

Curatorial Report Number 9

Nova Scotia Museum  
1747 Summer Street  
Halifax Nova Scotia Canada

# Notes on a Collection of Specimens Made by the Challenger Expedition 1873

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# 9

NOVA SCOTIA MUSEUM

*Curatorial Reports*

The *Curatorial Reports* of the Nova Scotia Museum contain information on the collections and the preliminary results of research projects carried out under the program of the museum. The reports may be cited in publications but their manuscript status should be clearly indicated.

## INTRODUCTION

The *Challenger Expedition* (1873-76) has been acclaimed for its pioneer work in oceanography and for the great quantity of new information and material that was collected. During the early part of the voyage, after the first Atlantic crossing, *H. M. S. Challenger* visited the port of Halifax, Nova Scotia (May 9-19, 1873). During this visit the scientific staff of the expedition, under the leadership of Professor C. Wyville Thomson, met with members of the Nova Scotian Institute for Natural Sciences. Dr. David Honeyman, who was at that time curator of the Provincial Museum and secretary of the Institute took part in the meeting. Accounts of the visit and meeting are given by Gossip (1873) and Wyville Thomson (1877). Perhaps as a result of the keen interest in deep sea studies shown by Dr. Honeyman, Professor Thomson donated a small series of samples to the museum.

The best known specimen donated was an ice-transported boulder of Shelburne granite dredged some 300 miles south of Nova Scotia. Due to a misunderstanding the boulder never came ashore and now lies at the bottom of Halifax Harbour (Gossip, 1873). Most of the other specimens fared better and are still part of the collection of the Nova Scotia Museum. It is difficult to assess how extensive the collection was originally. Honeyman (1874 b) noted in his report on the Provincial Museum:

"...Several of the singular starfishes and urchins referred to \* were dredged by *H. M. S. Challenger* in 70 fathoms, on LaHave Banks. Besides these, Professor Wyville Thomson presented to the museum an extensive and varied collection of pterepod (sic) shells and foramenifera (sic) from the deep sea soundings."

By present standards the small collection would hardly be described as 'extensive and varied' but to Dr. Honeyman in 1873 the specimens were probably as interesting and valuable as rocks from the moon are today. The condition of the collection indicates that Dr. Honeyman examined and sorted at least some of the lots, and he certainly put the collection to good use. He relates (1874 a):

"CONVERSAZIONE..... A conversazione was held in the new Provincial Building on Thursday evening, February 12, 1874.... The Hon. chairman then called upon Dr. Honeyman who gave a short lecture "On The Deep Sea". He gave an account of the progress of enquiry into the character of the depths and their inhabitants, as exhibited especially by the expeditions of *H. M. S. S. Porcupine*, *Lightning* and *Challenger*- The observations were illustrated by specimens from the museum collection, particularly those kindly presented by Professor Wyville Thomson when the *Challenger* visited Halifax."

Although the collection was maintained at the museum it became largely neglected and was neither accessioned nor catalogued. It is of interested to re-examine the collection on the occasion of the centennial of the visit of the *Challenger Expedition* to Halifax. This report has been prepared to draw attention to the existence of the collection and record the contents before they are again used to demonstrate to museum visitors something of the "character of the depths and their inhabitants".

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\* only *Rhizocrinus lofotensis* is referred to by name.

## DESCRIPTIONS OF THE LOTS

In all there are 67 lots which have been classified for convenience into six groups (A to F) and allocated NSPM accession numbers in the series 1973-Z-1 to 1973-Z-67. All of the material was preserved dry and was mostly unlabelled or sparsely labelled. Determinations have been made by reference to the *Challenger* reports and nomenclature used in the reports has been retained.

- GROUP A      Five small black pillboxes (Fig.2) labelled collectively "Dredgings (Foraminifera, etc.) of *H. M. S. Challenger* 1872-76. 1700, 2240, 3061, 4000 and 4600 fathoms". The label is in H. Piers' handwriting. The ink writing on the individual boxes faded and was written over at some later date possibly introducing some errors. The boxes have been retained and the three remaining samples put into glass vials.
- 1973-Z-1.    One inch diameter pillbox labelled "1700 fathoms", without a top. No sample.
- 1973-Z-2.    Three quarter inch diameter pillbox labelled on top "date 2/12/73 lat. 24.26 N. Long. 24.28 W. *Challenger*. depth 2240 f. 500 miles S. of Teneriffe Africa". Labelled on the bottom "*Challenger Dredgings*". The box contained a small sample of shell fragments and foraminifera, including *Globigerina* spp., *Orbulina* sp. and *Pulvinulina micheliniana* d'Orbigny.
- 1973-Z-3.    One inch diameter pillbox labelled "3061 fathoms". No sample.
- 1973-Z-4.    One inch diameter pillbox labelled on top "*Challenger Dredgings*. Foraminifera. 4000 fath". The box contained a very small quantity of fine sediment with some foraminifera.
- 1973-Z-5.    One inch diameter pillbox labelled "4600 fathoms". The box contained a small quantity of fine sediment with foraminifera and one fragment of a scaphopod.
- GROUP B      Four medium-sized black pillboxes possibly associated with two small labels "*H. M. S. Challenger Heteropoda*" and "*H. M. S. Challenger Pteropoda*". The four samples have been put into glass vials.
- 1973-Z-6.    A one and a half inch diameter pillbox, unlabelled. The sample included fragments of Pteropods, *Creseis* sp. *Limacina inflata* (d'Orbigny) and *Limacina bulimoides* (d'Orbigny); fragments of a benthic gastropod; a small chiton (believed foreign to this sample); and foraminifera, *Globigerina* spp., *Orbulina* sp. and *Pulvinulina micheliniana*.

- 1973-Z-7. A one and a half inch diameter pillbox, unlabelled. The sample contained some pteropod fragments including *Creseis* sp.; and foraminifera including *Globigerina* spp., and *Orbulina* sp.
- 1973-Z-8. A one and a quarter inch diameter pillbox, unlabelled. A very small sample of the pteropods, *Limacina inflata* and *Limacina bulimoides* and some benthic gastropods.
- 1973-Z-9. A one and a half inch diameter pillbox without a top and unlabelled. Three specimens of a scaphopod believed to be *Dentalium compressum* Watson.

GROUP C

Forty-one glass vials (2" x 5/8"), Fig. 3. All samples are in their original vials except for 1973-Z-50 which was in a broken vial. None of the vials was individually labelled. Two collective labels read "Deep Sea Dredgings of H. M. S. "Challenger". Presented by Professor Wyville Thompson (sic). May 1873 [41 vials]" and "H. M. S. Challenger were engaged in her deep-sea explorations from 1872 to 1876. She was at Halifax in May 1873". Both labels are in H. Piers' handwriting.

- 1973-Z-10. Fragments of pteropods and foraminifera including *Globigerina* spp., *Orbulina* sp.
- 1973-Z-11. Fragments of pteropods; *Cuvierina columnella* Rang., etc. and foraminifera; *Nodosaria* sp.
- 1973-Z-12. A small benthic gastropod, and foraminifera including *Miliolina* sp.
- 1973-Z-13. A few pteropod fragments, and foraminifera including *Nodosaria* sp.
- 1973-Z-14. A few foraminifera including *Textularia* sp. and *Nodosaria* sp.
- 1973-Z-15. Six unidentified foraminifera
- 1973-Z-16. A few foraminifera including *Miliolina* sp. and *Pulvulina pauperata* Parker and Jones
- 1973-Z-17. A few foraminifera including *Miliolina* spp., *Textularia* sp. and *Nodosaria* sp.
- 1973-Z-18. One pteropod, *Limacina bulimoides*, and a few foraminifera.

- 1973-Z-19. A small sample of foraminifera
- 1973-Z-20. A few bryozoans and foraminifera
- 1973-Z-21. A few pteropods, *Cavolina* spp.
- 1973-Z-22. A few foraminifera including *Nodosaria* spp.
- 1973-Z-23. A few foraminifera
- 1973-Z-24. A few foraminifera, mainly *Cristellaria calcar* Linné
- 1973-Z-25. A small sample of pteropod fragments and foraminifera including *Globigerina* spp., *Orbulina* sp.
- 1973-Z-26. A small sample of pteropod shells including *Limacina inflata* and *Limacina bulimoides*
- 1973-Z-27. A small sample of pteropod shells, mainly *Limacina inflata*
- 1973-Z-28. A few foraminifera
- 1973-Z-29. A small sample of heteropods, *Atlanta* spp.
- 1973-Z-30. A small sample of pteropods, *Cavolina quadridentata* (Lesueur) and one benthic prosobranch
- 1973-Z-31. A few miscellaneous foraminifera including *Ammodiscus?* sp.
- 1973-Z-32. A small sample of pteropod fragments and foraminifera
- 1973-Z-33. A few pteropods and benthic prosobranchs
- 1973-Z-34. A few specimens of foraminifera, *Pulvinulina pauperata*
- 1973-Z-35. Three specimens of benthic prosobranchs and one pteropod, *Peraclis reticulata* (d'Orbigny)
- 1973-Z-36. A few miscellaneous foraminifera
- 1973-Z-37. A small sample of the pteropod, *Cavolina longirostris* (Lesueur), and the benthic prosobranch, *Rissoa pyrrhias* Watson
- 1973-Z-38. A few foraminifera
- 1973-Z-39. A few foraminifera

- 1973-Z-40. A small sample of pteropod fragments, one benthic prosobranch (*Trochidae?*) and foraminifera including *Globigerina* spp. and *Orbulina* sp.
- 1973-Z-41. A small sample of pteropod and ostracod shells, one valve of a taxodont bivalve, and foraminifera including *Nodosaria* sp.
- 1973-Z-42. A few sponge spicules, foraminifera, etc.
- 1973-Z-43. A few foraminifera
- 1973-Z-44. Three identified specimens
- 1973-Z-45. Three specimens of *Nodosaria* sp.
- 1973-Z-46. One pteropod, *Cavolina longirostris* and a few foraminifera
- 1973-Z-47. A few specimens of *Nodosaria* sp.
- 1973-Z-48. A small sample of foraminifera, *Cristellaria* spp.
- 1973-Z-49. A few pteropod fragments and foraminifera
- 1973-Z-50. Seven trochiform prosobranchs of two species

GROUP D

Five lots of pteropod shells, originally in cardboard trays but now in glass vials. There is some doubt as to whether these specimens are actually from the *Challenger* collection. They fit the species association of the *Challenger* material and are certainly from deep water collections.

- 1973-Z-51. Three specimens of *Herse columnella* Rang.
- 1973-Z-52. A small sample of *Cavolina longirostris* Lesueur
- 1973-Z-53. A small sample of *Cresis* sp., *Clio* sp. and *Diacria* sp.
- 1973-Z-54. Two specimens of *Diacria trispinosa* Lesueur
- 1973-Z-55. Seven specimens of *Cavolina unicarinata* Rang.

GROUP E Echinoderms

- 1973-Z-56. Two specimens of *Antedon eschrichtii* (Müller) Fig. 4 labelled "Echinodermata, *Antedon eschrichtii* (Müller) LaHave Banks, Nova Scotia, 74 fathoms. H. M. S. *Challenger*: presented by Wyville Thomson, May 20, 1879 (sic)." Originally preserved wet.
- 1973-Z-57. No specimens, only H. Pier's label "Or. Branchiata *Rhizocrinus lofotensis* Sars (Cup [calyx], etc., of) Costa Rica, Col. by H. M. S. *Challenger*. Occurs in depths of 100 - 1000 ft."

GROUP F Ten wooden cavity slides (1 in. x 3 in.) with mounts of foraminifera, small molluscs, etc., Fig. 5. The labels on the slides are mostly incorrect and have been obliterated. Some slides with foraminifera are labelled "Cythere" which are ostracods. It is possible that Dr. Honeyman mounted the specimens on these slides for demonstration purpose. He did not attempt to soak off the original labels as this would have ruined the paper and wooden structure of the slides.

- 1973-Z-58. Labelled "Foraminifera" with specimens of *Globigerina* spp. and *Orbulina* sp.
- 1973-Z-59. Labelled "Foraminifera" with specimens of *Cristellaria* sp.
- 1973-Z-60. Labelled "Foraminifera" with examples of foraminifera that occur in the *Challenger* samples.
- 1973-Z-61. Labelled "*Cythere thriatopunctata* Bart". (crossed out) Specimens of foraminifera, *Nodosaria* sp.
- 1973-Z-62. Unlabelled. Sponge spicules
- 1973-Z-63. Labelled "*Cythere woodiana* Crag" (crossed out). Specimens of foraminifera including *Cristellaria* spp.
- 1973-Z-64. Type-set label "212 *Nummulina variolaria* Stubbington" (crossed out). Contains two specimens of foraminifera which occur in the *Challenger* samples.
- 1973-Z-65. Labels obliterated. Contains specimens of foraminifera and molluscs, including *Rissoa pyrrhias*, which occur in the *Challenger* samples.
- 1973-Z-66. Unlabelled, with specimens of pteropods, *Limacina bulimoides*, and prosobranchs including *Rissoa pyrrhias*.
- 1973-Z-67. Unlabelled, with specimens of heteropods and pteropods, including *Cavolina quadridentata* Lesueur.



## THE ORIGINS OF THE CHALLENGER SAMPLES

The small collection of specimens donated to the Provincial Museum by Professor Wyville Thomson has been largely treated as a curiosity with some historic interest. Because of a lack of information the material had little scientific value. However, during this recent examination of the lots the species assemblage and other factors have provided information to determine which of the *Challenger* stations the samples came from.

Obviously the specimens were collected in the period from February to May 1873, between the Canary Islands and Nova Scotia. In Group A the five lots are labelled according to depth and one (1973-Z-2) has latitude and longitude which easily identifies it as *Challenger* station 5. The errors in the labelling of this sample revealed by reference to the *Challenger Reports* indicate that the re-inking of the faded labels was not carefully done. Lot 1973-Z-1 (1700 fathoms) can be identified as *Challenger* station 44. The other three depths are erroneous as the *Challenger* did not record the depths as indicated on the labels. Therefore these stations cannot be identified.

The lots in groups B, C, and D are all believed to have originated from *Challenger* station 24. This was the first dredging station at which a good sample of pteropod ooze was obtained, with shells of diverse pteropod species and a wide variety of benthic prosobranch molluscs. The specimens in the 50 lots contain at least eight species of pteropod all of which are recorded from station 24 (Pelseneer, 1888). A similar sample of pteropods was obtained off Bermuda (station 33) but here there were few benthic prosobranchs. Two mollusc species identified support an origin at station 24. In lot 1973-Z-9 are three specimens of a scaphopod with laterally compressed shell, believed to be *Dentalium compressum* Watson and in lots 1973-Z-37 and 1973-Z-65, are specimens of a prosobranch, *Rissoa pyrrhias* Watson. Both species were recorded only at station 24 during the *Challenger* cruise. These species were new to science and first described by Watson (1886), from the station 24 samples. Several other unidentified prosobranch specimens from this sample should be more closely examined. The assemblage of foraminifera species in the lots resembles very closely the records for stations 23, 24 and 33 given by Brady (1884).

The specimens in group F are believed to have been picked from the station 24 lots by Dr. Honeyman as demonstration material. The two lots in group E are easily associated with stations 24A (1973-Z-57) and 48 (1973-Z-56) because they have sufficient data.

The station data associated with each group of lots have been taken from Tizzard, et al (1885) and are listed in Table 1. The station localities are marked on the map, Fig. 1.

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Table 1. Origins of the *Challenger* samples in the Nova Scotia Museum collection. The specimen lots in each group have been associated with Challenger dredging stations. Data from Tizzard et al (1885).

Lot	Challenger station	Date	Depth (faths)	Lat.	Long.	Bottom type
<u>GROUP A</u>						
1973-Z-1.	44	May 2, 1873	1700	37°25'N	71°40'W	Blue mud
1973-Z-2.	5	Feb. 21, 1873	2740	24°20'N	24°28'W	Red clay
1973-Z-3.	?					
1973-Z-4.	?					
1973-Z-5.	?					
<u>GROUP B</u>						
All lots	24	Mar. 25, 1873	390	18°38'30"N	65°05'30"W	Pteropod ooze
<u>GROUP C</u>						
All lots	24	Mar. 25, 1873	390	18°38'30"N	65°05'30"W	Pteropod ooze
<u>GROUP D</u>						
All lots	24	Mar. 25, 1873	390	18°38'30"N	65°05'30"W	Pteropod ooze
<u>GROUP E</u>						
1973-Z-56.	48	May 8, 1873	51	43°04'N	64°05'W	Rock
1973-Z-57	24a	Mar. 25, 1873	625	18°43'N	65°05'W	Pteropod ooze
<u>GROUP F</u>						
All lots	24	Mar. 25, 1873	390	18°38'30"N	65°05'30"W	Pteropod ooze

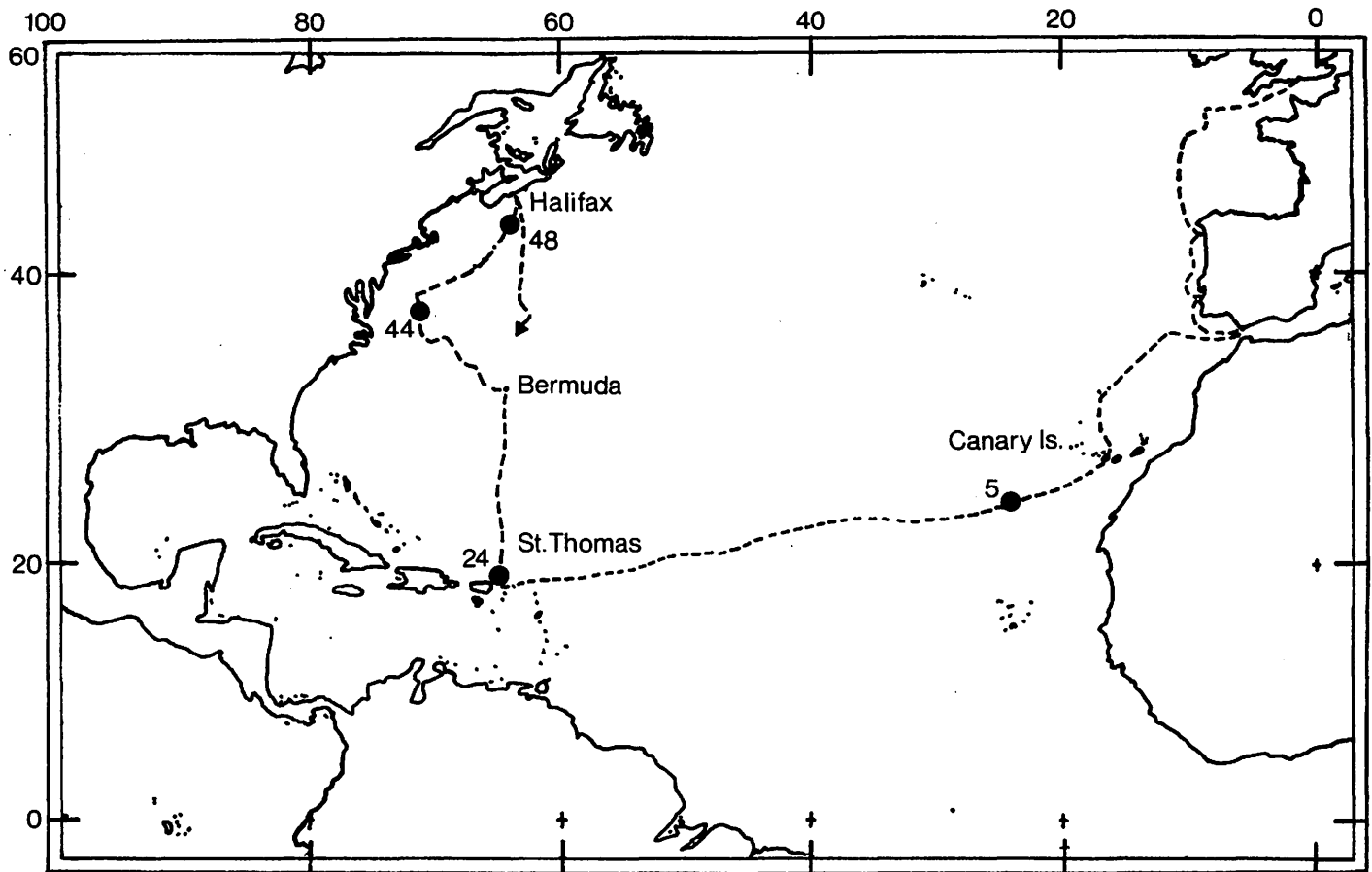


Fig. 1. The course of *H. M. S. Challenger* from December 1872 to May 1873 showing the stations from which specimens in Nova Scotia Museum collection originated [after Brady, 1884].



Fig. 2. Examples of the pillboxes from Group A.

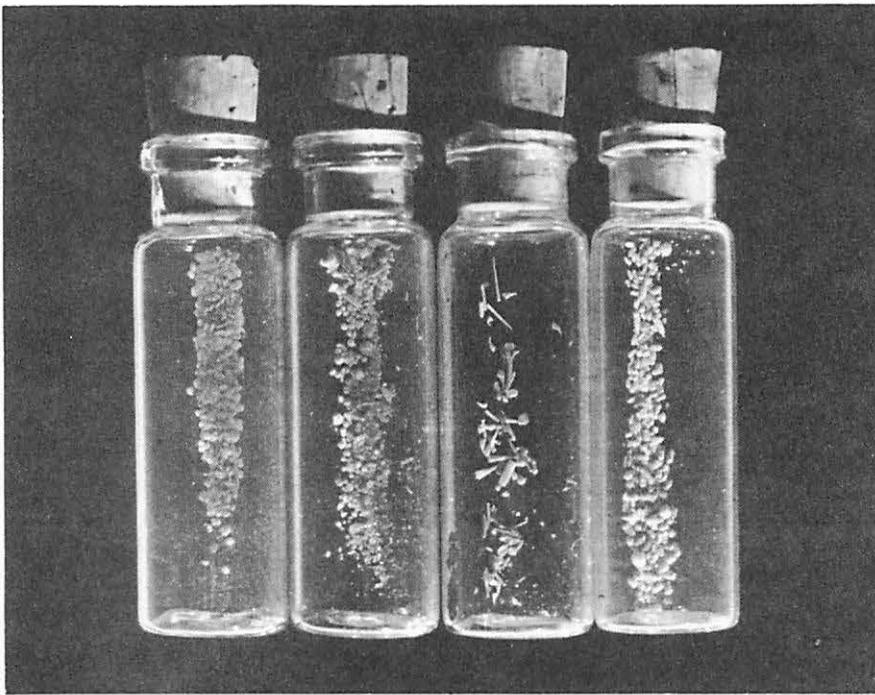


Fig. 3. Examples of original glass vials from Group C. The contents are foraminifera and pteropods.

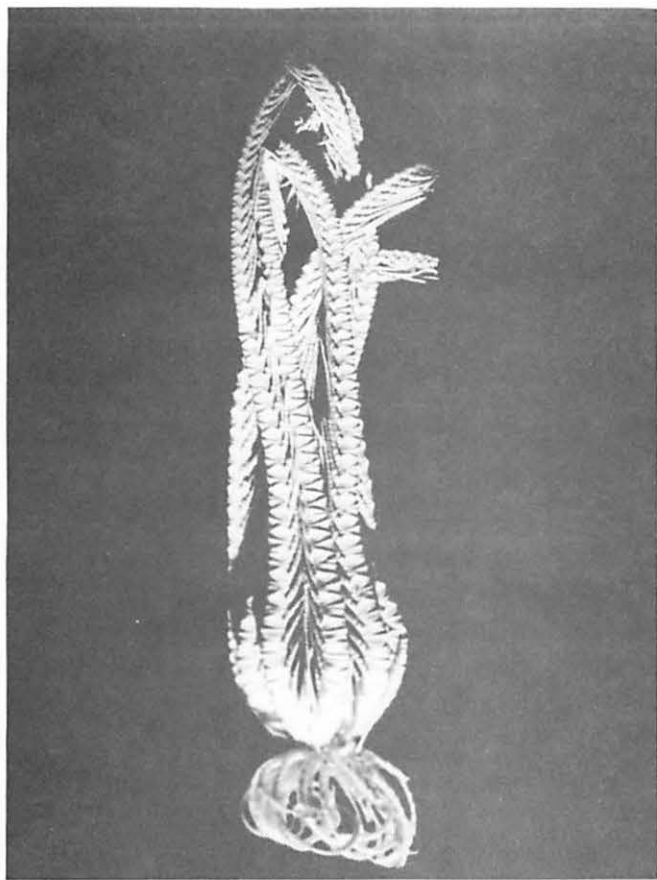


Fig. 4. *Antedon eschrichti* (Müller) from *Challenger* station 48.  
LaHave Bank.

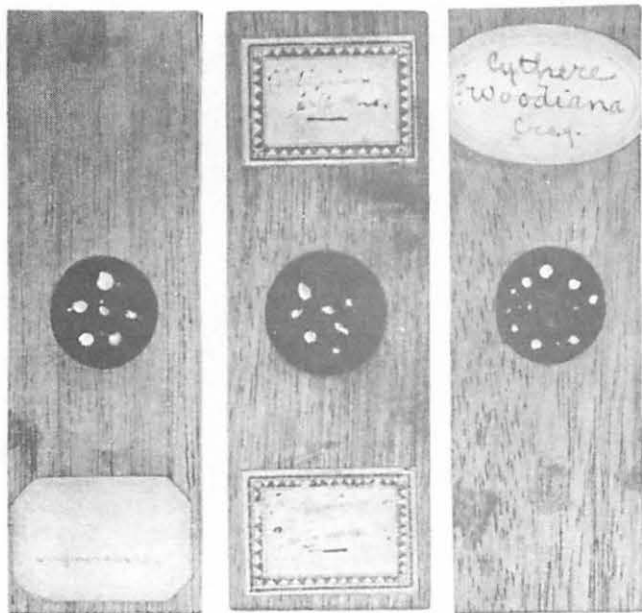


Fig. 5. Examples of wooden slides from Group F believed to contain *Challenger* specimens mounted by Dr. Honeyman.