EXTRACT FROM A REPORT OF A VOYAGE TO GREENLAND.

by

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The hospital ship left *Sydney, Cape Breton Island,* on 9th July 1929 for Greenland via the Strait of Belle-Isle. On board was Lieutenant Commander BEAUGÉ of the Naval Reserve, delegate of the Scientific and Technical Office of Maritime Fisheries, who had been appointed to undertake the oceanographic investigation of *Fyllas Bank,* off *Godthaab* on the west coast of Greenland, in about latitude 64° N.

The *Sainte Jeanne d'Arc* remained on this bank from 15th to 30th July then, leaving Commander BEAUGÉ in the trawler "*Joseph Wandewalle*" to continue his studies, she sailed for the Banks of Newfoundland. She arrived on the *Platier of the Grand Bank* on 5th August and put in to *Saint-Pierre-Miquelon* on 7th August.

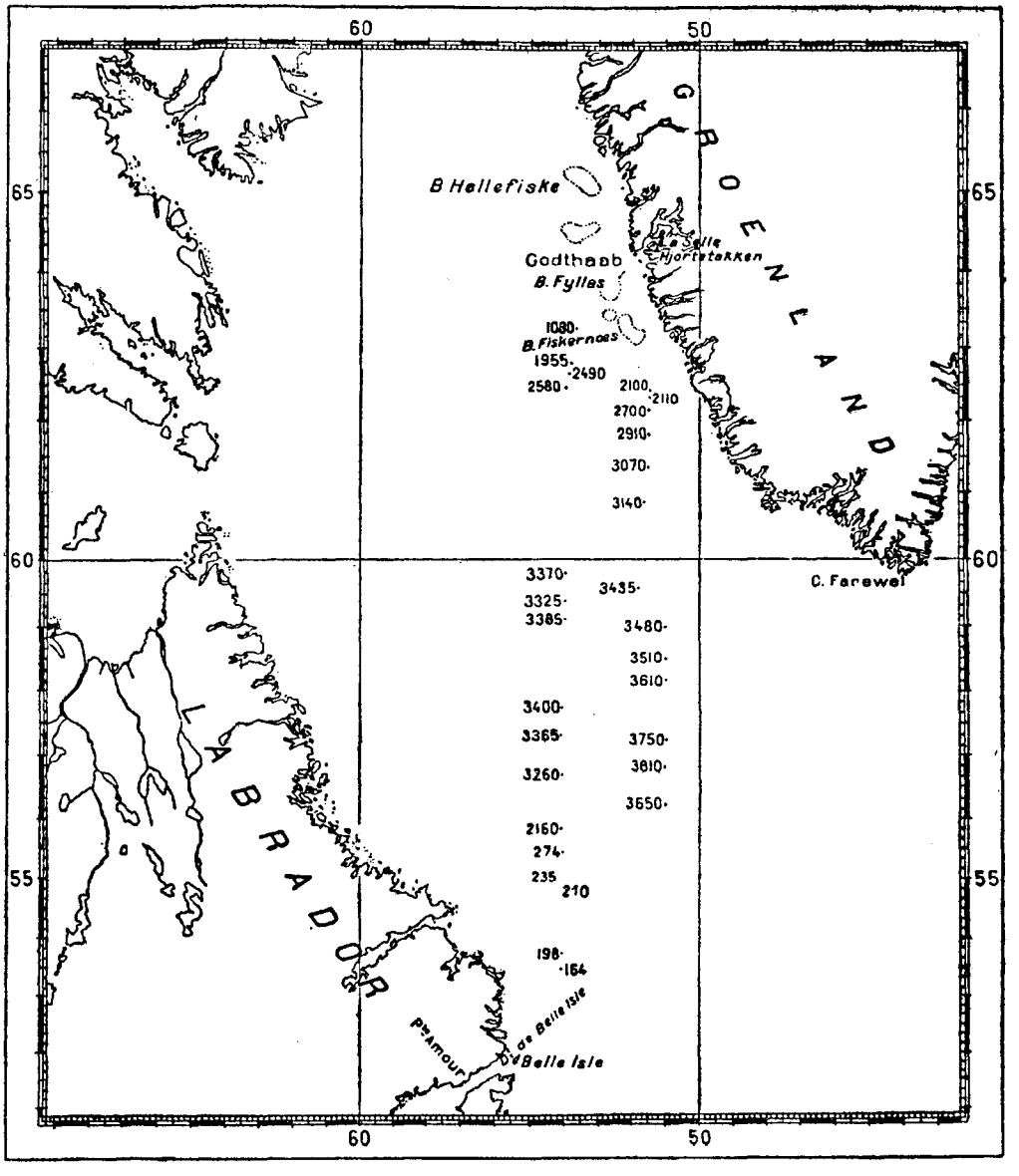
During this voyage we carefully recorded the results of our observations and we give here those which are of special interest to meteorology, bottom relief and navigation.

ROUTES FOLLOWED.

Leaving *Sydney* on 9th July we laid course for the Strait of Belle-Isle, passing along the *French shore* of Newfoundland.

In choosing this route we counted on taking advantage of the lesser prevalence of fog on this coast and also of the slight northerly current which sets towards the Strait. We were thankful that this decision was made because, from *Cape Ray,* the S. E. point of Newfoundland, the fog which prevailed to seaward thinned out near the land and at the same time a strong S. S. W. breeze along the coast considerably favoured our progress. When abreast of the *Bay of Islands* the breeze fell and the weather became overcast; it rained during most of the night but at daybreak the weather which had become misty cleared sufficiently for us to enter the Strait where a considerable amount of ice was spread out from *Point Amour* to *Belle-Isle,* all along the coast of Labrador. The southern part of the Strait was entirely clear. The position of all of this ice was reported moreover by the Ice Notices of the Belle-Isle station and we were of the opinion that by means of wireless bearings of Point Amour and Belle-Isle we could have made the entire passage in a fog, avoiding the ice which was there. After leaving Belle-Isle straits the clear weather induced us to proceed to the 54th meridian without going further from the coast of Labrador.

In fog it would have been advisable to continue at least as far as from 51° to 50° longitude: ice was not encountered except on the coast of Labrador and on arrival at the Fyllas Bank off Greenland. On the return journey, on leaving Greenland by the Bank of Fiskernaes, we proceeded south along the 51st meridian and not until we were passing Belle-Isle did we encounter a few scattered ice-bergs — these however had been reported by wireless station on that island.



SOUNDINGS.

The soundings were taken by the MARTI sounding machine. Unfortunately they were disturbed by the bad weather during the passage.

The impact of the waves against the hull in the rough sea gave rise to numerous parasitic disturbances on the registering band which hindered the determination of the point of inflexion of the reflected sound wave.

In the table appended to this report we give the results obtained, regretting our inability to furnish a continuous and regular line of soundings during the passage to and from our destination.

Such as they are, they may possibly serve however, to check those obtained by other vessels, particularly those of the *Marion* of the American expedition in 1928.

The soundings at great depths were obtained by utilizing the sound produced by the detonation of a rifle. The soundings up to 200 m. were obtained by striking the hull directly with a hammer. The soundings taken on the *Fyllas* and *Fiskernaes Banks* are shown on charts published by the Scientific Office of Fisheries, to which will be appended views of the coast of Greenland taken from these banks.

SOUNDINGS

DATES	*Latitudes*	*Longit.*	*Soundings*	*DATES*	*Latitudes*	*Longit.*	*Soundings*
	On passage towards Greenland				Return towards Cape Race		
12 JULY.....	53°30' N.	54°05'W.	164 m.	29 JULY.....	62°25' N.	51°30'W.	2,100 m.
	53°45' N.	54°05'W.	198 m.		62°20' N.	51°32'W.	2,110 m.
	54°25' N.	54°06'W.	210 m.		62°08' N.	51°33'W.	2,700 m.
	54°38' N.	54°08'W.	235 m.		61°50' N.	51°33'W.	2,910 m.
	55°05' N.	54°10'W.	274 m.		61°22' N.	51°35'W.	3,070 m.
	55°25' N.	54°10'W.	2,160 m.		60°50' N.	51°40'W.	3,140 m.
13 JULY.....	56°20' N.	54°10'W.	3,260 m.	30 JULY.....	59°37' N.	51°52'W.	3,435 m.
	57°20' N.	54°05'W.	3,365 m.		59°00' N.	51° W.	3,480 m.
	57°45' N.	54°03'W.	3,400 m.		58°30' N.	51° W.	3,510 m.
					58°10' N.	51° W.	3,610 m.
14 JULY.....	59°07' N.	54° W.	3,385 m.		57°15' N.	51° W.	3,750 m.
15 JULY.....	59°25' N.	54° W.	3.325 m.		56°50' N.	51° W.	3,810 m.
	59°50' N.	54° W.	3,370 m.				
	62°28' N.	54° W.	2,580 m.		56°16' N.	51° W.	3,650 m.
	62°38' N.	53°55'W.	2,490 m.				
	62°47' N.	53°50'W.	1.955 m.	(The last soundings, taken while the ship was			
	63°15' N.	53°42'W.	1,080 m.	pitching violently, may be inaccurate.)			

ICE.

When going North we encountered several ice-bergs on the 150 to 200 metre banks which extended to the east of the coast of Labrador north of Belle-Isle. On the edge of this bank, to the north, we encountered a veritable river of ice from 25 to 30 miles wide (in Lat. 54°45' N., Long. 54° W.). This river appeared to run in a S. S. E. direction and consisted of large ice-bergs together with a mass of broken ice resulting from the breaking-up of the larger masses.

All the ice disappeared when we suddenly passed from depths of 200 to 400 metres to those of over 2000 metres. After that we saw no ice on the 54th meridian as far as the approaches to the Fyllas Bank in depths of 1100 to 1200 metres at about 50 miles from this bank.

During our stay on this bank we saw three fairly small ice-bergs drifting rapidly to the north. On the Fiskernaes Bank we sighted 4 or 5 ice-bergs, some of them stranded in depths of about 70 metres on the N. W. part of the Bank and two others in 45 to 50 metres on the eastern part of the same bank. One of these masses of ice appeared to be a portion of a large ice-pack; the others were more like real ice-bergs.

To the south of Fiskernaes we again encountered several ice-bergs, but

thereafter the fog prevented us from making out those further south which were probably more numerous. On our return along the 51st meridian we sighted but rare small masses of ice while passing Belle-Isle.

CURRENTS.

No very accurate observations were made of the currents on *Fyllas Bank.* The currents on the surface appeared to be due to the influence of the tides; they are variable, fairly strong and set parallel to the coast.

Close to land the current sets towards and away from the fjords according to the tides. The tidal currents are more marked in the deep channels separating the banks. A permanent submarine current carries the ice in a direction from N. to N. N. W. This current is a continuation of the current on the east coast of Greenland which rounds *Cape Farewell* and then sets towards the north. The outer edges of this main current set more and more towards the west as it progresses to the north, giving rise to eddy currents in the middle of the area between the coast of Greenland and the shores of *Cumberland* (Baffin Land).

WATER TEMPERATURES AND SALINITY.

The temperature of the water and the salinity were measured by Commander BEAUGÉ. They are interesting as showing the great extent of the warming produced on the west coast of Greenland by the effect of the Atlantic water. Fairly appreciable difference in temperature were noted between the northern and southern parts of the *Fyllas Bank:* the northern part being warmer: 3.5°C. to the north against 2.6°C. to the south at 50 metres.

Further, the strip of cold water along the west coast of Greenland is limited to the surface of the Banks. At 60 miles from the coast the water, to a great depth, at least 500 metres, has a temperature of 4° to 6°C.; while on the Banks it is not more than 3° or 4°C. and even less.

TEMPERATURES OF THE AIR.

In S.S.E., S. or S.W. winds, with fog, the temperature is constant and in July from 4° to 5° C. In clear weather it is variable according to the direction of the wind and the strength of the sun, sometimes reaching 10° to 12° C.

At night in clear weather, with the wind from the N. to N.E. the thermometer rises little above zero C.

FOG.

Fog appears to prevail along the coast only and, as is natural, does not appear to form until the band of cold water along the shore is reached, where the temperature at the surface is from 2.5° to 3.5° C., the surface temperature of the water in the open being 6° to 6.5° C.

These fogs occur with winds from S.S.E., S. and S.W.; the other winds and in particular those from N. to N.E. produce clear weather only. The fog is often less thick than on the Banks. It is dissipated to seaward as soon as the wind changes to W. or N.W.; it may hang for some appreciable time over the coast, but the prominent peaks such as *Hjortetakken* and

the *Selle* near Godthaab, frequently emerge from the curtain of coast fog and allow position to be fixed on Fyllas Bank.

In calm, clear weather the phenomena of refraction and mirage distort objects and cause the ice to be seen at truly remarkable distances; thus we have seen icebergs at distances of 25 to 30 miles.

While passing through an ice-berg area, it appeared as though the whole horizon around us were completely bordered with ice, although during the day we had passed only three or four ice-bergs this side of the horizon. The great, and one might even say unlimited visibility made all the ice surrounding us for 25 or 30 miles appear in the field of vision. Once before I had observed this phenomenon of refraction off the *Banquereau* and the *Middle Ground*, where I was able to see the outlines of ships for 25 miles, the distance being measured by the course run. On approaching, the outlines became more distinct and I saw the inverted image of the ship quite clearly, the reflected image being formed on a light band of clouds very slightly raised above the horizon. On approaching still closer, the true image began to appear above the horizon when from 8 to 10 miles from the ship.

BAROMETER.

The barometric indications of Greenland considerably confuse our navigators because the meteorological phenomena do not appear to follow, with the barometric indications, the practical laws to which they are accustomed in France and on the Banks of Newfoundland.

Thus, for example, in France a falling barometer indicates bad weather, and fair weather is indicated by a rise. In Greenland, however, these general laws do not seem to hold — or at least it would appear so — since in July, as a result of the continuous low pressures prevailing over the frozen lands, which are disturbed only by the passage North or South of barometric depressions, variations are produced which bring bad weather with a rise of the barometer.

Often calm weather is found when the barometer stands at 758 $^{m}/_{m}$. If the barometer is rising the wind increases from the SSE, S. and SW; the barometer rises to 762 $^{m}/_{m}$ and fair weather does not return until the barometer has again dropped to 758 $^{m}/_{m}$.

WIRELESS TELEGRAPHY.

While on the Newfoundland Banks we communicated regularly at night with the European stations on a short wave-length of about 35 metres with power of 1 KW.

We had some difficulty in transmitting our telegrams from the Fyllas Bank due no doubt to the proximity of the high ice-covered land which formed a sort of screen between us and Europe. Besides, during the month of July, the whole of the Polar cap, which is continually illuminated, added a further difficulty to the passage of the waves.

We did not attempt the transmission on short waves directly with the Newfoundland Banks, but it is practically certain that, on this side, we would not have experienced the same difficulty in transmission. Perhaps this may serve to arouse interest in a short waves station at St-Pierre-et-Miquelon

which, at need, might serve as a relay for transmission on short waves to Europe.

I emphazise the fact that these difficulties were experienced only in the proximity of the land at a distance of some 10 or 15 miles from the coast. It is quite possible that these difficulties would not be encountered on the *Hollefiske Banks* which, although more to the north, are further from the coast.

COMPASSES.

We were led also to note the utility of well-compensated compasses.

In Greenland, the variation is very large :- 50° on the Fyllas Bank and this variation changes greatly according to latitude.

The charts give all necessary information on this subject and provided sufficient attention is paid to them, the difficulties introduced by the magnitude of the variation and its changes may be avoided.

It should be noted in passing that naturally it is necessary to state clearly, in meteorological reports, whether the direction given, wind and current, is true or by compass. The variation in the vertical component of the terrestrial field is of very great importance here and is unsuspected by many people ; this variation causes large errors in the curves of compasses which are not compensated with a Flinders bar.

Our fishing vessels on the Grand Banks have crossed only on east and west courses from France to the Banks and *vice versa,* on the same parallel, where the variable influence of vertical iron has but little effect, so that practically the Flinders Bar does not exist and has been completely neglected in the compensation of the compasses of all these vessels.

Some sailing vessels use only simple cards without any compensating magnets and, since fitting out, have installed stoves and baking-ovens near the compass ; I have frequently heard complaints from captains, obliged to navigate on the Banks of Newfoundland with instruments which give a course to within 15° to 20° only.

This situation is naturally aggravated in Greenland.

The installation of motors in the proximity of the compass will still further increase the amount of the deviation and, besides, the deviations ascertained on the Banks will prove to be an error in Greenland.

It is therefore necessary that shipowners should give careful thought to equipping their motor sailing-vessels with well-compensated compasses with suitable Flinders bars.

Signed : P. GUYADER.