CD Publications of interest to Diatomists

All titles available from Savona Books

	Author/Company	Title/Description	Price UK Pounds
M3.	Griffith and Henfrey	Micrographic Dictionary 4th Edition. 1883. Plates only	£8
M4.	Flatters & Garnett	1929 Microslide Catalogue includes images of slides.	£10
M7.	P. T. Cleve	Diatoms from the West-Indian Archipelago 1878. pp20 Text Pages, 5 Tafels.	£10
M8.	J. Brun et J. Tempere	Diatomees fossiles du Japon 1889. 73 Pages, 9 Plates.	£10
M9.	Peragallo et Peragallo	Diatomees marines de France. 1897-1908. 137 Plates and Plate text only (with hyperlink indices)	£15
M10.	F. T. Kutzing	Synopsis diatomearum. 1834. 93 Pages, 7 Plates.	£8
M16.	Hilmar v. Schonfeldt	Die Deutschen Diatomeen des Susswassers und des Brackwassers - 1907. 19 Plates	£8
M17.	Adolf Schmidt	Atlas der Diatomaceenkunde - first 268 plates with hyperlink Index.	£35
M19.	Leuduger-Fortmorel	Diatomees Marines de la Cote Occidentale d-Afrique (Plates and hyperlink Index) 1898. 39 Pages, 8 Plates.	£6
M20.	Luard and Witt	Die Diatomaceen der Polycystinenkreide von Jeremie in Hayti. 1888. 25 Pages,7 Plates.	£5
M35.	Arthur Scott Donkin	The Natural History of the British Diatomaceae	£10
M36.	Jacob Whitman Bailey	Notes on New Species of microscopical Organisms	£5
M37.	Charles Pooley	The Diatomaceae of Weston-super-Mare	£15
M43.	Rev. William Smith	List of the Diatomaceae in the British Museum 1859	£5
M44.	William Gregory	On New forms of Marine Diatomaceae found in the Firth of Clyde and in Loch Fine 1857	£4
M45.	Otto Muller	Kammern und Poren in der Zellwand der Bacillariaceen 1899-1901	£5
M47.	Kain and Schultze	On a Fossil Marine Diatomaceous Deposit from Atlantic City, N.J. 1889	£5
M48.	Dr. József Pantocsek	A FERTÕ TÓ KOVAMOSZAT VIRÁNYA (Bacillariae Lacus Peisonis) 1912	£5
M49.	Dr. Josef Pantocsek	BESCHREIBUNG und ABBILDUNG der FOSSILEN BACILLARIEN des ANDESITTUFFES von SZLIÁCS in UNGARN 1903	£5
M50.	E. G. Grahn M.D.	Diatomaceae found in the neighborhood of Brookville, Indiana, 1885	£4
M69.	Little Imp	A Checklist of British Diatoms	£4
M71.	Little Imp	Diatomaceae on Magic Lantern Slides V.1.0.	£3
M72.	Alfredo Truan y Luard	Diatomeas de Asturias 1844	£5
M73.	Little Imp	A Checklist of Diatoms of the Central U.S.A.	£3
M74.	Little Imp	DiatCode - List of Diatom Species with Int. codes	£3
M76.	Various Authors	Practical Direction for collecting, Preserving, Transporting, Preparing and Mounting Diatoms	£4
M78.	Rev. Eugene O'Meara	Report on the Irish Diatomaceae	£6
M80.	William Smith	A Synopsis of the British Diatomaceae	£10
M81.	J. D. Moller	Diatomaceen Typen-Platte 335	£4

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The Amateur Diatomist

Vol. IV. No. IV. **July 2009**

Little Imp Publications

IMPORTANT NOTICE!

It is with sadness that we have to announce that this issue is the last Amateur Diatomist to be printed.

All those involved in the production have very much appreciated your support over the years. Rising costs of production and a static readership have meant that the excess costs incurred, borne by the editors, have become such that we can no longer justify the continuation of the enterprise.

This issue is accompanied by 2 CDs. One is the CD intended for the last issue and promised therein.

We shall exploring the possibility of continuing the title via the Internet.

Klaus-Dieter Kemp's Diatom Database

Access via a web browser (IE5.5 or above) - requires 1024x768 display minimum.

Includes:- **over 15,000 species images**
124 genus description
from over 60 publications

Order via Microlife Services (address inside front cover).

Front cover picture: A tube from the Meakin Collecion

Depth of Field and Digital Photomicroscopy

By Stephen S. Nagy, M.D.[1]

Helena, Montana, U.S.A.

Editor Steve Gill wrote an article in The Amateur Diatomist, Vol. III, No. IV, May 2006 titled "Problems with Depth of Field" which compared an image made from the 1920s by Thomas Castle with considerable depth of field to results made by the author with a Zeiss Universal stand and a digital camera, apparently a Nikon Coolpix 990. The editor reviewed problems that he experienced with attempting to achieve comparable depth-of-field results to Mr. Castle's, and requested an authoritative article helping him to achieve results comparable to Castle's.

This article responds to this request, and it is my hope that it will help to improve results on all reader's stands, whether using digital cameras or film.

Certain concepts need to be clarified as a starting point:

Depth of field refers to the axial resolving power of an objective, or vertical resolution, measured parallel to the optical axis. This can be defined as the distance of the nearest object plane in focus at a distance from the microscope objective, to the furthest object plane also in focus. In microscopy, this distance is very short, and varies inversely with the numerical aperture. [2]

This concept is sometimes used as if it were interchangeable with Depth of Focus, which is incorrect. Depth of Focus refers to the depth of the image created by the microscope objective on the side opposite to the specimen being imaged, which is then further magnified by the compound microscope eyepiece. It is important to understand that objectives with low numerical aperture, which have larger depth of field, have a very thin depth of focus, which makes critical focusing of the specimen much more difficult with a low-power objective than is the case with one of higher power.

Nikon Instruments provides the following data, which provides the same information in a tabular format:[3] (The 100X objective must be one which is designed to be used dry, with uncovered specimens, to have this low of an N.A.)

Depth of Field and Image Depth

Magnification	Numerical Aperture	Depth of Field	Image Depth
4x	0.10	15.5	0.13
10x	0.25	8.5	0.80
20x	0.40	5.8	3.8
40x	0.65	1.0	12.8
60x	0.85	0.40	29.8
100x	0.95	0.19	80.0

The key concept to understand is that depth of field is strictly regulated by the numerical aperture of the microscope objective , and can be regulated by altering the numerical aperture of the system by closing down the condenser iris diaphragm, by closing an iris diaphragm which might be in an objective, or by closing the diaphragm of the Davis Shutter, an alternate placement of an iris above the microscope objective. Alternately, one can use a different objective with a dissimilar numerical aperture. [4]

Of course, every optical change creates a trade-off of some kind: microscope objectives provide the best point-to-point optical resolution in a plane perpendicular to their optical axis when the condenser diaphragm is set at about 9/10 of their aperture. In practice, most microscopists close down the aperture to a greater degree than this in order to create improved contrast in their specimens. However, this decrease in numerical aperture degrades lateral point-to-point resolution, obscuring fine details in diatom structure. With greater closing of the condenser diaphragm to the range of 50%, can create interference rings around fine structures, which further degrade details in the image. Hence, one can improve depth of field to some degree by manipulating the condenser diaphragm aperture, but only within fairly narrow limits, or be at risk of degrading the image.

At the present time we have become accustomed to using flat-field objectives, with relatively lower Numerical Apertures than the non-plan objectives that were in common use earlier in this Century. In these non-plan objectives, approximately the central 1/3 of the visible field was in focus when one examined a plan specimen. Further, modern microscopes are not equipped with a bellows or draw tube, limiting to some degree the possible manipulations that the microscopist can make to his equipment. A discussion of options available to microscopists who possessed stands with these features is from Shillaber's wonderful book, as follows:

The flatness of the field of view, an important factor in photomicrography, is increased, artificially, by reducing the N.A. However, for photomicrographic purposes there are better ways of reducing field curvature than by diaphragming the objective. It must be remembered that, whenever an objective is used at less than its rated aperture, it will not be working at capacity, and oftentimes a cheaper lens might serve the purpose of a better one. If the image field is not sufficiently flat it may be expedient to use a longer bellows draw, to use projection lenses specially designed for such corrections, to try an achromatic instead of an apochromatic objective, or to combine a low-power objective with a longer bellows draw.[5]

To some degree the optical zoom feature in digital cameras is equivalent to a longer bellows length, but for the most part we have fewer options than microscopists who made exposures in minutes with fine-grained, slow film.

Now, an examination of the image by Thomas Castle in Steve Gill's article, labeled "Triceratium Javonicum" (but actually of Hydrosera triquetra Wallich), reveals that while the vertical resolution of the image is quite good, the lateral resolution of the image is blurry at best, suggesting a low power objective in combination with a long bellows draw.

Hence, if we attempt to photograph this diatom to yield a comparable image, we would seek to choose a relatively low-numerical aperture objective (40x with N.A. of 0.65) with as much optical zoom as possible. Note that the "digital zoom" does not increase the resolution of any image captured, but simply increases the size of the central imaging area in the camera. One needs to be careful not to stop down the iris diaphragm in the condenser excessively. When using a Zeiss Universal stand, the use of the Optovar in this situation would serve to further increase the magnification of the image projected into the digital camera. We would then want to enlarge the digital image to a maximal extent for the final image.

There are certain conclusions that may help to guide the modern microscopist attempting to obtain maximal depth of field from their digital equipment:

1. Set up the microscope for Koehler illumination if possible.[6]

2. Focus the specimen exactly, using whatever means is possible to get a sharp image on the plane of the optical sensor. With low-power objectives, this means using the coarse focus to

focus through the focal plane of the objective, then back again, with fine focus used after the fact. With higher-power objectives, critical focusing by examining the LED display of the camera carefully is essential.

3. Examine the exit pupil of the objective by removing the eyepiece and looking down the eye tube of the microscope, preferably with a phase telescope. Be careful that the condenser iris is not stopped down excessively.

4. Use the optical zoom of the digital camera whenever possible to the full extent of the zoom. This will provide larger images which more fully fill the field of view of the digital camera, and thus allow the use of lower-magnification objective which have a deeper depth-of-field.

5. Use the largest pixel setting possible on your camera. This will optimise detail, so that if an image is later cropped out of an expansive background, there will be more content in the final cropped image than there would be at a lower image setting.

6. Consider changing to a lower-power objective if the depth of field is insufficient, and crop the digital image and enlarge correspondingly. This demands that one use the highest data setting possible on the digital camera to capture as much detail as possible.

7. Keep careful records of all microscope settings for each image; this way they can be critiqued later. A useful tabular form can be created using a word-processing program, which allows data collection at the time that the image is composed and photographed, and which serves the auxiliary reminder to the microscopist to check all settings before making any exposure.

8. Last, consider using an image stacking program such as CombineZ5[7] , available on the web, to extract the in-focus pieces of several images, and thus massively increase the apparent depth of field in the final image.

Further information is available on the web at these locations:

http://www.microscopyu.com/articles/formulas/formulasfielddepth.html

http://micro.magnet.fsu.edu/primer/java/imageformation/depthoffield/index.html

http://www.dpchallenge.com/tutorial.php?TUTORIAL_ID=1

Notes:

[1] An amateur diatomist, proprietor of Montana Diatoms, and winner of honorable mentions in the Nikon Small World and Olympus Bioscapes Contests in 2005 and 2006.

[2] Davidson and Abramowitz, Optical Microscopy, p. 22, http://www.olympusmicro.com/primer/opticalmicroscopy.html

[3] http://www.microscopyu.com/articles/formulas/formulasfielddepth.html

[4] Charles Patten Shillaber, Photomicrography in Theory and Practice, New York: John Wiley and Sons, 1944, p. 53 to 56.

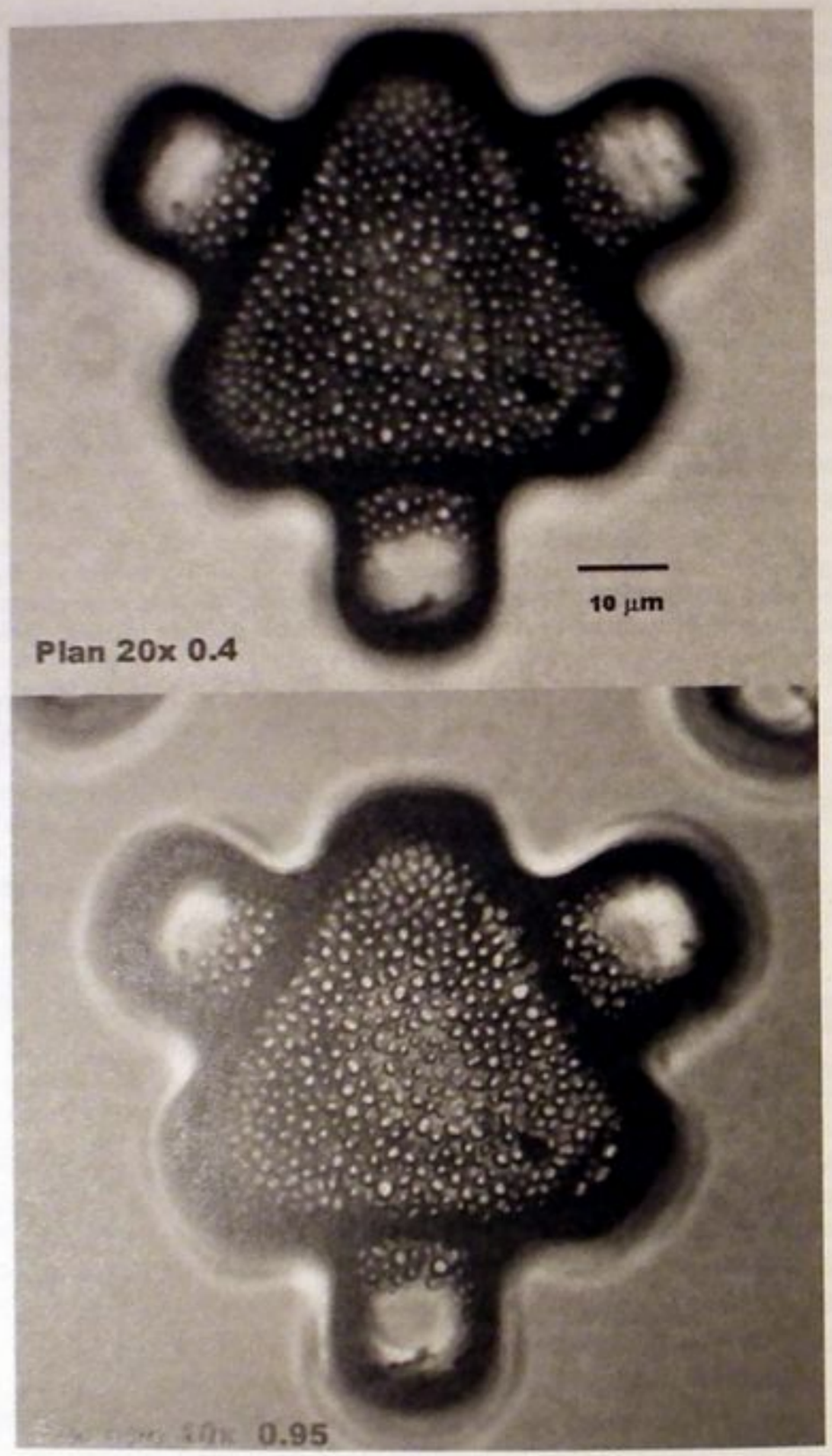
[5] Shillaber, P. 55.

[6] http://micro.magnet.fsu.edu/primer/anatomy/kohler.html

and http://www.mediacy.com/pdfs/Koehler%20Illumination.pdf

[7] CombineZ5 by Alan Hadley, available as freeware here:

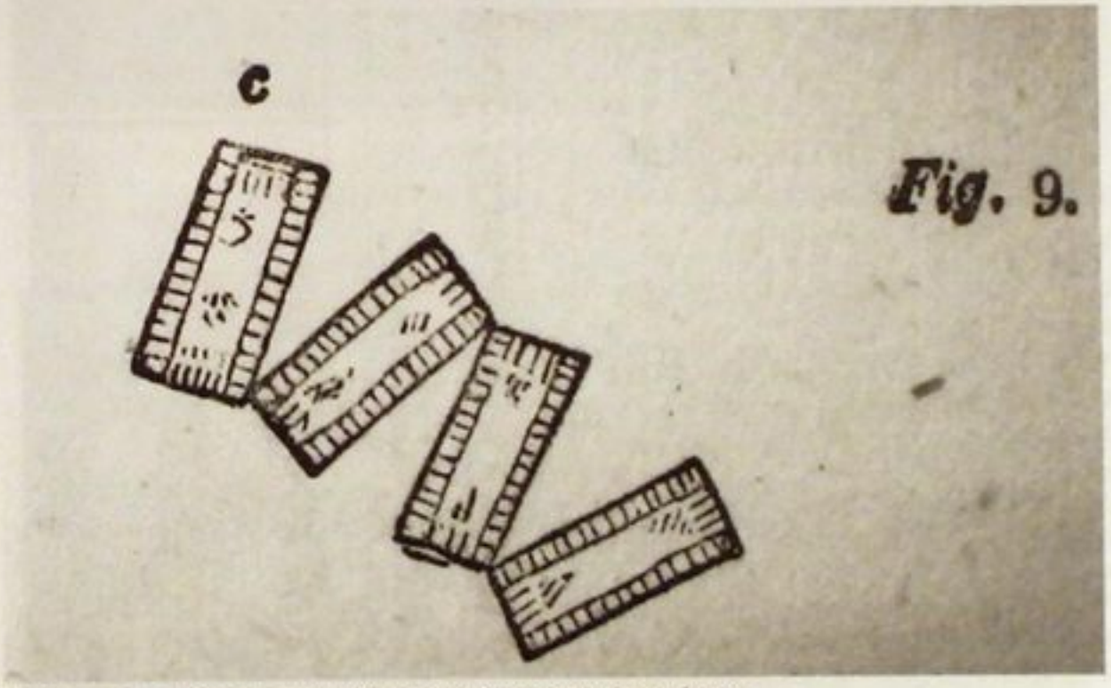
http://www.hadleyweb.pwp.blueyonder.co.uk/index.htm



Common Names

There is something comforting about common names and I often bemoan the absence of such in the world of the diatomist.The only example that readily springs to mind is Bacillaria paradoxa - the Carpenter's Rule diatom. However, I was recently perusing an old volume, not dedicated to the Diatomaceae at all, 'Vegetable and Animal Life' by Robert James Mann, M.D., F.R.A.S., etc. published in 1856 wherein was another common name.

"In some species of Diatoms, the individual cells cling slightly together by their corners or edges, as if loth to part, instead of being at once cast quite asunder when completely formed. The figure shows the appearance of one of these connected Diatoms, known as the Bacillaria, or zig-zag Brittlewort."



If other names, local or otherwise, are known please let us know.

Uses of Diatomite

Red Star Cleaning Powder

from History of Manufactures of Keene, New Hampshire

John A. Wright & Co., Manufacturers of Red Star Cleaning Powder. - The powder for cleaning and polishing gold, silver, glass, etc., is made from a substance sometimes called " Float Stone " and White Infusorial Earth," The deposit is located at Troy, N. H., and lies three feet from the surface, reaching down from five to twenty-five feet and spreading over some two acres lying in a basin at the foot of granite ridges or hills. This substance is mined, and after being submitted to atmospheric changes, is pulverised and sifted, the powder being as fine as flour and of a white colour. It is transported to Keene, where it is prepared for shipment, labeled with the trade mark of a red star, and sent out as the "Red Star Cleaning Powder." This mine was discovered in 1872, and the

product has been practically and thoroughly tested in thousands of cases since, each instance showing it to be a most superior article for polishing.

The following text courtesy of

Wright's®

AMERICA'S FIRST FAMILY OF METAL CARE PRODUCTS
SINCE 1873

MAGIC MUD: HOW A COWBELL RANG IN A NEW POLISHING ERA

I. The Early Days (1873-1896)

Like so many "brilliant" success stories, the development of John A. Wright's first product was the result of a rather accidental discovery. It all started in 1872.

While driving his buggy on a back road near Keene, New Hampshire, John A. Wright spotted a cow mired in a muddy bog. He enlisted a neighbouring farmer to help free the hapless-and dirty-bovine. As the two men chatted, Mr. Wright noticed that the dark-coloured mud on the animal's legs and flanks grew lighter as it dried. Wiping the mud from the cow's bell, he saw something remarkable: the metal of the bell appeared much brighter where the mud had been, as if polished. Intrigued, Mr. Wright had the mud analysed and discovered that the substance was diatomaceous earth, or silicon diatomite, formed from the fossilised shells of microscopic, single-celled aquatic algae. High in silica, the "magic mud" seemed a natural for polishing metal.

Mr. Wright immediately purchased the land containing the silica diatomite and began marketing the substance under the brand names "Red Star Cleaning Powder" and "Golden Seal Metal Polish." Originally, the product was a fine, dry powder. By 1887, Mr. Wright had developed a more practical product, registering it

under the name "Silver Cream." The business prospered.

II. Growth and Challenge (1896-1972)

In 1896, upon Mr. Wright's death, his sons Frank A. and Arthur L. took over. They continued to innovate, introducing glass jars (25 cents for a half pint) and an automated assembly line. The brothers sought out new sources of diatomaceous earth to satisfy demand.

By 1914, the company's annual advertising budget was an impressive $25,000. The company introduced a variety of innovative promotional techniques, including free samples, premiums, and prizes. The company grew steadily, and so did the compassion of Wright management. Frank introduced a five-day workweek, before Henry Ford. Arthur's only child, John P. Wright, succeeded his father and uncle in 1929-just in time to face the challenges of the Great Depression. He responded to a 10 percent decline in sales with an aggressive campaign that included the company's first radio advertising in 1930. By 1937, all previous sales record were broken. John P.'s belief in the power of promotion never waned and in 1954, the Wright company

ran its first television advertisements on Dave Garroway's "Today Show."

To accommodate expansion, in 1940 the company built a fully automated production facility on Dunbar Street in Keene. This location still houses all J.A. Wright and Co. operations to this day.

III. Expanding the Family (1972-1992)

The fourth generation of Wrights-John M. and Thomas P.-took the reigns in the early 1970s, as president and vice president, respectively. They expanded the product family, developing brass and copper polishes and jewellry cleaner. They christened the new and improved Wright product line "America's First Family of Metal Polishes."

Strongly committed to product innovation and quality, the Wrights created a modern in-house laboratory. In the 1980s, R&D efforts led to the replacement of diatomaceous earth with a natural clay that produced an even brighter finish.

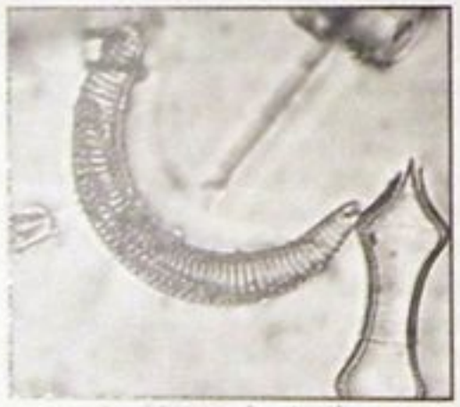
To meet growing demand for its growing line of products, in 1983 the brothers expanded the Dunbar Street facility by 50 percent.

****

Whilst material from Red Star Cleaning powder can provide whole frustules the majority of the diatomaceous earth component is calcined and crushed which means that you need to be able to recognise fragments in order to name a species.

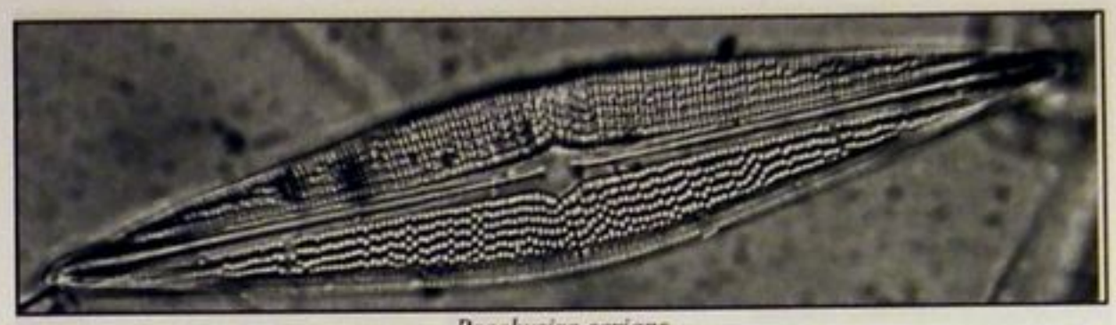
However, Klaus Kemp can provide a strew of the material from the Troy, New Hampshire site (contact details inside front cover).

A brief examination of a slide has identified the species and genera pictured as follows:



Amphicampa hemicyclus

Brachysira follis



Brachysira serians

Brachysira styriaca compare with Brachysira serians

Cymbella spp.

Diatoma anceps

Eunotia spp.

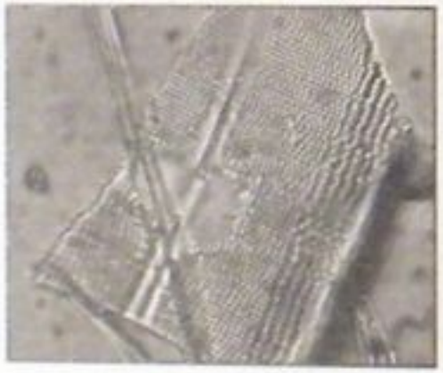
Eunotia spp.

Eunotia spp.

Eunotia spp.

Gomphonema spp.

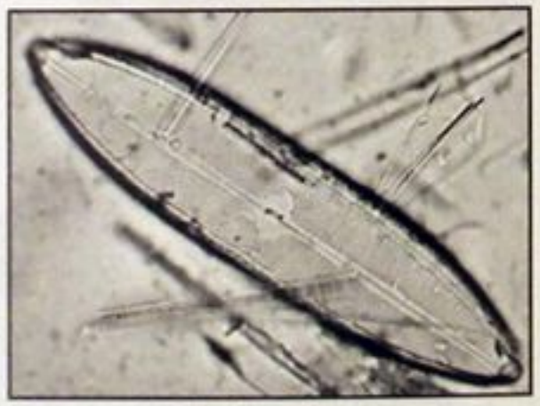
Navicula spp.



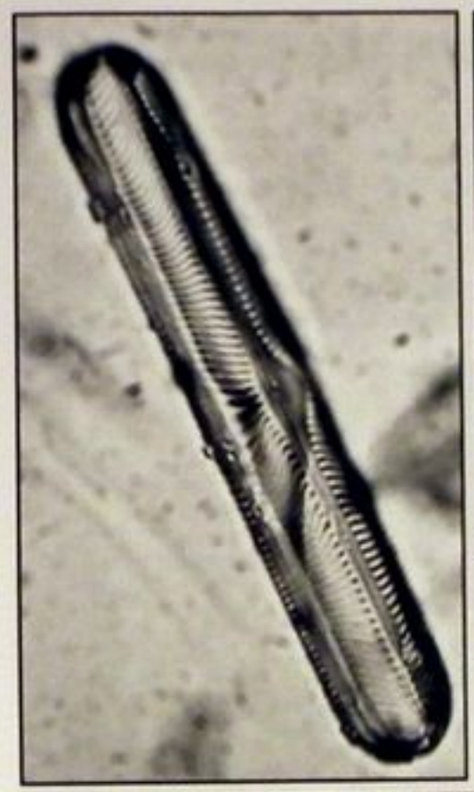
Neidium spp.

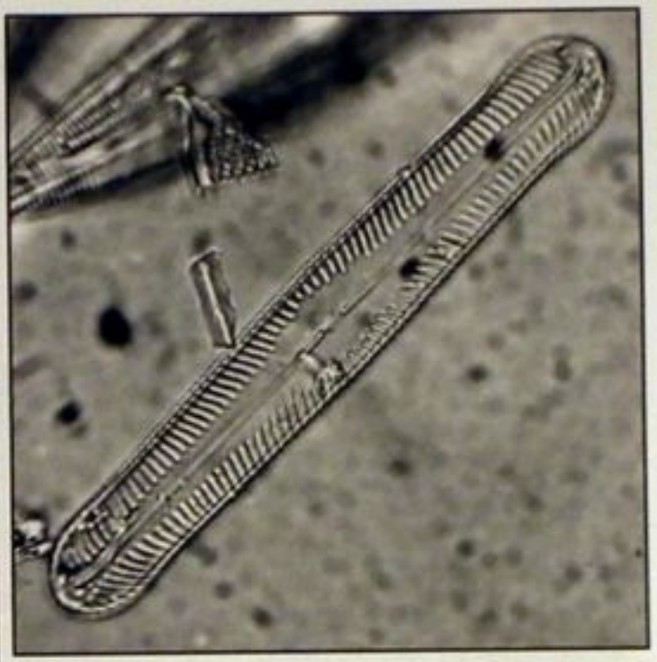
Fragilaria construens var binodis

Melosira spp.

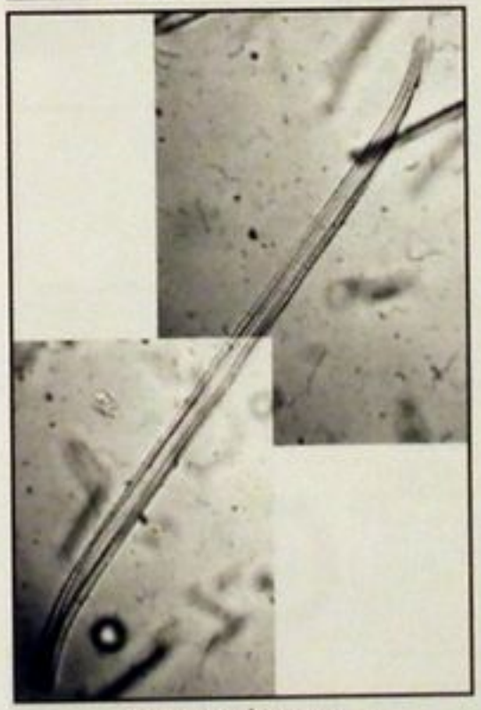


Neidium spp.

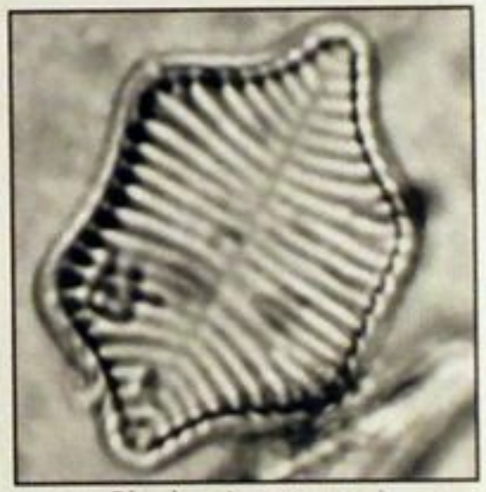




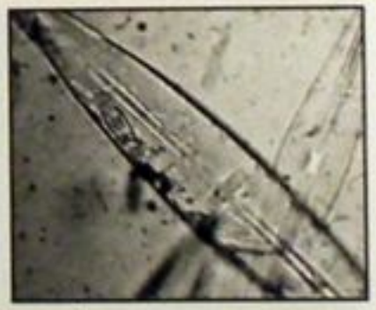
Pinnularia spp.



Stenopterobia anceps



Rhaphoneis castracanei

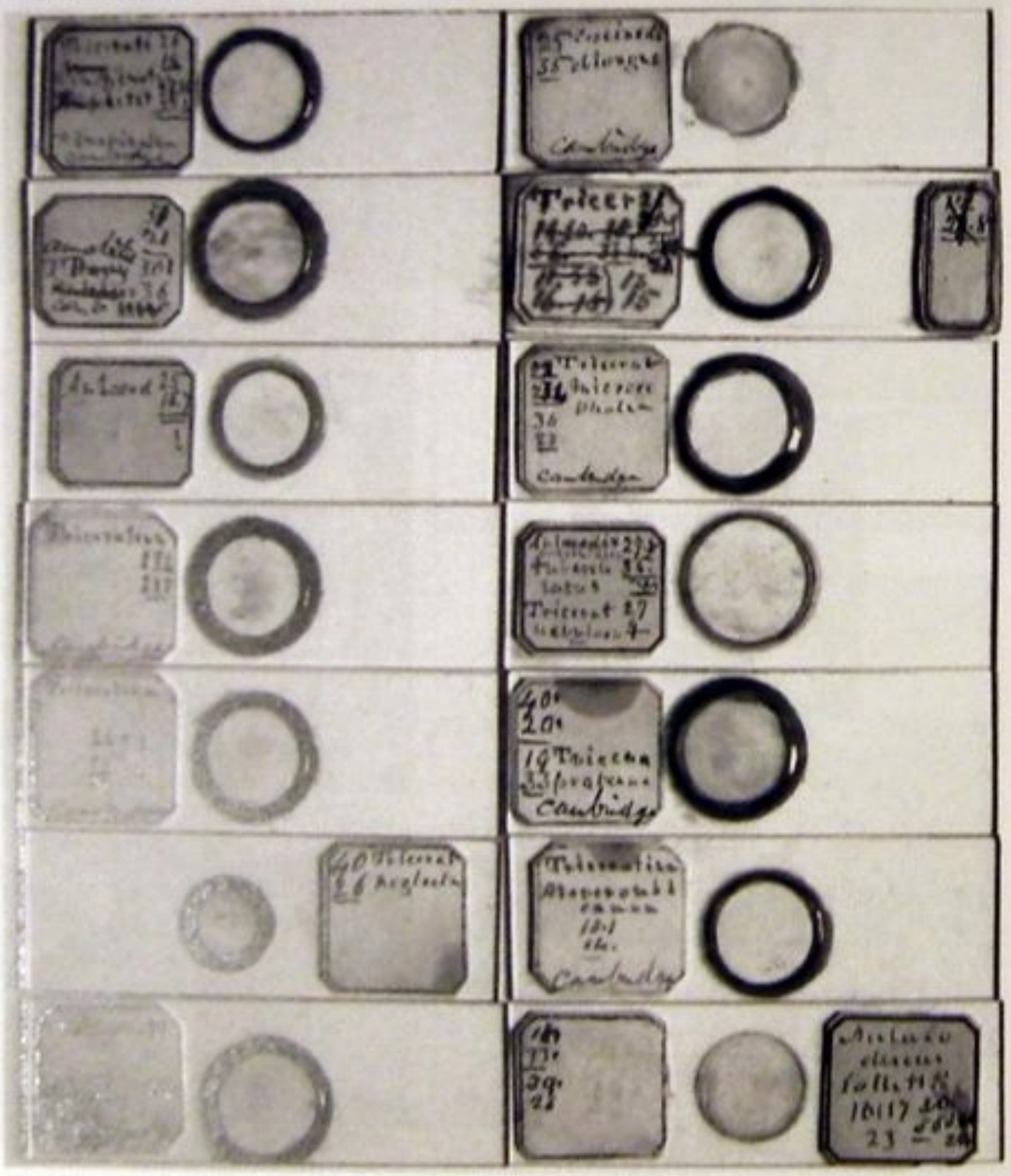


Stauroneis spp.

Luck and Perseverance

by Steve Gill

A number of years ago I purchased a small collection of strew slides bearing labels which themselves bore a breakdown of the genera in the sample without giving any absolute indication as to where the sample was from, save for the word 'Cambridge'. In the world of the diatomist this could legitimately be Cambridge, England or Cambridge, Barbados, which translates as Recent Freshwater for Cambridge, England or the fossil radiolarian (marine) tertiary deposit of Barbados. Checking the species listed it is clear that the source of the material is Marine, and in



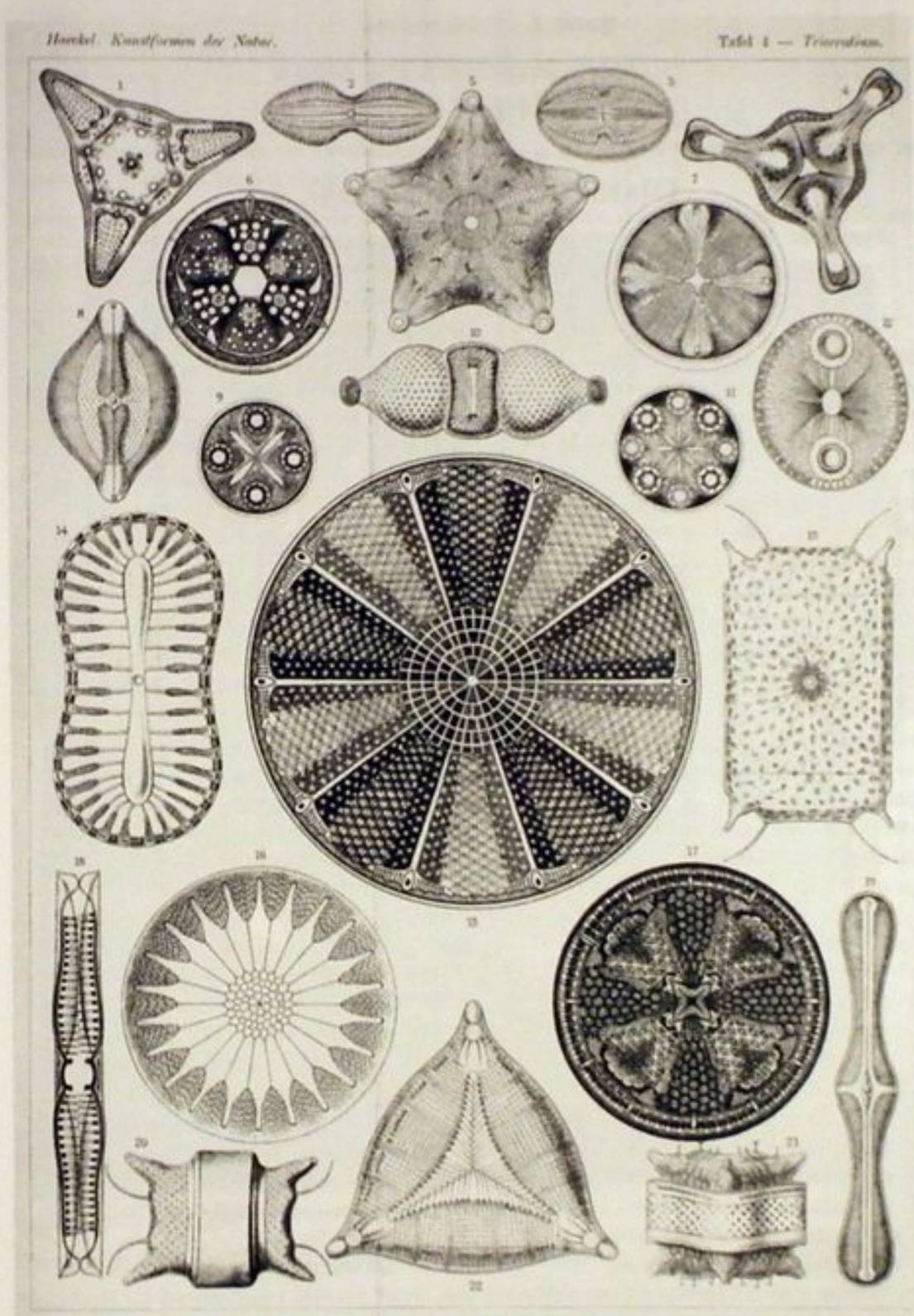
particular the presence of Triceratium microcephalum (3rd slide from the top, right hand column) effectively identifies the source of the 'Cambridge' material as Barbados. Whereas the slides would have a lesser value to Science without an identifiable source they now are valuable as reference material. Even should the material source be unknown the slides would have an historical interest, or at least would have if something of their provenance were known. I had singularly failed to glean any information regarding the mounters origins despite careful examination of the slide labels, though examination of the subject matter has been interesting - so I felt that my time and effort had not been wasted. As is my habit I attended one of the microscopical club meetings and wandering around the displays came across a single slide on the stage of a microscope that held the key to the history of my small collection.

The slide discovered at the meeting was of material collected at Whissonsett, Dereham, Norfolk which is, of course, where Fred Kitton was based. Frederic Kitton worked on and published papers on many fossil deposits though I have been unable, as yet, to locate a study, by him, of the Barbado(e)s deposits. It's

only a matter of time though, that and luck and perseverance.

Old Papers - Revisited.

This issue we thought that as a continuation of the article published in Vol. IV. No.2 depicting a plate by Haeckel and the interpreted mount by Stephen Nagy the following is worthy of printing in larger format. If you find original plates (they are quite often disbound from the original publication) they are worth collecting, not so much for their monetary value but for their beauty



Diatomea. — Schachtelfinge.

Diatomea. Schachtellinge.

Stamm der Urpflanzen (Protophyta); — Hauptklasse der Algarien; — Klasse der Diatomeen (Schachtel- oder Kiesel-Algarien).

Die Diatomeen oder Schachtellinge bilden eine formenreiche Klasse von einzelligen Urpflanzen, welche massenhaft sowohl im Süßwasser als im Meere leben; über 2000 Arten sind bekannt. Sie zeichnen sich vor anderen Protophyten durch die Bildung einer zierlichen, zweiklappigen Kieselschale aus; die beiden Hälften oder Klappen derselben verhalten sich wie eine Schachtel und ihr Deckel. Die obere, etwas größere Hälfte, die Deckelklappe, greift mit einem breiten Rande, dem Gürtelbande, über den Rand der unteren größeren Hälfte, der Schachtelklappe, hinüber. Daher hat jede Schale zwei sehr verschiedene Ansichten, die parallele (horizontale) Boden- oder Hauptseite (Fig. 1, 4 x.) und die ringförmige (vertikale) Gürtel- oder Nebenseite (Fig. 20, 21 x.). Die erstere ist meistens durch sehr zierliche Skulptur ausgezeichnet: Rippen, Leisten, Felder, Körner x. Sie ist von sehr feinen Poren durchbrochen. Die meisten Diatomeen sind sehr klein, schweben frei im Wasser und bilden einen wichtigen Bestandteil des Plankton; andere Arten sind durch Gallertstiele am Boden befestigt. Viele Arten bilden Cönobien oder Zellvereine, indem die durch Teilung entstehenden Tochterzellen in Zusammenhang bleiben. Alle auf dieser Tafel abgebildeten Arten gehören zu den einsam lebenden (Monobien) und frei schwimmenden. Ihre Schalen sind meist durch eine sehr regelmäßige geometrische Grundform ausgezeichnet: zweiseitig (Fig. 2, 3, 10), dreistrahlig (Fig. 1, 4, 22), vierstrahlig (Fig. 7, 9, 11), fünfstrahlig (Fig. 5), vielstrahlig (Fig. 16). Der lebendige, weiche Zellenkörper, welcher in der Schale eingeschlossen ist (Fig. 15), enthält in der Mitte einen Zellenkern; von der feinen Plasmaschicht, die ihn umgibt, strahlen verzweigte Plasmafäden aus, welche die strömende Bewegung der lebendigen Zellsubstanz zeigen. Im Plasmanetz zerstreut liegen viele Chromatellen oder Farbkörner; ihre grüne Farbe (Chlorophyll) wird meistens durch einen gelben oder braunen Farbstoff verdeckt (Diatomin).

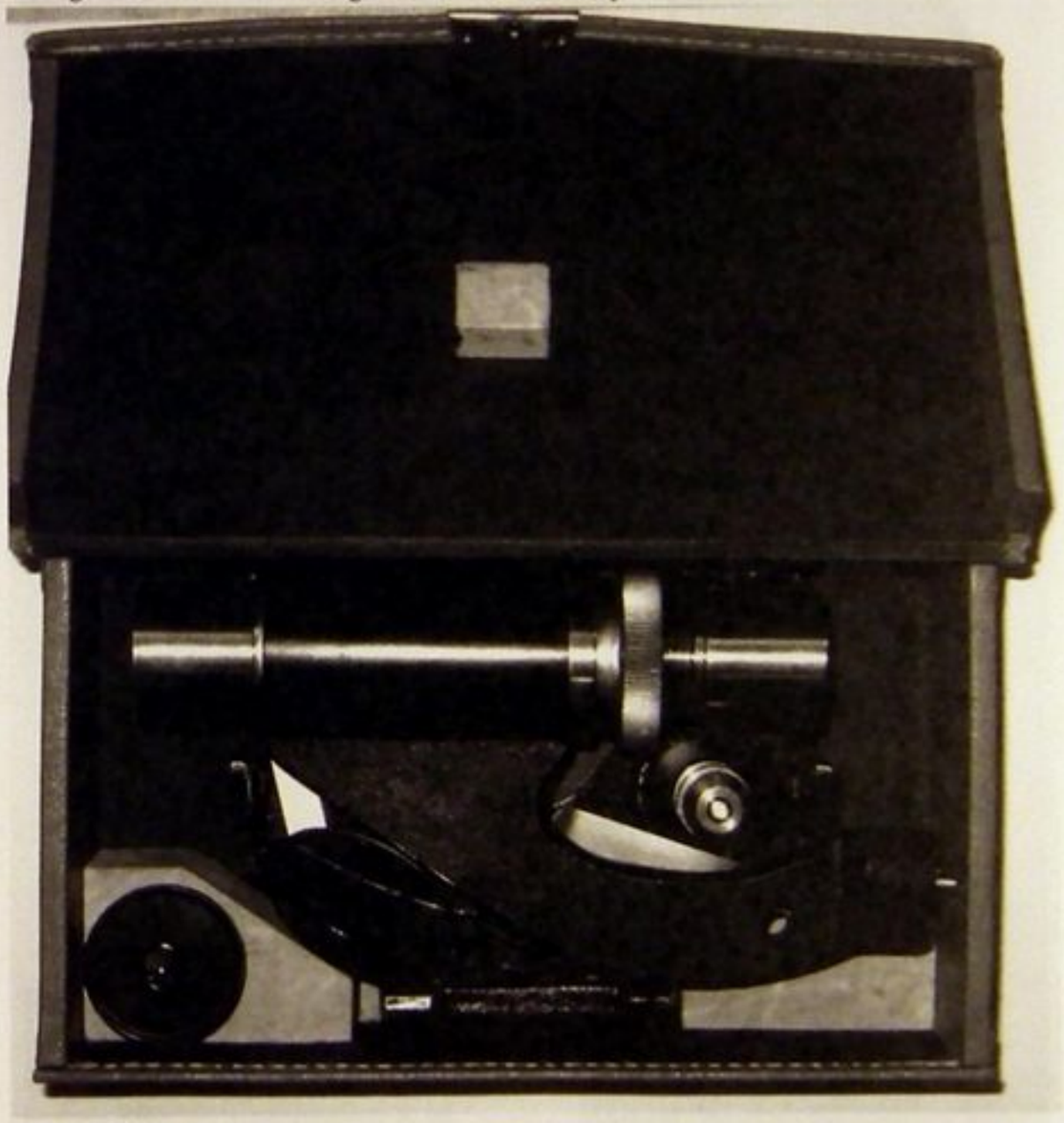
Fig. 1. Triceratium digitale *(Brun)*.
- 2. Navicula lyra *(Ehrenberg)*.
- 3. Navicula excavata *(Greville)*.
- 4. Triceratium mirificum *(Brun)*.
- 5. Triceratium pentacrinus *(Wallich)*. Vgl. Fig. 21.
- 6. Actinoptychus constellatus *(Brun)*.
- 7. Aulacodiscus mammosus *(Greville)*.
- 8. Navicula Wrightii *(Moore)*.
- 9. Auliscus cruciferus *(Brun)*.
- 10. Biddulphia pelchella *(Gray)*.
- 11. Auliscus cruciferus *(Brun)*.
- 12. Auliscus mirabilis *(Greville)*.
- 13. Aulacodiscus Grevilleanus *(Norman)*.
- 14. Surirella Macraeana *(Greville)*.
- 15. Denticella regia *(Max Schultze)*.
- 16. Asterolampra eximia *(Greville)*.
- 17. Actinoptychus heliopelta *(Brun)*.
- 18. Plagiogramma barbadense *(Brun)*.
- 19. Pinnularia Mülleri *(Haeckel)*.
- 20. Biddulphia granulata *(Smith)*.
- 21. Triceratium pentacrinus *(Wallich)*. Vgl. Fig. 5.
- 22. Triceratium moronense *(Greville)*.

of execution.

Field Microscopes (VII)
Zeiss Winkel

Unlike some of the stands we have featured where the size f your back-pack determines its portability, this Zeiss-Winkel model is truly portable.

The rigid leather case containing the disassembled components is a mere 175mm wide x 90mm



deep x 52mm in height.

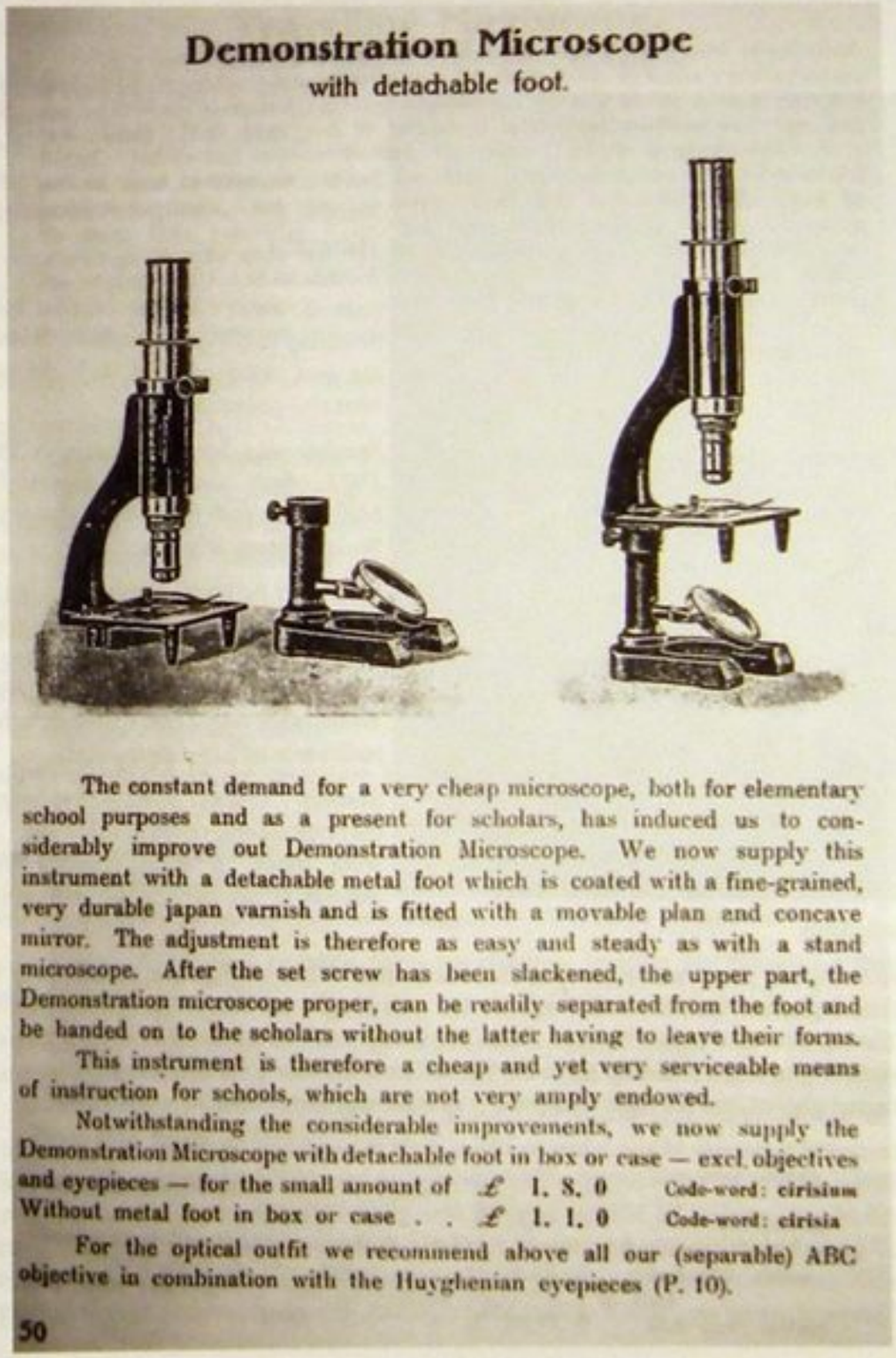
The objective is a dividing triplet giving a wide range of powers. The eyepiece provided is a x6.

Amazingly all the necessary bits are there and the whole can be assembled very quickly and broken down similarly. Once assembled the biggest drawback is the position of the mirror, obviously beneath the stage but so close to it as to make adjustment to catch the light somewhat

difficult. Nonetheless, as long as you're not choosing to use this in long grass it can be done.

Focussing is via a horizontal thumbwheel acting on a relatively coarse thread cut into the tube itself. It works very well.

Unfortunately I haven't found a catalogue entry for this specific stand to determine whether any other accessories were available. It seems unlikely but there may have been alternative eyepieces.



The constant demand for a very cheap microscope, both for elementary school purposes and as a present for scholars, has induced us to considerably improve out Demonstration Microscope. We now supply this instrument with a detachable metal foot which is coated with a fine-grained, very durable japan varnish and is fitted with a movable plan and concave mirror. The adjustment is therefore as easy and steady as with a stand microscope. After the set screw has been slackened, the upper part, the Demonstration microscope proper, can be readily separated from the foot and be handed on to the scholars without the latter having to leave their forms.

This instrument is therefore a cheap and yet very serviceable means of instruction for schools, which are not very amply endowed.

Notwithstanding the considerable improvements, we now supply the Demonstration Microscope with detachable foot in box or case — excl. objectives and eyepieces — for the small amount of £ 1. 8. 0 Code-word: cirisium
Without metal foot in box or case . . £ 1. 1. 0 Code-word: cirisia

For the optical outfit we recommend above all our (separable) ABC objective in combination with the Huyghenian eyepieces (P. 10).

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A very similar instrument appeared in an R. Winkel catalogue of about 1930.

Note:

Rudolph Winkel was a competitor with Carl Zeiss in the field of microscopes. Winkel family association with the manufacturing business gradually waned and it was eventually sold to Carl Zeiss. Despite this change of ownership the business remained Winkel until 1954 when it was absorbed into the microscope division of Carl Zeiss, Oberkochen.

James Stanley Midwinter
(15th February 1923 - 2nd August 2008)

It is with intense sadness that we must record the passing of James Stanley Midwinter (Stanley or Stan to all his friends in the various Societies). Stanley passed away in the early hours of Saturday 2nd August. After a short illness the end came quickly with the onset of broncho-pneumonia.

Stanley was born on the 15th February 1923, first son of William Herbert Midwinter and Katie (nee Jones) in the Welsh village Rhos Isaf.

Wherever he lived, throughout his life, he never forgot his Welsh origins and frequently returned to the village of his birth to visit family and friends. He spoke Welsh and was keen to teach others the rudiments of his native language.

Stanley was an indefatigable correspondent, communicating with a wide range of acquaintances from all periods in his life, on all the subjects he took a delight in.

Throughout his life there was a passion for music, particularly the genre of Jazz. He was an accomplished pianist, guitarist and banjoist. He was taught the banjo by the famous teacher Charlie Evans, who also taught Selwyn Cash. For many years he played guitar with like-minded jazz musicians who had a standing set at the Barwell and District Constitutional Club on a Friday night. Stanley played this set right up until his demise and rarely missed a performance.

His interest in Microscopy began when he discovered the writings of Philip Henry Gosse during his childhood. Proud of his 'working-class' heritage he recounted his desire to, one day, own a brass microscope, similar to the Society of Arts model displayed in a local shop near his childhood home - an ambition he achieved in later adulthood. He was a familiar figure at the various club meetings around the country and was particularly interested in the various 'do-it-yourself' projects, as he was also a skilled lathe operator. His children have fond recollections of

pond-dipping trips in the mid-seventies and his association with Horace Barber, who lived in the next town, was instrumental in establishing an interest in the Diatomaceae. Stanley was a member of the Quekett Microscopical Club, the Manchester Microscopical Society and the Postal Microscopical Society.

His formative years were spent in Birkenhead.

He was educated first at Mersey Road School and then, via a scholarship, entered the local Grammar, Rockferry High School.

After school, during the war years, he started work with ShellMex.

In the mid years of the conflict he was called up, entering the Army, working in the Royal Army Ordnance Corps (RAOC), reaching the rank of Corporal by the time of his discharge in 1947, when he enrolled at Liverpool University in the Social Sciences department and later to Manchester University to qualify as a Mental Health specialist.

His professional life began when he started work at Denbigh Mental Hospital where he was a Psychiatric Social Worker.

He married his wife, Irma, a student nurse at the same hospital, in 1954.

His daughter Jennifer was born in 1960, his son Ken in 1964.

He later specialised in Child Guidance, being responsible for large swathes of North Wales, which he patrolled on his motorbike. From here Stanley moved to King's College, Belgrave Children's Hospital, a prestigious group at the time. He moved from London to Hinckley, taking up a lectureship in Social Work at Lanchester Polytechnic in Coventry in 1963. He remained there for 19 years until his retirement.

He was renowned for driving to work in his green 1952 Armstrong Siddeley Whitley. As parts for this vehicle became more difficult to source Stanley donated the car to the Coventry Museum of British Road Transport. He was briefly reunited with the cherished machine on his eightieth birthday when friends organised for the vehicle to be at the steps of Coventry Cathedral where he was to meet for a birthday lunch.

A highly principled man, he remained true to his convictions even when those beliefs ran contrary to his own benefit.

All who knew Stanley had their lives enriched by his wit and humour and we are very much the poorer for his passing. He has left this world a better place for his existence and if we can emulate but a small portion of his humanity then his legacy will live in us all forever.

Our deepest sympathy goes to his wife, Irma, his children, Jennifer and Ken and grandchildren, Oscar and Caspar.

Diatomist Caged for 'Own good'.

A local group of diatomists decided on a collecting trip recently. Arrangements were made to pick up the various interested parties, calculations having been carefully done as to carrying capacity. I was last on the list for collection. By the time the transport arrived an extra person had been ensconced in the back seat and there was no place for my good self. It was clear that either another car was required or.....

I have since been told that this is an illegal mode of transport - and I'm not surprised - I smelt of damp dog all day and despite being of portly frame I was told I was the only one supple enough to get in for the ride back - hah!

H.M.S. Challenger Stations

Over the period of a number of years the editors have quite often encountered slides whose subject matter is stated to be from the famous Challenger Expedition1873-1876. Many of the mounts simply record 'HMS Challenger' with no further information. Some record the sounding number, quite a few record a depth and very few record the Station number.

To ability to determine the station number renders the slides more useful than they otherwise would be. We have at last managed to transcribe the stations from the Reports and publish them here in the hope that they will prove useful to others.

The various terms describing the kind of deposit recovered is noted below:

Globigerina Ooze - A deep sea deposit comprised mainly of shells from the foraminfera genus
Pterapod Ooze - A deep sea deposit composed largely of pteropod shells. Pterapod - a group of gastropods that swim by means of wing-like extensions to the foot.

Diatom Ooze - A deep sea deposit composed mainly of diatom frustules.

Station (Sounding)	**Depth (Method)**	**Date**	**Latitude**
Longitude	**Bottom Nature**	**Expedition Leg**	
Bottom Temp (Spec. Grav.)	**Surface Temp (Spec. Grav.)**		
I (Sounding 1)	1125 fathoms (Dredged)	December 30, 1872	41 deg 58 min 0 sec N
9 deg 42 min 0 sec W	Blue mud	Plan 2 - Cape Finisterre to Lisbon	
-oOo-	-oOo-		
IA (Sounding 2)	325 fathoms	January 1, 1873	40 deg 25 min 0 sec N
9 deg 38 min 30 sec W	Hard ground	Plan 3 - Cape Finisterre to Lisbon	
52 Fahr.	57 Fahr.		
IB (Sounding 3)	730 fathoms	January 1, 1873	40 deg 24 min 0 sec N
9 deg 45 min 0 sec W	Hard ground	Plan 3 - Cape Finisterre to Lisbon	
49 Fahr.	57 Fahr.		
IC (Sounding 4)	950 fathoms (Dredged)	January 1, 1873	40 deg 23 min 0 sec N
9 deg 43 min 0 sec W	Hard ground	Plan 3 - Cape Finisterre to Lisbon	
-oOo-	57 Fahr.		
ID (Sounding 5)	1975 fathoms (Dredged)	January 2, 1873	39 deg 55 min 0 sec N
10 deg 5 min 0 sec W	Blue mud	Plan 3 - Cape Finisterre to Lisbon	
-oOo-	57 Fahr.		
II (Sounding 6)	470 fathoms (Dredged)	January 13, 1873	38 deg 10 min 0 sec N
9 deg 14 min 0 sec W	Green mud	Plan 3 - Off the Tagus	
-oOo-	57 Fahr.		
IIA (Sounding 7)	1270 fathoms (Dredged)	January 13, 1873	38 deg 5 min 0 sec N
9 deg 39 min 0 sec W	Blue mud	Plan 3 - Off the Tagus	
-oOo-	57 Fahr.		
IIB (Sounding 8)	84 fathoms	January 14, 1873	38 deg 31 min 0 sec N
9 deg 31 min 0 sec W	Green mud	Plan 3 - Off the Tagus	
-oOo-	57 Fahr.		
IIC (Sounding 9)	280 fathoms	January 14, 1873	38 deg 28 min 0 sec N
9 deg 35 min 0 sec W	Green mud	Plan 3 - Off the Tagus	
-oOo-	57 Fahr.		
IID (Sounding 10)	560 fathoms	January 14, 1873	38 deg 26 min 0 sec N
9 deg 38 min 0 sec W	Green mud	Plan 3 - Off the Tagus	
52 Fahr.	57.5 Fahr.		
IIE (Sounding 11)	1290 fathoms	January 14, 1873	38 deg 22 min 30 sec N
9 deg 44 min 0 sec W	Blue mud	Plan 3 - Off the Tagus	
-oOo-	57 Fahr.		
IIF (Sounding 12)	1475 fathoms	January 14, 1873	38 deg 14 min 25 sec N
9 deg 49 min 42 sec W	Blue mud	Plan 3 - Off the Tagus	
37.5 Fahr .	57.5 Fahr.		
IIG (Sounding 13)	1380 fathoms	January 14, 1873	38 deg 9 min 43 sec N
9 deg 48 min 0 sec W	Blue mud	Plan 3 - Off the Tagus	
38 Fahr.	57.5 Fahr.		
IIH (Sounding 14)	1800 fathoms	January 14, 1873	37 deg 56 min 0 sec N
10 deg 8 min 0 sec W	Blue mud	Plan 3 - Off the Tagus	
37 Fahr.	57 Fahr.		
IIJ (Sounding 15)	1000 fathoms	January 15, 1873	37 deg 1 min 45 sec N
9 deg 23 min 45 sec W	Blue mud	Plan 3 - Lisbon to Gibraltar	
39.5 Fahr.	59.5 Fahr.		

IIK (Sounding 16)	525 fathoms (Dredged)	January 15, 1873	36 deg 58 min 50 sec N
9 deg 14 min 20 sec W	Blue mud	Plan 3 - Lisbon to Gibraltar	
54 Fahr.	60 Fahr.		
III (Sounding 17)	900 fathoms (Dredged)	January 15, 1873	37 deg 2 min 0 sec N 9 deg
14 min 0 sec W	Blue mud	Plan 3 - Lisbon to Gibraltar	
-oOo-	60 Fahr.		
IV (Sounding 18)	600 fathoms (Both)	January 16, 1873	36 deg 25 min 0 sec N
8 deg 12 min 0 sec W	Blue mud	Plan 2&3 - Lisbon to Gibraltar	
-oOo-	60 Fahr.		
V (Sounding 19)	1090 fathoms (Trawled)	January 28, 1873	35 deg 47 min 0 sec N
8 deg 23 min 0 sec W	Globigerina ooze	Plan 2 - Gibraltar to Madeira	
38.5 Fahr.	61 Fahr.		
VA (Sounding 20)	2500 fathoms	January 29, 1873	36 deg 13 min 0 sec N
10 deg 7 min 0 sec W	-oOo-	Plan 2&3 - Gibraltar to Madeira	
-oOo-	59 Fahr.		
VI (Sounding 21)	1525 fathoms (Trawled)	January 30, 1873	36 deg 23 min 0 sec N
11 deg 18 min 0 sec W	Globigerina ooze	Plan 2&3 - Gibraltar to Madeira	
36 Fahr.	58 Fahr.		
VII (Sounding 22)	2125 fathoms (Trawled)	January 31, 1873	35 deg 20 min 0 sec N
13 deg 4 min 0 sec W	Globigerina ooze	Plan 2 - Gibraltar to Madeira	
37 Fahr.	60 Fahr.		
VIIA (Sounding 23)	2250 fathoms	February 1, 1873	34 deg 4 min 0 sec N
14 deg 18 min 0 sec W	Globigerina ooze	Plan 2 - Gibraltar to Madeira	
37 Fahr.	61 Fahr.		
VIIB (Sounding 24)	2225 fathoms	February 2, 1873	32 deg 43 min 0 sec N
15 deg 52 min 0 sec W	Globigerina ooze	Plan 2 - Gibraltar to Madeira	
37 Fahr.	63 Fahr.		
VIIC (Sounding 25)	670 fathoms	February 2, 1873	32 deg 21 min 0 sec N
16 deg 24 min 0 sec W	Volcanic sand	Plan 4 - Off Madeira	
46.8 Fahr.	63 Fahr.		
VIID (Sounding 26)	1150 fathoms	February 2, 1873	32 deg 16 min 0 sec N
16 deg 28 min 0 sec W	Volcanic mud	Plan 4 - Off Madeira	
-oOo-	64 Fahr.		
VIIE (Sounding 27)	930 fathoms	February 2, 1873	32 deg 20 min 15 sec N
16 deg 32 min 0 sec W	Volcanic mud	Plan 4 - Off Madeira	
43.5 Fahr.	63.5 Fahr.		
VIIF (Sounding 28)	1500 fathoms (Trawled)	February 2, 1873	32 deg 27 min 0 sec N
16 deg 40 min 30 sec W	Volcanic mud	Plan 4 - Off Madeira	
-oOo-	63 Fahr.		
VIIG (Sounding 29)	1150 fathoms	February 3, 1873	32 deg 32 min 45 sec N
16 deg 48 min 0 sec W	Volcanic mud	Plan 4 - Off Madeira	
39 Fahr.	63 Fahr.		
VIIH (Sounding 30)	790 fathoms	February 3, 1873	32 deg 35 min 0 sec N
16 deg 51 min 0 sec W	Volcanic mud	Plan 4 - Off Madeira	
43 Fahr.	62.8 Fahr.		
VIII (Sounding 31)	490 fathoms	February 3, 1873	32 deg 36 min 15 sec N
16 deg 53 min 15 sec W	Volcanic mud	Plan 4 - Off Madeira	
-oOo-	63 Fahr.		

VIIK (Sounding 32)	1975 fathoms	February 6, 1873	29 deg 19 min 0 sec N
16 deg 38 min 0 sec W	Volcanic mud	Plan 2&5 - Madeira to Tenerife	
36.2 Fahr.	62.5 Fahr.		
VIIL (Sounding 33)	278 fathoms	February 10, 1873	28 deg 28 min 0 sec N
16 deg 12 min 30 sec W	Volcanic mud	Plan 5 - Between Canary Islands	
-oOo-	64 Fahr.		
VIIM (Sounding 34)	630 fathoms	February 10, 1873	28 deg 28 min 0 sec N
16 deg 10 min 0 sec W	Volcanic mud	Plan 5 - Between Canary Islands	
45 Fahr.	64 Fahr.		
VIIN (Sounding 35)	975 fathoms	February 10, 1873	28 deg 30 min 30 sec N
16 deg 3 min 30 sec W	Volcanic mud	Plan 5 - Between Canary Islands	
41 Fahr.	64 Fahr.		
VIIO (Sounding 36)	560 fathoms	February 10, 1873	28 deg 33 min 0 sec N
16 deg 4 min 0 sec W	Volcanic mud	Plan 5 - Between Canary Islands	
45.5 Fahr.	64 Fahr.		
VIIP (Sounding 37)	78 fathoms (Dredged)	February 10, 1873	28 deg 35 min 0 sec N
16 deg 5 min 0 sec W	Volcanic sand	Plan 5 - Between Canary Islands	
-oOo-	64 Fahr.		
VIIQ (Sounding 38)	179 fathoms	February 10, 1873	28 deg 38 min 0 sec N
16 deg 5 min 0 sec W	Hard ground	Plan 5 - Between Canary Islands	
-oOo-	64 Fahr.		
VIIR (Sounding 39)	640 fathoms	February 10, 1873	28 deg 41 min 0 sec N
16 deg 6 min 0 sec W	Volcanic mud	Plan 5 - Between Canary Islands	
45.8 Fahr .	64 Fahr.		
VIIS (Sounding 40)	1390 fathoms	February 10, 1873	28 deg 45 min 0 sec N
16 deg 7 min 0 sec W	Volcanic mud	Plan 5 - Between Canary Islands	
38.5 Fahr.	63 Fahr.		
VIIT (Sounding 41)	1750 fathoms	February 11, 1873	28 deg 42 min 0 sec N
17 deg 8 min 0 sec W	Volcanic mud	Plan 5 - Off Canary Islands	
37.5 Fahr.	63 Fahr.		
VIIU (Sounding 42)	1340 fathoms	February 11, 1873	28 deg 20 min 0 sec N
17 deg 34 min 0 sec W	Volcanic mud	Plan 5 - Off Canary Islands	
38.5 Fahr.	65 Fahr.		
VIIV (Sounding 43)	1620 fathoms	February 11, 1873	27 deg 58 min 0 sec N
17 deg 39 min 0 sec W	Volcanic mud	Plan 5 - Off Canary Islands	
37.5 Fahr.	65 Fahr.		
VIII (Sounding 44)	620 fathoms (Dredged)	February 12, 1873	28 deg 3 min 15 sec N
17 deg 27 min 0 sec W	Volcanic mud	Plan 5 - Off Canary Islands	
-oOo-	64.5 Fahr.		
1 (Sounding 45)	1890 fathoms (Dredged)	February 15, 1873	27 deg 24 min 0 sec N
16 deg 55 min 0 sec W	Globigerina ooze	Plan 5&6 - Tenerife to Sombrero Island	
36.8 Fahr. (SG.1.0265)	64.5 Fahr. (SG.1.0273)		
2 (Sounding 46)	1945 fathoms (Dredged)	February 17, 1873	25 deg 52 min 0 sec N
19 deg 22 min 0 sec W	Globigerina ooze	Plan 6 - Tenerife to Sombrero Island	
36.8 Fahr. (SG.1.026)	67 Fahr. (SG.1.0273)		
3 (Sounding 47)	1525 fathoms (Dredged)	February 18, 1873	25 deg 45 min 0 sec N
20 deg 14 min 0 sec W	Hard ground	Plan 6 - Tenerife to Sombrero Island	
37 Fahr.	65 Fahr. (SG.1.0271)		

4 (Sounding 48)	2220 fathoms		February 19, 1873	25 deg 28 min 0 sec N
20 deg 22 min 0 sec W	-oOo-		Plan 6 - Tenerife to Sombrero Island	
-oOo-	66 Fahr. (SG.1.0272)			
5 (Sounding 49)	2740 fathoms (Dredged)		February 21, 1873	24 deg 20 min 0 sec N
24 deg 28 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
37 Fahr. (SG.1.0274)	68 Fahr. (SG.1.0275)			
6 (Sounding 50)	2950 fathoms		February 23, 1873	23 deg 14 min 0 sec N
28 deg 22 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
37 Fahr. (SG.1.0274)	69.2 Fahr. (SG.1.0276)			
7 (Sounding 51)	2750 fathoms		February 24, 1873	23 deg 23 min 0 sec N
31 deg 31 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
36.9 Fahr. (SG.1.026)	68 Fahr. (SG.1.0276)			
8 (Sounding 52)	2700 fathoms (Dredged)		February 25, 1873	23 deg 12 min 0 sec N
32 deg 56 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
37 Fahr. (SG.1.0261)	67 Fahr. (SG.1.0277)			
9 (Sounding 53)	3150 fathoms (Dredged)		February 26, 1873	23 deg 23 min 0 sec N
35 deg 11 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
36.8 Fahr. (SG.1.0265)	69 Fahr. (SG.1.0277)			
10 (Sounding 54)	2720 fathoms (Dredged)		February 28, 1873	23 deg 10 min 0 sec N
38 deg 42 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
36.5 Fahr. (SG.1.0275)	71 Fahr. (SG.1.0277)			
11 (Sounding 55)	2575 fathoms (Dredged)		March 1, 1873	22 deg 45 min 0 sec N
40 deg 37 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.5 Fahr. (SG.1.0262)	72.2 Fahr. (SG.1.0276)			
12 (Sounding 56)	2025 fathoms (Dredged)		March 3, 1873	21 deg 57 min 0 sec N
43 deg 29 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.9 Fahr. (SG.1.0264)	73 Fahr. (SG.1.0276)			
13 (Sounding 57)	1900 fathoms (Dredged)		March 4, 1873	21 deg 38 min 0 sec N
44 deg 39 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.8 Fahr. (SG.1.0269)	72 Fahr. (SG.1.0277)			
14 (Sounding 58)	1950 fathoms (Trawled)		March 5, 1873	21 deg 1 min 0 sec N
46 deg 29 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.8 Fahr.	74 Fahr. (SG.1.0275)			
15 (Sounding 59)	2325 fathoms		March 6, 1873	20 deg 49 min 0 sec N
48 deg 45 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.2 Fahr. (SG.1.0261)	72.5 Fahr. (SG.1.0276)			
16 (Sounding 60)	2435 fathoms (Dredged)		March 7, 1873	20 deg 39 min 0 sec N
50 deg 33 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.2 Fahr. (SG.1.0275)	74 Fahr. (SG.1.0277)			
17 (Sounding 61)	2385 fathoms		March 8, 1873	20 deg 7 min 0 sec N
52 deg 32 min 0 sec W	Globigerina ooze		Plan 6 - Tenerife to Sombrero Island	
36.5 Fahr.	74 Fahr. (SG.1.0276)			
18 (Sounding 62)	2650 fathoms (Dredged)		March 10, 1873	19 deg 41 min 0 sec N
55 deg 13 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
36 Fahr. (SG.1.0261)	74 Fahr. (SG.1.0273)			
19 (Sounding 63)	3000 fathoms		March 11, 1873	19 deg 15 min 0 sec N
57 deg 47 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
35.5 Fahr. (SG.1.0261)	75 Fahr. (SG.1.0272)			

20 (Sounding 64)	2975 fathoms (Dredged)		March 12, 1873	18 deg 56 min 0 sec N
59 deg 35 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
36 Fahr. (SG.1.0272)	75 Fahr. (SG.1.0272)			
21 (Sounding 65)	3025 fathoms		March 13, 1873	18 deg 54 min 0 sec N
61 deg 28 min 0 sec W	Red clay		Plan 6 - Tenerife to Sombrero Island	
35.5 Fahr. (SG.1.0268)	76 Fahr. (SG.1.0268)			
22 (Sounding 66)	1420 fathoms (Trawled)		March 14, 1873	18 deg 40 min 0 sec N
62 deg 56 min 0 sec W	Pteropod ooze		Plan 6&7 - Tenerife to Sombrero Island	
38.4 Fahr.	76 Fahr. (SG.1.0269)			
23 (Sounding 67)	450 fathoms (Dredged)		March 15, 1873	18 deg 24 min 0 sec N
63 deg 28 min 0 sec W	Pteropod ooze		Plan 7 - Off Sombrero	
-oOo-	76 Fahr.			
23A (Sounding 68)	460 fathoms (Dredged)		March 15, 1873	18 deg 26 min 0 sec N
63 deg 31 min 15 sec W	Pteropod ooze		Plan 7 - Off Sombrero	
-oOo-	76 Fahr.			
23B (Sounding 69)	590 fathoms (Dredged)		March 15, 1873	18 deg 28 min 0 sec N
63 deg 35 min 0 sec W	Pteropod ooze		Plan 7 - Off Sombrero	
-oOo-	76 Fahr. (SG.1.0269)			
24 (Sounding 70)	390 fathoms (Dredged)		March 25, 1873	18 deg 38 min 30 sec N
65 deg 5 min 30 sec W	Pteropod ooze		Plan 7 - St. Thomas to Bermuda	
-oOo-	76 Fahr.			
24A (Sounding 71)	625 fathoms (Dredged)		March 25, 1873	18 deg 43 min 30 sec N
65 deg 5 min 0 sec W	Pteropod ooze		Plan 7 - St. Thomas to Bermuda	
-oOo-	76 Fahr. (SG.1.02704)			
25 (Sounding 72)	3875 fathoms (Dredged)		March 26, 1873	19 deg 41 min 0 sec N
65 deg 7 min 0 sec W	Red clay		Plan 6&7 - St. Thomas to Bermuda	
(SG.1.0263)	76 Fahr. (SG.1.0269)			
26 (Sounding 73)	2800 fathoms		March 27, 1873	21 deg 26 min 0 sec N
65 deg 16 min 0 sec W	Red clay		Plan 6 - St. Thomas to Bermuda	
(SG.1.0259)	76 Fahr. (SG.1.027)			
27 (Sounding 74)	2960 fathoms		March 28, 1873	22 deg 49 min 0 sec N
65 deg 19 min 0 sec W	Red clay		Plan 6 - St. Thomas to Bermuda	
36.2 Fahr. (SG.1.026)	75.5 Fahr. (SG.1.0271)			
28 (Sounding 75)	2850 fathoms (Dredged)		March 29, 1873	24 deg 39 min 0 sec N
65 deg 25 min 0 sec W	Red clay		Plan 6 - St. Thomas to Bermuda	
36.3 Fahr. (SG.1.026)	75 Fahr. (SG.1.0271)			
29 (Sounding 76)	2700 fathoms (Dredged)		March 31, 1873	27 deg 49 min 0 sec N
64 deg 59 min 0 sec W	Red clay		Plan 6 - St. Thomas to Bermuda	
36.4 Fahr. (SG.1.026)	72 Fahr. (SG.1.0273)			
30 (Sounding 77)	2600 fathoms		April 1, 1873	29 deg 5 min 0 sec N
65 deg 1 min 0 sec W	Red clay		Plan 6 - St. Thomas to Bermuda	
36.5 Fahr. (SG.1.0277)	72 Fahr. (SG.1.0273)			
31 (Sounding 78)	2475 fathoms		April 3, 1873	31 deg 24 min 0 sec N
65 deg 0 min 0 sec W	Globigerina ooze		Plan 6 - St. Thomas to Bermuda	
36.5 Fahr. (SG.1.0265)	69.5 Fahr.			
32 (Sounding 79)	2250 fathoms		April 3, 1873	31 deg 49 min 0 sec N
64 deg 55 min 0 sec W	Globigerina ooze		Plan 6&8 - St. Thomas to Bermuda	
36.7 Fahr. (SG.1.026)	68 Fahr.			

32A (Sounding 80)	1820 fathoms		April 3, 1873	32 deg 1 min 0 sec N
64 deg 51 min 0 sec W		Globigerina ooze	Plan 6 - St. Thomas to Bermuda	
-oOo-		68 Fahr. (SG.1.0272)		
32B (Sounding 81)	950 fathoms		April 3, 1873	32 deg 10 min 0 sec N
64 deg 52 min 0 sec W		Coral mud	Plan 8 - St. Thomas to Bermuda	
-oOo-		68 Fahr.		
32C (Sounding 82)	780 fathoms		April 4, 1873	32 deg 17 min 30 sec N
64 deg 39 min 5 sec W		Coral mud	Plan 8 - Off Bermuda	
-oOo-		67 Fahr.		
32D (Sounding 83)	380 fathoms		April 4, 1873	32 deg 19 min 0 sec N
64 deg 40 min 0 sec W		Coral mud	Plan 8 - Off Bermuda	
-oOo-		67 Fahr.		
32E (Sounding 84)	120 fathoms (Dredged.)		April 4, 1873	32 deg 19 min 30 sec N
64 deg 40 min 35 sec W		Coral mud	Plan 8 - Off Bermuda	
-oOo-		67.5 Fahr.		
32F (Sounding 85)	125 fathoms		April 4, 1873	32 deg 20 min 40 sec N
64 deg 38 min 15 sec W		Hard ground	Plan 8 - Off Bermuda	
-oOo-		67.5 Fahr.		
32G (Sounding 86)	265 fathoms (Dredged.)		April 4, 1873	32 deg 21 min 25 sec N
64 deg 37 min 15 sec W		Hard ground	Plan 8 - Off Bermuda	
-oOo-		68 Fahr.		
33 (Sounding 87)	435 fathoms (Dredged.)		April 4, 1873	32 deg 21 min 30 sec N
64 deg 35 min 55 sec W		Coral mud	Plan 8 - Off Bermuda	
-oOo-		68 Fahr.		
33A (Sounding 88)	175 fathoms		April 21, 1873	32 deg 31 min 10 sec N
64 deg 42 min 55 sec W		Coral sand	Plan 8 - Off Bermuda	
-oOo-		67.2 Fahr.		
33B (Sounding 89)	640 fathoms		April 21, 1873	32 deg 32 min 30 sec N
64 deg 46 min 0 sec W		Coral mud	Plan 8 - Off Bermuda	
-oOo-		67.2 Fahr.		
34 (Sounding 90)	1370 fathoms		April 21, 1873	32 deg 33 min 55 sec N
64 deg 52 min 18 sec W		Coral mud	Plan 8 - Off Bermuda	
-oOo-		67.2 Fahr.		
35A (Sounding 91)	2450 fathoms		April 22, 1873	32 deg 39 min 0 sec N
65 deg 6 min 0 sec W		Globigerina ooze	Plan 8 - Off Bermuda	
36.5 Fahr.		67.8 Fahr.		
35B (Sounding 92)	2100 fathoms		April 22, 1873	32 deg 26 min 0 sec N
65 deg 9 min 0 sec W		Globigerina ooze	Plan 8 - Off Bermuda	
36.5 Fahr.		68 Fahr. (SG.1.0271)		
35C (Sounding 93)	1950 fathoms		April 22, 1873	32 deg 15 min 0 sec N
65 deg 8 min 0 sec W		Globigerina ooze	Plan 8 - Off Bermuda	
-oOo-		68 Fahr.		
36 (Sounding 94)	30 fathoms (Dredged.)		April 22, 1873	32 deg 7 min 25 sec N
65 deg 4 min 0 sec W		Coral	Plan 8 - Off Bermuda	
-oOo-		67.5 Fahr.		
37 (Sounding 95)	2650 fathoms (Dredged)		April 24, 1873	32 deg 18 min 0 sec N
65 deg 38 min 8 sec W		Globigerina ooze	Plan 8&9 - Bermuda to Halifax	
36.5 Fahr.		68 Fahr.		

38 (Sounding 96)	2600 fathoms		April 25, 1873	33 deg 3 min 0 sec N
66 deg 32 min 0 sec W		Globigerina ooze	Plan 9 - Bermuda to Halifax	
36.5 Fahr.		70 Fahr. (SG.1.0272)		
39 (Sounding 97)	2850 fathoms		April 27, 1873	34 deg 3 min 0 sec N
67 deg 32 min 0 sec W		Red clay	Plan 9 - Bermuda to Halifax	
36.5 Fahr.		65 Fahr. (SG.1.027)		
40 (Sounding 98)	2675 fathoms (Dredged)		April 28, 1873	34 deg 51 min 0 sec N
68 deg 30 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
-oOo-		69.5 Fahr. (SG.1.0269)		
41 (Sounding 99)	(2500) fathoms		April 29, 1873	36 deg 5 min 0 sec N
69 deg 54 min 0 sec W		-oOo-	Plan 9 - Bermuda to Halifax	
-oOo-		65 Fahr. (SG.1.027)		
42 (Sounding 100)	2425 fathoms		April 30, 1873	35 deg 58 min 0 sec N
70 deg 35 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
36.8 Fahr. (SG.1.0266)		65 Fahr. (SG.1.0269)		
43 (Sounding 101)	(2600) fathoms		May 1, 1873	36 deg 23 min 0 sec N
71 deg 46 min 0 sec W		-oOo-	Plan 9 - Bermuda to Halifax	
36.8 Fahr.		75 Fahr. (SG.1.0267)		
44 (Sounding 102)	1700 fathoms (Dredged)		May 2, 1873	37 deg 25 min 0 sec N
71 deg 40 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
36.2 Fahr.		56.5 Fahr. (SG.1.0254)		
45 (Sounding 103)	1240 fathoms (Dredged)		May 3, 1873	38 deg 34 min 0 sec N
72 deg 10 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
37.2 Fahr.		49.5 Fahr. (SG.1.025)		
46 (Sounding 104)	1350 fathoms (Dredged)		May 6, 1873	40 deg 17 min N
66 deg 48 min W		Blue mud	Plan 9 - Bermuda to Halifax	
37.2 Fahr.		40 Fahr. (SG.1.024)		
47 (Sounding 105)	1340 fathoms (Dredged)		May 7, 1873	41 deg 14 min 0 sec N
65 deg 45 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
-oOo-		42 Fahr. (SG.1.0241)		
48 (Sounding 106)	51 fathoms (Dredged)		May 8, 1873	43 deg 4 min 0 sec N
64 deg 5 min 0 sec W		Rock	Plan 9 - Bermuda to Halifax	
-oOo-		38 Fahr.		
49 (Sounding 107)	85 fathoms (Dredged)		May 20, 1873	43 deg 3 min 0 sec N
63 deg 39 min 0 sec W		"Gravel, stones"	Plan 9 - Bermuda to Halifax	
35 Fahr. (SG.1.024)		40.5 Fahr. (SG.1.02354)		
50 (Sounding 108)	1250 fathoms (Dredged)		May 21, 1873	42 deg 8 min 0 sec N
63 deg 39 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
38 Fahr. (SG.1.02546)		45 Fahr. (SG.1.02451)		
51 (Sounding 109)	2020 fathoms		May 22, 1873	41 deg 19 min 0 sec N
63 deg 12 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
36 Fahr. (SG.1.02595)		59 Fahr. (SG.1.02625)		
52 (Sounding 110)	2800 fathoms		May 23, 1873	39 deg 44 min 0 sec N
63 deg 22 min 0 sec W		Blue mud	Plan 9 - Bermuda to Halifax	
36.2 Fahr. (SG.1.02701)		67.2 Fahr. (SG.1.02714)		
52A (Sounding 111)	-oOo-		May 24, 1873	38 deg 16 min 0 sec N
63 deg 17 min 0 sec W		-oOo-	Plan 9 - Bermuda to Halifax	
-oOo-		73 Fahr.		

53 (Sounding 112)	2650 fathoms	May 26, 1873	36 deg 30 min 0 sec N
63 deg 40 min 0 sec W	Red clay	Plan 9 - Bermuda to Halifax	
36.3 Fahr. (SG.1.027)	73 Fahr. (SG.1.02708)		
54 (Sounding 113)	2650 fathoms (Trawled)	May 27, 1873	34 deg 51 min 0 sec N
63 deg 59 min 0 sec W	Redclay	Plan 9 - Bermuda to Halifax	
-oOo-	70.5 Fahr. (SG.1.02715)		
55 (Sounding 114)	2500 fathoms	May 28, 1873	33 deg 20 min 0 sec N
64 deg 37 min 0 sec W	Globigerina ooze	Plan 9 - Bermuda to Halifax	
-oOo-	70.5 Fahr. (SG.1.02711)		
55A (Sounding 115)	1775 fathoms	May 28, 1873	32 deg 46 min 0 sec N
64 deg 39 min 0 sec W	Globigerina ooze	Plan 8&9 - Bermuda to Halifax	
36.2 Fahr.	70.5 Fahr.		
55B (Sounding 116)	1325 fathoms (Dredged)	May 29, 1873	32 deg 7 min 35 sec N
64 deg 53 min 45 sec W	Coral mud	Plan 8 - Off Bermuda	
-oOo-	72 Fahr.		
56 (Sounding 117)	1075 fathoms (Dredged)	May 29, 1873	32 deg 8 min 45 sec N
64 deg 59 min 35 sec W	Coral mud	Plan 8 - Off Bermuda	
38.2 Fahr.	72.5 Fahr.		
56A (Sounding 118)	506 fathoms (Dredged)	May 29, 1873	32 deg 10 min 45 sec N
64 deg 58 min 20 sec W	-oOo-	Plan 8 - Off Bermuda	
-oOo-	72.5 Fahr.		
57 (Sounding 119)	690 fathoms	May 30, 1873	32 deg 11 min 7 sec N
65 deg 3 min 20 sec W	-oOo-	Plan 8 - Off Bermuda	
-oOo-	72.5 Fahr.		
57A (Sounding 120)	1250 fathoms (Dredged)	May 30, 1873	32 deg 9 min 30 sec N
65 deg 7 min 35 sec W	Coral mud	Plan 8 - Off Bermuda	
-oOo-	73 Fahr.		
57B (Sounding 121)	1575 fathoms (Trawled)	May 30, 1873	32 deg 9 min 45 sec N
65 deg 10 min 50 sec W	Coral mud	Plan 8 - Off Bermuda	
-oOo-	73 Fahr.		
58 (Sounding 122)	1500 fathoms	June 13, 1873	32 deg 37 min 0 sec N
64 deg 21 min 0 sec W	Globigerina ooze	Plan 6&8 - Bermuda to Azores	
37.2 Fahr.	73.5 Fahr.		
59 (Sounding 123)	2360 fathoms	June 14, 1873	32 deg 54 min 0 sec N
63 deg 22 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
36.3 Fahr. (SG.1.0265)	74 Fahr. (SG.1.02715)		
60 (Sounding 124)	2575 fathoms (Trawled)	June 16, 1873	34 deg 28 min 0 sec N
58 deg 56 min 0 sec W	Red clay	Plan 6 - Bermuda to Azores	
36.2 Fahr. (SG.1.02704)	71.5 Fahr. (SG.1.02709)		
61 (Sounding 125)	2850 fathoms (Trawled)	June 17, 1873	34 deg 54 min 0 sec N
56 deg 38 min 0 sec W	Red mud	Plan 6 - Bermuda to Azores	
36.2 Fahr.	71 Fahr. (SG.1.02708)		
62 (Sounding 126)	2875 fathoms	June 18, 1873	35 deg 7 min 0 sec N
52 deg 32 min 0 sec W	Red clay	Plan 6 - Bermuda to Azores	
36.4 Fahr. (SG.1.02709)	70 Fahr. (SG.1.02716)		
63 (Sounding 127)	2750 fathoms (Trawled)	June 19, 1873	35 deg 29 min 0 sec N
52 deg 32 min 0 sec W	Red clay	Plan 6 - Bermuda to Azores	
(SG.1.02613)	71 Fahr. (SG.1.0272)		

64 (Sounding 128)	(2700) fathoms (Dredged)	June 20, 1873	35 deg 35 min 0 sec N
50 deg 27 min 0 sec W	Red clay	Plan 6 - Bermuda to Azores	
-oOo-	75 Fahr.		
65 (Sounding 129)	2700 fathoms	June 21, 1873	36 deg 33 min 0 sec N
47 deg 58 min 0 sec W	Red clay	Plan 6 - Bermuda to Azores	
36.2 Fahr. (SG.1.02598)	72.5 Fahr. (SG.1.02721)		
66 (Sounding 130)	2750 fathoms	June 22, 1873	37 deg 24 min 0 sec N
44 deg 14 min 0 sec W	Red clay	Plan 6 - Bermuda to Azores	
36.5 Fahr. (SG.1.02621)	70 Fahr. (SG.1.02712)		
67 (Sounding 131)	2700 fathoms	June 23, 1873	37 deg 54 min 0 sec N
41 deg 44 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
36.3 Fahr. (SG.1.02614)	70 Fahr. (SG.1.02699)		
68 (Sounding 132)	2175 fathoms (Trawled)	June 24, 1873	38 deg 3 min 0 sec N
39 deg 19 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
36.2 Fahr. (SG.1.02612)	70 Fahr. (SG.1.02688)		
69 (Sounding 133)	2200 fathoms (Trawled)	June 25, 1873	38 deg 23 min 0 sec N
37 deg 21 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
36.2 Fahr.	71 Fahr. (SG.1.02712)		
70 (Sounding 134)	1675 fathoms (Trawled)	June 26, 1873	38 deg 25 min 0 sec N
35 deg 50 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
-oOo-	70 Fahr. (SG.1.02708)		
71 (Sounding 135)	1675 fathoms (Trawled)	June 27, 1873	38 deg 18 min 0 sec N
34 deg 48 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
36.8 Fahr. (SG.1.02668)	71 Fahr. (SG.1.02696)		
72 (Sounding 136)	1240 fathoms	June 28, 1873	38 deg 34 min 0 sec N
32 deg 47 min 0 sec W	Globigerina ooze	Plan 6 - Bermuda to Azores	
37.8 Fahr.	71 Fahr. (SG.1.02718)		
73 (Sounding 137)	1000 fathoms (Dredged)	June 30, 1873	38 deg 30 min 0 sec N
31 deg 14 min 0 sec W	Pteropod ooze	Plan 6&10 - Bermuda to Azores	
39.4 Fahr. (SG.1.02691)	69 Fahr.		
74 (Sounding 138)	1350 fathoms	July 1, 1873	38 deg 22 min 0 sec N
29 deg 37 min 0 sec W	Pteropod ooze	Plan 6&10 - Bermuda to Azores	
-oOo-	69.8 Fahr.		
75 (Sounding 139)	450 fathoms (Dredged)	July 2, 1873	38 deg 38 min 0 sec N
28 deg 28 min 30 sec W	Volcanic mud	Plan 10 - Off the Azores	
-oOo-	70 Fahr.		
76 (Sounding 140)	900 fathoms (Dredged)	July 3, 1873	38 deg 11 min 0 sec N
27 deg 9 min 0 sec W	Pteropod ooze	Plan 10 - Off the Azores	
40 Fahr. (SG.1.02688)	70 Fahr. (SG.1.02699)		
77 (Sounding 141)	750 fathoms	July 4, 1873	37 deg 52 min 0 sec N
26 deg 26 min 0 sec W	Hard ground	Plan 10 - Off the Azores	
(SG.1.02675)	69.2 Fahr. (SG.1.02686)		
78 (Sounding 142)	1000 fathoms (Dredged)	July 10, 1873	37 deg 26 min 0 sec N
25 deg 13 min 0 sec W	Volcanic mud	Plan 10 - Off the Azores	
-oOo-	71 Fahr.		
79 (Sounding 143)	2025 fathoms (Dredged)	July 11, 1873	36 deg 21 min 0 sec N
23 deg 31 min 0 sec W	Globigerina ooze	Plan 6 - Azores to Madeira	
35.9 Fahr.	71.5 Fahr.		

80 (Sounding 144) 2660 fathoms
21 deg 25 min 0 sec W
36.6 Fahr. (SG.1.02601)
Globigerina ooze
71 Fahr. (SG.1.02706)
July 12, 1873 35 deg 3 min 0 sec N
Plan 6 - Azores to Madeira

81 (Sounding 145) 2675 fathoms
19 deg 52 min 0 sec W
37 Fahr.
Globigerina ooze
71 Fahr. (SG.1.0271)
July 13, 1873 34 deg 11 min 0 sec N
Plan 6 - Azores to Madeira

82 (Sounding 146) 2400 fathoms
19 deg 17 min 0 sec W
36.6 Fahr. (SG.1.02695)
Globigerina ooze
70.7 Fahr. (SG.1.02715)
July 14, 1873 33 deg 46 min 0 sec N
Plan 6 - Azores to Madeira

83 (Sounding 147) 1650 fathoms (Dredged)
18 deg 13 min 0 sec W
37 Fahr. (SG.1.02626)
Globigerina ooze
71 Fahr. (SG.1.02742)
July 15, 1873 33 deg 13 min 0 sec N
Plan 6 - Azores to Madeira

84 (Sounding 148) -oOo-
18 deg 5 min 0 sec W
-oOo-
-oOo-
71 Fahr. (SG.1.02729)
July 18, 1873 30 deg 38 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

85 (Sounding 149) 1125 fathoms (Dredged)
18 deg 6 min 0 sec W
-oOo-
Volcanic mud
69.2 Fahr. (SG.1.02735)
July 19, 1873 28 deg 42 min 0 sec N
Plan 6&5 - Madeira to Cape Verde Is.

86 (Sounding 150) 2300 fathoms
20 deg 34 min 0 sec W
36.6 Fahr. (SG.1.02626)
Globigerina ooze
71 Fahr.
July 21, 1873 25 deg 46 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

87 (Sounding 151) 1675 fathoms (Dredged)
20 deg 12 min 0 sec W
-oOo-
Rock
72 Fahr. (SG.1.02747)
July 21, 1873 25 deg 49 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

88 (Sounding 152) 2300 fathoms
21 deg 18 min 0 sec W
36.4 Fahr. (SG.1.02618)
Globigerina ooze
72 Fahr. (SG.1.02755)
July 22, 1873 23 deg 58 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

89 (Sounding 153) 2400 fathoms (Trawled)
22 deg 2 min 0 sec W
36.6 Fahr.
Globigerina ooze
73.5 Fahr. (SG.1.02719)
July 23, 1873 22 deg 18 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

90 (Sounding 154) 2400 fathoms
22 deg 57 min 0 sec W
36.5 Fahr. (SG.1.02645)
Globigerina ooze
74 Fahr. (SG.1.02688)
July 24, 1873 20 deg 58 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

91 (Sounding 155) 2075 fathoms
24 deg 6 min 0 sec W
36.5 Fahr. (SG.1.02696)
Globigerina ooze
74 Fahr. (SG.1.0271)
July 25, 1873 19 deg 4 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

92 (Sounding 156) 1975 fathoms (Dredged)
24 deg 41 min 0 sec W
-oOo-
Globigerina ooze
74.7 Fahr. (SG.1.02699)
July 26, 1873 17 deg 54 min 0 sec N
Plan 6 - Madeira to Cape Verde Is.

93 (Sounding 157) 1070 fathoms
24 deg 55 min 45 sec W
-oOo-
Volcanic mud
75 Fahr.
July 27, 1873 17 deg 12 min 45 sec N
Plan 11 - Off Cape Verde Islands

93A (Sounding 158) 1000 fathoms
24 deg 53 min 0 sec W
-oOo-
Volcanic mud
75 Fahr. (SG.1.02696)
July 27, 1873 17 deg 3 min 30 sec N
Plan 11 - Off Cape Verde Islands

93B (Sounding 159) 465 fathoms
24 deg 57 min 45 sec W
43.5 Fahr.
Volcanic mud
75 Fahr.
July 27, 1873 16 deg 59 min 15 sec N
Plan 11 - Off Cape Verde Islands

93C (Sounding 160) 52 fathoms
25 deg 1 min 0 sec W
-oOo-
Coralline mud
76 Fahr.
July 27, 1873 16 deg 57 min 15 sec N
Plan 11 - Off Cape Verde Islands

93D (Sounding 161) 103 fathoms
25 deg 3 min 45 sec W
-oOo-
Coralline mud
78 Fahr.
August 5, 1873 16 deg 55 min 45 sec N
Plan 11 - Off Cape Verde Islands

93E (Sounding 162) 85 fathoms
25 deg 6 min 45 sec W
-oOo-
Coralline mud
78 Fahr.
August 5, 1873 16 deg 52 min 15 sec N
Plan 11 - Off Cape Verde Islands

93F (Sounding 163) 260 fathoms
25 deg 8 min 0 sec W
-oOo-
Volcanic mud
78 Fahr.
August 5, 1873 16 deg 50 min 0 sec N
Plan 11 - Off Cape Verde Islands

93G (Sounding 164) 675 fathoms
25 deg 10 min 0 sec W
-oOo-
Volcanic mud
78 Fahr.
August 5, 1873 16 deg 46 min 0 sec N
Plan 11 - Off Cape Verde Islands

94 (Sounding 165) 1150 fathoms
25 deg 12 min 0 sec W
-oOo-
Volcanic mud
78 Fahr.
August 5, 1873 16 deg 42 min 0 sec N
Plan 11 - Off Cape Verde Islands

95 (Sounding 166) 2300 fathoms
22 deg 49 min 0 sec W
36.5 Fahr. (SG.1.02605)
Globigerina ooze
79 Fahr. (SG.1.0268)
August 10, 1873 13 deg 36 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

96 (Sounding 167) -oOo-
22 deg 28 min 0 sec W
-oOo-
-oOo-
78 Fahr. (SG.1.02651)
August 11, 1873 12 deg 15 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

97 (Sounding 168) 2575 fathoms
20 deg 30 min 0 sec W
36.6 Fahr. (SG.1.02604)
Red clay
78 Fahr. (SG.1.0261)
August 13, 1873 10 deg 25 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

98 (Sounding 169) 1750 fathoms (Dredged)
18 deg 28 min 0 sec W
36.7 Fahr. (SG.1.02605)
Globigerina ooze
78.2 Fahr. (SG.1.02605)
August 14, 1873 9 deg 21 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

99 (Sounding 170) -oOo-
17 deg 26 min 0 sec W
-oOo-
-oOo-
78 Fahr. (SG.1.026)
August 15, 1873 7 deg 53 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

100 (Sounding 171) 2425 fathoms
15 deg 55 min 0 sec W
-oOo-
-oOo-
79 Fahr. (SG.1.02612)
August 16, 1873 7 deg 1 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

101 (Sounding 172) 2500 fathoms (Trawled)
14 deg 20 min 0 sec W
36.4 Fahr.
Blue mud
79.2 Fahr. (SG.1.02635)
August 19, 1873 5 deg 48 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

102 (Sounding 173) 2450 fathoms
14 deg 49 min 0 sec W
36.4 Fahr. (SG.1.02595)
Globigerina ooze
78 Fahr. (SG.1.02589)
August 21, 1873 3 deg 8 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

103 (Sounding 174) 2475 fathoms
17 deg 0 min 0 sec W
36 Fahr.
Globigerina ooze
77 Fahr. (SG.1.02622)
August 22, 1873 2 deg 52 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

104 (Sounding 175) 2500 fathoms (Trawled)
20 deg 1 min 0 sec W
36.6 Fahr. (SG.1.02601)
Globigerina ooze
78 Fahr. (SG.1.02602)
August 23, 1873 2 deg 25 min 0 sec N
Plan 12 - St. Vincent to St. Paul's Rocks

105 (Sounding 176) 2275 fathoms August 24, 1873 2 deg 6 min 0 sec N
22 deg 53 min 0 sec W Globigerina ooze Plan 12 - St. Vincent to St. Paul's Rocks
36 Fahr. 78 Fahr. (SG.1.02604)

106 (Sounding 177) 1850 fathoms (Trawled) August 25, 1873 1 deg 47 min 0 sec N
24 deg 26 min 0 sec W Globigerina ooze Plan 12 - St. Vincent to St. Paul's Rocks
36.6 Fahr. 78.8 Fahr. (SG.1.02615)

107 (Sounding 178) 1500 fathoms (Trawled) August 26, 1873 1 deg 22 min 0 sec N
26 deg 36 min 0 sec W Globigerina ooze Plan 12 - St. Vincent to St. Paul's Rocks
37.9 Fahr. 78.8 Fahr. (SG.1.02613)

108 (Sounding 179) 1900 fathoms August 27, 1873 1 deg 10 min 0 sec N
28 deg 23 min 0 sec W Globigerina ooze Plan 12 - St. Vincent to St. Paul's Rocks
36.8 Fahr. 78 Fahr. (SG.1.02641)

109 (Sounding 180) 104 fathoms (Dredged) August 28, 1873 0 deg 55 min 38 sec N
29 deg 22 min 35 sec W Hard ground Plan 13 - Off St. Paul's Rocks
-oOo- 77.7 Fahr.

109A (Sounding 181) 475 fathoms August 29, 1873 0 deg 54 min 43 sec N
29 deg 23 min 32 sec W Hard ground(gravel) Plan 13 - Off St. Paul's Rocks
-oOo- 78 Fahr.

109B (Sounding 182) 510 fathoms August 29, 1873 0 deg 54 min 55 sec N
29 deg 22 min 17 sec W Hard ground Plan 13 - Off St. Paul's Rocks
-oOo- 76.5 Fahr.

109C (Sounding 183) 780 fathoms August 29, 1873 0 deg 56 min 23 sec N
29 deg 22 min 15 sec W Pteropod ooze Plan 13 - Off St. Paul's Rocks
-oOo- 76.5 Fahr.

109D (Sounding 184) 1425 fathoms August 29, 1873 0 deg 56 min 4 sec N
29 deg 25 min 2 sec W Pteropod ooze Plan 13 - Off St. Paul's Rocks
-oOo- 77 Fahr.

110 (Sounding 185) 2275 fathoms August 30, 1873 0 deg 9 min 0 sec N
30 deg 18 min 0 sec W Globigerina ooze Plan 12 - St. Paul's Rocks to Fernando Noronha
34.8 Fahr. (SG.1.02602) 77.5 Fahr. (SG.1.02667)

111 (Sounding 186) 2475 fathoms August 31, 1873 1 deg 45 min 0 sec S
30 deg 58 min 0 sec W Red clay Plan 12 - St. Paul's Rocks to Fernando Noronha
33.7 Fahr. 78 Fahr. (SG.1.02677)

112 (Sounding 187) 2200 fathoms September 1, 1873 3 deg 33 min 0 sec S
32 deg 16 min 0 sec W Globigerina ooze Plan 12&14 St. Paul's Rocks to Fernando Noronha
34 Fahr. (SG.1.02607) 78 Fahr. (SG.1.02669)

113 (Sounding 188) 1010 fathoms September 1, 1873 3 deg 40 min 45 sec S
32 deg 22 min 0 sec W Hard ground Plan 14 - St. Paul's Rocks to Fernando Noronha
37.5 Fahr. 78 Fahr.

113A (Sounding 189) 25 fathoms September 1, 1873 3 deg 47 min 0 sec S
32 deg 24 min 30 sec W Volcanic sand & Gravel Plan 14 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr.

113B (Sounding 190) 400 fathoms September 3, 1873 3 deg 50 min 30 sec S
32 deg 30 min 0 sec W Hard ground Plan 14 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr.

113C (Sounding 191) 525 fathoms September 3, 1873 3 deg 54 min 0 sec S
32 deg 36 min 15 sec W Hard ground Plan 14 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr.

114 (Sounding 192) 820 fathoms September 3, 1873 3 deg 58 min 0 sec S
32 deg 42 min 0 sec W Hard ground Plan 14 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr.

115 (Sounding 193) 2150 fathoms September 3, 1873 4 deg 2 min 0 sec S
32 deg 47 min 0 sec W Globigerina ooze Plan 14 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr.

116 (Sounding 194) 2275 fathoms September 4, 1873 5 deg 1 min 0 sec S
33 deg 50 min 0 sec W Globigerina ooze Plan 12 - Fernando Noronha to Pernambuco
34.3 Fahr. (SG.1.02609) 78 Fahr. (SG.1.02628)

117 (Sounding 195) 1375 fathoms September 6, 1873 5 deg 56 min 0 sec S
34 deg 45 min 0 sec W Red mud Plan 12 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr. (SG.1.02673)

117A (Sounding 196) 500 fathoms September 6, 1873 6 deg 4 min 0 sec S
34 deg 51 min 0 sec W Red mud Plan 15 - Fernando Noronha to Pernambuco
-oOo- 78 Fahr.

118 (Sounding 197) 2050 fathoms September 8, 1873 7 deg 28 min 0 sec S
34 deg 2 min 0 sec W Red mud Plan 12&15 - Fernando Noronha to Pernambuco
35.2 Fahr. 77.5 Fahr.

119 (Sounding 198) 1650 fathoms September 8, 1873 7 deg 39 min 0 sec S
34 deg 12 min 0 sec W Red mud Plan 12&15 - Fernando Noronha to Pernambuco
37.2 Fahr. 77.5 Fahr. (SG.1.02745)

120 (Sounding 199) 675 fathoms (Trawled) September 9, 1873 8 deg 37 min 0 sec S
34 deg 28 min 0 sec W Red mud Plan 12&15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 78 Fahr. (SG.1.0274)

121 (Sounding 200) 500 fathoms (Trawled) September 9, 1873 8 deg 28 min 0 sec S
34 deg 31 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 78 Fahr.

122 (Sounding 201) 350 fathoms (Trawled) September 10, 1873 9 deg 5 min 0 sec S
34 deg 50 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 77.5 Fahr.

122A (Sounding 202) 120 fathoms (Trawled) September 10, 1873 9 deg 10 min 0 sec S
34 deg 52 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 77.5 Fahr.

122B (Sounding 203) 32 fathoms (Trawled) September 10, 1873 9 deg 9 min 0 sec S
34 deg 53 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 77.5 Fahr.

122C (Sounding 204) 400 fathoms (Trawled) September 10, 1873 9 deg 10 min 0 sec S
34 deg 49 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
(SG.1.02669) 77.5 Fahr. (SG.1.02739)

123 (Sounding 205) 1715 fathoms September 11, 1873 10 deg 9 min 0 sec S
35 deg 11 min 0 sec W Red mud Plan 12&15 - Off Coast of S. America between
Pernambuco and Bahia
37 Fahr. 77.5 Fahr. (SG.1.02681)

124 (Sounding 206) 1600 fathoms (Trawled) September 11, 1873 10 deg 11 min 0 sec S
35 deg 22 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
(SG.1.02671) 77.5 Fahr.

125 (Sounding 207) 1200 fathoms September 12, 1873 10 deg 46 min 0 sec S
36 deg 2 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
(SG.1.0273) 77 Fahr. (SG.1.02746)

126 (Sounding 208) 770 fathoms (Trawled) September 12, 1873 10 deg 46 min 0 sec S
36 deg 8 min 0 sec W Red mud Plan 12&15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 77 Fahr.

126A (Sounding 209) 700 fathoms (Trawled) September 12, 1873 10 deg 45 min 0 sec S
36 deg 9 min 0 sec W Red mud Plan 15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 77 Fahr.

127 (Sounding 210) 1015 fathoms September 13, 1873 11 deg 42 min 0 sec S
37 deg 3 min 0 sec W Red mud Plan 12&15 - Off Coast of S. America between
Pernambuco and Bahia
38.5 Fahr. 77 Fahr. (SG.1.02748)

128 (Sounding 211) 1275 fathoms September 14, 1873 13 deg 6 min 0 sec S
38 deg 7 min 0 sec W Red mud Plan 12&15 - Off Coast of S. America between
Pernambuco and Bahia
-oOo- 76.5 Fahr.

129 (Sounding 212) 2150 fathoms (Dredged) September 30, 1873 20 deg 13 min 0 sec S
35 deg 19 min 0 sec W Red mud Plan 16 - Bahia to Tristan da Cunha
34.2 Fahr. 74 Fahr. (SG.1.02759)

130 (Sounding 213) 2350 fathoms (Trawled) October 3, 1873 26 deg 15 min 0 sec S
32 deg 56 min 0 sec W Red clay Plan 16 - Bahia to Tristan da Cunha
34.7 Fahr. (SG.1.02714) 69 Fahr. (SG.1.0271)

131 (Sounding 214) 2275 fathoms (Trawled) October 6, 1873 29 deg 35 min 0 sec S
28 deg 9 min 0 sec W Globigerina ooze Plan 16 - Bahia to Tristan da Cunha
34.6 Fahr. 65 Fahr. (SG.1.02663)

132 (Sounding 215) 2050 fathoms October 10, 1873 35 deg 25 min 0 sec S
23 deg 40 min 0 sec W Globigerina ooze Plan 16 - Bahia to Tristan da Cunha
35 Fahr. (SG.1.0259) 58 Fahr. (SG.1.02619)

133 (Sounding 216) 1900 fathoms (Trawled) October 11, 1873 35 deg 41 min 0 sec S
20 deg 55 min 0 sec W Globigerina ooze Plan 16 - Bahia to Tristan da Cunha
35.4 Fahr. (SG.1.02587) 58 Fahr. (SG.1.02626)

134 (Sounding 217) 2025 fathoms (Dredged) October 14, 1873 36 deg 12 min 0 sec S
12 deg 16 min 0 sec W Globigerina ooze Plan 16 - Off Tristan da Cunha
36 Fahr. (SG.1.02583) 53.5 Fahr. (SG.1.02616)

135 (Sounding 218) 360 fathoms October 15, 1873 37 deg 1 min 50 sec S
12 deg 19 min 10 sec W Volcanic sand Plan 17 - Off Tristan da Cunha
-oOo- 53.5 Fahr.

135A (Sounding 219) 75 fathoms (Dredged) October 16, 1873 37 deg 16 min 50 sec S
12 deg 45 min 15 sec W "Hard ground,shells,gravel" Plan 17 - Off Tristan da Cunha
-oOo- 54 Fahr.

135B (Sounding 220) 465 fathoms October 17, 1873 37 deg 22 min 30 sec S
12 deg 33 min 0 sec W "Hard ground,shells,gravel" Plan 17 - Off Tristan da Cunha
-oOo- 53.5 Fahr.

135C (Sounding 221) 110 fathoms (Dredged) October 17, 1873 37 deg 25 min 30 sec S
12 deg 28 min 30 sec W -oOo- Plan 17 - Off Tristan da Cunha
-oOo- 54 Fahr.

135D (Sounding 222) 72 fathoms (Dredged) October 17, 1873 37 deg 25 min 0 sec S
12 deg 30 min 30 sec W -oOo- Plan 17 - Off Tristan da Cunha
-oOo- 54 Fahr.

135E (Sounding 223) 1000 fathoms (Dredged) October 18, 1873 37 deg 21 min 0 sec S
12 deg 22 min 30 sec W "Hard ground,shells,gravel" Plan 17 - Off Tristan da Cunha
-oOo- 53.5 Fahr.

135F (Sounding 224) 1100 fathoms (Dredged) October 18, 1873 37 deg 14 min 45 sec S
12 deg 20 min 15 sec W Hard ground Plan 17 - Off Tristan da Cunha
-oOo- 53.5 Fahr.

135G (Sounding 225) 550 fathoms (Dredged) October 18, 1873 37 deg 10 min 50 sec S
12 deg 18 min 30 sec W Hard ground Plan 17 - Off Tristan da Cunha
-oOo- 54 Fahr.

136 (Sounding 226) 2100 fathoms (Dredged) October 20, 1873 36 deg 43 min 0 sec S
7 deg 13 min 0 sec W -oOo- Plan 16 - Tristan da Cunha to Cape of Good Hope
35.2 Fahr. (SG.1.02592) 54 Fahr. (SG.1.02616)

137 (Sounding 227) 2550 fathoms (Dredged) October 23, 1873 35 deg 59 min 0 sec S
1 deg 34 min 0 sec E Red clay Plan 16 - Tristan da Cunha to Cape of Good Hope
34.5 Fahr. (SG.1.02585) 56.1 Fahr. (SG.1.02637)

138 (Sounding 228) 2650 fathoms October 25, 1873 36 deg 22 min 0 sec S
8 deg 12 min 0 sec E Red clay Plan 16 - Tristan da Cunha to Cape of Good Hope
35.1 Fahr. (SG.1.0258) 56.2 Fahr. (SG.1.02631)

139 (Sounding 229) 2325 fathoms October 27, 1873 35 deg 35 min 0 sec S
16 deg 9 min 0 sec E Globigerina ooze Plan 16 - Tristan da Cunha to Cape of Good Hope
34.1 Fahr. (SG.1.02582) 56.2 Fahr. (SG.1.02614)

140 (Sounding 230) 1250 fathoms October 28, 1873 35 deg 0 min 0 sec S
17 deg 57 min 0 sec E Globigerina ooze Plan 16 - Tristan da Cunha to Cape of Good Hope
-oOo- 59 Fahr. (SG.1.0262)

141 (Sounding 231) 98 fathoms (Dredged) December 17, 1873 34 deg 41 min 0 sec S
18 deg 36 min 0 sec E Green Sand Plan 18 - Cape of Good Hope to parallel of 46° S
49.5 Fahr. 66.5 Fahr.

142 (Sounding 232) 150 fathoms (Dredged) December 18, 1873 35 deg 4 min 0 sec S
18 deg 37 min 0 sec E Green Sand Plan 18 - Cape of Good Hope to parallel of 46° S
47 Fahr. (SG.1.02658) 65.5 Fahr. (SG.1.02665)

143 (Sounding 233) 1900 fathoms (Dredged) December 19, 1873 36 deg 48 min 0 sec S
19 deg 24 min 0 sec E Globigerina ooze Plan 18 - Cape of Good Hope to parallel of 46° S
35.6 Fahr. (SG.1.02607) 73 Fahr. (SG.1.02657)

144 (Sounding 234) 1570 fathoms December 24, 1873 45 deg 57 min 0 sec S
34 deg 39 min 0 sec E Globigerina ooze Plan 18 - Cape of Good Hope to parallel of 46° S
35.8 Fahr. (SG.1.02525) 43 Fahr. (SG.1.02516)

144A (Sounding 235) 69 fathoms (Dredged) December 26, 1873 46 deg 48 min 0 sec S
37 deg 49 min 30 sec E Volcanic sand Plan 19 - Off Marion Island
-oOo- 41 Fahr.

145 (Sounding 236) 140 fathoms (Dredged) December 27, 1873 46 deg 43 min 0 sec S
38 deg 4 min 30 sec E Volcanic sand Plan 19 - Off Marion Island
-oOo- 41 Fahr.

145A (Sounding 237) 310 fathoms (Dredged) December 27, 1873 46 deg 41 min 0 sec S
38 deg 10 min 0 sec E Volcanic sand Plan 19 - Off Marion Island
-oOo- 41.5 Fahr. (SG.1.02515)

146 (Sounding 238) 1375 fathoms (Trawled) December 29, 1873 46 deg 46 min S
45 deg 31 min E Globigerina ooze Plan 18 - Marion Island to Crozets
35.6 Fahr. (SG.1.02555) 43 Fahr. (SG.1.02512)

147 (Sounding 239) 1600 fathoms (Trawled) December 30, 1873 46 deg 16 min S
48 deg 27 min E Diatom ooze Plan 18 - Marion Island to Crozets
34.2 Fahr. (SG.1.0255) 41 Fahr. (SG.1.02515)

147A (Sounding 240) 600 fathoms January 1, 1874 46 deg 45 min 0 sec S
50 deg 42 min 0 sec E Volcanic mud Plan 20 - Off Crozet Islands
-oOo- 42 Fahr. (SG.1.02503)

148 (Sounding 241) 210 fathoms (Dredged) January 3, 1874 46 deg 47 min 0 sec S
51 deg 37 min 0 sec E "Hard ground, gravel, shells" Plan 20 - Off Crozet Islands
-oOo- 41 Fahr.

148A (Sounding 242) 550 fathoms (Dredged) January 3, 1874 46 deg 53 min 0 sec S
51 deg 52 min 0 sec E "Hard ground, gravel, shells" Plan 20 - Off Crozet Islands
-oOo- 41 Fahr. (SG.1.02504)

149 (Sounding 243) 20 fathoms (Dredged) January 9, 1874 49 deg 8 min 0 sec S
70 deg 12 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- -oOo-

149A (Sounding 244) 40 fathoms (Dredged) January 14, 1874 49 deg 8 min 0 sec S
70 deg 9 min 0 sec E Volcanic mud Plan 21 - At Kreguelen Island
-oOo- -oOo-

149B (Sounding 245) 25 fathoms (Dredged) January 17, 1874 49 deg 28 min 0 sec S
70 deg 30 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- 40.5 Fahr.

149C (Sounding 246) 60 fathoms (Dredged) January 19, 1874 49 deg 32 min 0 sec S
70 deg 0 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- -oOo-

149D (Sounding 247) 28 fathoms (Dredged) January 20, 1874 49 deg 28 min 0 sec S
70 deg 13 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- 41 Fahr.

149E (Sounding 248) 30 fathoms (Dredged) January 21, 1874 49 deg 37 min 0 sec S
70 deg 16 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- -oOo-

149F (Sounding 249) 95 fathoms (Dredged) January 27, 1874 48 deg 55 min 0 sec S
69 deg 31 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- 41.7 Fahr. (SG.1.02537)

149G (Sounding 250) 110 fathoms (Dredged) January 29, 1874 48 deg 50 min 0 sec S
69 deg 18 min 0 sec E Volcanic mud Plan 21 - At Kreguelen Island
-oOo- 40.2 Fahr.

149H (Sounding 251) 127 fathoms (Dredged) January 29, 1874 48 deg 45 min 0 sec S
69 deg 14 min 0 sec E Volcanic mud Plan 21 - At Kreguelen Island
-oOo- 39.8 Fahr.

149J (Sounding 252) 105 fathoms (Dredged) January 29, 1874 48 deg 43 min 0 sec S
69 deg 15 min 0 sec E Volcanic mud Plan 21 - At Kreguelen Island
-oOo- 39 Fahr.

149K (Sounding 253) 45 fathoms (Dredged) January 29, 1874 48 deg 40 min 0 sec S
69 deg 6 min 0 sec E Volcanic mud Plan 21 - At Kerguelen Island
-oOo- 39 Fahr.

150 (Sounding 254) 150 fathoms (Dredged) February 2, 1874 52 deg 4 min S
71 deg 22 min E Coarse gravel Plan 18 - Heard Island
35.2 Fahr. 37.5 Fahr. (SG.1.02515)

151 (Sounding 255) 75 fathoms (Dredged) February 7, 1874 52 deg 59 min 30 sec S
73 deg 33 min 30 sec E Volcanic mud. Plan 22 - Heard Island
-oOo- 36.2 Fahr. (SG.1.02515)

152 (Sounding 256) 1260 fathoms (Trawled.) February 11, 1874 60 deg 52 min 0 sec S
80 deg 20 min 0 sec E Diatom ooze Plan 23 - In vicinity of Antarctic Ice
(SG.1.02561) 34.5 Fahr. (SG.1.02512)

153 (Sounding 257) 1675 fathoms (Dredged.) February 14, 1874 65 deg 42 min 0 sec S
79 deg 49 min 0 sec E Blue mud. Plan 23 - In vicinity of Antarctic Ice
(SG.1.02567) 29.5 Fahr. (SG.1.02413)

154 (Sounding 258) 1800 fathoms February 19, 1874 64 deg 37 min 0 sec S
85 deg 49 min 0 sec E Blue mud. Plan 23 - In vicinity of Antarctic Ice
(SG.1.02529) 32 Fahr. (SG.1.02458)

155 (Sounding 259) 1300 fathoms (Dredged) February 23, 1874 64 deg 18 min 0 sec S
94 deg 47 min 0 sec E Blue mud. Plan 23 - In vicinity of Antarctic Ice
-oOo- 31 Fahr.

156 (Sounding 260) 1975 fathoms (Trawled.) February 26, 1874 62 deg 26 min 0 sec S
95 deg 44 min 0 sec E Diatom ooze Plan 23 - In vicinity of Antarctic Ice
(SG.1.02515) 33 Fahr. (SG.1.02508)

157 (Sounding 261) 1950 fathoms (Trawled) March 3, 1874 53 deg 55 min S
108 deg 35 min E Diatom ooze Plan 24 - Termination Land to Melbourne
32.1 Fahr. (SG.1.02561) 37.2 Fahr. (SG.1.02509)

158 (Sounding 262) 1800 fathoms (Trawled) March 7, 1874 50 deg 1 min S
123 deg 4 min E Globigerina ooze Plan 24 - Termination Land to Melbourne
33.5 Fahr. (SG.1.02554) 45 Fahr. (SG.1.02522)

159 (Sounding 263) 2150 fathoms (Trawled.) March 10, 1874 47 deg 25 min 0 sec S
130 deg 22 min 0 sec E Globigerina ooze Plan 24 - Termination Land to Melbourne
34.5 Fahr. (SG.1.02564) 51.5 Fahr. (SG.1.02566)

160 (Sounding 264) 2600 fathoms (Trawled) March 13, 1874 42 deg 42 min S
134 deg 10 min E Red Clay Plan 24 - Termination Land to Melbourne
33.9 Fahr. (SG.1.0257) 55 Fahr. (SG.1.0257)

161 (Sounding 265) 33 fathoms (Trawled) April 1, 1874 38 deg 22 min 30 sec S
144 deg 36 min 30 sec E Sand. Plan 25 - Melbourne to Sydney
-oOo- 63.5 Fahr. (SG.1.02568)

162 (Sounding 266) 38 fathoms (Dredged) April 2, 1874 39 deg 10 min 30 sec S
146 deg 37 min 0 sec E Sand and shells. Plan 25 - Melbourne to Sydney
-oOo- 63.2 Fahr. (SG.1.02632)

163 (Sounding 267) 2200 fathoms April 4, 1874 36 deg 57 min 0 sec S
150 deg 34 min 0 sec E Green mud. Plan 25 - Melbourne to Sydney
34.5 Fahr. (SG.1.02644) 72 Fahr. (SG.1.02652)

163A (Sounding 268) 150 fathoms (Dredged) April 4, 1874 36 deg 59 min 0 sec S
150 deg 20 min 0 sec E Green mud. Plan 25 - Melbourne to Sydney
-oOo- 71 Fahr.

163B (Sounding 269) 35 fathoms (Dredged.) June 3, 1874 33 deg 51 min 15 sec S
151 deg 22 min 15 sec E Hard ground. Plan 26 - Off Sydney
63 Fahr. 69 Fahr.

163C (Sounding 270) 85 fathoms June 12, 1874 33 deg 55 min 0 sec S
151 deg 35 min 0 sec E {Hard ground (shells)} Plan 26 - Off Sydney
62.2 Fahr. 67.5 Fahr. (SG.1.02644)

163D (Sounding 271) 120 fathoms June 12, 1874 33 deg 57 min 30 sec S
151 deg 39 min 15 sec E Green sand. Plan 26 - Off Sydney
-oOo- 68 Fahr.

163E (Sounding 272) 290 fathoms June 12, 1874 34 deg 0 min 15 sec S
151 deg 44 min 15 sec E Green sand. Plan 26 - Off Sydney
-oOo- 70.2 Fahr.

163F (Sounding 273) 650 fathoms June 12, 1874 34 deg 3 min 15 sec S
151 deg 51 min 30 sec E Green mud Plan 26 - Off Sydney
40.8 Fahr. 70.2 Fahr.

164 (Sounding 274) 950 fathoms June 12, 1874 34 deg 8 min 0 sec S
152 deg 0 min 0 sec E Green mud Plan 26 - Off Sydney
36.5 Fahr. 69.5 Fahr. (SG.1.0265)

164A (Sounding 275) 1200 fathoms June 13, 1874 34 deg 9 min 0 sec S
151 deg 55 min 0 sec E Green mud Plan 26 - Off Sydney
-oOo- 70.2 Fahr.

164B (Sounding 276) 410 fathoms (Trawled.) June 13, 1874 34 deg 13 min 0 sec S
151 deg 38 min 0 sec E Green mud Plan 26 - Off Sydney
-oOo- 69 Fahr. (SG.1.02636)

164C (Sounding 277) 400 fathoms (Dredged.) June 13, 1874 34 deg 19 min 0 sec S
151 deg 31 min 0 sec E Green mud Plan 26 - Off Sydney
40.8 Fahr. 67 Fahr.

164D (Sounding 278) 2100 fathoms June 14, 1874 34 deg 3 min 0 sec S
152 deg 20 min 0 sec E -oOo- Plan 26&27 - Sydney to New Zealand
-oOo- 67.5 Fahr.

164E (Sounding 279) 2550 fathoms June 16, 1874 34 deg 27 min 0 sec S
154 deg 57 min 0 sec E -oOo- Plan 27 - Sydney to New Zealand
-oOo- 64 Fahr. (SG.1.02644)

165 (Sounding 280) 2600 fathoms (Dredged.) June 17, 1874 34 deg 50 min 0 sec S
155 deg 28 min 0 sec E Red clay. Plan 27 - Sydney to New Zealand
34.5 Fahr. (SG.1.02613) 64.5 Fahr. (SG.1.02638)

165A (Sounding 281) 2600 fathoms June 19, 1874 36 deg 41 min 0 sec S
158 deg 29 min 0 sec E Red clay. Plan 27 - Sydney to New Zealand
34.4 Fahr. 62.5 Fahr. (SG.1.02637)

165B (Sounding 282) 1975 fathoms June 21, 1874 37 deg 53 min 0 sec S
163 deg 18 min 0 sec E Globigerina ooze Plan 27 - Sydney to New Zealand
34.7 Fahr. (SG.1.02625) 59.5 Fahr. (SG.1.02616)

165C (Sounding 283) 1100 fathoms June 22, 1874 38 deg 36 min 0 sec S
166 deg 39 min 0 sec E Globigerina ooze Plan 27 - Sydney to New Zealand
36.4 Fahr. (SG.1.02594) 58.2 Fahr. (SG.1.02614)

166 (Sounding 284) 275 fathoms (Trawled) June 23, 1874 38 deg 50 min 0 sec S
169 deg 20 min 0 sec E Globigerina ooze Plan 27 - Sydney to New Zealand
50.8 Fahr. (SG.1.02668) 58.5 Fahr. (SG.1.02625)

166A (Sounding 285) 350 fathoms June 23, 1874 38 deg 57 min 0 sec S
170 deg 10 min 45 sec E -oOo- Plan 27 - Sydney to New Zealand
-oOo- 58.5 Fahr.

166B (Sounding 286) 400 fathoms June 23, 1874 39 deg 8 min 0 sec S
170 deg 43 min 0 sec E Globigerina ooze Plan 27 - Sydney to New Zealand
-oOo- 58.5 Fahr.

166C (Sounding 287) 400 fathoms June 24, 1874 39 deg 21 min 0 sec S
171 deg 28 min 0 sec E Globigerina ooze Plan 27 - Sydney to New Zealand
-oOo- 58 Fahr.

167 (Sounding 288) 150 fathoms (Trawled) June 24, 1874 39 deg 32 min 0 sec S
171 deg 48 min 0 sec E Blue mud. Plan 27 - Sydney to New Zealand
-oOo- 58.5 Fahr. (SG.1.02617)

167A (Sounding 289) 10 fathoms (Dredged) June 27, 1874 41 deg 4 min 0 sec S
174 deg 19 min 0 sec E Mud. Plan 27 - Sydney to New Zealand
-oOo- 51.5 Fahr. (SG.1.02593)

168 (Sounding 290) 1100 fathoms (Trawled) July 8, 1874 40 deg 28 min 0 sec S
177 deg 43 min 0 sec E Blue mud. Plan 27 - New Zealand to Tongatabu
37.2 Fahr. (SG.1.02584) 57.2 Fahr. (SG.1.02622)

169 (Sounding 291) 700 fathoms (Trawled) July 10, 1874 37 deg 34 min 0 sec S
179 deg 22 min 0 sec E Blue mud. Plan 27 - New Zealand to Tongatabu
40 Fahr. (SG.1.02594) 58.2 Fahr. (SG.1.02636)

170 (Sounding 292) 520 fathoms (Trawled) July 14, 1874 29 deg 55 min 0 sec S
178 deg 14 min 0 sec W Volcanic mud. Plan 27 - New Zealand to Tongatabu
43 Fahr. 65 Fahr.

170A (Sounding 293) 630 fathoms (Trawled) July 14, 1874 29 deg 45 min 0 sec S
178 deg 11 min 0 sec W Volcanic mud. Plan 27 - New Zealand to Tongatabu
39.5 Fahr. 65.2 Fahr. (SG.1.02644)

171 (Sounding 294) 600 fathoms (Trawled) July 15, 1874 28 deg 33 min 0 sec S
177 deg 50 min 0 sec W Hard ground. Plan 27 - New Zealand to Tongatabu
39.5 Fahr. 66.5 Fahr. (SG.1.02685)

171A (Sounding 295) 2900 fathoms July 17, 1874 25 deg 5 min 0 sec S
172 deg 56 min 0 sec W Red clay. Plan 27 - New Zealand to Tongatabu
34.3 Fahr. (SG.1.12626) 72 Fahr. (SG.1.02642)

172 (Sounding 296) 18 fathoms (Dredged.) July 22, 1874 20 deg 58 min 0 sec S
175 deg 9 min 0 sec W Coral mud. Plan 28 - Off Tongatabu
-oOo- 75 Fahr.

172A (Sounding 297) 240 fathoms (Dredged.) July 22, 1874 20 deg 56 min 0 sec S
175 deg 11 min 0 sec W Coral mud. Plan 28 - Off Tongatabu
-oOo- 75 Fahr. (SG.1.0264)

173 (Sounding 298) 315 fathoms (Dredged.) July 24, 1874 19 deg 9 min 35 sec S
179 deg 41 min 50 sec E Coral mud. Plan 29 - Off Matuku
-oOo- 76 Fahr. (SG.1.02642)

173A (Sounding 299) 310 fathoms (Trawled.) July 24, 1874 19 deg 9 min 32 sec S
179 deg 41 min 55 sec E Coral mud. Plan 29 - Off Matuku
-oOo- 77 Fahr.

174 (Sounding 300) 140 fathoms August 3, 1874 19 deg 6 min 0 sec S
178 deg 14 min 20 sec E Coral mud. Plan 30 - Off Kandavu Islands
77 Fahr.
-oOo-

174A (Sounding 301) 160 fathoms August 3, 1874 19 deg 6 min 32 sec S
178 deg 16 min 20 sec E Coral mud. Plan 30 - Off Kandavu Islands
77 Fahr.
-oOo-

174B (Sounding 302) 255 fathoms (Trawled.) August 3, 1874 19 deg 6 min 45 sec S
178 deg 17 min 0 sec E Coral mud. Plan 30 - Off Kandavu Islands
77.7 Fahr.
-oOo-

174C (Sounding 303) 610 fathoms (Trawled.) August 3, 1874 19 deg 7 min 50 sec S
178 deg 19 min 35 sec E Coral mud. Plan 30 - Off Kandavu Islands
78 Fahr.
39 Fahr.

174D (Sounding 304) 210 fathoms (Dredged.) August 3, 1874 19 deg 5 min 50 sec S
178 deg 16 min 20 sec E Coral mud. Plan 30 - Off Kandavu Islands
77.7 Fahr.
-oOo-

175 (Sounding 305) 1350 fathoms (Trawled) August 12, 1874 19 deg 2 min 0 sec S
177 deg 10 min 0 sec E Globigerina ooze Plan 27 - Fiji Islands to Raine Island
36 Fahr. (SG.1.02633) 77.5 Fahr. (SG.1.02647)

176 (Sounding 306) 1450 fathoms August 15, 1874 18 deg 30 min 0 sec S
173 deg 52 min 0 sec E Globigerina ooze Plan 27 - Fiji Islands to Raine Island
36.2 Fahr. (SG.1.02621) 77.5 Fahr. (SG.1.02636)

177 (Sounding 307) 130 fathoms (Dredged) August 18, 1874 16 deg 45 min 0 sec S
168 deg 7 min 0 sec E Volcanic sand. Plan 27 - Fiji Islands to Raine Island
78.7 Fahr. (SG.1.02624)
-oOo-

178 (Sounding 308) 2650 fathoms August 19, 1874 16 deg 47 min 0 sec S
165 deg 20 min 0 sec E Red clay. Plan 27 - Fiji Islands to Raine Island
35.8 Fahr. 79 Fahr. (SG.1.02621)

179 (Sounding 309) 2325 fathoms August 21, 1874 15 deg 58 min 0 sec S
160 deg 48 min 0 sec E Red clay. Plan 27 - Fiji Islands to Raine Island
36 Fahr. (SG.1.02594) 79 Fahr. (SG.1.02634)

180 (Sounding 310) 2450 fathoms August 24, 1874 14 deg 7 min 0 sec S
153 deg 43 min 0 sec E Red clay. Plan 27 - Fiji Islands to Raine Island
36 Fahr. (SG.1.02601) 80 Fahr. (SG.1.02611)

181 (Sounding 311) 2440 fathoms (Trawled) August 25, 1874 13 deg 50 min 0 sec S
151 deg 49 min 0 sec E Red clay. Plan 27 - Fiji Islands to Raine Island
35.8 Fahr. (SG.1.02591) 80 Fahr. (SG.1.02649)

182 (Sounding 312) 2275 fathoms August 27, 1874 13 deg 6 min 0 sec S
148 deg 37 min 0 sec E Globigerina ooze Plan 27 - Fiji Islands to Raine Island
35.8 Fahr. (SG.1.02584) 78.5 Fahr. (SG.1.02619)

183 (Sounding 313) 1700 fathoms August 28, 1874 12 deg 42 min 0 sec S
146 deg 46 min 0 sec E Globigerina ooze Plan 27 - Fiji Islands to Raine Island
36 Fahr. (SG.1.02595) 78 Fahr. (SG.1.0263)

184 (Sounding 314) 1400 fathoms (Trawled) August 29, 1874 12 deg 8 min 0 sec S
145 deg 10 min 0 sec E Globigerina ooze Plan 27 - Fiji Islands to Raine Island
36 Fahr. (SG.1.02613) 77.5 Fahr. (SG.1.0263)

185 (Sounding 315) 135 fathoms (Dredged) August 31, 1874 11 deg 35 min 25 sec S
144 deg 2 min 0 sec E Coral Sand Plan 27 - Off Raine Island
77 Fahr. (SG.1.02639)
-oOo-

185A (Sounding 316) 150 fathoms (Dredged) August 31, 1874 11 deg 36 min 20 sec S
144 deg 1 min 50 sec E Coral Sand Plan 27 - Off Raine Island
77 Fahr.
-oOo-

185B (Sounding 317) 155 fathoms (Dredged) August 31, 1874 11 deg 38 min 15 sec S
143 deg 59 min 38 sec E Coral Sand Plan 27 - Off Raine Island
77 Fahr.
-oOo-

186 (Sounding 318) 8 fathoms (Dredged) September 8, 1874 10 deg 30 min 0 sec S
142 deg 18 min 0 sec E Coral mud Plan 31 - Cape York to Arrou Islands
77.2 Fahr.
-oOo-

187 (Sounding 319) 6-8 fathoms (Dredged) September 9, 1874 10 deg 36 min 0 sec S
141 deg 55 min 0 sec E Coral mud Plan 31 - Cape York to Arrou Islands
77.7 Fahr. (SG.1.02691)
-oOo-

188 (Sounding 320) 28 fathoms (Both) September 10, 1874 9 deg 59 min 0 sec S
139 deg 42 min 0 sec E Green mud Plan 31 - Cape York to Arrou Islands
78.5 Fahr. (SG.1.02599)
-oOo-

189 (Sounding 321) 25 fathoms (Trawled) September 11, 1874 9 deg 36 min 0 sec S
137 deg 50 min 0 sec E Green mud Plan 31 - Cape York to Arrou Islands
(SG.1.02529) 79 Fahr. (SG.1.0255)

190 (Sounding 322) 49 fathoms (Trawled) September 12, 1874 8 deg 56 min 0 sec S
136 deg 5 min 0 sec E Green mud Plan 31 - Cape York to Arrou Islands
79.2 Fahr. (SG.1.02545)
-oOo-

191 (Sounding 323) 800 fathoms (Trawled) September 23, 1874 5 deg 41 min 0 sec S
134 deg 4 min 30 sec E Green mud Plan 31 & 32 - Arrou Islands to Banda
39.5 Fahr. 82.2 Fahr. (SG.1.02496)

191A (Sounding 324) 580 fathoms September 24, 1874 5 deg 26 min 0 sec S
133 deg 19 min 0 sec E Green mud Plan 31 & 32 - Arrou Islands to Banda
40.7 Fahr. (SG.1.02581) 81.5 Fahr. (SG.1.02579)

192 (Sounding 325) 140 fathoms (Trawled) September 26, 1874 5 deg 49 min 15 sec S
132 deg 14 min 15 sec E Blue mud Plan 32 - Arrou Islands to Banda
82 Fahr. (SG.1.02585)
-oOo-

193 (Sounding 326) 2800 fathoms September 28, 1874 5 deg 24 min 0 sec S
130 deg 37 min 15 sec E Blue mud Plan 31 - Arrou Islands to Banda
38 Fahr. (SG.1.02558) 83.5 Fahr. (SG.1.02565)

194 (Sounding 327) 200 fathoms (Dredged) September 29, 1874 4 deg 34 min 0 sec S
129 deg 57 min 30 sec E Volcanic mud Plan 33 - Arrou Islands to Banda
83 Fahr.
-oOo-

194A (Sounding 328) 360 fathoms (Trawled) September 29, 1874 4 deg 31 min 0 sec S
129 deg 57 min 20 sec E Volcanic mud Plan 33 - Arrou Islands to Banda
82.5 Fahr.
-oOo-

195 (Sounding 329) 1425 fathoms (Trawled) October 3, 1874 4 deg 21 min S
129 deg 7 min E Blue mud Plan 31 - Banda to Amboina
38 Fahr. (SG.1.02568) 82 Fahr. (SG.1.02602)

196 (Sounding 330) 825 fathoms (Trawled) October 13, 1874 0 deg 48 min 30 sec S
126 deg 58 min 30 sec E Hard ground Plan 31 - Amboina to Samboangan
36.9 Fahr. (SG.1.02584) 83 Fahr. (SG.1.02558)

197 (Sounding 331) 1200 fathoms October 14, 1874 0 deg 41 min 0 sec N
126 deg 37 min 0 sec E Blue mud Plan 31 - Amboina to Samboangan
35.9 Fahr. (SG.1.02593) 82.5 Fahr. (SG.1.02523)

198 (Sounding 332) 2150 fathoms (Trawled) October 20, 1874 2 deg 55 min 0 sec N
124 deg 53 min 0 sec E Blue mud Plan 31 - Amboina to Samboangan
38.9 Fahr. (SG.1.02586) 85 Fahr. (SG.1.02551)

199 (Sounding 333) 2600 fathoms October 22, 1874 5 deg 44 min 0 sec N
123 deg 34 min 0 sec E Blue mud Plan 31 - Amboina to Samboangan
38.6 Fahr. (SG.1.02535) 83 Fahr. (SG.1.02545)

200 (Sounding 334) 250 fathoms (Trawled) October 23, 1874 6 deg 47 min 0 sec N
122 deg 28 min 0 sec E Green mud Plan 31 - Amboina to Samboangan
-oOo- 85.5 Fahr. (SG.1.02536)

201 (Sounding 335) 82 fathoms (Trawled) October 26, 1874 7 deg 3 min 0 sec N
121 deg 48 min 0 sec E "Stones, gravel" Plan 31 - Samboangan to Manila
-oOo- 83 Fahr. (SG.1.02515)

202 (Sounding 336) 2550 fathoms October 27, 1874 8 deg 32 min 0 sec N
121 deg 55 min 0 sec E Blue mud Plan 31 - Samboangan to Manila
50.5 Fahr. (SG.1.02555) 83 Fahr. (SG.1.02494)

203 (Sounding 337) 20 fathoms (Trawled) October 31, 1874 11 deg 6 min 0 sec N
123 deg 9 min 0 sec E Mud Plan 31 - Samboangan to Manila
-oOo- 85 Fahr.

204 (Sounding 338) 705 fathoms November 2, 1874 12 deg 28 min 0 sec N
122 deg 15 min 0 sec E Green mud Plan 31 - Samboangan to Manila
(SG.1.02517) 84 Fahr. (SG.1.02517)

204A (Sounding 339) 100 fathoms (Trawled) November 2, 1874 12 deg 43 min 0 sec N
122 deg 9 min 0 sec E Green mud Plan 31 - Samboangan to Manila
-oOo- 84 Fahr.

204B (Sounding 340) 115 fathoms (Trawled) November 2, 1874 12 deg 46 min 0 sec N
122 deg 10 min 0 sec E Green mud Plan 31 - Samboangan to Manila
(SG.1.02521) 84 Fahr. (SG.1.02521)

205 (Sounding 341) 1050 fathoms (Trawled) November 13, 1874 16 deg 42 min 0 sec N
119 deg 22 min 0 sec E Blue mud Plan 31 - Manila to Hong-Kong and back
37 Fahr. (SG.1.02574) 82 Fahr. (SG.1.02502)

206 (Sounding 342) 2100 fathoms (Trawled) January 8, 1875 17 deg 54 min 0 sec N
117 deg 14 min 0 sec E Blue mud Plan 31 - Manila to Hong-Kong and back
36.5 Fahr. (SG.1.02568) 75.2 Fahr. (SG.1.02538)

207 (Sounding 343) 700 fathoms (Trawled) January 16, 1875 12 deg 21 min 0 sec N
122 deg 15 min 0 sec E Blue mud Plan 31 - Manila to Samboangan
51.6 Fahr. (SG.1.02557) 80 Fahr. (SG.1.02515)

208 (Sounding 344) 18 fathoms (Trawled) January 17, 1875 11 deg 37 min N
123 deg 32 min E Blue mud Plan 31 - Manila to Samboangan
-oOo- 81 Fahr. (SG.1.02517)

209 (Sounding 345) 95 fathoms (Both) January 22, 1875 10 deg 14 min 0 sec N
123 deg 54 min 0 sec E Blue mud Plan 31 - Manila to Samboangan
71 Fahr. 81 Fahr.

210 (Sounding 346) 375 fathoms (Both) January 25, 1875 9 deg 26 min 0 sec N
123 deg 45 min 0 sec E Blue mud Plan 31 - Manila to Samboangan
54.1 Fahr. 80.2 Fahr.

210A (Sounding 347) 185 fathoms January 26, 1875 9 deg 15 min 0 sec N
124 deg 38 min 0 sec E Green mud Plan 31 - Manila to Samboangan
57.1 Fahr. 80.7 Fahr. (SG.1.0252)

211 (Sounding 348) 2225 fathoms January 28, 1875 8 deg 0 min 0 sec N
121 deg 42 min 0 sec E Blue mud Plan 31 - Manila to Samboangan
50.5 Fahr. (SG.1.02546) 81 Fahr. (SG.1.02571)

212 (Sounding 349) 10 fathoms (Both) January 30, 1875 6 deg 54 min 0 sec N
122 deg 18 min 0 sec E Sand Plan 31 - Manila to Samboangan
-oOo- 83 Fahr.

213 (Sounding 350) 2050 fathoms (Trawled) February 8, 1875 5 deg 47 min 0 sec N
124 deg 1 min 0 sec E Blue mud Plan 31 - Samboangan to New Guinea
38.8 Fahr. (SG.1.02567) 83 Fahr. (SG.1.02475)

214 (Sounding 351) 500 fathoms (Trawled) February 10, 1875 4 deg 33 min 0 sec N
127 deg 6 min 0 sec E Blue mud Plan 31 - Samboangan to New Guinea
41.8 Fahr. (SG.1.02562) 80.5 Fahr. (SG.1.02551)

215 (Sounding 352) 2550 fathoms (Trawled) February 12, 1875 4 deg 19 min 0 sec N
130 deg 15 min 0 sec E Red clay Plan 31 - Samboangan to New Guinea
35.4 Fahr. (SG.1.02572) 81.8 Fahr. (SG.1.02597)

216 (Sounding 353) 1675 fathoms February 16, 1875 2 deg 46 min 0 sec N
133 deg 58 min 0 sec E Globigerina ooze Plan 31 - Samboangan to New Guinea
35.4 Fahr. (SG.1.02585) 82.8 Fahr.

216A (Sounding 354) 2000 fathoms (Trawled) February 16, 1875 2 deg 56 min 0 sec N
134 deg 11 min 0 sec E Globigerina ooze Plan 31 - Samboangan to New Guinea
35.4 Fahr. (SG.1.02567) 82.8 Fahr. (SG.1.0257)

217 (Sounding 355) 2000 fathoms February 22, 1875 0 deg 39 min 0 sec S
138 deg 55 min 0 sec E Blue mud Plan 31 - Samboangan to New Guinea
35.2 Fahr. (SG.1.02595) 83 Fahr. (SG.1.02518)

218 (Sounding 356) 1070 fathoms (Trawled) March 1, 1875 2 deg 33 min 0 sec S
144 deg 4 min 0 sec E Blue mud Plan 31 - New Guinea to Admiralty Ids.
36.4 Fahr. (SG.1.02572) 84 Fahr. (SG.1.02564)

219 (Sounding 357) 150 fathoms (Trawled) March 10, 1875 1 deg 54 min 0 sec S
146 deg 39 min 40 sec E Coral mud Plan 34 - Admiralty Islands to Yokohama
-oOo- 84 Fahr. (SG.1.02571)

220 (Sounding 358) 1100 fathoms (Trawled) March 11, 1875 0 deg 42 min 0 sec S
147 deg 0 min 0 sec E Globigerina ooze Plan 31 - Admiralty Islands to Yokohama
36.2 Fahr. (SG.1.0256) 83.8 Fahr. (SG.1.0258)

221 (Sounding 359) 2650 fathoms March 13, 1875 0 deg 40 min 0 sec N
148 deg 41 min 0 sec E Red clay Plan 31 - Admiralty Islands to Yokohama
35.4 Fahr. 83.8 Fahr. (SG.1.02624)

222 (Sounding 360) 2450 fathoms March 16, 1875 2 deg 15 min 0 sec N
146 deg 16 min 0 sec E Red clay Plan 31 - Admiralty Islands to Yokohama
35.2 Fahr. (SG.1.0256) 82.8 Fahr. (SG.1.02634)

223 (Sounding 361) 2325 fathoms (Trawled) March 19, 1875 5 deg 31 min 0 sec N
145 deg 13 min 0 sec E Globigerina ooze Plan 31 - Admiralty Islands to Yokohama
35.5 Fahr. (SG.1.02578) 82 Fahr. (SG.1.02595)

224 (Sounding 362) 1850 fathoms (Dredged) March 21, 1875 7 deg 45 min 0 sec N
144 deg 20 min 0 sec E Globigerina ooze Plan 31 - Admiralty Islands to Yokohama
35.4 Fahr. (SG.1.02567) 81.2 Fahr. (SG.1.02585)

225 (Sounding 363) 4475 fathoms March 23, 1875 11 deg 24 min 0 sec N
143 deg 16 min 0 sec E Radiolarian ooze Plan 31 - Admiralty Islands to Yokohama
35.2 Fahr. (SG.1.02579) 80.2 Fahr. (SG.1.02568)

226 (Sounding 364) 2300 fathoms (Trawled) March 25, 1875 14 deg 44 min 0 sec N
142 deg 13 min 0 sec E Radiolarian ooze Plan 31 - Admiralty Islands to Yokohama
35.5 Fahr. 79 Fahr. (SG.1.02595)

227 (Sounding 365) 2475 fathoms March 27, 1875 17 deg 29 min 0 sec N
141 deg 21 min 0 sec E Red clay Plan 31 - Admiralty Islands to Yokohama
35.2 Fahr. 79.2 Fahr. (SG.1.02572)

228 (Sounding 366) 2450 fathoms March 29, 1875 19 deg 24 min 0 sec N
141 deg 13 min 0 sec E Red clay Plan 31 - Admiralty Islands to Yokohama
35.2 Fahr. 80.2 Fahr. (SG.1.02582)

229 (Sounding 367) 2500 fathoms (Trawled) April 1, 1875 22 deg 1 min 0 sec N
140 deg 27 min 0 sec E Red clay Plan 31 - Admiralty Islands to Yokohama
35.2 Fahr. 78.5 Fahr. (SG.1.02613)

230 (Sounding 368) 2425 fathoms (Trawled) April 5, 1875 26 deg 29 min 0 sec N
137 deg 57 min 0 sec E Red clay Plan 31 - Admiralty Islands to Yokohama
35.5 Fahr. 68.5 Fahr. (SG.1.02606)

231 (Sounding 369) 2250 fathoms April 9, 1875 31 deg 8 min 0 sec N
137 deg 8 min 0 sec E Blue mud Plan 31 - Admiralty Islands to Yokohama
35.2 Fahr. (SG.1.02579) 64 Fahr. (SG.1.02541)

232 (Sounding 370) 345 fathoms (Both) May 12, 1875 35 deg 11 min N
139 deg 28 min E Green mud Plan 35 - Off Japan
41.1 Fahr. 64.2 Fahr. (SG.1.02539)

233 (Sounding 371) 8 fathoms (Dredged) May 17, 1875 34 deg 39 min 0 sec N
135 deg 14 min 0 sec E Mud Plan 35 - Off Japan
-oOo- 62.3 Fahr.

233A (Sounding 372) 50 fathoms (Dredged) May 19, 1875 34 deg 38 min 0 sec N
135 deg 1 min 0 sec E Sand Plan 35 - Off Japan
-oOo- 62.6 Fahr.

233B (Sounding 373) 15 fathoms (Trawled) May 26, 1875 34 deg 18 min 0 sec N
133 deg 35 min 0 sec E Blue mud Plan 35 - Off Japan
-oOo- 66.3 Fahr. (SG.1.02361)

233C (Sounding 374) 12 fathoms (Trawled) May 28, 1875 34 deg 18 min 0 sec N
133 deg 21 min 0 sec E Blue mud Plan 35 - Off Japan
59.9 Fahr. 66.8 Fahr. (SG.1.02381)

234 (Sounding 375) 2675 fathoms June 3, 1875 32 deg 31 min 0 sec N
135 deg 39 min 0 sec E Blue mud Plan 35 - Off Japan
35.8 Fahr. 69.5 Fahr. (SG.1.02541)

235 (Sounding 376) 565 fathoms (Trawled) June 4, 1875 34 deg 7 min N
138 deg E Green mud Plan 35 - Off Japan
38.1 Fahr. (SG.1.0256) 73 Fahr. (SG.1.02557)

236 (Sounding 377) 775 fathoms (Trawled) June 5, 1875 34 deg 58 min 0 sec N
139 deg 29 min 0 sec E Green mud Plan 35 - Off Japan
37.6 Fahr. (SG.1.02546) 66.5 Fahr. (SG.1.0256)

236A (Sounding 378) 420 fathoms (Trawled) June 5, 1875 34 deg 59 min 0 sec N
139 deg 31 min 0 sec E Green mud Plan 35 - Off Japan
-oOo- 66.5 Fahr.

237 (Sounding 379) 1875 fathoms (Trawled) June 17, 1875 34 deg 37 min N
140 deg 32 min E Blue mud Plan 35&36 - Yokohama to Sandwich Islands
35.3 Fahr. (SG.1.02555) 73 Fahr. (SG.1.0257)

238 (Sounding 380) 3950 fathoms June 18, 1875 35 deg 18 min 0 sec N
144 deg 8 min 0 sec E Red Clay Plan 36 - Yokohama to Sandwich Islands
35 Fahr. (SG.1.02558) 70.5 Fahr.

239 (Sounding 381) 3625 fathoms June 19, 1875 35 deg 18 min 0 sec N
147 deg 9 min 0 sec E Red Clay Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. (SG.1.02572) 70.2 Fahr. (SG.1.02577)

240 (Sounding 382) 2900 fathoms (Trawled) June 21, 1875 35 deg 20 min 0 sec N
153 deg 39 min 0 sec E Red Clay Plan 36 - Yokohama to Sandwich Islands
34.9 Fahr. 64.8 Fahr. (SG.1.02556)

241 (Sounding 383) 2300 fathoms (Trawled) June 23, 1875 35 deg 41 min N
157 deg 42 min E Red clay Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. (SG.1.02558) 69.2 Fahr. (SG.1.02574)

242 (Sounding 384) 2575 fathoms June 24, 1875 35 deg 29 min 0 sec N
161 deg 52 min 0 sec E Red Clay Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. (SG.1.0256) 68.5 Fahr. (SG.1.0259)

243 (Sounding 385) 2800 fathoms (Trawled) June 26, 1875 35 deg 24 min 0 sec N
166 deg 35 min 0 sec E Red Clay Plan 36 - Yokohama to Sandwich Islands
35 Fahr. 71 Fahr. (SG.1.02562)

244 (Sounding 386) 2900 fathoms (Trawled) June 28, 1875 35 deg 22 min N
169 deg 53 min E Red clay Plan 36 - Yokohama to Sandwich Islands
35.3 Fahr. (SG.1.02571) 70.5 Fahr. (SG.1.02566)

245 (Sounding 387) 2775 fathoms June 30, 1875 36 deg 23 min 0 sec N
174 deg 31 min 0 sec E Red Clay Plan 36 - Yokohama to Sandwich Islands
34.9 Fahr. (SG.1.02553) 69 Fahr. (SG.1.02556)

246 (Sounding 388) 2050 fathoms (Trawled) July 2, 1875 36 deg 10 min 0 sec N
178 deg 0 min 0 sec E Globigerina ooze Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. (SG.1.02572) 73 Fahr. (SG.1.02567)

247 (Sounding 389) 2530 fathoms July 3, 1875 35 deg 49 min 0 sec N
179 deg 57 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.2 Fahr. (SG.1.02568) 73 Fahr. (SG.1.02574)

248 (Sounding 390) 2900 fathoms (Trawled) July 5, 1875 37 deg 41 min 0 sec N
177 deg 4 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. 69.2 Fahr. (SG.1.02573)

249 (Sounding 391) 3000 fathoms July 7, 1875 37 deg 59 min 0 sec N
171 deg 48 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.2 Fahr. (SG.1.02542) 65.2 Fahr. (SG.1.0254)

250 (Sounding 392) 3050 fathoms (Trawled) July 9, 1875 37 deg 49 min 0 sec N
166 deg 47 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35 Fahr. (SG.1.02568) 65 Fahr. (SG.1.0255)

251 (Sounding 393) 2950 fathoms July 10, 1875 37 deg 37 min 0 sec N
163 deg 26 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. (SG.1.02572) 65 Fahr. (SG.1.02522)

252 (Sounding 394) 2740 fathoms (Trawled) July 12, 1875 37 deg 52 min 0 sec N
160 deg 17 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.3 Fahr. (SG.1.02567) 65 Fahr. (SG.1.02535)

253 (Sounding 395) 3125 fathoms (Dredged) July 14, 1875 38 deg 9 min 0 sec N
156 deg 25 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.1 Fahr. (SG.1.02569) 67.7 Fahr. (SG.1.02536)

254 (Sounding 396) 3025 fathoms (Trawled) July 17, 1875 35 deg 13 min 0 sec N
154 deg 43 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35 Fahr. (SG.1.02533) 72 Fahr. (SG.1.0257)

255 (Sounding 397) 2850 fathoms July 19, 1875 32 deg 28 min 0 sec N
154 deg 33 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35 Fahr. (SG.1.02569) 74 Fahr. (SG.1.02602)

256 (Sounding 398) 2950 fathoms (Dredged) July 21, 1875 30 deg 22 min 0 sec N
154 deg 56 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.2 Fahr. (SG.1.02565) 74 Fahr. (SG.1.02636)

257 (Sounding 399) 2875 fathoms July 23, 1875 27 deg 33 min 0 sec N
154 deg 55 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
34.9 Fahr. (SG.1.02581) 76.5 Fahr. (SG.1.02611)

258 (Sounding 400) 2775 fathoms July 24, 1875 26 deg 11 min 0 sec N
155 deg 12 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
35.2 Fahr. (SG.1.02525) 77 Fahr. (SG.1.02591)

259 (Sounding 401) 2225 fathoms July 26, 1875 23 deg 3 min 0 sec N
156 deg 6 min 0 sec W Red Clay Plan 36 - Yokohama to Sandwich Islands
34.9 Fahr. (SG.1.02577) 77 Fahr. (SG.1.02574)

260 (Sounding 402) 310 fathoms (Trawled) July 27, 1875 21 deg 11 min 0 sec N
157 deg 27 min 0 sec W Volcanic mud Plan 37 - Yokohama to Sandwich Islands
44 Fahr. (SG.1.02542) 76.8 Fahr. (SG.1.02565)

261 (Sounding 403) 2050 fathoms August 12, 1875 20 deg 18 min 0 sec N
157 deg 14 min 0 sec W Volcanic mud Plan 37 - Sandwich Islands to Tahiti
35.2 Fahr. (SG.1.02577) 78.5 Fahr. (SG.1.02586)

262 (Sounding 404) 2875 fathoms August 20, 1875 19 deg 12 min 0 sec N
154 deg 14 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35.2 Fahr. (SG.1.02569) 77.5 Fahr. (SG.1.02585)

263 (Sounding 405) 2650 fathoms (Trawled) August 21, 1875 17 deg 33 min 0 sec N
153 deg 36 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35.1 Fahr. (SG.1.02544) 77.5 Fahr. (SG.1.02593)

264 (Sounding 406) 3000 fathoms (Trawled) August 23, 1875 14 deg 19 min 0 sec N
152 deg 37 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35.2 Fahr. (SG.1.02594) 77.5 Fahr. (SG.1.02572)

265 (Sounding 407) 2900 fathoms (Dredged) August 25, 1875 12 deg 42 min 0 sec N
152 deg 1 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35 Fahr. (SG.1.02551) 79.2 Fahr. (SG.1.02564)

266 (Sounding 408) 2750 fathoms August 26, 1875 11 deg 7 min 0 sec N
152 deg 3 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
35.1 Fahr. (SG.1.02579) 80 Fahr. (SG.1.02582)

267 (Sounding 409) 2700 fathoms August 28, 1875 9 deg 28 min 0 sec N
150 deg 49 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
35 Fahr. (SG.1.02572) 80 Fahr. (SG.1.0249)

268 (Sounding 410) 2900 fathoms August 30, 1875 7 deg 35 min 0 sec N
149 deg 49 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
34.8 Fahr. (SG.1.02569) 81 Fahr. (SG.1.0257)

269 (Sounding 411) 2550 fathoms (Dredged) September 2, 1875 5 deg 54 min 0 sec N
147 deg 2 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
35.2 Fahr. (SG.1.02571) 81.2 Fahr. (SG.1.02591)

270 (Sounding 412) 2925 fathoms September 4, 1875 2 deg 34 min 0 sec N
149 deg 9 min 0 sec W Globigerina ooze Plan 38 - Sandwich Islands to Tahiti
34.6 Fahr. (SG.1.02578) 79.5 Fahr. (SG.1.02621)

271 (Sounding 413) 2425 fathoms (Trawled) September 6, 1875 0 deg 33 min 0 sec S
151 deg 34 min 0 sec W Globigerina ooze Plan 38 - Sandwich Islands to Tahiti
35 Fahr. (SG.1.02587) 78.7 Fahr. (SG.1.02661)

272 (Sounding 414) 2600 fathoms (Trawled) September 8, 1875 3 deg 48 min 0 sec S
152 deg 56 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
35.1 Fahr. (SG.1.02636) 79 Fahr. (SG.1.0265)

273 (Sounding 415) 2350 fathoms September 9, 1875 5 deg 11 min 0 sec S
152 deg 56 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
34.5 Fahr. 80.7 Fahr. (SG.1.02638)

274 (Sounding 416) 2750 fathoms (Trawled) September 11, 1875 7 deg 25 min 0 sec S
152 deg 15 min 0 sec W Radiolarian ooze Plan 38 - Sandwich Islands to Tahiti
35.1 Fahr. 80.2 Fahr. (SG.1.02656)

275 (Sounding 417) 2610 fathoms September 14, 1875 11 deg 20 min 0 sec S
150 deg 30 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35 Fahr. (SG.1.02602) 80 Fahr. (SG.1.02678)

276 (Sounding 418) 2350 fathoms (Trawled) September 16, 1875 13 deg 28 min 0 sec S
149 deg 30 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35.1 Fahr. (SG.1.02593) 80 Fahr. (SG.1.02628)

277 (Sounding 419) 2325 fathoms September 17, 1875 15 deg 51 min 0 sec S
149 deg 41 min 0 sec W Red Clay Plan 38 - Sandwich Islands to Tahiti
35.1 Fahr. (SG.1.02581) 79 Fahr.

278 (Sounding 420) 1525 fathoms September 18, 1875 17 deg 12 min 0 sec S
149 deg 43 min 0 sec W Volcanic mud Plan 38 - Sandwich Islands to Tahiti
36.5 Fahr. (SG.1.02565) 79.5 Fahr. (SG.1.02696)

279 (Sounding 421) 420 fathoms October 2, 1875 17 deg 30 min 26 sec S
149 deg 33 min 45 sec W Volcanic mud Plan 39 - Off Tahiti
-oOo- 79 Fahr.

279A (Sounding 422) 590 fathoms October 2, 1875 17 deg 29 min 53 sec S
149 deg 34 min 0 sec W Volcanic mud Plan 39 - Off Tahiti
-oOo- 79 Fahr.

279B (Sounding 423) 620 fathoms October 2, 1875 17 deg 29 min 38 sec S
149 deg 34 min 7 sec W Volcanic mud Plan 39 - Off Tahiti
-oOo- 79 Fahr.

279C (Sounding 424) 680 fathoms (Trawled) October 2, 1875 17 deg 29 min 11 sec S
149 deg 34 min 32 sec W Volcanic mud Plan 39 - Off Tahiti
-oOo- 79 Fahr.

280 (Sounding 425) 1940 fathoms (Trawled) October 4, 1875 18 deg 40 min 0 sec S
149 deg 52 min 0 sec W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.3 Fahr. (SG.1.0263) 77.2 Fahr. (SG.1.02707)

281 (Sounding 426) 2385 fathoms (Trawled) October 6, 1875 22 deg 21 min 0 sec S
150 deg 17 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.9 Fahr. (SG.1.02628) 74.5 Fahr. (SG.1.0267)

282 (Sounding 427) 2450 fathoms October 7, 1875 23 deg 46 min 0 sec S
149 deg 59 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
35.1 Fahr. (SG.1.02582) 73.2 Fahr. (SG.1.02676)

283 (Sounding 428) 2075 fathoms October 9, 1875 26 deg 9 min 0 sec S
145 deg 17 min 0 sec W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.4 Fahr. (SG.1.02583) 68.5 Fahr. (SG.1.02633)

284 (Sounding 429) 1985 fathoms (Trawled) October 11, 1875 28 deg 22 min 0 sec S
141 deg 22 min 0 sec W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.1 Fahr. (SG.1.02615) 68 Fahr. (SG.1.02631)

285 (Sounding 430) 2375 fathoms (Trawled) October 14, 1875 32 deg 36 min 0 sec S
137 deg 43 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
35 Fahr. (SG.1.02575) 65 Fahr. (SG.1.02621)

286 (Sounding 431) 2335 fathoms (Trawled) October 16, 1875 33 deg 29 min 0 sec S
133 deg 22 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.8 Fahr. (SG.1.0257) 63 Fahr. (SG.1.02608)

287 (Sounding 432) 2400 fathoms October 19, 1875 36 deg 32 min 0 sec S
132 deg 52 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.7 Fahr. (SG.1.02564) 57.8 Fahr. (SG.1.02586)

288 (Sounding 433) 2600 fathoms October 21, 1875 40 deg 3 min 0 sec S
132 deg 58 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.8 Fahr. (SG.1.02564) 54.5 Fahr. (SG.1.02561)

289 (Sounding 434) 2550 fathoms (Trawled) October 23, 1875 39 deg 41 min 0 sec S
131 deg 23 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.8 Fahr. (SG.1.02565) 54.5 Fahr. (SG.1.02533)

290 (Sounding 435) 2300 fathoms October 25, 1875 39 deg 16 min 0 sec S
124 deg 7 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.9 Fahr. (SG.1.02546) 52.5 Fahr. (SG.1.02533)

291 (Sounding 436) 2250 fathoms (Trawled) October 27, 1875 39 deg 13 min 0 sec S
118 deg 49 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.6 Fahr. (SG.1.0255) 53 Fahr. (SG.1.02548)

292 (Sounding 437) 1600 fathoms (Trawled) October 29, 1875 38 deg 43 min 0 sec S
112 deg 31 min 0 sec W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.2 Fahr. (SG.1.02559) 53.2 Fahr. (SG.1.02532)

293 (Sounding 438) 2025 fathoms (Trawled) November 1, 1875 39 deg 4 min S
105 deg 5 min W Globigerina ooze Plan 38 - Tahiti to Valparaiso
34.4 Fahr. (SG.1.02573) 53.7 Fahr. (SG.1.02522)

294 (Sounding 439) 2270 fathoms November 3, 1875 39 deg 22 min 0 sec S
98 deg 46 min 0 sec W Red clay Plan 38 - Tahiti to Valparaiso
34.6 Fahr. 57.5 Fahr. (SG.1.02519)

295 (Sounding 440) 1500 fathoms (Trawled) November 5, 1875 38 deg 7 min 0 sec S
94 deg 4 min 0 sec W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.3 Fahr. (SG.1.02562) 58.5 Fahr. (SG.1.02536)

296 (Sounding 441) 1825 fathoms (Trawled) November 9, 1875 38 deg 6 min S
88 deg 2 min W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.3 Fahr. (SG.1.02544) 59.8 Fahr. (SG.1.02536)

297 (Sounding 442) 1775 fathoms (Trawled) November 11, 1875 37 deg 29 min 0 sec S
83 deg 7 min 0 sec W Globigerina ooze Plan 38 - Tahiti to Valparaiso
35.5 Fahr. (SG.1.02565) 57 Fahr. (SG.1.02542)

298 (Sounding 443) 2225 fathoms (Trawled) November 17, 1875 34 deg 7 min 0 sec S
73 deg 56 min 0 sec W Blue mud Plan 38 - Tahiti to Valparaiso
35.6 Fahr. 59 Fahr. (SG.1.02533)

299 (Sounding 444) 2160 fathoms (Trawled) December 14, 1875 33 deg 31 min S
74 deg 43 min W Blue mud Plan 40 - Valparaiso to Gulf of Penas
35.2 Fahr. (SG.1.02567) 62 Fahr. (SG.1.02529)

300 (Sounding 445) 1375 fathoms (Trawled) December 17, 1875 33 deg 42 min S
78 deg 18 min W Globigerina ooze Plan 40 - Valparaiso to Gulf of Penas
35.5 Fahr. (SG.1.02543) 62.5 Fahr. (SG.1.02526)

301 (Sounding 446) (1800) fathoms December 22, 1875 37 deg 29 min 0 sec S
84 deg 2 min 0 sec W -oOo- Plan 40 - Valparaiso to Gulf of Penas
-oOo- 59.5 Fahr. (SG.1.02539)

302 (Sounding 447) 1450 fathoms (Trawled) December 28, 1875 42 deg 43 min 0 sec S
82 deg 11 min 0 sec W Globigerina ooze Plan 40 - Valparaiso to Gulf of Penas
35.6 Fahr. (SG.1.02562) 55 Fahr. (SG.1.02531)

303 (Sounding 448) 1325 fathoms December 30, 1875 45 deg 31 min 0 sec S
78 deg 9 min 0 sec W Blue mud Plan 40 - Valparaiso to Gulf of Penas
36 Fahr. (SG.1.02563) 54.8 Fahr. (SG.1.02504)

304 (Sounding 449) 45 fathoms (Dredged) December 31, 1875 46 deg 53 min 15 sec S
75 deg 12 min 0 sec W Green sand Plan 41 - In various channels leading to Magellan Strait
-oOo- 57.2 Fahr. (SG.1.02295)

305 (Sounding 450) 165 fathoms January 1, 1876 47 deg 47 min 0 sec S
74 deg 47 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
(SG.1.02519) 55.5 Fahr. (SG.1.02251)

305A (Sounding 451) 125 fathoms (Trawled) January 1, 1876 47 deg 48 min 30 sec S
74 deg 47 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
-oOo- 55 Fahr.

305B (Sounding 452) 160 fathoms (Trawled) January 1, 1876 47 deg 48 min 0 sec S
74 deg 46 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
-oOo- 55 Fahr.

306 (Sounding 453) 565 fathoms January 2, 1876 48 deg 17 min 0 sec S
74 deg 33 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
-oOo- 57 Fahr. (SG.1.01521)

306A (Sounding 454) 345 fathoms (Trawled) January 2, 1876 48 deg 27 min 0 sec S
74 deg 30 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
46 Fahr. (SG.1.02515) 57.5 Fahr. (SG.1.0048)

307 (Sounding 455) 140 fathoms (Trawled) January 4, 1876 49 deg 24 min S
74 deg 23 min W Blue mud Plan 41 - In various channels leading to Magellan Strait
(SG.1.02465) 53 Fahr. (SG.1.01508)

308 (Sounding 456) 175 fathoms (Trawled) January 5, 1876 50 deg 8 min 30 sec S
74 deg 41 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
-oOo- 51.7 Fahr. (SG.1.01401)

309 (Sounding 457) 40 fathoms January 8, 1876 50 deg 56 min 0 sec S
74 deg 15 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
47 Fahr. 50.5 Fahr. (SG.1.01896)

309A (Sounding 458) 140 fathoms (Trawled) January 8, 1876 50 deg 56 min 0 sec S
74 deg 14 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
(SG.1.02446) 50.5 Fahr.

310 (Sounding 459) 400 fathoms (Trawled) January 10, 1876 51 deg 27 min 30 sec S
74 deg 3 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
46.5 Fahr. (SG.1.02451) 50.5 Fahr. (SG.1.0191)

311 (Sounding 460) 245 fathoms (Trawled) January 11, 1876 52 deg 45 min 30 sec S
73 deg 46 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
46 Fahr. (SG.1.02454) 50 Fahr. (SG.1.01904)

312 (Sounding 461) 9 fathoms (Dredged) January 13, 1876 53 deg 37 min 30 sec S
70 deg 56 min 0 sec W Blue mud Plan 41 - In various channels leading to Magellan Strait
-oOo- 47.8 Fahr. (SG.1.02233)

313 (Sounding 462) 55 fathoms (Trawled) January 20, 1876 52 deg 20 min 0 sec S
67 deg 39 min 0 sec W Sand Plan 41&42 - Sandy Point to Falkland Islands
47.8 Fahr. (SG.1.02439) 48.2 Fahr. (SG.1.02437)

314 (Sounding 463) 70 fathoms (Trawled) January 21, 1876 51 deg 35 min 0 sec S
65 deg 39 min 0 sec W Sand Plan 42 - Sandy Point to Falkland Islands
46 Fahr. (SG.1.02476) 48 Fahr. (SG.1.02468)

314A (Sounding 464) 110 fathoms (Trawled) January 22, 1876 51 deg 24 min 0 sec S
61 deg 46 min 0 sec W Hard ground Plan 42 - Sandy Point to Falkland Islands
41.8 Fahr. (SG.1.02504) 49 Fahr. (SG.1.02486)

315 (Sounding 465) 12 fathoms (Dredged) January 26, 1876 51 deg 40 min 0 sec S
57 deg 50 min 0 sec W "Sand, gravel" Plan 42 - Sandy Point to Falkland Islands
-oOo- 50 Fahr.

316 (Sounding 466) 4 fathoms (Dredged) February 3, 1876 51 deg 32 min 0 sec S
58 deg 6 min 0 sec W Mud Plan 42 - Sandy Point to Falkland Islands
-oOo- 51.2 Fahr.

317 (Sounding 467) 1035 fathoms (Trawled) February 8, 1876 48 deg 37 min 0 sec S
55 deg 17 min 0 sec W Hard ground (gravel) Plan 42 - Falkland Islands to Rio de la Plata
35.7 Fahr. (SG.1.02531) 40.7 Fahr. (SG.1.02524)

318 (Sounding 468) 2040 fathoms (Trawled) February 11, 1876 42 deg 32 min 0 sec S
56 deg 29 min 0 sec W Blue mud. Plan 42 - Falkland Islands to Rio de la Plata
33.7 Fahr. (SG.1.02584) 57.5 Fahr. (SG.1.02524)

319 (Sounding 469) 2425 fathoms February 12, 1876 41 deg 54 min 0 sec S
54 deg 48 min 0 sec W Blue mud. Plan 42 - Falkland Islands to Rio de la Plata
32.7 Fahr. (SG.1.02552) 59.5 Fahr. (SG.1.02555)

320 (Sounding 470) 600 fathoms (Trawled) February 14, 1876 37 deg 17 min 0 sec S
53 deg 52 min 0 sec W Green sand. Plan 42 - Falkland Islands to Rio de la Plata
37.2 Fahr. (SG.1.02541) 67.5 Fahr. (SG.1.02523)

321 (Sounding 471) 13 fathoms (Trawled) February 25, 1876 35 deg 2 min 0 sec S
55 deg 15 min 0 sec W Mud. Plan 42 - Falkland Islands to Rio de la Plata
-oOo- 73.5 Fahr.

322 (Sounding 472) 21 fathoms (Trawled) February 26, 1876 35 deg 20 min 0 sec S
53 deg 42 min 0 sec W "Sand, Shells." Plan 16 - Falkland Islands to Rio de la Plata
-oOo- 71.5 Fahr. (SG.1.02288)

323 (Sounding 473) 1900 fathoms (Trawled) February 28, 1876 35 deg 39 min 0 sec S
50 deg 47 min 0 sec W Blue mud. Plan 16 - Rio de la Plata to Tristan da Cunha
33.1 Fahr. (SG.1.02641) 73.5 Fahr. (SG.1.0267)

324 (Sounding 474) 2800 fathoms (Trawled) February 29, 1876 36 deg 9 min 0 sec S
48 deg 22 min 0 sec W Blue mud. Plan 16 - Rio de la Plata to Tristan da Cunha
32.6 Fahr. (SG.1.026) 71.5 Fahr. (SG.1.02608)

325 (Sounding 475) 2650 fathoms (Trawled) March 2, 1876 36 deg 44 min 0 sec S
46 deg 16 min 0 sec W Blue mud. Plan 16 - Rio de la Plata to Tristan da Cunha
32.7 Fahr. (SG.1.02583) 70.8 Fahr. (SG.1.02675)

326 (Sounding 476) 2775 fathoms March 3, 1876 37 deg 3 min 0 sec S
44 deg 17 min 0 sec W Blue mud. Plan 16 - Rio de la Plata to Tristan da Cunha
32.7 Fahr. (SG.1.02585) 67.8 Fahr. (SG.1.02491)

327 (Sounding 477) 2900 fathoms March 4, 1876 36 deg 48 min 0 sec S
42 deg 45 min 0 sec W Blue mud. Plan 16 - Rio de la Plata to Tristan da Cunha
32.8 Fahr. (SG.1.02514) 70.2 Fahr. (SG.1.02633)

328 (Sounding 478) 2900 fathoms March 6, 1876 37 deg 38 min 0 sec S
39 deg 36 min 0 sec W Blue mud. Plan 16 - Rio de la Plata to Tristan da Cunha
32.9 Fahr. 68 Fahr. (SG.1.02571)

329 (Sounding 479) 2675 fathoms March 7, 1876 37 deg 31 min 0 sec S
36 deg 7 min 0 sec W Red clay. Plan 16 - Rio de la Plata to Tristan da Cunha
32.3 Fahr. (SG.1.02576) 64.5 Fahr. (SG.1.02606)

330 (Sounding 480) 2440 fathoms March 8, 1876 37 deg 45 min 0 sec S
33 deg 0 min 0 sec W Red clay. Plan 16 - Rio de la Plata to Tristan da Cunha
32.7 Fahr. (SG.1.02608) 64.2 Fahr. (SG.1.0262)

331 (Sounding 481) 1715 fathoms (Trawled) March 9, 1876 37 deg 47 min 0 sec S
30 deg 20 min 0 sec W Globigerina ooze Plan 16 - Rio de la Plata to Tristan da Cunha
35.4 Fahr. (SG.1.02588) 64.5 Fahr. (SG.1.0262)

332 (Sounding 482) 2200 fathoms (Trawled) March 10, 1876 37 deg 29 min 0 sec S
27 deg 31 min 0 sec W Globigerina ooze Plan 16 - Rio de la Plata to Tristan da Cunha
34 Fahr. (SG.1.0258) 64 Fahr. (SG.1.02604)

333 (Sounding 483) 2025 fathoms (Trawled) March 13, 1876 35 deg 36 min 0 sec S
21 deg 12 min 0 sec W Globigerina ooze Plan 16 - Rio de la Plata to Tristan da Cunha
35.3 Fahr. (SG.1.02584) 67 Fahr. (SG.1.02612)

334 (Sounding 484) 1915 fathoms (Trawled) March 14, 1876 35 deg 45 min 0 sec S
18 deg 31 min 0 sec W Globigerina ooze Plan 16 - Rio de la Plata to Tristan da Cunha
35.8 Fahr. (SG.1.02604) 68.5 Fahr. (SG.1.02604)

335 (Sounding 485) 1425 fathoms (Dredged) March 16, 1876 32 deg 24 min 0 sec S
13 deg 5 min 0 sec W Pteropod ooze Plan 16 - Tristan da Cunha to Ascension Island
37 Fahr. (SG.1.02585) 73.5 Fahr. (SG.1.02666)

336 (Sounding 486) 1890 fathoms March 18, 1876 27 deg 54 min 0 sec S
13 deg 13 min 0 sec W Globigerina ooze Plan 16 - Tristan da Cunha to Ascension Island
36.5 Fahr. (SG.1.0259) 76 Fahr. (SG.1.02693)

337 (Sounding 487) 1260 fathoms (Dredged) March 19, 1876 24 deg 38 min 0 sec S
13 deg 36 min 0 sec W Pteropod ooze Plan 16 - Tristan da Cunha to Ascension Island
37.2 Fahr. (SG.1.02639) 77 Fahr. (SG.1.02704)

338 (Sounding 488) 1990 fathoms (Dredged) March 21, 1876 21 deg 15 min 0 sec S
14 deg 2 min 0 sec W Globigerina ooze Plan 16 - Tristan da Cunha to Ascension Island
36.3 Fahr. 76.5 Fahr. (SG.1.02752)

339 (Sounding 489) 1415 fathoms March 23, 1876 17 deg 26 min 0 sec S
13 deg 52 min 0 sec W Pteropod ooze Plan 16 - Tristan da Cunha to Ascension Island
37.2 Fahr. (SG.1.02568) 76 Fahr. (SG.1.02775)

340 (Sounding 490) 1500 fathoms March 24, 1876 14 deg 33 min 0 sec S
13 deg 42 min 0 sec W Pteropod ooze Plan 16 - Tristan da Cunha to Ascension Island
37.6 Fahr. (SG.1.02598) 77.2 Fahr. (SG.1.02752)

341 (Sounding 491) 1475 fathoms March 25, 1876 12 deg 16 min 0 sec S
13 deg 44 min 0 sec W Pteropod ooze Plan 16 - Tristan da Cunha to Ascension Island
38.2 Fahr. (SG.1.02601) 79 Fahr. (SG.1.02706)

342 (Sounding 492) 1445 fathoms March 26, 1876 9 deg 43 min 0 sec S
13 deg 51 min 0 sec W Pteropod ooze Plan 16 - Tristan da Cunha to Ascension Island
37.5 Fahr. (SG.1.026) 80 Fahr. (SG.1.02721)

343 (Sounding 493) 425 fathoms (Dredged) March 27, 1876 8 deg 3 min 0 sec S
14 deg 27 min 0 sec W Volcanic sand. Plan 43 - Tristan da Cunha to Ascension Island
40.3 Fahr. (SG.1.02612) 80.8 Fahr. (SG.1.02688)

344 (Sounding 494) 420 fathoms (Dredged) April 3, 1876 7 deg 54 min 20 sec S
14 deg 28 min 20 sec W Volcanic sand. Plan 43 - Ascension Island to St. Vincent
-oOo- 82 Fahr. (SG.1.02658)

345 (Sounding 495) 2010 fathoms April 4, 1876 5 deg 45 min 0 sec S
14 deg 25 min 0 sec W Globigerina ooze Plan 12 - Ascension Island to St. Vincent
36.8 Fahr. (SG.1.02599) 82.8 Fahr. (SG.1.02627)

346 (Sounding 496) 2350 fathoms (Dredged) April 6, 1876 2 deg 42 min 0 sec S
14 deg 41 min 0 sec W Globigerina ooze Plan 12 - Ascension Island to St. Vincent
34 Fahr. (SG.1.02622) 82.7 Fahr. (SG.1.02624)

347 (Sounding 497) 2250 fathoms April 7, 1876 0 deg 15 min 0 sec S
14 deg 25 min 0 sec W Globigerina ooze Plan 12 - Ascension Island to St. Vincent
36.2 Fahr. (SG.1.02589) 82 Fahr. (SG.1.02639)

348 (Sounding 498) (2450) fathoms (Dredged) April 9, 1876 3 deg 10 min 0 sec N
14 deg 51 min 0 sec W -oOo- Plan 12 - Ascension Island to St. Vincent
-oOo- 84 Fahr. (SG.1.02578)

349 (Sounding 499) -oOo- April 10, 1876 5 deg 28 min 0 sec N
14 deg 38 min 0 sec W -oOo- Plan 12 - Ascension Island to St. Vincent
-oOo- 83.5 Fahr. (SG.1.02616)

350 (Sounding 500) -oOo- April 11, 1876 7 deg 33 min 0 sec N
15 deg 16 min 0 sec W -oOo- Plan 12 - Ascension Island to St. Vincent
-oOo- 84 Fahr. (SG.1.02615)

351 (Sounding 501) -oOo- April 12, 1876 9 deg 9 min 0 sec N
16 deg 41 min 0 sec W -oOo- Plan 12 - Ascension Island to St. Vincent
-oOo- 81.8 Fahr. (SG.1.02653)

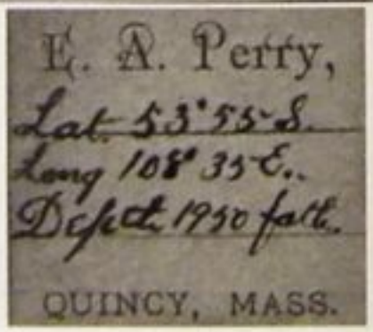
352 (Sounding 502) -oOo- April 13, 1876 10 deg 55 min 0 sec N
17 deg 46 min 0 sec W -oOo- Plan 12 - Ascension Island to St. Vincent
-oOo- 77.7 Fahr. (SG.1.02662)

353 (Sounding 503) 2965 fathoms May 3, 1876 26 deg 21 min 0 sec N
33 deg 37 min 0 sec W Red clay. Plan 6 - St. Vincent towards Azores
37.6 Fahr. (SG.1.02708) 70 Fahr. (SG.1.02768)

354 (Sounding 504) 1675 fathoms May 6, 1876 32 deg 41 min 0 sec N
36 deg 6 min 0 sec W Globigerina ooze Plan 6 - St. Vincent towards Azores
37.8 Fahr. (SG.1.02665) 70 Fahr. (SG.1.02729)

Hopefully this extensive listing will prove useful to you in determining the source of any Challenger material, whether mounted or as bottled samples. There is a surprising amount of this material out there. The editrs have regularly come across samples in small tubes.

The next two pages show examples of slides recording samples from HMS Challenger.



IMPORTANT NOTICE!

It is with sadness that we have to announce that this issue is the last Amateur Diatomist to be printed.

All those involved in the production have very much appreciated your support over the years. Rising costs of production and a static readership have meant that the excess costs incurred, borne by the editors, have become such that we can no longer justify the continuation of the enterprise.

This issue is accompanied by 2 CDs. One is the CD intended for the last issue and promised therein.

We shall exploring the possibility of continuing the title via the Internet.

Any subscribers who have pre-paid subscriptions for further Volumes will be conacted under seperate cover.