

Parry's Soundings

RUDOLF STAROSCIK AND BRIAN DAVIDSON

Introduction

An era of expeditions through uncharted oceans developed during the 18th century. For example, Cook's first voyage in 1768 was a combined Royal Navy and Royal Society enterprise, to observe the 1769 transit of Venus across the Sun, and to seek evidence of a hitherto unknown southern land.

In 1818 John Ross (1777-1856), (Fig.1), was given command of a two-ship Arctic expedition seeking a northwest passage round the extreme northeast coast of America. He was also to note the currents, tides, the state of ice and magnetism, and to collect specimens he found on the way. Ross sailing in the *Isabella* with William Edward Parry (1790-1855), (Fig.2) who was to become a distinguished Arctic explorer rising to the rank of Rear Admiral, was in command of the *Alexander*. They left England in early May reaching Lancaster Sound, Canada towards the end of August.

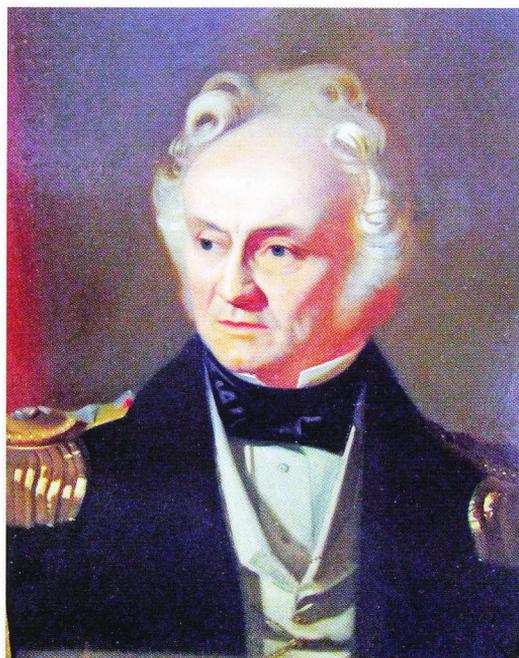


FIG. 2. Sir William Edward Parry



FIG. 1. Captain John Ross
[courtesy of the Royal Geographical Society].

Parry's soundings

Recently, while examining a collection of more than sixty mid-nineteenth century microscope slides prepared by Thomas Henry Hennah, we found four slides labelled as 'Parry Soundings'. The most important of these was described on the label as 'Parry's Soundings, 674 fms, Lancaster Sound, lat. 73°N, Sept 1 1818' (Fig.3). The remaining three simply carried the label, 'Parry's Soundings 201 fms.' (Fig.4). A slide from the same collection signed by Hennah is shown to document and confirm the handwriting on the other slides (Fig.5).

There are many examples of mounts of deep-sea soundings known, both commercial and scientific from many subsequent oceanographic expeditions such as the voyages of HMS *Porcupine*, The British Antarctic Expeditions, and the more famous *Challenger* Expedition. However, since our Parry soundings were recognised we have not been able to find any such mounts dating from before 1818, and this



FIG. 3. Hennah's Mount of "Parry's Soundings at 674 fm's"

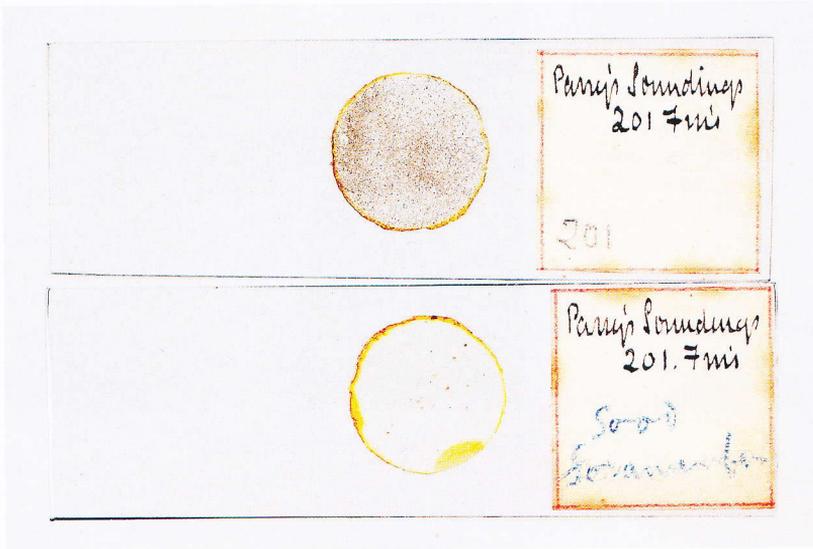


FIG. 4. Hennah's Mount of "Parry's Soundings at 201 fm's"

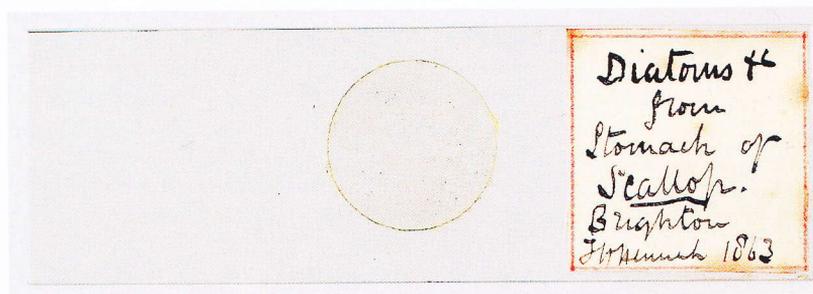


FIG. 5. A Hennah slide to show his holograph signature.

was a strong incentive to explore the origin of these slides.

Ross's 1818 Voyage

A number of Arctic exploratory voyages begun towards the end of the fifteenth century were unsuccessful, primarily due to the presence of extensive sea ice, and as a result interest in the

project waned by the mid 17th century [1,2]. The intention to find a north-west passage was rekindled in England early in the 18th century due to a confluence of events.

Britain, at the end of the Napoleonic Wars, was left with a large and under-employed Navy. A report that Russia was preparing an exploratory expedition into the Arctic raised

concern within the British Admiralty. As a result, John Barrow, Second Lord of the Admiralty, with the support of Sir Joseph Banks, suggested that England should launch another attempt to find a North-West Passage. This request was accepted by Lord Melville, First Lord of the Admiralty, and in 1817 a plan for such an expedition employing a two-pronged effort utilizing four ships, was announced [3, p.294]. HMS *Dorothea* and HMS *Trent* under the command of Capt. David Buchan with Lt. John Franklin as second-in-command, were ordered by the Admiralty to search between Spitzbergen and Greenland and proceed northwards, hopefully through an open polar sea. Captain John Ross was given command of the second group sailing in HMS *Isabella* with Lt. Edward Parry as his second-in-command, sailing in HMS *Alexander*. He was ordered to enter Davis Strait and pass into Baffin Bay and to proceed if possible through Lancaster Sound. At the time the twin Arctic expeditions were seen by many to be the 'grandest and most ambitious naval adventure to date' [4].

Ross was also instructed to perform a wide variety of observations in geography, natural history and hydrography of the Arctic regions. Although earlier voyages of exploration had made scientific and other observations, the Ross expedition was apparently the first to be tasked to collect what would now be considered oceanographic observations [3,p.295]. The work would include gathering zoological, plant and geological specimens, and also to determine the depths and the nature of the ocean bottom at

multiple sites [5, pp.1-14]. Ross was issued with instruments [5, pp.xvii -xix] designed to allow him to obtain the required information; and in addition each ship was supplied with a skilled draughtsman to document significant observations. The *Isabella* also carried Captain William Sabine (1788 -1883), later General Sir Edward Sabine KCB FRS, who was skilled in the study of mathematics, astronomy, terrestrial magnetism and physical geography. His distinguished scientific career, included becoming President of the Royal Society in 1861 [5,pp.9-11]. A measure of the detailed planning and intent of this expedition is shown by the inclusion on the voyage of John Sackheouse, a native Eskimo from Jacob Sound, Greenland, whose role was that of interpreter. He was also an accomplished artist, and his coloured aquatint of the first meeting with the 'Natives' shows in detail the *Isabella* and the *Alexander*, both had been built originally as whaling ships (Fig.6).

Ross's instructions were comprehensive and representative of similar instructions for successive oceanographic expeditions for the next half century [6.p. 128].

Barrow states at the end of his description of the rationale for the voyage: '*Of the enterprise itself, it may be truly characterized as one of the most liberal and disinterested that was ever undertaken, and every way worthy of a great, a prosperous and enlightened nation: having for its primary object that of the advancement of science, for its own sake, without any selfish or interested views.*' [2, pp.378-379].

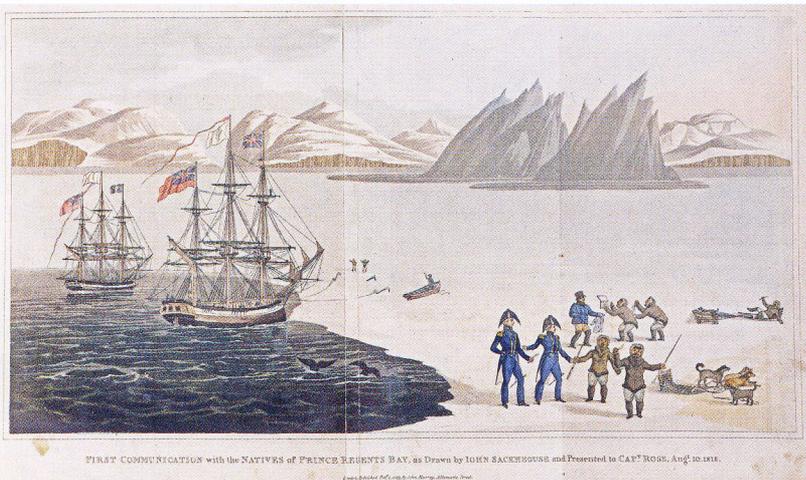


FIG. 6. H.M.S *Isabella* & H.M.S. *Alexander*.

By John Sackheouse.
First Communication with the Natives of Prince Regents Bay, as drawn by John Sackheouse and presented to Capt. Ross, Augt. 10, 1818.

(This is the earliest representational work by a native American artist to be so reproduced).

[Courtesy of the Royal Geographical Society].

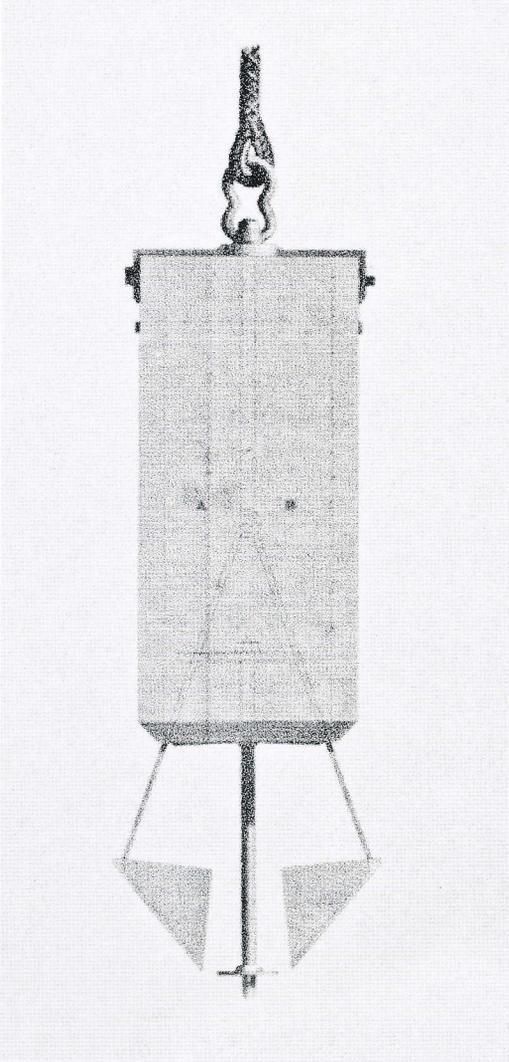


FIG. 8. Ross's Deep-sea Clamm

He joined the Brighton and Sussex Natural History Society, becoming President in 1869. His primary interest appeared to be microscopy, as shown by his presentations to the Society on subjects such as Gundlach's lenses, palates of Mollusca, minute crustaceans, a new series of lenses by Wenham, scales of fish, and methods of illumination. Hennah also gave practical lessons to the members in mounting, section-cutting, and the preparation of objects for the microscope: he contributed to the Society's cabinet many fine preparations which he had made.

Hennah's special interest in deep-sea mounts is evidenced by additional slides in our collection of material from HMS *Cyclops* and HMS *Porcupine*, mounted by him (Fig.10). He felt so strongly about deep sea soundings that he wrote a short abstract included in *Nature*, 7 December 1871 which said:

As a rule, yacht owners object to the fatigue and dirt of dredging, but as we have the successful example of the Noma, may we not hope that other yachts may further the cause of science, if assistance in the way of instruction or apparatus be afforded to them by those having the necessary experience and means? The idea of now urging the question is not mine alone, but is entertained by many ardent naturalists who are much in favour of a skilful search of our seas at home, as well as of the Mediterranean and other distant and almost untried seas. Your pages have often borne witness to the interest and importance attaching to marine zoology, and of men of practical experience, such as Carpenter, W.

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FIG. 9. Hennah & Kent's Brighton shop



FIG. 10. Hennah's mounts of soundings from *Cyclops* and *Porcupine*

On 10 April 1870, Hennah presented to the Society his findings on the soundings made by Parry in Arctic Seas in the Davis Straits and Lancaster Sound, in water ranging in depth

from 22 to 1058 fathoms, between 68°-76°N and 73°-78°W, in 1818 [9, p.20]. In the presentation he specifically mentioned soundings of 201 and 674 fathoms [10, pp.57-58].

A Copy of the original Meteorological Logs of His Majesty's Ships the *Isabella*

ISABELLA.												
Hours.	Temperature.		Soundings.		Height of the				Winds by Compass.	REMARKS.	Officer's Signature.	
	Air.	Water.	Depth.	Nature.	Barometer.	Synpelsometer.	Attached Thermometer.	Hygrometer.				Cyanometer.
4	38	36½	.....	.....	29.72	29.72	54	8.10	.....	North.	.....	A. M. S.
6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. C. R.
8	35½	36	.....	.....	29.86	29.78	70	8.30	.....	.....	.....	W. R.
10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	33	35	120 fms.	no ground	29.79	29.90	64	8.10	.....	.....	.....	A. M. S.
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	N.N.W.	.....	.....
4	34	35½	.....	.....	29.78	29.88	61	7.51	6	West	{ Var. 115° 33' W.	J. C. R.
6	.....	.....	.....	.....	.....	.....	.....	.....	.....	S.W.	{ Per Amp. Hd. No.	.....
8	36	35	674	soft mud	29.63	29.86	58	7.30	.....	South	.....	W. R.
10	35½	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	35½	35	.....	.....	26.29	29.88	56	8.25	.....	E. by S.	.....	A. M. S.
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	S.b.E. ½ E	.....	.....
4	35	35	.....	.....	29.58	29.66	62	8.11	.....	W.S.W.	Leeway 3 Ps.	J. C. R.
6	.....	.....	650	Mud and worms	.....	.....	.....	.....	.....	N.N.E.	.....	W. R.
8	34½	34½	.....	.....	29.57	29.80	58	8.35	.....	N.E.	.....	A. M. S.
10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	34	34½	No ground	at 70 fathoms.	29.55	29.66	60	9.06	4	.....	.....	J. C. R.
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	35	35	.....	.....	29.60	29.81	56	8.30	.....	N.N.E.	.....	W. R.
6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	35	35	.....	.....	29.61	29.81	56	8.10	7	N.N.E.	.....	A. M. S.
10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Signal Preparative	.....
12	36	35	1000fms.	Mud	29.65	29.84	56	7.50	7	North	3. 8. K. Calm.	J. C. R.

FIG. 11. Meteorological log of the *Isabella* 29 August- 1 September 1818

The above tables have been examined,

This still left open the important question as to how Hennah actually obtained the Parry material. The answer was found in a report of his presentation to the Society [10, p.20; 10, p.57-58]. It revealed the important information that J C Burrows had purchased Parry's geological collection from his widow: among them were some soundings labelled in Parry's hand-writing. The geological specimens were placed in the Brighton Museum, but the soundings were handed over for microscopic examination to Hennah, locally recognized as a skilled microscopist. Unfortunately, Hennah died in Brighton on 7 January 1876, at the early age of 49.

Origin of Parry soundings material

Further research into these slides concentrated on both the personal and meteorological logs of the *Isabella* maintained by Ross, and similar logs of the *Alexander* recorded by Parry [11, 12], as well as Ross's published account of the voyage [5]. In this narrative Ross tries to justify his decision to end the expedition on 31 August

[5,pp.172-177], including copies of the meteorological logs of both the *Isabella* and *Alexander* covering the observations recorded from noon 29 August through noon September 1 [5, pp.180, 181], (Figs 11,12).

It was most surprising to us to find that on 31 August the meteorological log of the *Isabella* noted a sounding of 674 fathoms from which 'soft mud' was retrieved. A review of the *Alexander* log for the same time period reveals one but with no mention of ocean-bottom material. In addition [5, appendix 3] Ross provides a table of soundings obtained by the *Isabella* in Davis Strait and Baffin Bay: this records that on 31 August at Lat. 74°8' N a sounding of 674 fathoms was made. Under the column "Nearest Land seen" is listed 'Mouth of Lancaster Bay' and under the column labelled 'Nature of Soundings and remarks' is *mud (temp 29 1/2 when taken up) with rounded gravel of quartz rock* (Fig.13, 14). This is almost identical to the information recorded on our slide except for the date, 1 September, and the latitude 73°N. The *Isabella*, according to the

and *Alexander*, between Noon, 29 August, and Noon, September 1, 1818.

ALEXANDER.												
Hours.	Temperature.		Soundings.		Height of the			Winds, by Compass.	REMARKS.	Officers' Signature.		
	Air.	Water.	Depth.	Nature.	Barometer.	Synpeli-someter.	Attached Ther-mometer.					
2	38	37	.....	.....	.....	.....	.....	4.87	.....	North	{ Temperature at 235 fathoms 29° 3/4.	
4	38	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	W. P. H.
6	37	36	.....	.....	29.76	.....	49	.....	.....	.....	.....	P. B.
8	35 1/2	35 1/2	.....	.....	.....	.....	.....	.....	.....	N. by E.	Moderate Breezes.....	J. N.
10	35	36	.....	.....	.....	.....	.....	.....	.....	N.	.....	.....
12	34 1/2	36	.....	.....	29.80	.....	56	.....	.....	N.N.W.	Light Breezes.....	W. P. H.
2	34 1/2	36	.....	.....	.....	.....	.....	.....	.....	W.N.W.	Fine	.....
4	35	36	.....	.....	.....	.....	.....	.....	.....	.....	{ Moderate and lazy, with small rain.....	P. B.
6	36	36	.....	.....	29.71	.....	49	.....	.....	W. by S.	.....	.....
8	37	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. N.
10	37 1/2	36	.....	.....	.....	.....	.....	.....	.....	S.S.E.	Cloudy	.....
12	37	36	.....	.....	29.51	.....	54	4.20	.....	S.E.	Hazy and small rain.	.....
2	36	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	36	35 1/2	.....	.....	.....	.....	.....	.....	.....	S.S.W.	.....	P. B.
6	36	36	.....	.....	29.58	.....	56	.....	.....	South.	{ 1125 specific gravity, Hazy, with small rain.....	J. N.
8	35	35 1/2	.....	.....	.....	.....	.....	.....	.....	N.E.b.N.	.....	W. H. H.
10	35	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	35	36	.....	.....	29.59	.....	58	.....	.....	.....	Cloudy.....	P. B.
2	35	36	.....	.....	.....	.....	.....	.....	.....	N.E.	Moderate and Cloudy	.....
4	35	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	J. N.
6	35	35 1/2	.....	.....	29.53	.....	48	.....	.....	.....	.....	.....
8	35	35 1/2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	35	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	W. P. H.
12	35	34 1/2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	36	34 1/2	.....	.....	29.63	.....	55 1/2	5.20	.....	.....	Light air.....	P. B.
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	{ Temperature of the water at two hundred and fifty fathoms 29 3/4.	.....

FIG. 12. Meteorological log of the *Alexander* 29 August- 1 September 1818

and found correct, by me,

T. HURD, *Hydrographer.*

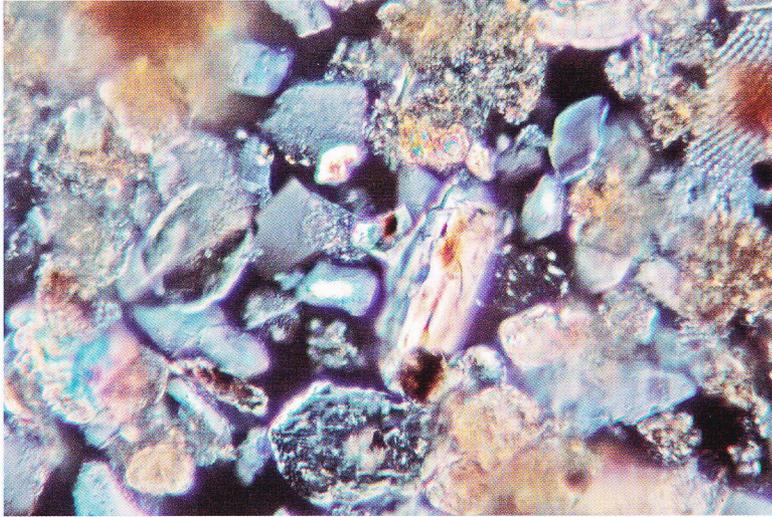


FIG. 13. Photomicrograph of "Rounded gravel and quartz rock"
From the slide fig.3 above.
[Darkfield, x20 objective].

information listed, was located at 73°N latitude on the following day, 1 September. The confusion concerning the date may be due to the importance of the 1000-fathom sounding performed on 1 September. It has also been noted that Ross seems to have been quite capable of transposing the events of one day to another [3, p.307], and as noted above Barrow was somewhat critical of Ross's apparent lack of *an inquisitive and persevering pursuit after details of fact* [7, p.21].

It also should be noted that the material mounted on our slides is consistent with Hennah's presentation of the Parry sounding when he mentions that

..from deeper the soundings were rich in organic debris diatomaceae, particularly large Coscinodisci, were very abundant. Sponge Spiculae also abounded (Fig.15, 16), and [10, p.20].

Both the personal and meteorological logs of the *Alexander*, maintained by Lieutenant Parry [11] are available on line. There is no reference to a 674 fathom sounding, and apparently all of the deep soundings were made from the *Isabella* [3, p.301]. Parry does not mention any use of Ross's deep-sea Clamm on board the *Alexander*. His only reference to the instrument is a note dated 1 September in his personal log where he records the successful sounding of 1000 fathoms carried out on the *Isabella*, with the comment:

among the mud he brought up from this great depth, in Captain Ross's machine, was a star fish, which will perhaps be considered as a curiosity [12, p.132].

We found no evidence that Parry carried a deep-sea Clamm on the *Alexander*, so that the only bottom samples that he was likely to have obtained would have been material imbedded in the tallow applied to the bottom of the lead weights. Parry occasionally mentions the nature of the bottom material retrieved from his soundings using terms such as soft mud, sand, black stones [11, p.125], and coral rock [11, p.141] with no mention of animal material.

Although Ross in his narrative gives a more detailed description of the material retrieved by the deep-sea Clamm, including descriptions of worms and other marine organisms, neither Ross nor Parry make any mention of saving or preserving any of the collected material. The only reference indicating that at least some of the ocean-bottom samples that Ross collected were in fact saved, comes from a letter that Sabine wrote to his brother in which he states:

He [Ross] is very kind and I am half ashamed of myself for laughing at his stupidity in collecting mud, and packing it in pickle jars, and in glass tubes hermetically sealed, and in conceiving that he is doing Sir Joseph Banks a great service in supplying him with it [3, p.296].

APPENDIX, No. III.

LXXXV

FIG. 14. Ross's Table of Soundings from the *Isabella* including the 674 fms sounding.

TABLE of SOUNDINGS obtained in Baffin's Bay—(continued.)							
Date	Latitude N.	Longitude W.	Depth of Water	Nearest Land seen	True Bearing	Distance in Miles	Nature of the Soundings and Remarks
Aug. 30	74 19 30	78 43 58	Fathoms. 210	Cape Charlotte	W.	16	Mud, (north of Lancaster Bay.)
31	74 08 0	80 0 0	674	{ Mouth of Lan- } { aster Bay }	W.		Mud, (temp. 29½ when taken up,) with rounded gravel of quartz rock.
"	74 02 0	81 12 0	650	Lancaster Bay			Mud-worms, (depth uncertain, but not more.)
Sept. 1	73 39 0	77 08	1000	Possession Bay	S.	6	Soft mud, with some worms in it.
"	73 35 0	77 10	450	Ditto	S. by E.	2	Gravel stones, and two small living shrimps. The gravel consists of fragments of granite, gneiss, and quartz rock.
5	72 37 16	74 13 42	120	Cape M'Culloch	S.W.	17		Mud.
6	72 22 52	73 06 30	1050	Cape Coutts	S.W. by S.	21	Mud, coarse sand, and small stones, (temp. mud 28½.) The stones are fragments of grey secondary limestone.
7	72 16 42	71 46 30	1005	Cape Cargenholm	S.S.W.	24	Soft mud.
9	71 22 47	68 26	100	Cape Adair	W.	11	Sand.
9	71 10 0	68 20	90 to 51 38 to 131 138	Cape Eglington	W.	5	Sand.
						4	Sand and shells.
						12	Stones.
10	70 40 00	67 56 00	38 to 145	{ Off and on } { Agnes' Mon. }	S. to W.	2 4 5	Fine sand and stones. The stones are granite, gneiss, and graywacke schist.
11	70 34 30	67 46 15	90 to 95	Bute Isle	S.W.	6	Olive-brown clay.
12	70 42 00	64 37 00	290	.....	.....	7	Rocky, no land in sight—Centre of Davis' Strait.
14	70 19 20	65 30 00	570	.....	.....	.....	Mud.
15	69 25 0	64 42 00	40 to 35 20 casts at 20 35 to 100	Cape Kater	W.	4	Sand, small stones, and broken shells—Isabella Bank.
					
16	69 05 0	64 48 00	26 to 35	Cape Bisson	W.	4	Sand and shells—Alexander's Bank.
17	68 07 0	63 00 00	180	Cape Broughton	S.W.	10	Mud.
18	67 27 6	61 09 00	1070	Cape Searle	S.W.	9	Reddish mud and Grey Limestone.
19	66 58 28	60 30 00	687	Dyer's Cape	S.W. by S.	15	Reddish mud.
20	66 44 09	59 20 00	400	No Land in sight	.....	.....	Mud.
21	66 56 0	56 18 00	48 to 56	Queen Ann's Cape	N.E.	.....	Rocky.

This is significant in that it suggests that Ross did retain some of the material that was recovered by his deep-sea Clamm. Sabine's comment also suggests that saving ocean-bottom samples was not the norm for voyages of exploration at this time.

Therefore, our review of the information gathered strongly suggests that the material from 674 fathoms mounted by Hennah on our slide, actually originated from a sounding performed by Ross on the *Isabella* using his

deep-sea Clamm, and not from a Parry sounding made from the *Alexander*, and that it was obtained on 31 August rather than 1 September.

The significance of the Hennah-mounted Parry soundings slides

The Ross 1818 expedition was one of the first if not *the* first British expedition largely designed to be an oceanographic voyage. During the voyage Captain Sabine noted the collection and preservation of some of the dredged material

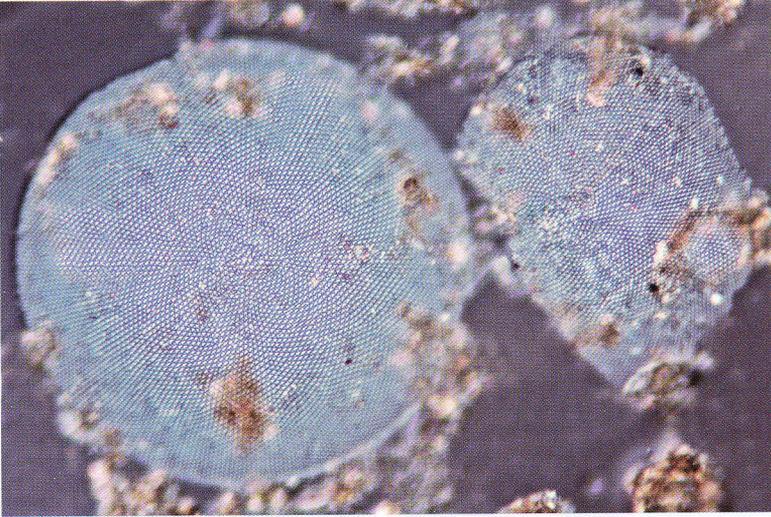


FIG. 15. Photomicrograph of *Coscinodiscus* diatoms From the slide fig.3 above [Darkfield, x20 objective].

obtained by Ross's deep-sea Clamm, the first effective device for collecting significant specimens of ocean bottom material. As Wyville-Thomson wrote in his description of the voyages of HMS *Porcupine* and HMS *Lightning*, Ross's deep-sea Clamm soundings were *the first authentic instance of any quantity of the bottom having been brought up from such depths* [8, p.210]. Parry was reported to have carried and successfully used a Ross deep-sea Clamm on his 1819 voyage [3, p.315], after which it was apparently never used again. However it served as a model for the later development of more efficient instruments. Wallich, the naturalist on board HMS *Bulldog* during the 1860 voyage, notes that after having difficulty obtaining adequate ocean-bottom samples, he successfully used a modification of Ross's Clamm [13, p.11]. It might be that Ross's Clamm served as a prototype for all modern oceanographic grabs in use today [3, p.315].

Although the Ross 1818 expedition is remembered for a variety of contentious reasons, his report of retrieving worms and other live animals from great depths was considered to be of considerable importance and was widely referenced [8, p.18; 14, p.xv; 13, pp.78-80].

It is interesting to note that if the results of the Ross soundings had been published soon after his return, Edward Forbes (1815-54) may not have developed his 'Azoic theory' suggesting that life cannot exist below 300 fathoms due to

the lack of light, high pressure and low temperature [15]. This theory was not finally laid to rest until the work of Carpenter, of Jeffreys, and of Wyville-Thomson's 1873 report on the results of the *Porcupine* and *Challenger* expedition [8].

Other than Hennah's presentation on the Parry soundings, we have been quite unable to find further information concerning fate of this material saved by Ross. Professor McIntosh in his report on the Annelida Polychaeta collected during the Challenger Expedition states:

There can be little doubt that during Sir John Ross's two Arctic voyages (1818 and 1829) Annelids of considerable interest must have been obtained, indeed, he mentions in his first voyage that "worms" were procured in the mud at a depth of 1000 fathoms. Unfortunately the collections in each case have disappeared.' [16, p.iv].

Subsequent enquiries have not found any material relating to the Ross 1818 expedition to be present in the collections of the Natural History Museum in London [17].

Conclusion

From the information presented above, it is clear that the material mounted on our slide labelled '674 fms' was actually obtained from a sounding made on HMS *Isabella* using Ross's Deep-sea Clamm on 31 August 1818.

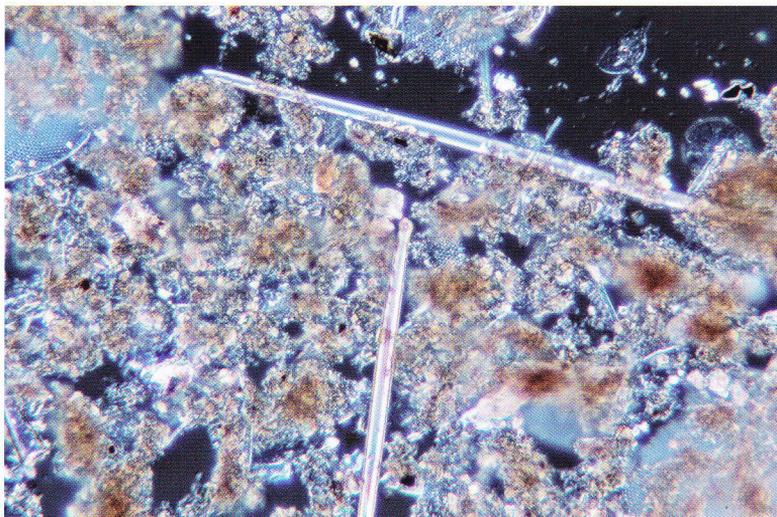


FIG. 16. Photomicrograph of sponge spicules and diatoms

From the slide fig.3 above. [Darkfield, x20 objective].

It can therefore properly be claimed that this '674 fms' slide is the most important of only four known surviving preparations of the earliest deep-sea soundings from one of the first British oceanographic expeditions. It may well also be the only remaining ocean-bottom specimen obtained using the first sounding machine capable of recovering material from great depth.

Given the lack of additional information on the three 201 fathom slides, we could not further define their origin: however, we believe that it is likely that they originated from the same source, since they are noted in Hennah's presentation on the sounding material [11]. It is of interest that Parry was able to obtain the Ross material in view of the apparent animosity between them as a result of their disagreement concerning the existence of mountains at the mouth of Lancaster Sound, the general conduct of the expedition, and the failure to give proper recognition to the work of the other officers [3, p.295].

The provenance of any article is almost as important in validating its authenticity as the object itself. It has been possible with the judicious use of modern methods of research and a degree of determination, to establish the detailed history of this small group of important slides, from the moment when the soundings were taken, up to the present day. Ross's log confirmed where and when this material was

recovered and that it was the *Isabella*, not the *Alexander* from which the soundings were made. It is clear that Parry obtained a sample of the soundings from Ross and that they remained with him until his death. J C Burrows obtained this material from Parry's widow and passed some of it to Hennah, whose interest in such matters was well-known locally. Hennah mounted the soundings on slides and gave a lecture about them to the Brighton & Sussex Natural History Society in 1870. Hennah died in 1876, and subsequently his slide collection was acquired by William Henry Youdale (1859-1922), a member of the Royal Microscopical Society. The Youdale collection, including Hennah's slides, was purchased by one of the authors some twenty five years ago, and the Ross/Parry/Hennah slides have now surfaced again.

It has been a challenging and rewarding task to piece together the story that these microscope slides reveal about an important expedition, the first to gather material from what were at the time the deepest soundings successfully retrieved. Although Ross rose to the rank of Captain and received a knighthood in 1843, his career was compromised by his misjudgement in Baffin Bay. In spite of this he should be remembered for leading the first scientific oceanographic expedition which became the template for those which followed, even to the present day.

Acknowledgements

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RUDOLF STAROSCIK
135 FISHER ROAD
JENKINTOWN PA 19046
USA

BRIAN DAVIDSON
MAYFIELD
CHART LANE
DORKING SURREY RH4 2BU