

The genus *Scaphites* in West Greenland.

by

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(with one plate)

In 1856 the Mineralogical Museum of Copenhagen received from Umanak in West Greenland a calcareous concretion, containing a shell, which seemed to be of the nature of an Ammonite; this was added to the Museum collection and labelled: »M. U. H. 1856, Rullesten. Umanak Grönland«.

The same Museum received, in the following year, from the Royal Museum of Natural History, three imperfect Ammonites, formerly belonging to an older collection, of which it was merely stated that they came from Greenland, without any more exact indication as to locality. If these fossils came from Greenland, a fact which cannot be absolutely proved, they must have been found in the West, since the East coast had been but little visited at that time, and no scientific researches of any kind had been carried on there. These specimens are now labelled: »1857 α , (β , and γ) Grönland«, and with them is placed a very old label: »Cornu ammonis aus Grönland«, the handwriting of which it has not been possible to identify, but in any case it is not that of GIESECKE and therefore HEER'S statement that these Ammonites belonged to GIESECKE cannot have been based upon the evidence afforded by this handwriting.

A few years then elapsed during which time the Museum received no more West Greenland Cephalopods. In 1879, however, K. I. V. STEENSTRUP, during his West Greenland expedition, succeeded in obtaining a few more of these calcareous concretions containing Ammonites which, on his return, were sent to the Copenhagen Mineralogical Museum, and are now labelled: »Niakornak. Umanak«.

In 1883 this collection was considerably increased by the addition of thirty-three calcareous concretions from West Greenland in which were fragments of Ammonites or Scaphites. These fossils were collected by greenlanders who accompanied K. I. V. STEENSTRUP on his expedition of 1878—80, and were sent to the Museum by the underassistant HENDRIKSEN. The collection bears in the Museum the label: »1885. 926. Niakornat«.

The Cephalopods of West Greenland are first referred to by HOFF¹⁾, who mentioned the four oldest specimens at the Association of Scandinavian naturalists at Stockholm in 1863, and at the same time pointed out the fact that these Ammonites indicate the existence of Jurassic deposits in the neighbourhood of Umanak.

Later the same specimens are noticed by HEER²⁾ who states his belief that they had been formerly the property of GIESECKE. The three Ammonites of 1857 HEER refers to the genus *Macrocephalites*, suggesting that one of them may be nearly allied to the species *Ammonites tumidus* v. BUCH. Hence he concludes that upper beds of the middle Jurassic period do undoubtedly occur in Greenland although the exact locality of these fossils is unknown.

STEENSTRUP's collection of 1879 was examined by DE LORIO³⁾,

¹⁾ Om Alderen af de i Grönland optrædende geognostiske Formationer. Förh. vid de skand. naturforskarnes 9. möte 1863. Stockholm 1865.

²⁾ Flora fossilis arctica. Zürich 1868, p. 8 and 45 (note.)

³⁾ O. HEER: Flora fossilis grönlandica. Part 2. Zürich 1883, p. 251. VI. Ueber die marinen Thierversteinerungen von Nord-Grönland von P. DE LORIO, mitgetheilt in einem Brief an Prof. O. HEER.

who considered one Cephalopod to be closely allied to certain *Scaphites* of the Fox Hill group, as described by MEEK. He added, however, that the specimen was too incomplete for exact determination. In his letter to HEER only very brief mention is made of this Cephalopod, but a label was sent with the specimen containing the following rather more complete description: »Cet échantillon est en trop mauvais état, et trop incomplet pour pouvoir être déterminé. Je ne lui trouve d'analogie qu'avec certains *Scaphites* de Fox Hill Group, figurés par MEEK, Report G. Survey of Terr. vol. 9, tels que *Scaphites Conradi*, *Scaphites mandanensis*. On ne voit pas l'ombilic, on ne peut même s'assurer s'il appartient au même genre. On voit seulement vers le pourtour interne le côté forme de petits saillies connu dans le *Scaphites mandanensis*«. This specimen is entered as: »Kook Angnertunerik, Niakornat«. A second specimen, apparently also a *Scaphites*, was at the same time labeled: »Débris d'Ammonite indéterminable, Niakornat«, a third: »Alveole d'une *Belemnitella* probablement, Niakornak, Umanak«. The four oldest specimens, those of 1856 and 1857, do not seem to have been examined by DE LORIOI.

In 1883 K. I. V. STEENSTRUP¹⁾ notices the Ammonites of West Greenland as follows: »Near Saviarkat and Kook Angnertunek are found, in the river beds, a number of pebbles of the nature of calcareous concretions, some of which have fossil contents. Amongst these fossils Ammonites occur, and some light is thus thrown on the place of origin of similar fossils which, long ago, were brought from Greenland to Copenhagen. These concretions are derived from a shaley rock, partially replaced by red clay near Saviarkat, and fragments of which recall the baked shales of Vaigat«.

In the »Planteforsteninger fra Cap Stewart i Östgrönland« N. HARTZ²⁾ makes a historical summary of our knowledge with

¹⁾ Om Forekomsten af Forsteninger i de kulførende Dannelser i Nordgrönland. Meddelelser om Grönland. Hefte 5. Kjöbenhavn 1883, p. 59. — This paper was written by K. I. V. STEENSTRUP before the specimens were examined by DE LORIOI.

²⁾ Meddelelser om Grönland. Hefte 9. Kjöbenhavn 1896.

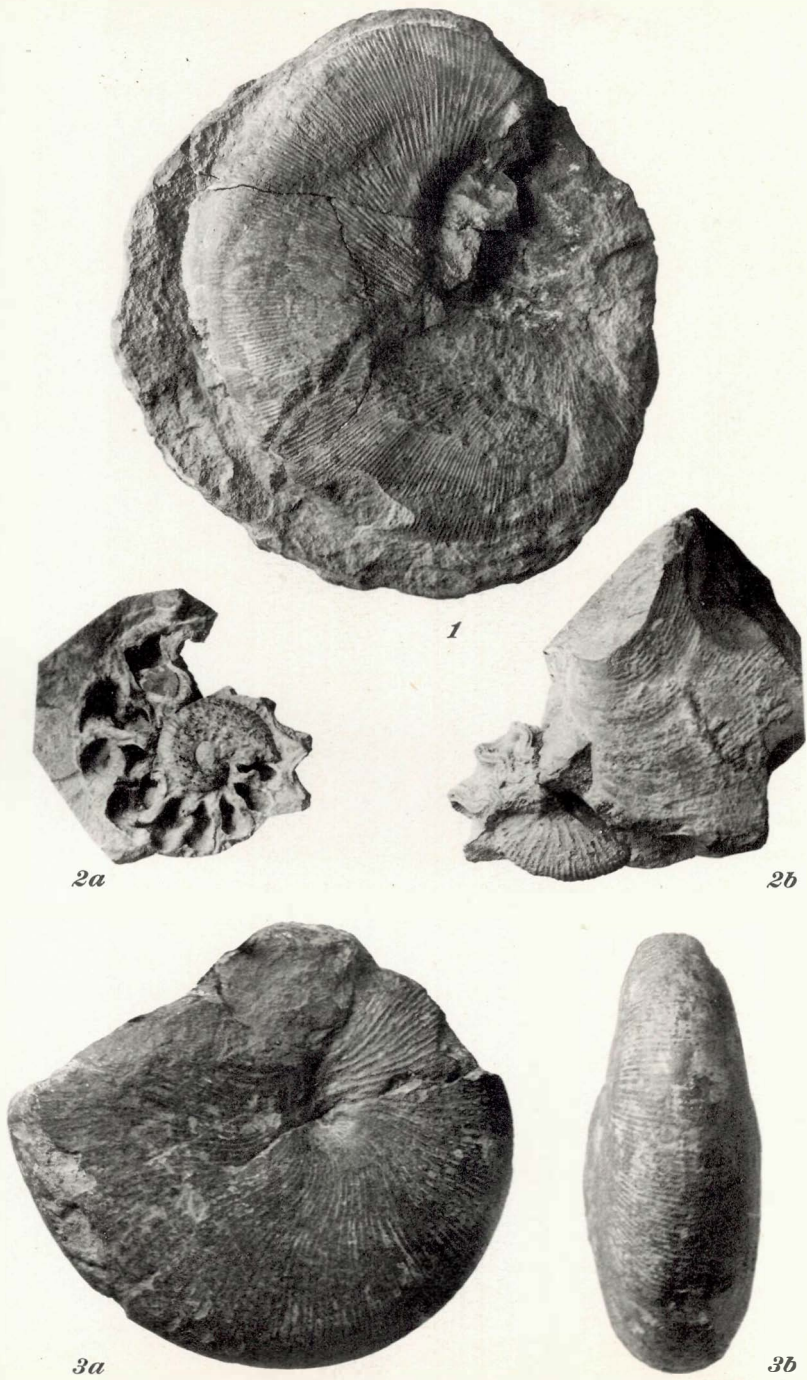
regard to the fossil flora and fauna of Greenland, giving a full account of West Greenland Ammonites. He states his belief that the oldest specimens, as also those of 1879 examined by DE LORIOI belong to the Cretaceous system.

HENDRIKSENS collection of 1885 contains some examples which are in a better state of preservation than those of the older collections, it seemed therefore possible that a more exact opinion might now be arrived at, and a revision of HEER's determinations of the older specimens was also necessary.

The results thus obtained greatly affect the question of the occurrence of Jurassic formations in West Greenland, our belief in the existence of which is based entirely upon the age of these Ammonites. The examination of the Jurassic fossils collected by the Danish expedition to East Greenland in 1891—92 rendered the decision of this question urgent, I therefore undertook to make a revision and determination of all the West Greenland Ammonites belonging to the Copenhagen Mineralogical Museum, during a stay in Munich in the winter of 1895—96. The result of this work has been that the specimens which are sufficiently well preserved for identification may be placed in the species *Scaphites Roemeri* d'ORB. The three oldest specimens from the Royal Natural History Museum of Copenhagen, which HEER attributed to the species *Ammonites tumidus* v. BUCH are incorrectly determined, the siphonal border of the shell being much more flattened than that of *Macrocephalites tumidus*¹⁾. They do not belong to the *Macrocephalites* group, probably not even to the *Stephanoceratidae*; possibly they are *Scaphites* also, but the state of preservation is however so imperfect that they cannot be determined with any degree of certainty.

Seeing that *Scaphites Roemeri* is of the horizon of the Mucronata Chalk, these West Greenland Ammonites in no way indicate the presence of Jurassic formations in West Greenland, and as hitherto no

¹⁾ REINECKE. Nautilus et Argonautas. Koburg. 1818. Fig. 47—48.



Scaphites Roemeri d'Orb.

Jurassic fossils have been found there, we have nothing to prove that such beds exist¹⁾.

Scaphites Roemeri d'ORBIGNY.

The plate fig. 1, fig. 2 a, b, and fig. 3 a, b.

- 1851 *Scaphites roemeri*. D'ORBIGNY. Prodrôme, tom. 2, pag. 214.
 1869 — *tenuistriatus*. E. FAVRE. Description des mollusques fossiles de la craie des environs de Lemberg, p. 25, t. 5, fig. 6—7.
 1874 — *Roemeri* SCHLÜTER. Cephalopoden der oberen deutschen Kreide. Palaeontographica ed. DUNCKER u. ZITTEL. Bd. 21, p. 89, t. 27, fig. 1—3. Bd. 24, p. 163, t. 42, fig. 4—5.
 1876 — *Nicolletii*, MEEK. Invertebrate Cretaceous and Tertiary fossils of the upper Missouri Country. Rep. U. S. Geol. Surv. Territories, v. 9, t. 34, fig. 4 a. b. c.—2 a. b.

For the complete synonymy see SCHLÜTER.

Scaphites Roemeri is very exactly described by SCHLÜTER and the Greenland specimens agree, on the whole, very well with this description. As SCHLÜTER says, the fineness of the ribbing varies very much, in different specimens, in the middle of the free portion of the shell, the Greenland examples for instance, have 4—12 ribs in 5 mm. of length. In the same specimen the sculpture is very variable; the inner whorls have much coarser ribs than the last whorl and the body chamber (see the plate fig. 2 a, b), the ribs of the initial whorls rarely divide, and then, as a rule, only quite near the periphery, whereas there are intercalations of short ribs, up to as many as three in number, on the periphery between the longer ribs which extend to the umbilicus. On the last whorl, (see the plate fig. 3 a), however, and also on the body chamber, (see the plate fig. 1) the

¹⁾ HAUGHTON'S *Cardinia ovalis*, found in dredging off the harbour of Godhavn was carried thither by drift-ice. HARTZ: Planteforsteninger fra Cap Stewart i Østgrønland. Meddelelser om Grønland. Hefte 19. Kjøbenhavn 1896. p. 218.

rule is that the ribs branch either once or twice at any point, sometimes quite close to the umbilicus and intercalations of ribs occur much more rarely. The knobs which are occasionally present on SCHLÜTERS specimens have not been seen in a single example from Greenland.

The Greenland specimens agree very closely with some from the Senonian of Haldem in Westphalia, which are in the Palæontological Museum of Munich. Any sufficient reason for separating *Scaphites Nicolletii* MORTON from *Scaphites Roemeri* does not appear. MEEK's description of the former species agrees in all essential points with that of *Scaphites Roemeri*. It is true that, according to MEEK, in *Scaphites Nicolletii* the ribs on the periphery of the whorl are, in consequence of repeated divisions and intercalations, five times more numerous than near the umbilical margin, whereas in *Scaphites Roemeri* this proportion does not exceed 3 to 1. Judging from MEEK's figures, however, it is only in rare cases that the increase in the number of ribs on the peripheral part is so great and as a rule it seems to be not greater than in SCHLÜTER's *Scaphites Roemeri*.

MEEK further states that *Scaphites Nicolletii* bears a row of knobs on each side of the peripheral border of the last whorl. These are, however, absent in his figures and may well only occur in rare instances as is the case with *Scaphites Roemeri*.

Whereas SCHLÜTER has had but little opportunity of noticing the suturelines, MEEK gives a full description of these, accompanied by a figure. The suturelines of the Greenland specimens, so far as they can be made out, agree closely with this description.

The largest and best preserved specimen from Greenland is 83 mm. long, and the breadth of the free portion of the body chamber measures 46 mm. It is, however, so imperfect that no further measurements of importance can be taken.

Two of the thickest specimens reach a maximum thickness of 26 mm. in that part of the shell which is coiled in a regular spiral, in these, however, the body chamber is wanting, its length is, therefore, unknown.

Distribution. Found at Niakornat on the Umanak Fiord, on the west coast of North Greenland, in the calcareous concretions of shaly beds; in the Mucronata Chalk of Northwest Germany and Galicia, and perhaps in the Senonian of Denmark. The species also occurs in the Fox Hill Group of Dakota and Montana, in the United States.

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Explanation of the plate.

Scaphites Roemeri D'ORBIGNY,

from Niakornat, Umanak Fiord on the west coast
of North Greenland.

Fig. 1. One of the best preserved specimens showing the sculpture of the body chamber.

Fig. 2 a, b. A specimen showing the sculpture of the inner whorls and partly that of the body chamber.

Fig. 3. A specimen showing the sculpture of the last whorl (a), and its relative thickness (b).

All the figures are in natural size.
