 positions, and many additional times to consult the chart for the course to be steered, so that I am sure I may say that I have run up and down the ladder, to and from my cabin, 60 or 70 times during the day; and this is nothing extraordinary but what I have to do on any day which is favourable for our work."

On the 5th August, while the ship is at Pictou, Bayfield receives a visit from Mr. (afterwards Sir Charles) Lyell, who came on board for the discussion of geological matters."

On the 8th: "The Honble. Samuel Cunard, accompanied by Mr. Beggs the Collector of Customs, and by Mr. Ross agent for steamboats, paid me a visit on board to-day."

Under date of the 10th: "Found eight hours' work plotting too much for me, and determined to work more moderately in the future."

On the 11th: "Many meteors or shooting stars to-night, as there were during the two previous nights." (The August shower or the Persiads, which annually occur on these three nights.)

On the 25th August, Bayfield says: "Mr. Donaldson, one of the Commissioners for Light Houses in the Province of New Brunswick, paid me a visit" (the ship is at Picton) "in connection with previous official correspondence. He was on his way to the Magdalen Islands, which belong to his son-in-law, Captain Coffin, R.N."

On the 7th September, Mr. Simon Dodd the pilot is paid 51 pounds, 10 shillings, Halifax currency, wages for 103 days at 10s. per diem. Mr. Parry the master of the *Gulnare*, seems to interest himself in the surveying work, especially in the measurement of base lines, in which he greatly assisted Bayfield.

On the 11th September, at Charlottetown, he says: "The Bishop of Nova Scotia confirmed 49 persons, among whom I was one, not having been confirmed before, in consequence of going to sea too young, and neglect afterwards."

Two days later, Lieutenant Orlebar goes to England on leave: "We all took leave of Lieutenant Orlebar and his family. They carry with them our best wishes, for they are deservedly esteemed by all."

October 10th: "Considering and answering the propositions submitted to me by Captain Boxer, R.N., the Captain of the Port of Quebec, respecting the improvement of the navigation of the St. Lawrence."

"On the 16th October, 1842, H.M. Surveying Steamer *Columbia*, and my old friend and Commander, W. F. W. Owen R.N., arrived at Charlottetown. He took up his quarters with us." Captain William Fitzwilliam Owen R.N., was at this time in command of the survey of the Atlantic coasts of Nova Scotia and New Brunswick. A

brief summary of his services, it will be remembered, was given when he was first mentioned in connection with Bayfield's serving under him on the Great Lakes, 1815-1816.

The next day, Bayfield says: "Lieutenant Bedford and Captain Owen's assistants were on board the *Gulnare*, making tracings of such of our surveys as Captain Owen required for the purpose of joining his intended survey of the Bay of Fundy to our stations, etc, etc."

On the 20th October, the party being now at Charlottetown for the winter, he says: "I was occupied in writing to Captain Boxer R.N. of Quebec, respecting improvements in the navigation of the St. Lawrence, their Lordships of the Admiralty having referred him to me."

On the 24th May, Bayfield remarks: "The Queen's Birthday; our people therefore did not work. The *Gulnare* dressed out with flags, looked extremely well. Mr. Stevenson" (the owner of the vessel) "sent a barrel of beer on board for the men's dinner on this gala day. We issue no grog, having experienced it to be the cause of almost all the trouble that occurs among seamen."

On the 31st May, Bayfield is at Charlottetown, preparing for sea, and says: "Our hands are full, and unfortunately there are not hands enough for the duty which we have to perform; too much of my time being necessarily occupied in doing the duty of a clerk or midshipman."

There is trouble with the crew on the 6th and 7th June, on the eve of sailing: "The second master, Mr. Melville, having been drunk and fighting with the men last night, I ordered him to be discharged. Two seamen, Everett and West, deserted."

The *Gulnare* is at the end of June in Pugwash Roads, Nova Scotia, Lieutenant Orlebar having rejoined from leave. Bayfield states on the 30th: "I proceeded on shore to wait upon Captain Owen R.N., and had a long conference with him respecting the connection of our respective surveys, and the settlement of the longitude of the pillar in the dockyard at Halifax as a meridian common to us both. He is to station a party with rockets midway be-

tween the head of Cumberland Basin, Bay of Fundy, and Tignish, Bay Verte. The Columbia will lie at the former and the Gulnare at the latter. On the night of the 7th July we are to have chronometers rated, and the instant of explosion is to be noted at both vessels, and thus measure the difference of longitude across. Lieutenant Shortland brought a chronometer overland to compare with ours." Lieutenant (afterwards Admiral) Peter Shortland was a very talented surveying officer, who took the unusual course of obtaining leave from the Admiralty to study the higher mathematics at Cambridge University, graduating therefrom, a "wrangler." He succeeded Owen in command of the Bay of Fundy survey in 1847.

"July 7th Lieutenant Shortland of the H.M.S. Columbia, arrived with chronometer and a note from Captain Owen, informing me that he (Capt. O.) was at a point about midway between the two vessels with the rockets, which he intended superintending the firing of himself."

July 8th he adds: "Altogether we saw and marked the time of the explosion of six out of the eight rockets. In the preceding evening I had calculated up the rates of the chronometers, so that altogether I retired to rest well tired with the day's work at 1 h. 30 m. a.m."

July 26th, 1843: "Mr. Heath Haviland came on board from Charlottetown, to take a cruise for his health with us at my invitation. He is the eldest son of my friend the Honble. T. Heath Haviland, Colonial Secretary of Prince Edward Island."

July 29th the Gulnare was at Halifax, and Bayfield says: "Called on the Lieutenant-Governour, Lord Falkland. One of Captain Owen's officers called on board, informing me that the Columbia was in Bedford Basin, and that observations with rockets would be made to-night. Accordingly we looked out and observed several of them. They were distinctly seen by us, though distant 28 miles."

At Pictou, on the 15th August, he relates: "A large ship, the George, of Dundee, arrived to-day with a signal adopted here for sickness on board, viz., the ensign at the

main, union downwards. Thinking it a signal of distress, I sent a boat to her assistance, but, fortunately, warned the officer in her to ask the question if there was sickness on board, so that we escape being in quarantine by not going on board."

At the same place, on the 2nd September: "Found H.M.S. Tweed lying off the town of Pictou. Her Commander, H. D. C. Douglas, an old acquaintance of other years on the lakes of Canada, came on board and paid us a visit."

October 5th, at Charlottetown: "Mr. Stevenson brought the good news of Lieutenant Bedford's promotion to Commander."

On December 4th, 1843: "Visited the Gulnare and found her so decayed that I consider her unfit to be retained in H.M. Service. Wrote officially to Mr. Stevenson, notifying him that the contract must be considered to have ceased, unless he would consent to replace the old Gulnare by a new Gulnare of 175 tons, to be built here under my inspection and to be ready on the 20th May next. The new vessel to be subject to all the conditions of the contract for the old one, and to be manned, victualled and equipped in the same manner, and to be employed next season or longer, at the option of the Admiralty."

Under date of 7th December, 1843: "The Hydrographer decides that Lieutenant Orlebar, though junior in the service to Commander Bedford, is to be senior as an Assistant Surveyor."

December 8th: "The want of a clerk or other person to assist me in writing, is severely felt, which may be imagined when I state that I wrote fourteen pages of foolscap to-day."

Bayfield states on 12th February, 1844: "Captain Vaughan, from Canada, delivered to me this morning an official letter from the Honble. H. H. Killaly, President of the Canadian Board of Works, requesting my opinion as to the line of operations best to be adopted for deepening

Lake St. Peter." Captain Bayfield sends in his recommendations.

February 25th: "Mail informed me of Commander Bedford's appointment to a survey in Ireland, and directing me to discharge him from this service as soon as navigation opens."

March 4th: "Engaged on the 1st, Mr. Stuart of Rosebank to assist in making the fair drawings, but finding he could not draw sufficiently well, I discharged him to-day, paying him £1 3s 9d., island currency, for four days' attendance at the office."

Commander Bedford left Charlottetown for England on 29th April, and Bayfield says: "Their departure, after being with us four and one-half years, seems quite a chasm in our happy little party, for his conduct, official and private, has been excellent." Commander (afterwards Admiral) George Augustus Bedford, after conducting surveys in Ireland and Scotland, succeeded Mr. Michael Walker at the Admiralty as Assistant Hydrographer in 1862.

May 7th: "Wrote to Sir Charles Adam, Commander-in-Chief, requesting him to view favourably the intended application of Lieutenant John Hancock, of H.M.S. Pique, to be allowed to join this service."

May 16th: "Mr. and Mrs. Stevenson and two Misses Hale (the latter Lieutenant Orlebar's sisters-in-law) arrived here from Quebec."

May 18th: "The Gulnare was launched and christened by Lady Huntley, the Governour and almost everybody in the place attending; but a sad accident destroyed the satisfaction we should otherwise have felt on the occasion. One of our best men got into the bow to try to save the bottle of water which he supposed wine, used in the ceremony, and had his hand so badly injured from the discharge of the ship's gun, that it had to be amputated. Mr. Duncan of Charlottetown built the vessel, and Captain Bayfield expresses himself well pleased with the liberality of her equipment. The Gulnare departs from Charlottetown in the early part of June with Mr. Mavor as master and a Mr. Ellis as the second master.

On the 2nd July, Bayfield is at Tignish, Bay Verte, and says: "Between 9 and 10 p.m. observed the explosion of ten out of eleven rockets for difference of longitude between Bay Verte and Bay of Fundy. The next day Bayfield drives across the isthmus and dines on board the Columbia.

On the 9th July, 1844, he is at Charlottetown, and remarks: "Found lying here H.M. Sloop Scylla, Commander Robert Sharpe, an old acquaintance of mine, we having served together on the Canadian lakes at the close of the War with the United States. I intend to leave Lieutenant Orlebar to work on the north coast of Prince Edward Island, while I proceed in vessel to make the important chronometric measurements designed to accurately connect the meridians of Quebec, Halifax and St. John's Newfoundland, Captain Owen having done the same by Boston and Halifax."

On the 30th July, he is at St. John's Newfoundland, and says: "Found lying here H.M.S. Eurydice, Captain G. Elliot. On my returning from my morning observation at the Chain Rock battery, I found a midshipman of the Eurydice on board, who had been sent to enquire what vessel we were, and he returned with full information. Nevertheless, when I returned again from the noon observations, I found that a small boat with two men without an officer, had been sent to order the Master, M. Mavor of the Gulnare, on board the Eurydice, and that the pennant should be hauled down. The next day Captain Elliot called upon me, and although he made no allusion to the affair of yesterday, I suppose I may conclude his calling as an acknowledgement that he was wrong. At any rate, it is not worth further consideration."

On the 1st August, Bayfield writes: "I returned Captain Elliot's visit to-day and was shewn all over the vessel, a fine new 26 gun ship of about 700 tons."

On the 6th, the Gulnare leaves St. John's: "With the sanction of the Governour Sir John Harvey, the mail steamer North America, bound to Halifax, towed us out of harbour." He has a tedious voyage to Prince Edward

Island, saying, on the 13th: "This has been a very fine day, the first without fog out of fourteen, but it is weary work making so little progress day after day."

Lieutenant Hancock R.N., joined the survey on the 6th September; and on the 12th Captain Bayfield proceeds to England on leave: "Left Charlottetown on the 12th in steamer St. George, our party consisting of Mrs. Bayfield and our two oldest children, Miss Anwyl and Dr. Kelly R.N., Miss M. Hale (Mrs. Orlebar's sister) accompanying us as far as Pictou, on her way to Quebec. Arrived at Dartmouth at 6 h. 30 m., p.m., on the 14th, crossed the harbour in our coach and four horses, and at 7 arrived at the Halifax Hotel. On the 16th took places in the Royal Mail Steamer Hibernia, expected from Boston on the 18th. Terms, £24 sterling per head, children and servants half price.

"Arrived in Liverpool in nine and one-half days from Halifax, difference of time allowed for, and were received by my father-in-law, Major Wright. On the 4th October, I arrived in London after 17 years' absence."

On the 15th October, Captain Bayfield pays a visit to his sister, Lady Page Turner, at Cippenham House.

Under date of 15th November, 1844, he remarks: "Wrote also to the Hydrographer, stating expenditure for the quarter, etc. This does not feel much like being on leave, though!"

On the 19th November, is the following entry: "Waited upon Sir George Cockburn, stating to him the unfavourable position in which I and my officers have been so long placed by being kept on half pay nine years, contrary to the understanding at the commencement of the survey, and of the practice of the first eight years. He advised that I should address the Board and seemed favourable to the justice of my request that we should be borne on the books of the Admiral's ship on the Station." Bayfield's application succeeded, for on the 25th he says: "Received official intimation from Sir John Barrow" (the able Secretary of the Admiralty at that time) "of my appointment as additional Captain of H.M.S. Illustrious (the flagship on the North American Station)."

A week later he is informed that Lieutenants Orlebar and Hancock, together with Dr. Kelly, are also placed on the books of H.M.S. *Illustrious*. In the first week of 1845, Bayfield's opinion and suggestions, in regard to a proposed observatory at Quebec, are asked by the Hydrographer. An observatory was erected near the present time-ball on the Citadel, the foundation still remaining, and Lieutenant Ashe, R.N. appointed by the Admiralty in 1850 as astronomer in charge. It was demolished in 1874, the present observatory taking its place.

On the 24th February he hears that Mr. William Forbes, Master, R.N., is appointed as his third naval assistant. Orlebar appears to have been promoted to Commander early in this year, 1845.

On the 20th May, Bayfield writes: "From 9th April, when I left London, to this day of my departure from Liverpool in the Royal Mail Steamer *Cambria*, I was on leave, and felt myself so, being for the first time since my arrival in England entirely free from official business."

Bayfield says, on arrival at Charlottetown on the 4th June: "After an absence of eight months, have been restored to our home and the theatre of our duties in health and with hearts swelling with thankfulness to the Giver of all good."

Mr. William Forbes, Master, R.N., arrives on the 7th June, 1845, and Mr. Thomas DesBrisay, of Charlottetown, is engaged as draughtsman, and I may mention that I had the pleasure of the latter's acquaintance, ~~being present in church at Charlottetown when he was reading the lessons in April, 1881, and had an epileptic seizure, causing his death.~~ *He died*

July 16th, the *Gulnare* is at Charlottetown, and Bayfield says: "Found the master of the vessel had succeeded in recovering the best bower anchor and chain, by which he has saved himself from having to pay the value of them out of his wages, since I should certainly have charged them against him, as they were lost by his neglect."

The season's operations were carried on during 1845 in Prince Edward Island, at the close of which Bayfield returns to Charlottetown for the winter. Atlantic passages were longer then than now, for on November 4th there is an entry of the arrival at Charlottetown of the brig British Union, 62 days from London. On the 12th January, 1846, Lieutenant John Hancock R.N. marries Miss Elizabeth Cambridge, eldest daughter of Lemuel Cambridge Esq. of Prince Edward Island.

May 22nd, 1846, Bayfield states: "Arrived from Quebec our Canadian boatmen and a boatswain, with eight seamen for the Gulnare," and on 2nd June: "Thus have I commenced the nineteenth year of the survey afloat, with all on board in good health and all we left ashore the same. We ought to be, and I trust, are, thankful."

Under date of 8th June, he writes: "Wrote to Mr. Paine, the astronomer of Boston, sending him the times of the occultation of Spica Virginis on the 8th ultimo, in hopes of comparison with corresponding observations." (With a view to difference of longitude.)

On the 9th, at Port Hood, Cape Breton Island, Bayfield says: "Great changes appear to have taken place in this fine harbour since the time of Des Barres, 1779."

As Bayfield mentions Des Barres again, later on, a short account of this energetic and talented officer may be interesting.

Colonel Joseph Frederic Willet Des Barres, born in 1722, was the descendant of French Huguenots, who, on the revocation of the Edict of Nantes in 1685, emigrated to England. He entered the British army, was present at the siege of Louisbourg in 1758, and at the taking of Quebec in 1759. He repaired the fortifications of this city, and assisted in designing those of Halifax. In 1762, he was at the retaking of St. John's, Newfoundland, where he met Captain Cook, and with whom he did some hydrographic work in Conception Bay.

From 1763 to 1780 Colonel Des Barres was employed under the direction of the Lords Commissioners of the Ad-

miralty, in making a collection of charts of the east coast of North America for the use of the Royal Navy. These charts were published by him in 1780, 1781, in large volumes, bearing the title of the "Atlantic Neptune," a copy of which this Society possesses. The charts of Nova Scotia and Cape Breton Island appear to be from surveys by Des Barres himself, the remainder from surveys by Major Samuel Holland, "Surveyor-General of the Northern Districts of North America," and his assistants. Colonel Des Barres was, in 1784, appointed Governour of the Province of Cape Breton Island, and in 1804, Lieutenant-Governour of Prince Edward Island. He died in Halifax in 1825, aged 102 years.

On the 30th June Bayfield is at Pictou, and says: "The variable winds to-day caused us to make, shorten and trim sails repeatedly, and this, together with the deep sea lead going every five or six minutes, made a very heavy day's work for the men, who were at work from 4 h. 30 m. a.m., to 9 h. 30 m. p.m. It was this that induced me to anchor, that they might have the benefit of the night to rest."

August 5th: "Caught codfish in abundance, one of them weighing 73 pounds. We have sounded over 50 miles to-day."

On the 12th of August, 1846, the *Gulnare* calls at Charlottetown, and Bayfield says: "We should have been ready for sea at night, but for the bad conduct of two of our crew, Macatee and Stalker, who refused duty in hopes of being discharged, and then getting the twelve pounds offered to seamen for the run home in the new ships."

The *Gulnare* is at Pictou on the 23rd August, 1846, and Bayfield says: "Found here orders from the Admiralty to proceed to Canada and put myself at the disposal of the Governour-General for the examination of the channels of Lake St. Peter, with a view to the excavation of a channel."

On 9th September, the *Gulnare* is at Montreal, and Bayfield writes: "Waited upon the Governor-General,

Lord Cathcart, and having learnt his wishes, put myself in communication with the Commissioners of Public Works. The Honble. W. B. Robinson, of Toronto, is an old friend of mine, and dined with us."

On 14th September: "Commander Orlebar requested and obtained leave to proceed to Sherbrooke to visit his brother-in-law, the Honble. E. Hale, and to bring down his nephew Mr. E. Cary, who is going to join H.M. Surveying Steamer Columbia.

On the 19th: "Proceeded to Monkland, the residence of the Governour-in-Chief, Lord Cathcart, and presented my report on the navigation of Lake St. Peter. The Governour-General wished me and my officers to stay and dine, but being anxious to proceed on account of the lateness of the season, and thinking, moreover, that as the duty entrusted to me was executed I had no business to be absent from my station any longer than I could possibly help, I declared my intention to commence my return immediately, if his Lordship had no further commands."

On her passage back from Montreal, under date of 20th September, 1846, Captain Bayfield says: Ran over the flats of Lake St. Peter in $8\frac{1}{2}$ feet water, or 6 inches less than the vessel drew. At 6 p.m., anchored off Port Neuf, and, with Commander Orlebar and Dr. Kelly, called upon our old friend Mr. Edward Hale, the Seigneur of Port Neuf."

23rd September, at Quebec: "Paid the Montreal and Quebec Steamboat Company £41 15s. sterling for towing the Gulnare up from Quebec to Montreal."

On the 9th October the vessel is at Charlottetown: "The Gulnare was hove down, keel out, to-day at the wharf; a great deal of copper had been rubbed off her keel and stern and some of her bilge; hence shewing the necessity of what we are doing. Gave the necessary directions for her repairs."

The next day: "Employed balancing accounts and counting and packing up public money, which being partly in sixpences and shillings, took a considerable time."

Under date of 11th February, 1847, Bayfield says: "Examining and destroying old papers, being purser's accounts of schooner Recovery, which I commanded in 1823, 24 and 25, on Lake Superior."

On the 16th he remarks: "Commenced making fair copy of list of Variations through forty degrees of longitude, from the year 1816 to 1846, inclusive, and at night attempted to observe an immersion of Jupiter's first satellite, but did not succeed well on account of the wind and extreme cold, the thermometer being twelve degrees below zero at the time."

Under date of 23rd February, 1847, Bayfield says: "Received a letter from the Hydrographer, Admiral Beaufort, limiting the annual expenditure of this service to £2,400 sterling, exclusive of the pay and allowances of myself and officers."

On the 18th March: "Received a communication from the Admiralty, informing me that the Governour-General of Canada had been desired to put himself into communication with me respecting harbours of refuge in the St. Lawrence River and Gulf, and directing me to give full replies to any questions he might put to me on that subject."

22nd April: "Computing occultation of Spica observed by Captain Owen, R.N., at Campo Bello last May, and found his observations and mine to agree."

Under date of 21st May, he remarks: "The Lieutenant-Governour, Sir H. V. Huntley, inspected our fair plans (eight large sheets), the result of our winter's labours."

On the 2nd June, Bayfield says: "Yesterday, the pinnace and launch, under Lieutenant Hancock and Mr. Forbes, provisioned for four weeks with crews of eight and seven men respectively, departed for Georgetown. We have thus commenced the twentieth year of the survey afloat, the whole party in health and those we leave on shore tolerably so. May the Great and Gracious Giver of all good gifts make us thankful."

On the 22nd June, the *Gulnare* is at Port Hood again, Cape Breton Island, and Bayfield remarks: "Proceeded on shore to examine the geological formation of Smith's Island; the relation of the beds of gypsum to the coal strata among which they are found being full of interest to the geologist."

The vessel is at Charlottetown on the 12th July, and he adds: "The second master, Mr. Canfield, got drunk and refused to come off. As I could not suffer him to retain his situation if brought on board by constables in a state of intoxication, I was obliged to order him to be left behind, the loss of his situation being as heavy a punishment as I thought it necessary to inflict."

On the 6th August Captain Bayfield leaves Trepassey Harbour, south coast of Newfoundland, having made a survey of that locality in connection with the choice of a site for a lighthouse on Cape Pine, at the request of Sir Gaspard le Merchant, Governour of Newfoundland. Bayfield, before leaving Canada for Newfoundland, had left Commander Orlebar and Mr. Thomas Des Brisay with their boats and tents, on the north coast of Cape Breton Island, and in communicating again with them on 25th August, he found that Mr. Des Brisay and his boat's crew had nearly lost their lives. He says: "On the 6th Mr. Des Brisay with the launch, were blown off the land by a heavy squall from the high land of Cape St. Lawrence. They were at sea for 30 hours in the greatest peril, and were eventually saved by getting on board a small sloop, which was also driving before the squall with all her sails split. The people saved the plans, instruments, etc. The boat being lightened of the men and things, rode out the gale astern of the sloop. They all landed at Aspée Bay, completely exhausted."

On the 15th October, the *Gulnare* is back at Charlottetown for the winter, and Bayfield finds a letter from Captain Owen, saying that he was ordered home in the *Columbia*, and would sail from Halifax on the 1st November.

On the 20th Bayfield says: "Returned all the powder except a few cartridges for the gun for signals, and a few rounds of ball cartridges for the six musquets which I retain as sufficient with the cutlasses, if ever I should be called upon to aid the civil power. The large quantity of musquets we have hitherto carried has ever been a useless lumber, although necessary formerly when we were on the Labrador Coast, and also as a precaution during the time of the troubles in Canada."

On the 9th September, Bayfield notes: "The new Lieutenant-Governor, Sir Donald Campbell, Baronet, arrived this morning by a schooner from Pictou."

There is a gap in the journals here until February, 1851, but a few facts have been extracted from a letter book covering approximately this period.

In a letter to the Assistant Hydrographer Mr. Michael Walker on the 23rd of November of this year, 1847, Captain Bayfield says: "I believe I have no news to give you, unless it be the birth of a fifth child and fourth son on the 28th ultimo, which will show you that that sort of riches is increasing with me much faster than any other is ever likely to do."

In addition to Bayfield's purely professional duties, it will be seen from the following, dated Charlottetown, 22nd May, 1848, that the keeping of accounts and correspondence therewith, must have made a considerable inroad upon his valuable time:—

"Sir:—I have the honour to acknowledge the receipt of your letter of the 29th ult., requesting me to return the tents specified therein to the Ordnance Storekeeper at Quebec. In reply, I have the honour to inform you that these tents, which are always half worn when supplied to us, are used by the officers and boats' crews who are constantly detached on service from this vessel, until they are completely unserviceable, and then they are cut up and painted for floor-cloths for the men to sleep upon, and for bags, thus saving the expense of purchasing materials for those indispensable purposes. Such has hitherto

been our practice, and as it diminishes the expense of this service in some degree, I have thought it best to inform you of it and to request to know if you still wish me to return the useless, wornout tents to the Ordnance Department at Quebec, which could only be done by shipping them in some vessel that may be going there.

"I have the honour to be, Sir,

"Your most obedient and humble servant,

"HENRY W. BAYFIELD,

"Captain, Surveying Gulf of St. Lawrence."

"The Honble. Robert Dundas,

"Storekeeper- General of H.M. Navy."

Bayfield, in a letter to the Hydrographer dated 8th June, 1848, mentions probably the greatest Canadian coast change (Sable Island excluded) of which there is any record. He says: "Another point of some importance to the geologist as well as the seaman, is the change which has taken place in the last twenty years in the still fine harbour of Port Hood, Cape Breton Island; where a range of high and partly wooded sandhills, which formed the head of the harbour, has been swept away by the sea and a channel formed two-thirds of a mile wide and fully nine feet deep at low water." I may incidentally mention here that I resounded this harbour in 1873, and found there had been no further change.

That Bayfield's officers were occasionally entrusted to make latitude observations is evidenced by the following extract from his written orders to Lieutenant J. Hancock, R.N., 6th July, 1848: ". . . You had better also observe at some station in Aspée Bay" (Cape Breton Island) "in order that we may see how much your sextant differs from the known latitude of those points."

Propos of the Society's recent unearthing of several folios of charts of the River and Gulf of St. Lawrence, etc. (already alluded to), many of which charts were by Des

Barres, some remarks by Bayfield on the latter's charts may be of interest.

These remarks are extracted from a letter to the Hydrographer Admiral Sir Francis Beaufort, on the 17th November, 1848. " . . . I beg leave also to suggest to you the discontinuance of the chart of the Island of Cape Breton, or any other of Des Barres charts, for they might possibly cause the loss of one of Her Majesty's ships, supposing her to run for shelter, either to Ste. Anne's Harbour or the Great Bras d'Or, the former being represented to have ten fathoms in the entrance, where there are only thirteen feet of water; and the other, deep water in the place of the most dangerous shoals."

Here Bayfield relates how one of his assistants witnessed three vessels running in a gale for the breakers at the entrance of the Great Bras d'Or, and adds: "I have related this occurrence in order that you may perceive the evil that these charts of Des Barres may produce, for they are in general sufficiently nearly correct in the delineation of the shores to inspire confidence, which is also increased by the pretension about them from their large scale, etc., but which in the important matters of shoals and soundings especially, they are totally undeserving of. I do not know whether these charts are, or are not issued to Her Majesty's ships, but as they were supplied to me, it has occurred to me that they might be issued as the best that could be had. I believe the map makers compile from them."

During the summer of 1848, the party was employed on the coast of Cape Breton Island, together with the Gut of Canso and its approaches.

In his account of the survey to, and by request of the Lieutenant-Governour of Prince Edward Island, Sir Donald Campbell, Baronet, 16th December, 1848, Bayfield states the yearly expense of the survey (defrayed, of course, by the British Admiralty) was £3,900, not including the general service pay of the officers.

From the following extract from a letter to the Admiralty Hydrographer, dated 12th June, 1849, it would look as if a reduction in the annual vote for scientific services which include Admiralty Surveys) was contemplated. He says: "I have not in the least exaggerated the defects of the old charts of the Gulf, Cape Breton and Nova Scotia. There are none of them that can, with any degree of safety be trusted by the seaman, excepting those of Cook and Lane. At least, none have come under my observation that are not a reproach to this age of improved hydrography. When I consider the still greater ignorance that exists respecting the coasts of many other countries, I cannot but think that the Select Committee might at least have touched more lightly a department so evidently useful to the world."

One of Bayfield's officers complained in writing of being ordered to cross Northumberland Strait in his open boat and of other discomforts, which drew from Bayfield the following reply, dated 26th October, 1849: "Sir, I have to acknowledge the receipt of your letter of the 22nd inst., representing to me the discomfort experienced by yourself and crew during your return voyage in your boat from Guysborough, from exposure to the weather; from having no other accommodation provided by the service than that afforded by canvas tents; the risk of crossing the Straits, etc., etc. In reply, however I may differ from you in my estimate of the amount of discomfort and risk attending the discharge of the duty in question, I shall on this occasion content myself with reminding you that the discomfort, exposure and alleged risk which you have deemed it necessary to make the subject of an official communication to me, are in no respect different from what have been cheerfully undergone often in far greater degree by other officers who have been attached to this service since its commencement in 1827, and I may add that I myself up to a much later period of life than you have yet reached, and even when holding my present rank, have not hesitated to impose them on myself when I considered the service required it.

"All, therefore, that I can further add, and I do it with pleasure as being due to the respectful manner in which you have submitted this matter to my consideration, is the assurance that the comfort of the officers serving under me will ever continue to be regarded by me, as far as the faithful discharge of the duties of the service we are employed upon, will permit."

The following letter from Bayfield in connection with the departure of a party of "Forty-Niners" to California from Charlottetown, may be of interest:—

"Having been requested to furnish the Californian Association, now about to sail from this port in the brig Fanny, with a certificate which it has been thought may prove useful to them during the progress of their enterprise, I hereby certify all whom it may concern that a residence of nine winters in Charlottetown enables me to bear testimony, generally, to the steady, sober and industrious character of the members of the Association, whose names are upon the annexed paper.

"From the character of the parties and the testimony of the numerous persons connected with them in this town, I have no doubt in believing the objects of the Association to be simply such as are stated on the annexed paper, to which I have affixed my signature, and I have, therefore, no hesitation in commending them to the favourable consideration, kind offices and, if need be, assistance of any of Her Majesty's officers whom they may chance to meet.

"Given under my hand at Charlottetown, P.E.I., the 6th day of November, 1849,

"HENRY W. BAYFIELD,

"Captain, R.N.,

"Surveying the Gulf of St. Lawrence."

During the summer of 1849, the party were employed upon the coast of Cape Breton Island and the Gut of Canso with approaches thereto. Deep water soundings with Massey's sounding machine were also taken in the Gulf.

Bayfield, in a letter to the Hydrographer Sir Francis Beaufort, 10th January, 1850, mentions the effect of drift ice on shoals. He says: "I have given many additional soundings on the Caribou sheet which do not always exactly agree with those of other years. This is owing to the ice which occasionally packs and grounds on the Picton banks; at one time, forcing the gravel and stones up into mounds and ridges, and at other times levelling them again; thus rendering the soundings uncertain to the amount of several feet." I may incidentally add that I noticed the same ice action in the survey of Georgian Bay and North Channel of Lake Huron, 1883 to 1893.

In the spring of 1850 Dr. Kelly is superseded by Dr. Stratton R.N., the former having to relinquish service under Captain Bayfield by reason of ill health, aggravated, if not caused, by the long and exposed service in the River and Gulf of St. Lawrence.

The summer of 1850 was spent by the party on the east coast of Cape Breton Island, and the eastern approach to the Gut of Canso.

On the 4th February, 1851, Captain Bayfield says: "Received letter from the Admiralty, directing me to verify the position of Sable Island at a convenient opportunity." In connection with this, he, a week later, "requested of the Admiralty that the war vessel that visits the Gulf each summer may be placed at my disposal for two or three weeks to go to Sable Island."

On the 25th of March, Captain Bayfield and officers attended on the Lieutenant-Governor, Sir Alexander Bannerman, at the opening of the Prince Edward Island Parliament. Mr. Mavor is still the master of the *Gulnare*.

Under date of 11th April, Bayfield says: "Revising and recalculating Admiral Owen's chronometrical measure-

ments to and from Boston, a most laborious job owing to the confused manner in which they have been stated, in consequence, I suppose, of the inexperience of his officers in 1843."

21st May, 1851: "Examined most carefully some charges against the master, Mr. Mavor, by which his honesty is made very doubtful to say the least of it. I was obliged to direct his discharge by Mr. Stevenson, in consequence. Mr. Stevenson, by my desire, appointed Mr. McLeod (who has been mate of the *Gulnare* during the several last years) to be master in Mr. Mavor's place." Captain Alexander McLeod was many years sailing-master and pilot of the surveying vessel after Admiral Bayfield relinquished the survey, and a wonderful pilot he was. He and I were shipmates in the steamer *Gulnare* from 1871 to 1881, and could I have known that I should have the pleasure of writing this paper, I might have had some interesting talks with Captain McLeod about Admiral Bayfield. I only remember his telling us that the Admiral, though ignoring himself entirely when the service required it, was not averse to the comforts of civilization when within reach, as the Admiral used to give McLeod a kind of standing order that in bringing the vessel up at night, he was, "if possible, to moor with one anchor to the cow and the other to the post office."

On the 24th May, 1851, Bayfield writes: "The Honourable Samuel Cunard, who had made a brief visit to Prince Edward Island to see his daughter-in-law, Mrs. Peters, the wife of the Master of the *Rolls*, left for Pictou."

Bayfield has been in ill health for some time, and on the 27th and 28th of May he says: "It is not without pain that I shall see the *Gulnare* sail without me, but when I remember that it is the first time for twenty-four years, all feeling of discontent is removed by the grateful sense of the goodness of a merciful Providence in enabling me to discharge my laborious duties for so many years."

Some trouble again among the crew, for Bayfield says: "The laws regulating merchant seamen seem made on pur-

pose to encourage want of principle, fidelity and common honesty in seamen, who think nothing of breaking their engagement upon the slightest whim, or merely to carry off the usual month's advance without which they will not ship.."

On the 3rd June, 1851, he writes to the Publishers of the British Nautical Almanac, pointing out errors.

Under date of July 11th, Bayfield says: "Received a letter from the Commander-in-Chief, Sir George Seymour, informing me that Their Lordships of the Admiralty had directed him to withdraw H.M. Surveying Steamer Columbia from the Bay of Fundy survey to assist me in the survey of Sable Island." The Columbia and Bay of Fundy survey had, since Owen's retirement, been under the command of Captain Peter Shortland, R.N. Bayfield has thirteen chronometers at this time.

On 22nd July, 1851, he arrives in Gulnare at Sable island, and anchors off the residence of Mr. McKenna, the Superintendent. After observing for latitude and longitude at three points on Sable Island, Bayfield, on the 24th, sails from it, leaving Lieutenant Hancock, with three men, to make a detailed survey of the island, and makes written arrangements for their removal, on the completion of the survey.

On the 2nd August he is again at Pictou, and says: "Commander Orlebar proceeded by my desire to survey Haliburton Creek above the Bridge, and thus remove or confirm some suspicions that I entertain as to its accuracy. Being unnavigable and dry at low water, it is not of much consequence, but we should be accurate in every part of our work alike." This creek, done by a local surveyor during the winter, was found to be inaccurate.

A week later he hears that the Columbia, Commander Shortland, was prevented from reaching Sable Island until 1st August. She brought away Lieutenant Hancock and his men. Under date of 12th August is entered: "Our observations at Sable Island confirm the accounts of the people of the island that a good deal of the western part of the

island had been washed away of late years, within the memory and under the observation of the men now residing in the island."

On 22nd September, 1851, Mr. Forbes departs for England on leave of absence. On 27th, Captain Bayfield receives a letter from Mr. W. C. Bond of Cambridge University, Boston, asking Bayfield to assist him in the telegraphic difference of longitude between Cambridge Observatory and Halifax. Bayfield not being able to do so, the latter writes to Captain Shortland R.N., commanding H.M. Surveying Steamer Columbia, in the Bay of Fundy, to assist Mr. Bond at Halifax.

On 16th October, he says: "Employed in various arrangements respecting the Gulnare, which is now so affected by dry rot as to be scarcely seaworthy. But the new vessel is building in Quebec, and is much larger and superior in every respect."

A few days later: "Wrote to the Secretary of the Admiralty, declining the retirement" (I think this was in reference to Admiralty Circular of June, 1851, offering optional retirement to the senior ranks in the Navy to relieve the congested state of the List.)

On 23rd January, 1852: "Reading Reports of American Coast Survey with reference to the longitude of Cambridge Observatory, which is being determined chronometrically in the Royal Mail steamers to and from Liverpool."

On the 6th March, 1852, Bayfield says: "Writing to the Vice-Resident of the Toronto and Huron Railroad Company at his request as to the terminus to be adopted on Lake Huron. I recommended Penetanguishene Harbour."

On the 17th April, Mr. Forbes left England from leave to rejoin the survey. The new Gulnare, 212 tons, arrived at Charlottetown from Quebec. Mr. Forbes arrives on 14th May. On the 22nd May, 1852, Bayfield says: "Accompanied Commander Colin Campbell R.N., of H.M.S. Devastation, on a visit to Sir Alexander Bannerman, who

consulted us about the Fishery Laws according to treaty with the United States." Three days later he "wrote to the Honble. James Uniacke, the Attorney-General of Nova Scotia, in reply to his letter respecting a proposed canal at St. Peters, Cape Breton Island."

On the 3rd June, the *Gulnare* sails from Charlottetown for the Gut of Canso, to commence another season's operations. "We have on board with us the Revd. Mr. S. Rand, who is missionary to the Micmac Indians, and a Baptist minister. My eldest son, Henry, also accompanies me. The new *Gulnare*, the third of that name, is much larger than the two former. The contractor, Mr. Stevenson, has dealt most liberally with us, giving us better cabins and equipment." The master now appears to be Mr. McIntyre.

On 20th June, while in the Gut of Canso, Bayfield writes: "This morning a boatman, John McLeod, out of his senses and violent from drink, came off at 6 a.m. He was discharged last night with his bedding, being insanely violent from drink, and drawing his knife upon the men. etc. I ordered him to be discharged, finally allowing him to take his clothes."

On the 27th July, Captain Bayfield being unwell, returns from Pictou to Charlottetown in the steamer *Rose*, having given orders to Commander Orlebar to take the *Gulnare* round to Halifax and commence the survey of the harbour."

While unwell at Charlottetown, Bayfield says: "The Lieutenant-Governor, Sir Alexander Bannerman, called on me and consulted me respecting the American fishermen, whom it is now resolved to restrain from fishing within the limits assigned by treaty. My opinion is that this should be done mildly and discreetly, though firmly and in such a way as to give as little offence as possible. It should be a duty entrusted to responsible naval officers only."

On the 10th August, Captain Bayfield rejoins the *Gulnare* at Halifax, and on 8th October returns to Charlottetown for the winter, leaving Commander Orlebar to bring the *Gulnare* round from Halifax, Bayfield "not feeling up

to the tumbling about in so small a vessel." On her way round, the *Gulnare* picks up Lieutenant Hancock, who had been detached near the Gut of Canso for the prosecution of the survey of Cape Breton Island. The vessel arrives at Charlottetown on the 15th October, 1852.

Nothing of importance transpires during the winter of 1852-53.

On the 28th April, 1853, Bayfield says: "The brigantine *Peri* arrived from Barbadoes; engaged her master, Mr. McLeod as master of the *Gulnare*." Captain McLeod was absent in 1852.

The *Gulnare* arrives again at Halifax, in command of Commander Orlebar, on the 29th May, 1853, and Bayfield joins her on the 10th June, having travelled from Charlottetown by public conveyance, via Pictou and Truro. He has evidently not shaken off his illness of the spring of 1852.

On 4th July, he says: "Wrote to the First Lord of the Admiralty, Sir James Graham, Baronet, asking an entry for my son Henry into the Navy as a Cadet."

July 17th, he writes: "Sunday afternoon—some of our party attended a prayer meeting on shore at Jedore. The preacher, a Baptist minister, a rough diamond, who delivered an excellent sermon in indifferent English."

The *Gulnare* returns to Charlottetown to winter, and under date 11th November, 1853, Captain Bayfield says: "I heard by telegraph from Quebec of the death of Mr. William Stevenson, the owner of the *Gulnare*, an old esteemed friend, whom I have known for 25 years."

The party was principally employed in the completion of the survey of Halifax harbour and the coast northward of it, during the summer of 1853.

Unfortunately, we have no further obtainable information as to his work. Bayfield's promotion to Rear Admiral, 21st October, 1856, necessitated his relinquishment of the survey. He remained on the active list (gaining the step of Vice Admiral 27th April, 1863) until 18th October, 1867, when he retired with the rank of full Admiral.

In 1874 the Admiralty bestowed on him a Greenwich Hospital pension of £150 per annum; this in addition to

his ordinary pension. Admiral Bayfield was a Fellow of the British Royal Society, and a member of the Société Géologique de France.

I might add that while making a survey of the Georgian Bay and North Channel of Lake Huron, from 1883 to 1893, under the orders of the Dominion Government, I had a good opportunity of witnessing the marvellous quantity and excellence of Admiral Bayfield's work. He had neither the time nor the means to find all the outlying rocks and shoals, nor was it necessary ninety years ago in that locality, where his own open boats were probably the largest craft sailing thereon.

The Admiralty Surveying Service has produced good men, from Cook onwards, but I doubt whether the British Navy has ever possessed so gifted and zealous a Surveyor as Bayfield. He had a marvellous combination of natural talent with tremendous physical energy, and was, I feel convinced, a man who would have gained the summit of any profession he might have honoured, for his one thought was his work.

The Admiral wore himself out in the service of his country and the thousands of mariners who have used and still use his charts in the navigation of the Gulf of St. Lawrence; for, although he lived considerably longer than the allotted span, yet during the last few years of his life, he shewed evident signs of the concentrated strain. And in the few conversations I was privileged to have with him in Charlottetown, the irrelevant turn his conversation would occasionally take was always far away to the scenes of his surveying labours, appearing to me, unmistakably indicative of what he had undergone.

The disappointments consequent upon hydrographic work, especially upon a coast like the Canadian Labrador, where, in a fortnight of the short summer, a couple of suitable days only were obtainable, can easily be understood.

This continual struggle with the elements must, in the long run, tell upon an officer with the burning zeal which

Bayfield possessed. Add to this, his short and broken rests consequent upon his watch over the navigation of his schooner in unknown waters; also his many nightly astronomical observations on shore.

Although not customary in those days, to bestow titles or erect statues to such men, Admiral Bayfield has more enduring monuments of natural masonry in the red sandstone of Prince Edward Island, the limestones of Lake Huron, and, where his work was the most trying, in the more durable laurentian rocks of the north shores of Lake Superior and the Gulf of St. Lawrence.

Admiral Henry Wolsey Bayfield resided in Charlotte-town, P.E.I., after his retirement, and died there on the 10th of February, 1885, at the age of ninety years and three weeks, and in concluding this imperfect memoir, I do not think I could do better than quote the Charlottetown Patriot of February 11th, 1885, as follows: "The most distinguished, and probably the most aged of our citizens, has passed away. On Tuesday, the 10th inst., Admiral Bayfield, who has been a resident of this city for 44 years, breathed his last. Long after he retired from active service, he might be seen taking his daily walk on our streets, his distinguished appearance and kindly countenance giving him respectful recognition wherever he went. But for several years he has been an invalid and unable to leave his room.

"The Admiral was a man of high religious principle, kind to the poor and disposed to aid every good work. His noble Christian example did much in past years to exert a beneficial influence on the higher circles of our city life. Some, who have held a like exalted position in the Naval Service, may have had more brilliant careers, but few, indeed, have rendered more practical benefit to the commerce of the nation and to the Navy itself, than did Admiral Bayfield by his careful coast surveys and excellent charts.

"And while faithful to his country and Queen, he neglected not to remember the higher allegiance he owed to the 'King of Kings.'"