

#### 4. **Sassenisaurus, a New Genus of Eotriassic Stegocephalians from Spitsbergen.**

By

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Through the works of WOODWARD (1904) and WIMAN (1910, 1913, 1914, 1916, 1917) eight different species of Stegocephalians were distinguished in the Triassic of Spitsbergen: *Aphaneramma rostratum* WOODW., *Lonchorhynchus öbergi* WIM., *Lyrocephalus euri* WIM., *Platystega depressa* WIM., *Tertrema acuta* WIM., *Peltostega erici* WIM., *Capitosaurus polaris* WIM., and *Cyclotosaurus? spitsbergensis* WIM. Of these *Lonchorhynchus öbergi* was shown to belong to the genus *Aphaneramma* by SÄVE-SÖDERBERGH (1936, pp. 58—60). This author distinguished two species of *Aphaneramma*, *A. sp. 1* and *A. sp. 2*, according to my opinion, however, on insufficient grounds<sup>1</sup>. By a study of the lower jaws I have been able to add an as yet unnamed new form most nearly comparable with the Russian *Dvinosaurus* or, possibly, with the Brachyopids (NILSSON Mscr. 1). — For the work on these lower jaws and the postcranial remains of the Triassic Stegocephalians from Spitsbergen (NILSSON Mscr. 2) it proved desirable to get a clearer idea of two of the above mentioned species, namely *Capitosaurus polaris* and *Cyclotosaurus? spitsbergensis*, which were not restudied by SÄVE-SÖDER-

<sup>1</sup> *Aphaneramma sp. 1* is represented by a single, unusually large specimen (U. 15). The arguments advanced by SÄVE-SÖDERBERGH in 1936 for its separation as a species of its own were the following: 1) U. 15 is different from the other specimens of *Aphaneramma* by its more pitted ornamentation; 2) when the proportions of the divisions of the skull roof are compared with a very young individual (B. 1) and a selected medium-sized specimen (U. 37), the large spec. U. 15 does not show extreme conditions, as might be expected, if all specimens belonged to the same species; U. 15 was on the contrary found to be intermediate between B. 1 and U. 37. Against this may be argued as follows: 1) the pitted ornamentation of spec. U. 15 is shown by SÄVE-SÖDERBERGH himself in 1937 (pp. 195—199) to be a change caused by age; 2) the individual variation of the lower jaws in *Aphaneramma* is rather considerable, but does not allow their division into two or more groups (NILSSON Mscr. 1); 3) U. 15 is derived from the same locality (Mt. Andersson) and the same horizon (»the Fish Horizon») as remains of *Aphaneramma* »sp. 2».

BERGH. These species are of special interest, as they would be the only representatives in Spitsbergen of the group *Capitosauroidae*, all other forms belonging to the group *Trematosauroidae* (cf. SÄVE-SÖDERBERGH 1935, pp. 85—88, 200).

*Capitosaurus polaris* (WIMAN 1914, pp. 21 f., pl. VIII) is derived from another geological horizon than the other species mentioned above, which are all found in the Upper Eotriassic *Posidonomya* Beds («the Fish Horizon»). Only one specimen is known, which occurs in a loose sample of a greenish fine-grained sandstone, found in the so-called «Auk Colony» on the north-western slope of Mt. Middelhook, the northern part of which is now called Mt. Congress. According to WIMAN the specimen probably comes from a new Vertebrate-horizon, situated somewhat above a plant-bearing layer. Its geological age would then be Upper Triassic (Neotriassic), according to the prevalent opinion<sup>1</sup>. It can be said with certainty that the preserved material, mainly a fragment of the dermal skull roof, belongs to a *Capitosaurid*, but it must be considered to be indeterminate as to genus (cf. WATSON 1919, p. 29). If it is really of Neotriassic age<sup>2</sup>, it may rather be expected to belong to *Cyclotosaurus*<sup>3</sup> than to *Capitosaurus*. Its geological age must, however, remain unsettled for the present. According to a verbal communication by Prof. E. STENSIÖ, the leader of the expedition which found the fossil, the petrological character of the rock of the specimen does not entirely agree with any one hitherto known from the Triassic of Spitsbergen.

*Cyclotosaurus? spitsbergensis* (WIMAN 1914, pp. 22 f., pl. IX, fig. 1) is founded on the anterior part of a snout, derived from the *Posidonomya* Beds of Mt. Andersson at the inner end of Sassen Valley. Its geological age, which is now established as Upper Eotriassic, makes it *a priori* improbable that it should belong to *Cyclotosaurus*, a mainly Neotriassic genus. This circumstance made a reinvestigation of the material desirable, the results of which are set forth in the present paper<sup>4</sup>. A slight negative preparation of part of the palate disclosed regular rows of small teeth,

<sup>1</sup> For stratigraphy cf. FREBOLD 1935 and the literature cited there.

<sup>2</sup> There are other Stegocephalian remains from Spitsbergen of doubtless Neotriassic age, *viz.* the hypocentra of «rhachitinous» type from the summit of Mt. Lundbohm, described by WIMAN (1914, p. 25, pl. VI, figs. 1—4).

<sup>3</sup> Unfortunately the specimen is lacking the most posterior part of the skull roof. The character of the otic notches thus cannot be revealed. According to SÄVE-SÖDERBERGH (1935, p. 62), WIMAN's chief argument for referring the specimen to the genus *Capitosaurus* was the characteristically angular shape of the suture between postorbital and jugal. However, a similar angular suture seems also to occur in at least one specimen of *Cyclotosaurus* (*C. ebrachensis*, KUHN 1932, pl. III, fig. 1; possibly also in *C. stantonensis*, WOODWARD 1904, pl. IX, fig. 1, and *C. posthumus*, FRAAS 1913, pl. 19).

<sup>4</sup> For the loan of the specimen, U. 82, which belongs to the Palaeontological Institute of the University of Uppsala, I am indebted to the chief of the institute, Prof. G. SÄVE-SÖDERBERGH.

which added important new characters. As will be shown later on these are sufficient to determine the form as a clear Capitosauroid. A close comparison will, however, make clear that it differs in essential points from previously known genera and therefore in all probability constitutes a genus of its own, which I propose to call *Sassenisaurus* n. g. after the find locality, Sassen Valley.

### ***Sassenisaurus spitsbergensis* (WIMAN).**

**Description of the anterior part of the palate**<sup>1</sup> (figs. 1, 6). Only the anterior ends of the interpterygoid vacuities (*fen. ip*) are shown. They are rather broad and truncated anteriorly. The choanae (*ch*) are large, broad and elongated in the length direction, with four more or less marked angles. In the foremost part of the palate the posterior part of a large anterior palatal vacuity (or fenestra; *f. p. a*) is shown. Its posterior margin is produced backwards, forming a rounded or, on the dorsal (internal) side, a more acute angle in the median line. In the present state of the fossil the left dental tusk of the lower jaw projects dorsally into the left anterior corner of the anterior palatal vacuity.

The margins of the choana are formed by the maxillary (*Max*), vomer, and dermopalatine. The antero-medial part of the dermopalatine (*Dpl*) is overlapped by the vomer in ventral view. Immediately behind the choana a strong anterior postchoanal tusk<sup>2</sup> (*d. po*<sup>1</sup>) is preserved. Of the parasphenoid (*Pspk*) only the most anterior part of the processus cultriformis is shown. In dorsal (internal) view it projects far forward between the vomeres to a point some distance behind the anterior palatal vacuity. Ventrally it is entirely covered by the vomeres in the preserved part of the fossil. The most anterior part of the septum between the interpterygoid vacuities, which is formed by parasphenoid and vomeres, is relatively narrow. The vomer (*Vo*) overlaps the margins of the dermopalatine and parasphenoid in ventral view<sup>3</sup>. The centre of radiation is situated in the antero-lateral part of the bone between the choana and the anterior palatal vacuity. The internal face of this part is markedly concave. The external face is, upon the whole, flat. It bears on each vomer

<sup>1</sup> The dorsal part of the snout and the lower jaw, of which a fragment is preserved, do not allow a closer description. To this species probably also some detached lower jaws can be referred (cf. NILSSON Mscr. 1).

<sup>2</sup> The denomination of the teeth after BYSTROW (for instance in BYSTROW & EFREMOV 1940, figs. 1, 2, pp. 122 f.).

<sup>3</sup> It should be pointed out that greater attention must be devoted to the separation of external and internal outlines of bones than has often been done. It is generally not advisable to compare drawings made on the basis of the outer sutures with such founded on internal casts (cf. also my paper on the lower jaws, NILSSON Mscr. 1).

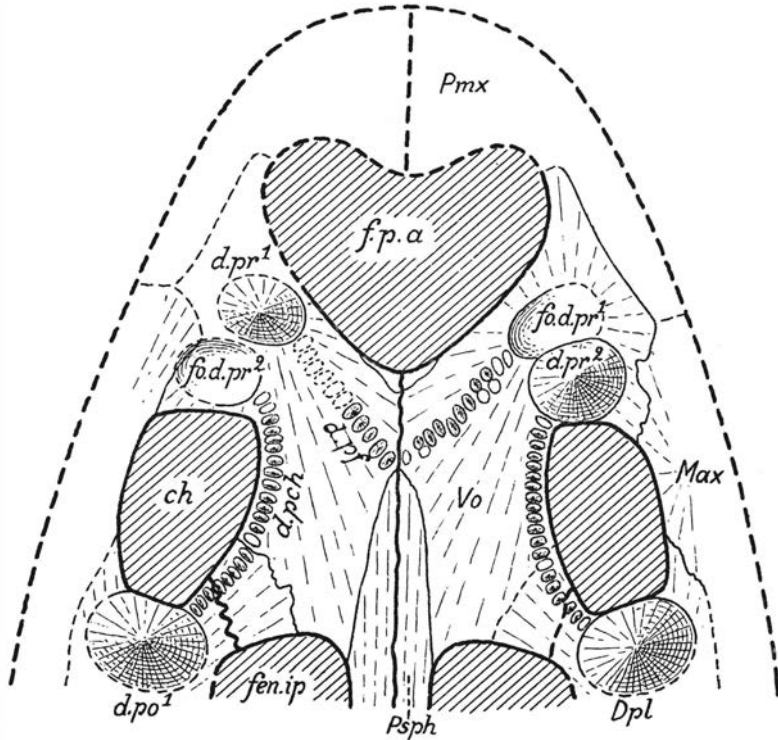


Fig. 1. *Sassenisaurus spitsbergensis* (WIMAN). Restoration of the anterior part of the palate. U. 82. Thick lines mark the structures of the ventral face (except the teeth), thin lines structures of the dorsal (internal) face. The figured part of the parasphenoid is entirely covered by the vomeres in ventral view. (Cf. also fig. 6.)  $\times \frac{3}{4}$ .

*Dpl*, dermopalatine; *Dpl* + *Ecpt*, dermopalatine and ectopterygoid; *Ecpt*, ectopterygoid; *Enpt*, entopterygoid; *Max*, maxillary (= lachrymo-maxillary of SÄVE-SÖDERBERGH 1935); *Pmx*, premaxillary (= naso-rostro-premaxillary of SÄVE-SÖDERBERGH 1935); *Psph*, parasphenoid (in fig. 1 = processus cultriformis of the parasphenoid); *Qu*, quadrate; *Quj*, quadratojugal; *ch*, choana; *d. pf*, postfenestral row of teeth; *d. po* (*d. po*<sup>1</sup>), (first) postchoanal tusk; *d. pr* (*d. pr*<sup>1</sup>, *d. pr*<sup>2</sup>), (first resp. second) prechoanal tusk; *fen. add*, adductor fenestra (vacuity); *fen. ip*, interpterygoid fenestra (vacuity); *fo. d. pr*<sup>1</sup>, *fo. d. pr*<sup>2</sup>, fovea for the first resp. second prechoanal replacement tusk; *f. p. a*, anterior palatal fenestra (vacuity).

one large prechoanal tusk<sup>1</sup> (*d. pr*<sup>1</sup> or *d. pr*<sup>2</sup>) and a fovea for a replacement tooth (*fo. d. pr*<sup>1</sup> or *fo. d. pr*<sup>2</sup>) between the choana and the anterior palatal vacuity. Immediately medially of the choana there is a gently curved row of about 22 minor parachoanal teeth<sup>1</sup> (*d. pch*) with oblong bases; it runs between the pre- and postchoanal tusks and is for a short part situated also on the dermopalatine. Some distance behind the anterior palatal vacuity there is on each vomer an almost straight row of postfenestral teeth<sup>1</sup> (*d. pf*), beginning at the anterior prechoanal tusk and running in a medio-posterior direction to the intervomerine suture. The postfenestral rows of both vomeres thus form a backwards directed, almost

<sup>1</sup> Cf. foot-note 2 on the preceding page.

right angle with each other. They are not placed on a raised edge. There is no direct connection between the parachoanal and postfenestral rows of teeth. On each vomer there are about 10 or 11 postfenestral teeth, which are only slightly larger than the parachoanal teeth. Immediately in front of the row of postfenestral teeth the vomer, especially its external face, begins to bend rather strongly dorsally towards the anterior palatal vacuity.

**Comparison.** The shape of the snout, the general arrangement of the fenestrae and of the teeth, and the unpaired anterior palatal vacuity show the present form to be a clear member of the group *Capitosauroidae*. Of this group the family *Mastodontosauridae* with the genera *Mastodontosaurus* and *Heptasaurus*<sup>1</sup> (FRAAS 1889, pls. II, VII; WEPFER 1923, figs. 6, 7, 11),

<sup>1</sup> The genus *Heptasaurus* was distinguished by SÄVE-SÖDERBERGH (1935, pp. 77–79) and referred by him to the *Capitosauridae*. The main differences between the true *Mastodontosaurus*, to which genus the genotype of *Heptasaurus*, *H. capfelensis*, was referred by its author (WEPFER 1923), and *Heptasaurus*, are as follows, according to SÄVE-SÖDERBERGH, whose bone terminology is used here: 1) the clear supraorbito-dermosphenotic in *Heptasaurus*; 2) the larger size and irregular shape of the orbits in the true *Mastodontosaurus*; 3) the markedly longer preorbital division of the cranial roof in *Heptasaurus*; 4) the shape of the anterior supraorbital; 5) the long suture of the postorbital with the jugal in *Heptasaurus*; 6) the much longer parieto-extrascapulars in *Heptasaurus*; 7) the very broad lateral extrascapulars in *Heptasaurus* and the thus deeper otic notches. — Against this the following reasons referring to the cranial roof may be advanced: 1) as allowed by SÄVE-SÖDERBERGH (1935, p. 54), the bone marked by him *So*<sub>2</sub> in *Mastodontosaurus* may possibly be interpreted as a specialization of the conditions in the *Capitosauridae*; 2) the orbits are considerably larger in *Heptasaurus* than in the true *Capitosaurids*, really more approaching *Mastodontosaurus*; 3) the preorbital division of the cranial roof is very nearly  $\frac{1}{5}$  of the total (median) length of the skull in both *Heptasaurus* and *Mastodontosaurus*; 4) the minor length of the anterior supraorbital in *Mastodontosaurus* than in *Heptasaurus* may be due to the larger size of the orbits in the former genus; 5) the suture of the postorbital with the jugal is distinctly shorter in *Heptasaurus* than in the true *Capitosauridae* and has not the angular shape characteristic of most members of the latter group; 6) the conditions of the lateral extrascapulars and the otic notches in *Heptasaurus* seem to be almost intermediate between *Mastodontosaurus* and the true *Capitosaurids*; 7) the posterior outline of the skull roof between the lateral extrascapulars is, in agreement with *Mastodontosaurus*, less deeply concave in *Heptasaurus* than in the true *Capitosaurids*; 8) the anterior margin of the squamosal is broadly rounded in *Heptasaurus* and *Mastodontosaurus* and not sharpened to a point as in the true *Capitosaurids*; 9) the posterior end of the posterior antorbital lies in *Heptasaurus*, in agreement with *Mastodontosaurus*, much farther posteriorly than in the true *Capitosaurids* (with the exception of *Benthosuchus*). — Taken as a whole, *Heptasaurus* appears to approach the conditions in the true *Capitosaurids* more than those of *Mastodontosaurus* only with regard to points 1, 4, and 6 of SÄVE-SÖDERBERGH. In the other points advanced by him as well as in the points referring to the skull roof added above, *Heptasaurus* appears to be intermediate or more approaching the conditions in *Mastodontosaurus*. In the structure of the anterior part of the palate *Heptasaurus* agrees almost completely with *Mastodontosaurus* and differs markedly from the true *Capitosaurids* with their as a rule unpaired anterior palatal vacuity. Consequently, *Heptasaurus* ought most probably to be considered as a primitive member of the family *Mastodontosauridae*.

which have two separate anterior palatal foramina, is rather different and does not need to be submitted to a close comparison. The other Capitosauroidae are here considered to form one family only, Capitosauridae s. l.<sup>1</sup>, most members of which have an unpaired anterior palatal vacuity<sup>2</sup>. These as well as the genus *Lydekkerina*<sup>3</sup>, which at least in respect of the palate shows considerable similarity to the Capitosaurids, will be compared more closely with *Sassenisaurus*. For the sake of shortness brief definitions of the characters of the anterior part of the palate of each genus<sup>4</sup> will first be given.

*Cyclotosaurus* (fig. 2): anterior palatal vacuity kidney-shaped, with convex posterior margin<sup>5</sup>; choanae relatively short and rounded<sup>6</sup>, small or

<sup>1</sup> They are generally considered to constitute two different families, Benthosuchidae (= Wetlugosauridae) and Capitosauridae s. s. (cf. SÄVE-SÖDERBERGH 1935, p. 83; BYSTROW & EFREMOV 1940, p. 143). The reasons hitherto advanced seem, however, not to justify such a great systematic distinction. Also, it is not certain that the vertebrae are different throughout. *Benthosuchus* and *Wetlugosaurus* are »neorhachitinous», *Cyclotosaurus* stereospondylous; the vertebrae of *Capitosaurus* are, as far as I have been able to find, as yet unknown.

<sup>2</sup> To the family Capitosauridae generally also the South African *Kestrosaurus* is referred. It is a rather different, not yet completely known form with two separate anterior palatal foramina (HAUGHTON 1925, fig. 12). In a quite recently published work EFREMOV (1940, fig. 2, pp. 93—97) describes a new genus, *Thoosuchus*, apparently nearly related to but yet more deviating than *Benthosuchus*. It is among others different in having two anterior palatal foramina. As will be mentioned later on, there are in *Benthosuchus* certain structures, indicating a beginning division of the unpaired anterior palatal vacuity, a probably primitive character, into two separate foramina. Indeed, this process seems occasionally to be completed in very large specimens of *Benthosuchus* (BYSTROW & EFREMOV 1940, fig. 69, p. 135). These conditions are presumably more established in *Thoosuchus*, to judge from the small specimen of this form known as yet.

<sup>3</sup> The systematic position of the family Lydekkerinidae was left undetermined by SÄVE-SÖDERBERGH (1935, p. 200). It seems, however, as if the characters of the palate would suggest some affinity to the suborder Capitosauroidae (l. c., p. 199). The shape of the humerus possibly also points in the same direction (cf. NILSSON 1939, p. 30).

<sup>4</sup> The definitions are founded on the following literary data. *Cyclotosaurus*: FRAAS 1889 (pl. X, *C. robustus*), 1913 (pl. XX, *C. posthumus*; pl. XVIII, fig. 3; pl. XXII, *C. mordax*); WOODWARD 1904 (pl. XI, fig. 1, *C. stantonensis*); KUHN 1932 (pl. III, fig. 2, *C. ebrachensis*). — *Capitosaurus*: H. v. MEYER 1858 (pl. XXIV, XXVI, *C. nasutus*); SCHRÖDER 1914 (pl. XVIII, XIX, *C. helgolandiae*, *C. nasutus*); WATSON 1919 (fig. 29 C, *C. nasutus*); ROEPKE 1923 (pl. II, fig. 1, *ibid.*); BROILI & SCHRÖDER 1937 b (figs. 1, 9, *C. haughtoni*); H. v. MEYER 1847—55 (pl. 64, fig. 16, *C. fürstenberganus*); TILLY EDINGER 1937 (figs. 1, 2, *ibid.*). — *Wetlugosaurus* (*W. angustifrons*): RIABININ 1930 (text-fig. 2; pl. VI); BYSTROW & EFREMOV 1940 (fig. 84 B). — *Benthosuchus* (*B. sushkini*): YAKOVLEV 1918 (fig. 5, »*Rhinesuchus volgodvinensis*»); BYSTROW & EFREMOV 1940 (figs. 30, 58, 64, 66, 67 B, 69, 71). — *Lydekkerina* (*L. huxleyi*): WATSON 1919 (fig. 6); BROILI & SCHRÖDER 1937 a (fig. 2).

<sup>5</sup> The posterior margin forms a narrow median projection directed anteriorly in *C. stantonensis*; the vacuity has, according to KUHN, a more oval shape in *C. ebrachensis*.

<sup>6</sup> Elongated in *C. stantonensis*.

middle-sized; the processus cultriformis has a long intervomerine rostrum, ventrally not overlapped by the vomeres; the row of postfenestral teeth slightly curved, with the convexity in a posterior direction, and situated close behind the anterior palatal vacuity; vomeres relatively broad; the most anterior part of the septum between the interpterygoid vacuities broad; the number of postfenestral and parachoanal teeth large; forms of moderate or large size (length of the skull from 21 cm [*C. stantonensis*] up to 60 cm [*C. robustus*]).

*Capitosaurus* (fig. 3): anterior palatal vacuity kidney-shaped, with convex posterior margin<sup>1</sup>; choanae elongated, narrow or moderately broad; the processus cultriformis has a long intervomerine rostrum, ventrally not overlapped by the vomeres; the transverse row of postfenestral teeth upon the whole straight<sup>2</sup> and as a rule situated close behind<sup>3</sup> the anterior palatal vacuity; vomeres narrow, moderately broad, or broad; the most anterior part of the septum between the interpterygoid vacuities broad or very broad<sup>4</sup>; the number of postfenestral and parachoanal teeth moderately large; forms of moderate or large size (length of the skull from 23 cm [*C. semiclausus*] up to 60 cm [*C. haughtoni*]).

*Wetlugosaurus* (fig. 4): anterior palatal vacuity kidney-shaped or almost circular<sup>5</sup>, with more or less strongly convex posterior margin; choanae elongated, large, but rather narrow; a large anterior part of the processus cultriformis ventrally entirely covered by the vomeres; the row of postfenestral teeth slightly curved (or forming a very obtuse angle), with the convexity (or angle) in posterior direction, and situated close behind the anterior palatal vacuity; vomeres moderately broad; the most anterior part of the septum between the interpterygoid vacuities moderately broad; the number of postfenestral and parachoanal teeth moderately large; forms of small size (length of the skull up to 16 cm<sup>6</sup>).

*Sassenisaurus* (figs. 1, 6): posterior margin of the anterior palatal vacuity produced backwards forming a rounded obtuse angle; choanae elongated, relatively large and broad; a large anterior part of the processus cultriformis ventrally entirely covered by the vomeres; the row of postfenestral teeth situated rather far behind the anterior palatal vacuity and forming an almost right angle directed posteriorly; vomeres moderately

<sup>1</sup> *C. fürstenberganus* (EDINGER 1937) makes an important exception. In this form the anterior palatal vacuity is tripartite through four processes, two from the anterior and two from the posterior margin.

<sup>2</sup> Provided with a small median apex directed posteriorly in *C. haughtoni*.

<sup>3</sup> Situated farther posteriorly in *C. fürstenberganus* and in WATSON's restoration of *C. nasutus*, reproduced in this paper (fig. 3).

<sup>4</sup> Relatively narrow in *C. fürstenberganus*.

<sup>5</sup> Cf. BYSTROW & EFREMOV (1940, fig. '84 B).

<sup>6</sup> Certain as yet imperfectly known remains referred by EFREMOV (1940, p. 97) to *Wetlugosaurus* possibly indicate the occurrence also of larger species within the genus.

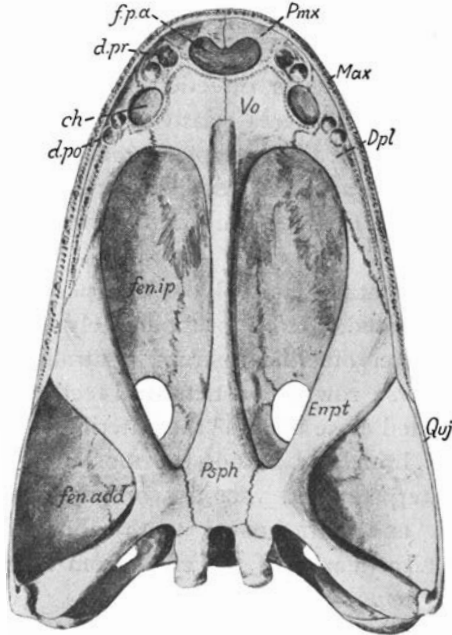


Fig. 2.

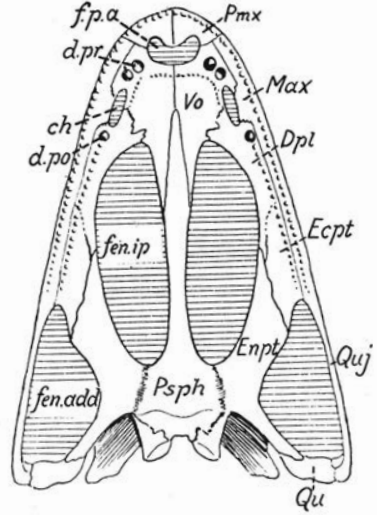


Fig. 3.

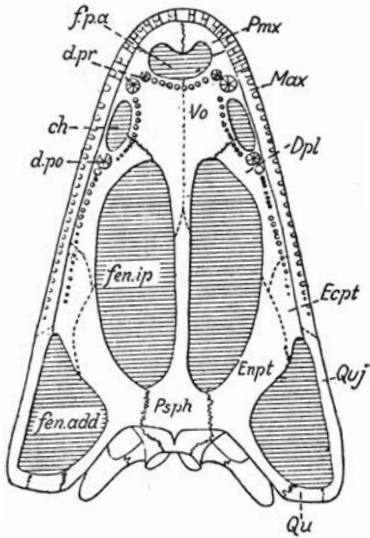


Fig. 4.

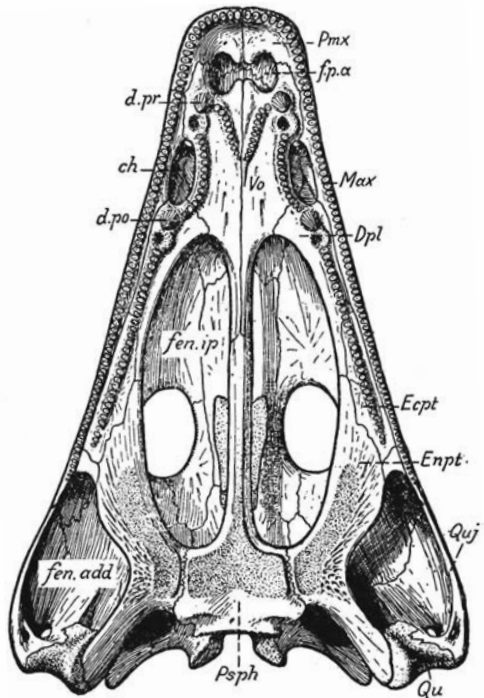


Fig. 5.

- Fig. 2. *Cyclotosaurus robustus*. Palate (after FRAAS 1889).  
 Fig. 3. *Capitosaurus nasutus*. Palate (after WATSON 1919).  
 Fig. 4. *Wetlugosaurus angustifrons*. Palate (after RIABININ 1930).  
 Fig. 5. *Benthosuchus sushkini*. Palate (after BYSTROW & EFREMOV 1940).  
 (For lettering see fig. 1.)



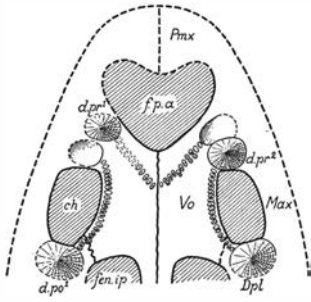


Fig. 6.

Fig. 6. *Sassenisaurus spitsbergensis*. Palate (ventral face; cf. fig. 1).

Fig. 7. *Lydekkerina huxleyi*. Palate (after BROILI & SCHRÖDER 1937 a). (For lettering see fig. 1.)

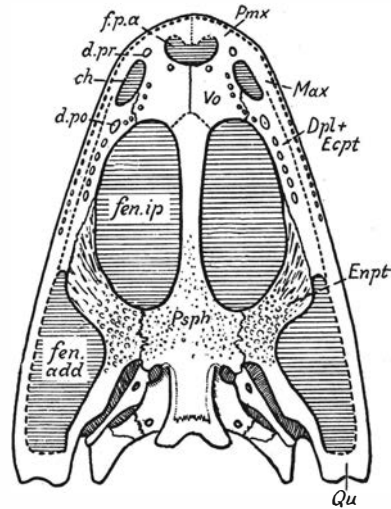


Fig. 7.

broad; the most anterior part of the septum between the interpterygoid vacuities relatively narrow; the number of postfenestral and parachoanal teeth large; form of moderate size (estimated length of the skull about 36 cm).

*Benthosuchus* (fig. 5): snout narrower and more elongated than in the other genera here defined; anterior palatal vacuity contracted in its median part through processes from the anterior and posterior margins<sup>1</sup>; choanae large, elongated and rather narrow<sup>2</sup>; a large anterior part of the processus cultriformis ventrally entirely covered by the vomeres; the row of postfenestral teeth situated rather far behind the anterior palatal vacuity and forming a long, posteriorly directed, very acute angle<sup>3</sup>; vomeres narrow<sup>3</sup>; the most anterior part of the septum between the interpterygoid vacuities moderately broad; the number of postfenestral and parachoanal teeth moderately large; large forms (length of the skull up to 70—80 cm).

*Lydekkerina* (fig. 7): anterior palatal vacuity with convex posterior margin; choanae elongated, narrow; the most anterior part of the processus cultriformis ventrally covered by the vomeres; only two postfenestral teeth, situated near the posterior margin<sup>4</sup> of the anterior palatal vacuity and larger than the parachoanal teeth; vomeres broad; the most anterior part of the septum between the interpterygoid vacuities broad;

<sup>1</sup> In very large specimens it seems occasionally to be divided into two separate foramina, cf. above p. 96, foot-note 2.

<sup>2</sup> Shorter and relatively broader in the very young specimen figured by BYSTROW & EFREMOV (1940, fig. 58).

<sup>3</sup> The mentioned angle is much less acute (but not yet right) in the very young specimen cited above. This specimen also has moderately broad vomeres.

<sup>4</sup> Farther posteriorly in WATSON's restoration (1919, fig. 6).

the number of parachoanal teeth small; small forms (length of the skull about 7 cm).

As will appear from a close comparison of the special characters given in the above definitions, *Sassenisaurus* differs from *Lydekkerina* in almost all points; special stress ought to be laid upon the very small number of postfenestral teeth in the latter genus. The special similarities of *Sassenisaurus* with *Cyclotosaurus* and *Capitosaurus* are also small and comprise mainly characters as size, number of the small vomerine teeth (*Cyclotosaurus*), breadth of the vomeres (some species of *Capitosaurus*), and breadth of the septum between the interpterygoid vacuities (one species of *Capitosaurus*). The affinity of *Sassenisaurus* to *Capitosaurus* is probably a little greater than to *Cyclotosaurus*. *Sassenisaurus* seems to be more closely related to the two North Russian Eotriassic genera *Wetlugosaurus* and *Benthosuchus* and is, in some characters, intermediate between them; in some it differs, however, from both. *Sassenisaurus* agrees with both *Wetlugosaurus* and *Benthosuchus* in the conditions of the processus cultriformis and the size of the choanae. It further agrees with the small-sized *Wetlugosaurus* in the general shape of the snout and the breadth of the vomeres (the rather strongly convex posterior margin of the anterior palatal vacuity at least in some specimens of *Wetlugosaurus* seems also to approach the conditions in *Sassenisaurus*) and, on the other hand, with the larger *Benthosuchus* in the number at least of the postfenestral teeth; in both *Sassenisaurus* and *Benthosuchus* the row of postfenestral teeth is cuneiform, *i. e.* is produced backwards forming a distinct angle<sup>1</sup>, which, however, is much more acute in the latter genus. The similarity with *Benthosuchus* becomes yet greater, when also the very young specimen of this genus, figured by BYSTROW & EFREMOV (1940, fig. 58; length of the skull about 3 cm), is considered. *Sassenisaurus* approaches this as to the angle of the postfenestral teeth and agrees with it in regard to the general shape of the snout and the breadth of the vomeres; it differs, however, also from this in the shape of the anterior palatal vacuity. *Sassenisaurus* differs from both *Benthosuchus* and *Wetlugosaurus* in the broad choanae, the relatively narrow septum between the interpterygoid vacuities, the larger number at least of the parachoanal teeth, and above all in the shape of the anterior palatal vacuity, which is unique among Capitosaurids.

In addition to the above mentioned forms an unpaired anterior palatal vacuity is found among Stegocephalians, as far as I have been able to find, only in the following genera: *Ichthyostega* (SÄVE-SÖDERBERGH 1935, fig. 4), *Orthosauriscus* (WATSON 1926, fig. 9), *Acanthostoma* (STEEN 1937, fig. 1 A), and *Trematops* (MEHL 1926, fig. 4; OLSON 1941, fig. 8 A), and

<sup>1</sup> *Thoosuchus* has a cuneiform row of postfenestral teeth very similar to that in *Benthosuchus* (cf. above p. 96, foot-note 2). A distinct but very obtuse angle is also formed by the mentioned teeth in the Permian *Melosaurus*, likewise from N. Russia (EFREMOV 1937, fig. 2). Both these forms have two separate anterior palatal foramina.

possibly also in one species of *Lyrocephalus* (*L. rapax*, SÄVE-SÖDERBERGH 1935, text-fig. 35; pl. 12, fig. 1). *Acanthostoma* and *Trematops* are remarkable, as they seem to have more or less triangular anterior palatal vacuities, with one angle directed posteriorly. In other respects they are very different from *Sassenisaurus*, among others in having large parts of the vomeres covered with minute teeth.

**Palaeogeographical significance.** The Trematosaurids of Spitsbergen all belong to genera not found in other parts of the world, with the exception of *Lyrocephalus*, which also occurs in the Lower Eotriassic of East Greenland (SÄVE-SÖDERBERGH 1935, pp. 195 f.). As a result of the present investigation also the single Capitosauroid, occurring in the Upper Eotriassic of Spitsbergen, has proved to be a most probably new genus. It is of very great palaeogeographical interest, that this new form has its nearest relatives, partly in East Greenland (*Wetlugosaurus groenlandicus*, SÄVE-SÖDERBERGH l. c.), partly in N. Russia (*Wetlugosaurus angustifrons*, *Benthosuchus sushkini*). The relationship between the Eotriassic Stegocephalian faunas of East Greenland, Spitsbergen, and N. Russia has already been pointed out by SÄVE-SÖDERBERGH (1935, p. 196; cf. also 1936, pp. 114 f.).

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