

MEDDELELSER OM GRØNLAND

UDGIVNE AF

KOMMISSIONEN FOR VIDENSKABELIGE UNDERSØGELSER I GRØNLAND

Bd. 200 • Nr. 2

STUDIES ON TRIASSIC FISHES FROM EAST GREENLAND III

On *Helmolepis gracilis* Stensiö

BY

ORVAR NYBELIN

WITH 2 FIGURES AND 3 PLATES



Nyt Nordisk Forlag Arnold Busck

København 1977

Abstract

Three new specimens, preliminarily identified as *Helmolepis gracilis* STENSIÖ, are described and the identification is verified. The new material proves that *Helmolepis* is a perleidid. The genus is not identical with any other perleidid genus described before 1932 and the name *Helmolepis* is thus valid.

O. NYBELIN
Naturhistoriska Museet
40030 Göteborg
Sweden

Contents

Introduction	3
Description	4
Discussion	10
Acknowledgements	13
References	14

ISBN 87-17-02228-2

BIANCO LUNOS BOGTRYKKERI A/S

INTRODUCTION

In his fundamental work "Triassic fishes from East Greenland" STENSIÖ (1932) created a new genus and a new species under the name *Helmolepis gracilis*. He placed it in his "Group D", comprising the families Catopteridae, Perleididae, Ospiidae and Parasemionotidae, but as only the hindmost part of the head was preserved in the unique specimen, the new genus could only be placed as "Incertae sedis in group D". However, he called attention to many resemblances with the perleidids, in the shape of the preoperculum, the lepidotrichia and the scales.

NIELSEN (1936) mentioned a further specimen in the collections from East Greenland made after 1932 "in a much better state of preservation than the one previously known". He comments as follows:

"The new specimen of *Helmolepis* has exactly the same dimensions as the type specimen, but shows many details not previously known.

The head recalls in every respect that of *Perleidus*, so that the only characters separating *Helmolepis* from the bigger specimens of *Perleidus* occurring in East Greenland are the characters presented by the fins and previously described by STENSIÖ. Thus *Helmolepis* must no doubt be referred to the *Perleididae*".

ROMER (1950, p. 580) placed *Helmolepis* in the family Parasemionotidae, and in a discussion regarding the possible descent of the pholidophorids from the parasemionotids I overlooked the note by NIELSEN, cited above, and called attention to the similar slender fusiform shape of the body in *Pholidophorus* (?) *caffii* and *Helmolepis*, "obviously belonging to the Parasemionotidae" (NYBELIN 1966, p. 430). LEHMAN (1966) and ROMER (1966), however, placed *Helmolepis* in the family Perleididae.

In connection with my investigation on the postspiracular bones (NYBELIN, 1976) I again became interested in *Helmolepis*. On my inquiry to Dr. S. E. BENDIX-ALMGREEN, Geologisk Museum, Copenhagen, he informed me that the Museum possessed, besides the holotype, three more specimens preliminary identified as *Helmolepis gracilis* and kept in the collection as specimens MGHVP 562, 563 and 564. He kindly placed them at my disposal for further examination. As NIELSEN (1936) gave no description of the fine specimen mentioned by him I found it of some interest to make short descriptions of the three new specimens and to compare them with the holotype.

DESCRIPTION

MGHVP 563 (Pl. I, fig. 2; II).

This specimen, by far the best preserved and obviously that mentioned by NIELSEN (1936), has a total length of about 90 mm. The greatest depth of the body, a little anterior to the dorsal fin, is 28 mm. The distance from the posterior margin of the operculum to the dorsal fin is about 28 mm. The body is slender and fusiform. The head, somewhat bent ventrally, is comparatively small, about one-quarter of the length from the tip of the snout to the middle of the base of the caudal fin. The dorsal fin begins a little behind the half of that length and anterior to the fin there is a characteristic enlarged scale. The base of the ventral fin is placed ventral to this scale, thus only a little anterior to the dorsal fin. The base of the pectoral fin is placed immediately posterior to the suboperculum. The caudal fin is hemi-heterocercal, moderately forked; its upper and lower lobes seem to have been of about the same size.

Of the cranial bones some dermal bones from the skull roof, the check and the visceral skeleton are preserved, the latter belonging to the left side and shown in medial view; of the endocranium nothing is visible.

The dermal cranial roof is only preserved as an impression of the frontals and parietals, fragment of the extrascapular and some bone fragments anterior to the frontals.

The frontal (*Fr*, Pl. II) is a broad bone, rounded off anteriorly, the suture between the frontals of both sides seems to be straight like that between the frontals and the parietals. The parietal (*Pa*, Pl. II) seems to be square but its margins cannot be made out. Posterior to the parietal there is a bone fragment, obviously a part of the extrascapular (*Ext*, Pl. II). The convex bone fragments anterior to the frontals are probably parts of a postrostral, but they cannot be identified exactly. A fragment of the dorsal surface of the frontal as well as the fragments anterior to it show an ornamentation consisting of small, irregularly curved ridges.

Of the cheek bones only the large infraorbital postero-ventral to the orbit is preserved (*Ifo*, Pl. II). Its anterior continuation consists of a somewhat curved groove below the orbit, but no bone limits can be observed.

Of the bones of the visceral skeleton the opercular bones, the maxillary, the lower jaw, the gular plate and some radii branchiostegi are preserved.

The operculum (*Op*, Pl. II) is on the whole triangular but broadly rounded off antero-dorsally; its ventral, straight margin is obliquely postero-dorsally directed.

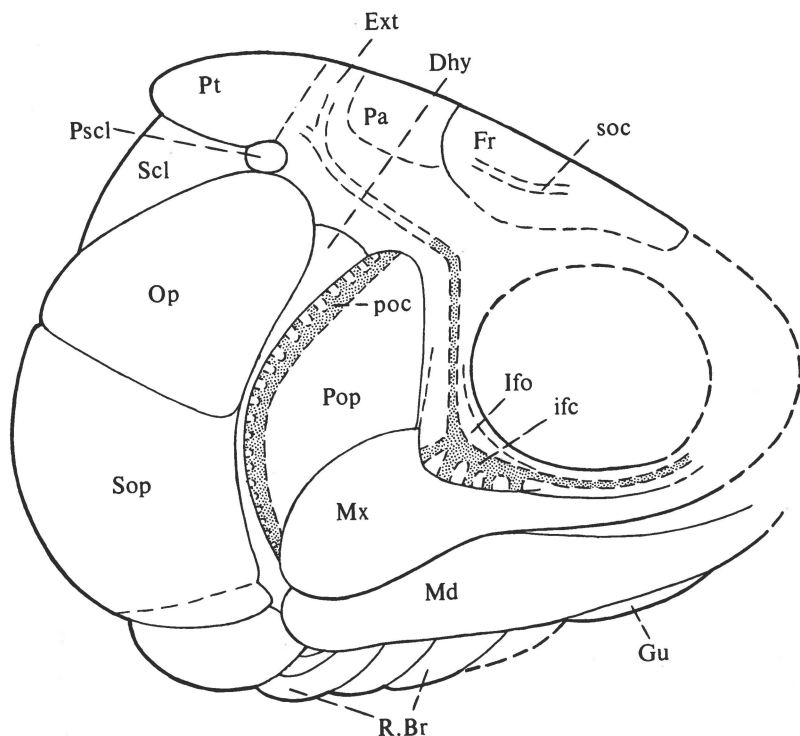


Fig. 1. *Helimolepis gracilis* STENSIÖ. Attempted restoration of head in lateral view. $\times 7$. Dhy, dermohyal; Ext, extrascapular; Fr, frontal; Gu, gular plate; Ifo, infraorbital; Md, lower jaw; Mx, maxillary; Op, operculum; Pa, parietal; Pop, preoperculum; Pscl, presupracleithrum; Pt, posttemporal; R.Br, radii branchiostegi; Scl, supracleithrum; Sop, suboperculum, ifc, infraorbital sensory canal; poc, preopercular sensory canal; soc, supraorbital sensory canal.

The suboperculum (*Sop*, Pl. II) is larger than the operculum. Its postero-ventral margin is evenly rounded, its anterior margin is straight and its dorsal margin is oblique, following the oblique ventral margin of the operculum. Its ventral part seems at first sight to be broken by pressure post mortem, but the line is remarkably even and the piece recalls an interoperculum. This structure is mentioned here, without further comments, as NIELSEN (1936, p. 48) has discussed the origin of the interoperculum as follows: "As regards the formation of the interopercular, PIVETEAU (1935, p. 80) considers the shape of the interopercular of *Parasemionotus* a decisive proof that the interopercular is a modified branchiostegal ray. It seems, however, more natural to regard the interopercular as a separated corner of the subopercular".

The preoperculum (*Pop*, Pl. II) has a very characteristic shape. Its posterior margin is convex, the dorsal half of its anterior margin is defective but seems to have been vertical, going over into the antero-

ventral margin, which is concave, following the postero-dorsal margin of the maxillary.

Between the anterior margin of the operculum and the dorsal part of the posterior margin of the preoperculum there is a slender, triangular, ventrally pointed bone (*Dhy*, Pl. II), obviously the same bone as *e.g.* that in *Perleidus madagascariensis* PIVETEAU, which LEHMAN (1952; *DyH*, figs. 85, 86) calls dermohyal.

The maxillary (*Mx*, Pl. II) has the shape typical for the palaeoniscoids with a long anterior, dentigerous part. The dentition is badly preserved but seems to consist of quite small, conical teeth.

The lower jaw (*Md*, Pl. II) is long but its shape cannot be made out because its postero-dorsal part is hidden by the maxillary and its ventral margin by the gular plate and the branchiostegal rays.

As the gular plate (*Gu*, Pl. II) I have interpreted the broadly oval bone lying ventral to the anterior part of the lower jaw. Posterior to it there are five radii branchiostegi (*R.Br*, Pl. II); the first one is oval, the second, a little smaller and partly hidden by the foregoing, seems to have a straight posterior border; the third is smaller and more slender than the second and the fourth is still smaller, somewhat reminiscent of the "Petit composant d'un rayon branchiostège" (LEHMAN, 1952, fig. 91B), the fifth is large with rounded margin but is partly hidden by the ventral part of the suboperculum and therefore its exact shape cannot be stated. It seems as if one more ray has been present between the gular plate and the anterior-most one of those preserved, thus six branchiostegal rays in all.

The sensory canal system of the head is only partly visible. A trace of the posterior part of the supraorbital sensory canal crossing over the suture between the frontal and the parietal seems to be indicated but the canal itself is not preserved. The infraorbital sensory canal (*ifc*, Pl. II) in the preserved infraorbital shows five tubules, the anterior one antero-ventrally directed, the three following ventrally and the posteriormost one postero-ventrally directed. The preopercular sensory canal (*poc*, Pl. II) is visible almost in its entire length; it is provided with numerous short tubules going out to the posterior margin of the bone. If the interpretation is correct that the preoperculum is exposed in medial view, the preopercular sensory canal has a pronounced mesial position in the bone against the general position near or on the lateral surface of the bone.

The mandibular sensory canal is not visible.

Of the bones belonging to the shoulder-girdle the posttemporal (suprascapula) (*Pt*, Pl. II) is preserved in outline but the bone is broken and its surface split off. The supracleithrum (*Scl*, Pl. II) is almost entirely preserved but its anterior part is defective. Between the operculum, the posttemporal and the supracleithrum there is a small rounded bone

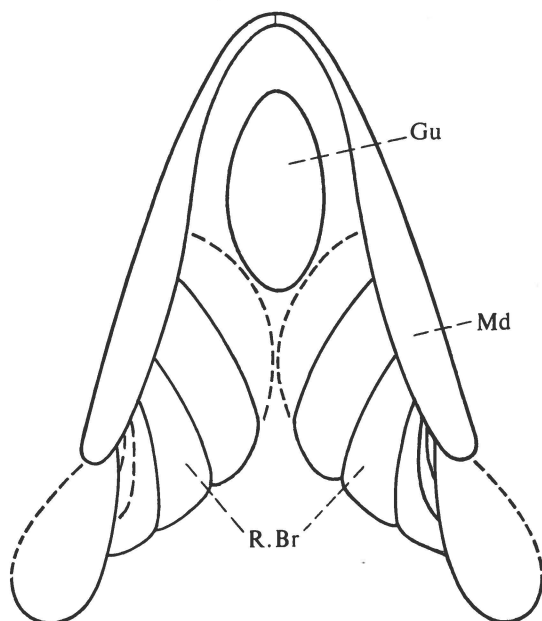


Fig. 2. *Helimolepis gracilis* STENSIÖ. Attempted restoration of gular plate and radii branchiostegi in ventral view. $\times 7$. *Gu*, gular plate; *Md*, lower jaw; *R.Br.*, radii branchiostegi.

which probably is the so-called postspiracular bone (*Pscl*, Pl. II), for which the name presupracleithrum has been proposed (NYBELIN, 1976).

Of the paired fins there are fragments of the pectoral fin (*P*, Pl. I, fig. 2; II), the base of which is situated in the angle between the suboperculum and the posteriormost branchiostegal ray. The lepidotrichia are, as far as can be seen, unjointed in their basal part. The number of lepidotrichia cannot be made out. The ventral fin (*V*, Pl. I, fig. 2) is also fragmentary; its base is situated at the 11th transverse scale-row and the tip of the fin reaches the 16th transverse scale-row. Anterior to the base of the ventral fin an elongated scale can be observed; it is, however, not as large as the scale anterior to the dorsal fin.

The dorsal fin (*D*, Pl. I, fig. 2) begins above the posterior part of the ventral at about the 21st transverse scale-row. The number of lepidotrichia is difficult to count but seems to be about 16, the anteriormost ones very short but increasing in length posteriorly. About the fourth ray reaches half the height of the fin, while the following ray is the longest and is provided with very small fulcra along its free anterior margin.

The anal fin (*A*, Pl. I, fig. 2) is only represented by a few fragments of lepidotrichia from the posterior part of the fin, and therefore the exact position of this fin cannot be stated. The distance between the anal and

the base of the ventral seems, however, to be only a little shorter than that between the pectoral and ventral fin bases.

The caudal fin is on the whole well preserved but a great part of the ventral lobe and the tip of the dorsal lobe are missing. The jointed lepidotrichia are densely placed and the joints in the ventral lobe are stronger than those in the dorsal lobe, the margin of which is provided with fringing fulcra, grading anteriorly into a series of basal fulcra. The squamation on the upper lobe seems to end as a single scale row, but as almost all the preserved scales belong to the left side the squamation pattern on the upper lobe (the upturned body axis) cannot be analysed in detail.

The squamation on the body is well preserved but mostly in impression. There seem to be 37 transverse scale-rows between the posterior margin of the operculum and the base of the middle caudal lepidotrichia. Along the middle of the abdominal region there are four longitudinal rows of somewhat enlarged scales. The posterior margin of the abdominal scales is denticulated, at least ventrally.

MGHVP 562 (Pl. I, fig. 1; Pl. III, fig. 4).

This specimen (Pl. I, fig. 1) consists of a partly weathered impression of the left body side with well preserved impressions of the opercular bones, the pectoral and ventral fins and a fragment of the anal fin. The dorsal outline of the body together with the dorsal fin, the caudal part and the anterior part of the head are missing.

The impressions of the operculum, suboperculum and preoperculum agree well with the corresponding bones of MGHVP 563; they are, however, a little larger and more defective at the margins. The preserved impressions of the branchiostegal rays give very little information.

The impressions of the paired fins give some information in addition to that obtained from MGHVP 563. In the pectoral fin (*P*, Pl. I, fig. 1; Pl. III, fig. 4) the unjointed basal parts of the first five lepidotrichia are well exposed. The first, most robust ray carries small fulcra. The jointed part of these lepidotrichia seems to be of about the same length as the unjointed part. Behind the five strong lepidotrichia there are fragments of some delicate rays.

The impression of the ventral fin (*V*, Pl. I, fig. 1) shows its base between the 11th and 12th transverse scale-rows. The long unjointed basal parts of at least five lepidotrichia are clearly visible together with some fragments of more delicate ones.

The anal fin (*A*, Pl. I, fig. 1) is marked by seven to eight fragmentary impressions of lepidotrichia.

The impression of the squamation seems to agree perfectly with the scales in MGHVP 563.

MGHVP 564 (Pl. III, figs. 1, 3).

The anterior part of the head is missing and the existing cranial bones are badly preserved. The whole caudal part from close behind the anal fin is also missing, but the squamation as well as the pectoral, ventral, dorsal and anal fins are more or less well preserved. It seems as if the specimen has been somewhat crushed. Its size seems to be about the same as that of MGHVP 563 as the estimated distance between the posterior margin of the operculum and the dorsal fin is about 28 mm.

Of the cheek bones the large infraorbital (*Ifo*, Pl. III, fig. 3) postero-ventral to the orbit can be recognized but its outline is damaged. Its sensory canal is, however, clearly visible; the canal seems to continue dorsally and to bend posteriorly at the level of the dorsal margin of the preoperculum. The bone fragments surrounding the bend may therefore represent a dermosphenotic. A boundary between the two named bones is not visible and it is consequently doubtful whether they border upon another or if a small, independent infraorbital exists between them.

The dorsal part of the operculum is hidden (*Op*, Pl. III, fig. 3) and its postero-ventral part is lacking; nothing indicates, however, that its shape differs from that in MGHVP 562 and 563. Only a fragment of the dorsal part of the suboperculum is preserved. The best preserved of the opercular bones is the preoperculum (*Pop*, Pl. III, fig. 3), agreeing well in shape and size with the corresponding bone in the two other specimens.

Of the maxillary and the lower jaw only their posterior parts are indicated. Ventral to them the more or less well preserved remains of perhaps five radii branchiostegi (*R. Br*, Pl. III, fig. 3) are present, seemingly similar to those of MGHVP 563.

Besides the already mentioned sensory canal in the infraorbital there are broken pieces of the cephalic division of the main lateral line (*ll*, Pl. III, fig. 3) preserved, including a part of the supratemporal commissure (*stc*, Pl. III, fig. 3); a fragment of the frontal shows a part of the supraorbital sensory canal (*soc*, Pl. III, fig. 3). But the exact course of these sensory lines cannot be made out.

The paired fins are present in their whole length but much crushed so that the limit between the unjointed and jointed parts of the lepidotrichia cannot be seen. The pectoral fin reaches posteriorly the eighth transverse scale-row. The base of the ventral fin is indistinct but seems to be situated at the 11th or 12th transverse scale-row. The fin extends to the 18th scale-row.

The dorsal fin (Pl. III, fig. 1) is very well preserved in impression. It begins at the 21st transverse scale-row and its first three lepidotrichia are very short; the first one consists of only one segment, the

second of two and the third of three. The fourth ray has six, the fifth eight segments. The sixth lepidotrichium, the longest in the fin, has about 15 segments and is somewhat broader than the foregoing rays. The fifth and sixth rays carry a series of very small fringing fulera on their free anterior margin. The seven anterior lepidotrichia are unbranched, but from the eighth ray they are branched distally. The total number of the dorsal lepidotrichia seems to be 15 or 16, but the last ones are difficult to count. Anterior to the dorsal fin there are fragments of a large median scale.

The anal fin is poorly preserved. It seems to begin at about the 22nd or 23rd transverse scale-row, but at least its first ray is missing. Seven strong lepidotrichia are preserved, followed by at least 5 or 6 weaker rays. All the lepidotrichia are jointed from their base, as in the dorsal fin, but at least in the anterior, stronger rays the segments are somewhat longer.

The squamation is well preserved except around the ventral fin base. Four longitudinal rows of larger and deeper abdominal scales are distinct and the second row reckoned from above is pierced by the lateral line. Above the pectoral fin there is a seemingly equilateral triangular scale which can also be recognized in MGHVP 563. Most of the abdominal scales are denticulate along the ventral part of the posterior margin.

DISCUSSION

From the description given above it may be evident that the specimens MGHVP 562 and 563 agree in all those features in which a comparison is possible: the shape and mutual size of the operculum, the suboperculum and the preoperculum, the position of the fins, especially that of the ventral fin in relation to the transverse scale-rows, the presence of four longitudinal rows of enlarged abdominal scales and the shape and denticulation of the scales. MGHVP 564 differs at first sight from the two other specimens, but there seem to be no differences of taxonomic value. The only cranial bone that can be compared is the preoperculum, and no differences can be detected. The agreement regarding the dorsal fin with that of MGHVP 563 is perfect and the position of the fins and the squamation seem not to show any differences of importance between the three specimens. It consequently seems fully reasonable to consider the three specimens as belonging to one and the same species.

Then the question is whether the species represented by these three specimens is identical with *Helmolepis gracilis*.

The holotype, described by STENSJÖ, has a length of about 86 mm, but it is defective anteriorly and its total length is estimated to be

90–100 mm. MGHVP 563 has a total length of about 90 mm, but as the distance from the posterior margin of the operculum to the middle caudal scales is only about 56 mm against about 60 mm in the holotype, specimen 563 must be a little shorter than the holotype. The greatest depth of the body, situated somewhat anterior to the dorsal fin is, however, 28 mm in both specimens. The distance between the posterior margin of the operculum and the dorsal fin is about 29 mm in the holotype, about 28 mm in MGHVP 563; this distance is likewise 28 mm in MGHVP 564. The corresponding measurements cannot be given for MGHVP 562, but the size of the preserved opercular bones indicates that it is a somewhat larger specimen than the holotype. All four specimens are consequently of much the same size.

The opercular bones, operculum, suboperculum and preoperculum are all defective in the holotype, but the preserved features (the convex posterior margin of the preoperculum with the preopercular sensory canal close to it; the suboperculum deeper than the operculum) do not contradict the assumption that these bones agree with the corresponding bones in the three specimens MGHVP 562, 563 and 564.

The shape of the dorsal fin agrees in the holotype and in MGHVP 563 and 564 as far as a comparison is possible (Pl. III, figs. 1 and 2). In the holotype the number of lepidotrichia seems to be about 16, in MGHVP 564 about 15, possibly 16. The first, very short lepidotrichium is situated at about the 20th transverse scale-row in the holotype, in MGHVP 563 and 564 at about the 21st row. In all these three specimens there is a large, saddle-shaped scale immediately anterior to the dorsal fin, well preserved in the holotype and in MGHVP 563, somewhat defective in MGHVP 564.

The position of the base of the ventral fin in relation to the transverse scale-rows is consonant in all four specimens. In the holotype it lies at the 11th or 12th row according to STENSIÖ, in MGHVP 562 at the limit between the 11th and 12th row, in MGHVP 563 at the 11th and in MGHVP 564 at about the 11th or 12th transverse scale-row.

The caudal fin, with densely-set lepidotrichia and fulcra on the dorsalmost ray grading anteriorly into a long series of basal fulcra, seems to be identical in the holotype and in MGHVP 563.

The squamation, with four longitudinal rows of somewhat enlarged scales, and their shape and serration, seems to agree in all four specimens.

Consequently it seems to be justified to consider the three specimens MGHVP 562, 563 and 564 as belonging to the species *Helmolepis gracilis* STENSIÖ.

On the basis of the well preserved MGHVP 563 in the new material no doubt can prevail that NIELSEN (1936) was quite right as to the systematic position of *Helmolepis*; it is a true perleidid.

To the family Perleididae LEHMAN (1966) refers the following genera erected prior to 1932; *Colobodus* AGASSIZ 1844, *Dipteronotus* EGERTON 1854, *Thoracopterus* BRONN 1858, *Cleithrolepis* EGERTON 1864, *Crenilepis* DAMES 1868 (= *Colobodus bassanii*), *Pristiosomus* WOODWARD 1890, *Dollopterus* ABEL 1906, *Gigantopterus* ABEL 1906, *Hydropessum* BROOM 1909, *Perleidus* ALESSANDRI 1910, *Meridensia* ANDERSSON-STENSIÖ 1916, and *Meidiichthys* BROUGH 1931.

Of these twelve genera the following clearly differ from *Helmolepis*: *Dipteronotus*, *Pristiosomus*, *Cleithrolepis* and *Hydropessum* (family Cleithrolepidae of WADE 1935) by their deep bodies and their remote dorsal and anal fins; *Thoracopterus*, *Gigantopterus* and *Dollopterus* by their very long pectoral fins; *Meridensia*, in which the operculum is larger than the suboperculum and the four longitudinal rows of enlarged scales dominate the flank of the body (BROUGH, 1939, Text-fig. 3).

The genus *Colobodus* differs from *Helmolepis* in the shape of the preoperculum and its size relative to the operculum and the suboperculum, in the shape of the maxillary and in the greater number of branchiostegal rays (STENSIÖ, 1921, Text-fig. 87). I have not found any statement of the presence of an enlarged scale anterior to the dorsal fin in *Colobodus*.

Between the genera *Perleidus* [*altolepis* and *woodwardi* (STENSIÖ, 1921), *stoschiensis* (STENSIÖ, 1932), *piveteaui* and *madagascariensis* (LEHMAN, 1952)] and *Helmolepis* the similarities are greater. The number of branchiostegal rays is low: about six in *Helmolepis*, 8–4 in *Perleidus* according to LEHMAN. But in the *Perleidus* species the preoperculum is larger than the operculum, and the anterior part of the maxillary and the lower jaw are shorter than in *Helmolepis*. The dorsal and ventral fins are placed more posteriorly, in *stoschiensis* at about the 29th and 15th vertical scale-rows respectively, in *madagascariensis* at about the 23rd to 25th and 14th scale-rows, and the anterior lateral abdominal scales are somewhat deeper. The lepidotrichia in the dorsal fin are quite different; in *Perleidus* they are unjointed basally (STENSIÖ, 1921, Pl. 28, fig. 3) whereas in *Helmolepis* they are jointed from the base, a difference already noted by NIELSEN (1939). There is no enlarged scale anterior to the dorsal fin in *Perleidus*.

The genus *Meidiichthys*, founded on *M. browni* (BROOM), recalls *H. gracilis* in size, up to 100 mm, and body shape, but according to the description and the text-fig. 11 given by BROUGH (1931) and the notes and text-fig. 32 given by HUTCHINSON (1973) there are, however, a number of differences of importance. In *Meidiichthys* the operculum is considerably smaller than the suboperculum and has a curved ventral border; the posterior border of the suboperculum is pectinated. In these respects *Meidiichthys* differs considerably from *Helmolepis*. The maxillary is deeper and shorter. The number of transverse scale-rows seems to be

the same, about 37 to the base of the middle caudal lepidotrichia in MGHVP 563, 34 to the first ventral caudal ray in *Meidiichthys* according to BROUGH, but the longitudinal rows of enlarged abdominal scales seem to be at least five in the figure of *Meidiichthys* against four in *Helmolepis*. In *Meidiichthys* the lepidotrichia in the dorsal fin have unjointed basal parts as in *Perleidus*, not thoroughly jointed as in *Helmolepis*. The dorsal and ventral fins seem to be placed more posteriorly in *Meidiichthys*, the ventral fin at about the 13th or 14th transverse scale-row according to the figure. The enlarged scale anterior to the dorsal fin, characteristic of *Helmolepis*, is lacking in *Meidiichthys*.

From these comparisons it will be evident that the genus *Helmolepis* cannot be identified with any one of the perleidid genera erected prior to 1932 and that consequently it is valid.

To the diagnosis of the genus given by STENSIÖ (1932) the following can be added.

Preoperculum perleidid-like, smaller than the operculum. Suboperculum higher than operculum, boundary between them oblique. Maxillary with a low but long suborbital part and a moderately deep and rounded postorbital part. About six branchiostegal rays. Infraorbital sensory canal postero-ventral to the orbit with at least five postero-ventrally to ventrally directed tubules. Preopercular sensory canal situated along the posterior margin of the preoperculum and with densely set and posteriorly directed short tubules.

Type and only known species of the genus: *Helmolepis gracilis* STENSIÖ.

Diagnosis. — That of the genus.

Geological horizon and localities. — The Otoceras-Ophiceras beds, Eotrias; Kap Stosch on Hold-with-Hope (holotype), "Fiskeplatsen" (MGHVP 562) and between Gaffeldal and Stribedal (MGHVP 563, 564), East Greenland.

STENSIÖ (1932) has called attention to the very imperfect fish from the Spitsbergen Trias, mentioned by him in 1925 (p. 225, Pl. 34, fig. 5), as having a certain superficial resemblance to *Helmolepis*. The new material treated here does not give any contribution to an identification of the Spitsbergen specimen.

Acknowledgements

To Dr. BENDIX-ALMGREEN I am very much indebted for his kindness in placing the fine new material at my disposal. It was a great pleasure to me to discuss my observations with my old friend, Prof. Dr. E. STENSIÖ, Stockholm, for which I am very thankful. My thanks are due to Dr. C. PATTERSON, British Museum (Nat. Hist.), London, for the stylistic correction of my English manuscript.

References

- BROUGH, J. 1931: On Fossil Fishes from the Karroo System and some General Considerations on the Bony Fishes of the Triassic Period. *Proc. Zool. Soc. Lond.* **1931**, 235–296.
- *The Triassic Fishes of Besano, Lombardy*. IX + 117 pp. London: Brit. Mus. (Nat. Hist.).
- HUTCHINSON, P. 1973: A Revision of the Redfieldiform and Perleidiform Fishes from the Triassic of Bekker's Kraal (South Africa) and Brookvale (New South Wales). *Bull. Brit. Mus. nat. Hist. (Geol.)* **22**, 233–354.
- LEHMAN, J.-P. 1952: Etude complémentaire des poissons de l'Eotrias de Madagascar. *K. svenska Vetensk. Akad. Handl. (4)* **2**, 6, 1–201.
- Actinopterygii. In PIVETEAU, J. (editor) *Traité de Paléontologie*. **4**, **3**, 1–242. Paris: MASSON.
- NIELSEN, E. 1936: Some few preliminary remarks on Triassic fishes from East Greenland. *Meddr Grønland* **112**, 3, 1–55.
- NYBELIN, O. 1966: On certain Triassic and Liassic representatives of the family Pholidophoridae s. str. *Bull. Br. Mus. nat. Hist. (Geol.)* **11**, 351–432.
- On the so-called postspiracular bones in Crossopterygians, Brachiopterygians and Actinopterygians. *Acta R. Soc. scient. litt. gothoburg. (Zool.)* **10**, 1–31.
- ROMER, A. S. 1950: Vertebrate paleontology. Univ. Chicago Press, Second Edit. Chicago, Ill.
- Vertebrate paleontology. Univ. Chicago Press. Third Edit. Chicago, Ill.
- STENSIÖ, E. A:SON, 1921: *Triassic fishes from Spitzbergen*. Part I. XXVIII + 307 pp. Wien: HOLZHAUSEN.
- 1925: Triassic fishes from Spitzbergen. Part II. *K. svenska Vetensk. Akad. Handl. (3)* **2**, 1, 1–261.
- 1932: Triassic fishes from East Greenland collected by the Danish expeditions in 1929–1931. *Meddr Grønland*. **83**, 3, 1–305.
- WADE, R. T. 1935: *The Triassic Fishes of Brookvale, New South Wales*. XII + 89 pp. London: Brit. Mus. (Nat. Hist.).

PLATES

Plate I

Helmolepis gracilis STENSIÖ

Fig. 1. MGHVP 562. $\times 2$.

Fig. 2. MGHVP 563. $\times 2$.

A, anal fin; *D*, dorsal fin; *P*, pectoral fin; *V*, ventral fin.



Plate II

Helmolepis gracilis STENSIÖ

Head of MGHVP 563. $\times 5,2$.

Dhy, dermohyal; *Ext*, extrascapular; *Fr*, frontal; *Gu*, gular plate; *Ifo*, infraorbital; *Md*, lower jaw; *Mx*, maxillary; *Op*, operculum; *P*, pectoral fin; *Pa*, parietal; *Pop*, preoperculum; *Pocl*, presupracleithrum; *Pt*, posttemporal; *R.Br*, radii branchiostegi; *Scl*, supracleithrum; *Sop*, suboperculum; *ifc*, infraorbital sensory canal; *poc*, preopercular sensory canal.

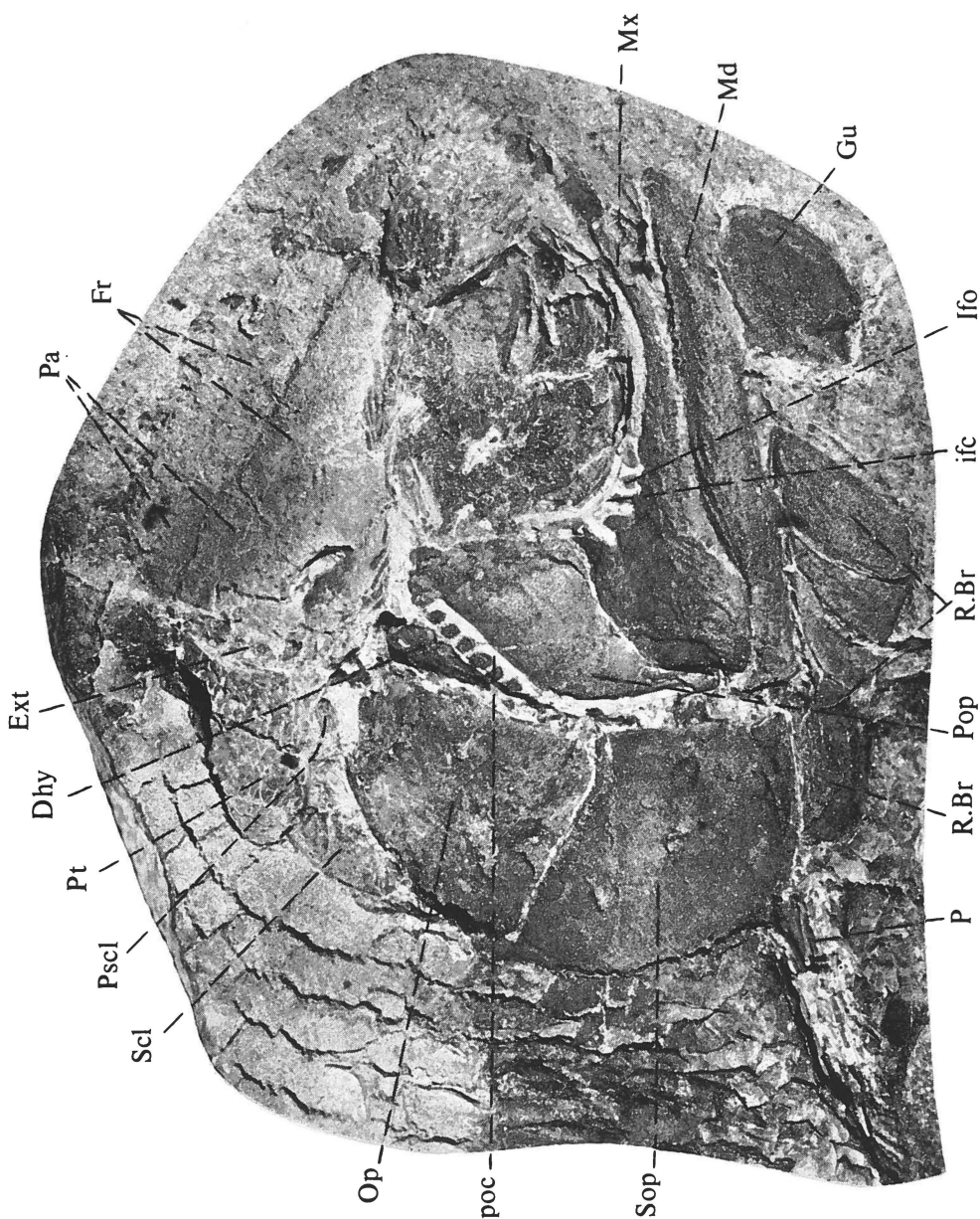


Plate III

Helmolepis gracilis STENSIÖ

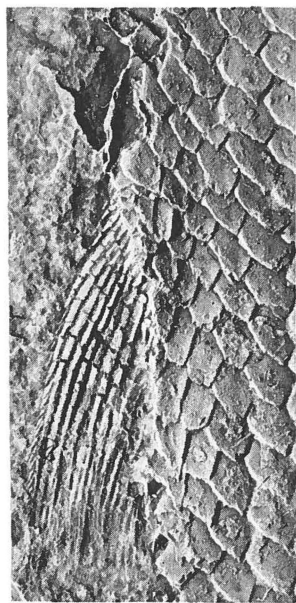
Fig. 1. Latex cast of dorsal fin of MGHVP 564. $\times 4$.

Fig. 2. Dorsal fin of holotype (STENSIÖ 1932, Pl. XI, fig. 2). $\times 4$.

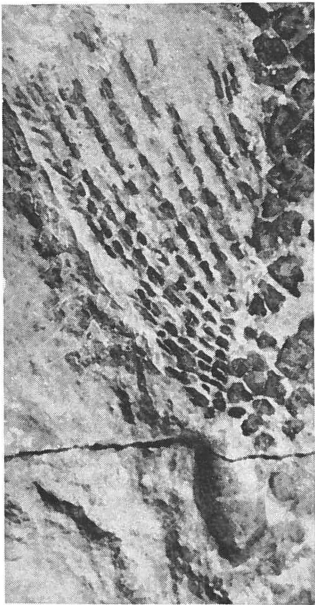
Fig. 3. Latex cast of head of MGHVP 564. $\times 4$.

Fig. 4. Latex cast of head of MGHVP 562. $\times 4$.

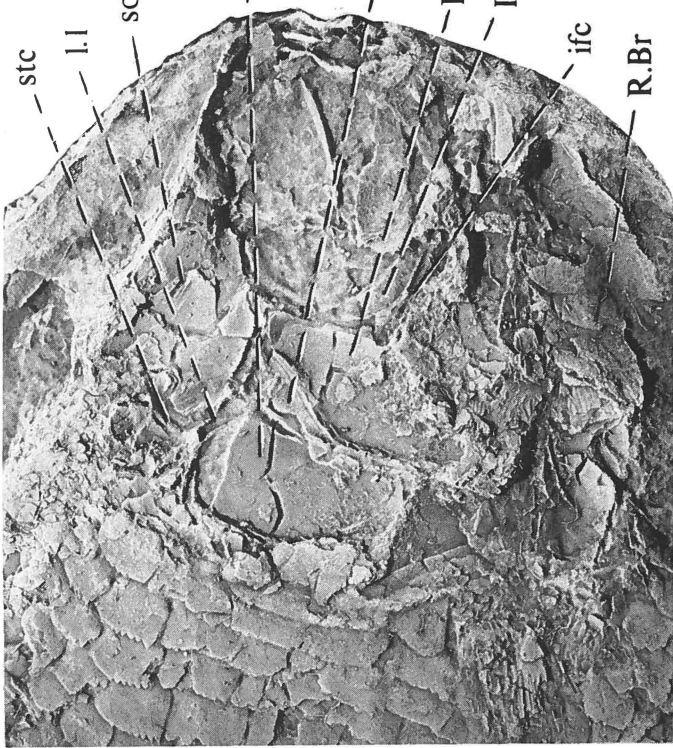
Dhy, dermohyal; *Ifo*, infraorbital; *Op*, operculum; *P*, pectoral fin; *Pop*, preoperculum;
R.Br, radii branchiostegi; *Sop*, suboperculum; *ifc*, infraorbital sensory canal; *ll*,
cephalic division of main lateral line; *stc*, supratemporal commissure.



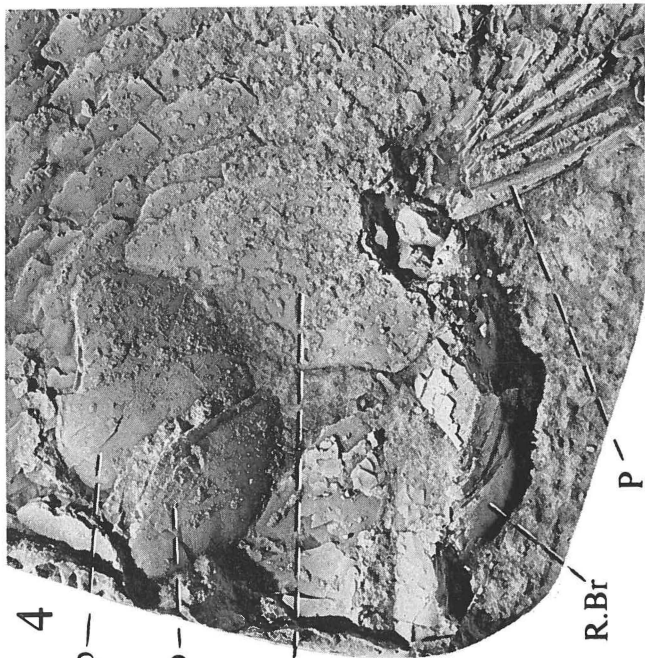
1



2



3



4