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The cranial anatomy of the prosauropod dinosaur "*Efraasia diagnostica*", a juvenile individual of *Sellosaurus gracilis* from the Upper Triassic of Nordwürttemberg, West Germany

By Peter M. Galton, Bridgeport, and Robert T. Bakker, Boulder, USA

With 2 plates and 4 figures

Summary

Efraasia diagnostica (v. HUENE) ist regarded as a juvenile individual of *Sellosaurus gracilis* v. HUENE, the only prosauropod taxon from the Middle Stubensandstein (Middle Keuper, Middle Norian, Upper Triassic) of Stromberghöhe, Nordwürttemberg, West Germany. The partial skull of "*Efraasia diagnostica*" has been further prepared to expose the braincase which includes a laterosphenoid. The braincase is more similar to that of *Thecodontosaurus* (Upper Triassic, England) than it is to those of either *Plateosaurus* (Upper Triassic, Germany) or *Anchisaurus* (Lower Jurassic, eastern USA). The frontal of *Sellosaurus* contributed considerably to the orbital rim and was not largerly excluded from it by the prefrontal and postorbital as in *Plateosaurus.*

Zusammenfassung

Elfraasia diagnostica (v. HUENE) wird als jugendliches Individuum von *Sellosaurus gracilis* v. HUENE aufgefaßt, dem einzigen Prosauropoden-Taxon aus dem Mittleren Stubensandstein (Mittelkeuper, Mittleres Nor, Obertrias) der Stromberghöhe in Nordwürttemberg, Deutschland. Der teilweise erhaltene Schädel von „*Efraasia diagnostica*" wurde nachpräpariert, um die Gehirnkapsel freizulegen. Diese weist ein Laterosphenoid auf. Die Gehirnkapsel ist derjenigen von *Thecodontosaurus* (Obertrias, England) ähnlicher als jener von *Plateosaurus* (Obertrias, Deutschland) oder *Anchisaurus* (Unterjura, östliche USA). Das Frontale war hauptsächlich an der Umrandung der Orbita beteiligt und wurde nicht, wie bei *Plateosaurus,* durch das Praefrontale und Postorbitale großteils von ihrer Umgrenzung ausgeschlossen.

1. Introduction

An almost complete skeleton (see BERCKHEMER 1938: fig. 38; GALTON 1973: fig. 16A) of a saurischian dinosaur was excavated by Professor E. FRAAS at the BURRER Quarry near Pfaffenhofen in the Stromberg region northwest of Ludwigsburg, Nordwürttemberg, West Germany. This skeleton came from the "untere Fäule," the lowermost of the two bands of marl which interrupt the Middle Stubensandstein (Upper Triassic, Middle Keuper, mid-Norian). It was named *Thecodontosaurus diagnostica* FRAAS 1913, a nomen nudum because neither diagnosis nor description were ever given. This skeleton was described as the holotype of a new species of palaeosaurid carnosaur, *Palaeosaurus* (?) *diagnosticus* v. HUENE 1932. V. HUENE (1932: pl. 4, figs. 1—4) figured the exposed skull bones (as parietal, quadrate, ectopterygoid, basisphenoid with parasphenoid) which formed the basis for a rather hypothetical reconstruction of the skull in lateral view (v. HUENE 1932: fig. 7; 1956: fig. 510). GALTON (1973) redescribed the skeleton of a new genus of anchisaurid prosauropod, *Efraasia,* as *E. diagnostica* (v. HUENE). However, the only figures of the cranial bones in GALTON (1973: figs. 1A—E; also GALTON & CLUVER 1976: fig. 9G) were copied from those given by v. HUENE (1932) because little could be added to the original description. The block containing the skull bones has been further prepared so that much more of the skull is visible, and it includes the first braincase of a prosauropod described to date from the Stubensandstein. The only other piece of braincase is a poorly preserved basioccipital of the skull from the Middle Stubensandstein of Trossingen which was referred to *Sellosaurus hermannianus* v. HUENE 1908 by v. HUENE (1915, in 1932 to *Plateosaurus gracilis* [v. HUENE]).

When the senior author visited the Staatliches Museum für Naturkunde in Stuttgart in 1969, the only prosauropod material that was unpacked from World War II was the skeleton of *Efraasia diagnostica.* However, the abundant prosauropod material from the Middle Stubensandstein and from the overlying Knollenmergel of Nordwürttemberg is now accessible, so more extensive comparisons are possible. On the basis of this material, the senior author concludes that all the prosauropod material from the Middle Stubensandstein is referable to *Sellosaurus gracilis* v. HUENE 1908 that, contrary to the later conclusions of v. HUENE (1926, 1932), is not referable to the Knollenmergel genus *Plateosaurus* v. MEYER 1837 as *P. gracilis* (v. HUENE) (GALTON 1985a, b).

The purpose of this paper, which is the third in a series by the senior author that will revise the dinosaur remains from the Stubensandstein, is to provide a description of the partial skull of this specimen, the postcrania of which were described by v. HUENE (1932) and GALTON (1973). The junior author arranged for the preparation of the cranial block of SMNS 12667, the rest of this paper is the work of the senior author.

Institution names for cited specimens have been abbreviated as follows:
AMNH: American Museum of Natural History, New York;
SMNS: Staatliches Museum für Naturkunde in Stuttgart;
YPM: Peabody Museum of Natural History, Yale University, New Haven, Ct.

2. Cranial anatomy of SMNS 12667

Originally the skull and vertebral column of SMNS 12667, the holotype of *Efraasia diagnostica* (v. HUENE), was preserved as one block of sandstone (see BERCKHEMER 1938: fig. 38) with the longitudinal axis of the braincase at an angle of about 160° to the longitudinal axis the anterior cervical vertebrae. The skull and atlas are now in separate blocks (Fig. 1; Pl. 1, Fig. 1; Pl. 2, Fig. 1) which can still be connected to the one containing cervical vertebrae 2 and 3 by matrix contact and by the left paraoccipital process which is split between both blocks (Fig. 2F).

P a r i e t a l a n d f r o n t a l s. — The bone identified as the dorsal surface of the parietal with parts of the frontals by v. HUENE (1932: pl. 4, fig. 1; followed by GALTON 1973; fig.

1A) is actually the ventral surface of most of the frontals with part of the parietal attached (Fig. 3C; Pl. 2, Fig. 1). The minimum width is 31.7 mm and the maximum width is 53 mm. The bone is badly fractured, but traces of the sutures between these bones and of the sutural area for the anterior head of the laterosphenoid are visible. The region between the two curved longitudinal ridges formed the roof of the endocranial cavity and it is transversely concave with a maximum depth of 6 mm at its posterior end (Fig. 1B; Pl. 1, Fig. 2). The region lateral to each of these longitudinal ridges formed the orbital margin, and the free edge is smooth and was not excluded from the orbit by the prefrontal and postorbital.

Squamosal. — The incomplete squamosal is preserved adjacent to the left paroccipital process (Figs. 1A, B; Pl. 1, Figs. 1, 2); it is visible in dorsal (Fig. 2D) and lateral views (Fig. 2A) and partly visible in ventral (Fig. 2C) and posterior views (Fig. 2F).

Quadrate. — The right quadrate is visible in medial (Fig. 3A) and posterior views (Figs. 1A, 3B; Pl. 2, Fig. 1); the complete height is preserved at 61 mm. However, the lateral edge and especially the pterygoid process are incomplete. The ventral half of the lateral edge has rugose markings for the quadratojugal, but this edge is thin (Figs. 1A, 3B; Pl. 1, Fig. 1). The distal half of the isolated left quadrate of SMNS 12668 has the base of the pterygoid process more complete (Pl. 1, Figs. 4, 5).

Pterygoid. — The quadrate ramus of the right pterygoid is visible in medial view adjacent to the quadrate (Fig. 1A; Pl. 1, Fig. 1), and the robust ventral process and the more elongate dorsal process are recognizable (Fig. 3F).

Epipterygoid. — The slender element adjacent to the pterygoid may be part of the epipterygoid (Fig. 3F).

Braincase. — Prior to preparation, only the basisphenoid and the parasphenoid were visible in ventral view, but now most of the braincase is visible in ventral (Figs. 1A, 2C; Pl. 1, Fig. 1; Pl. 2, Fig. 2), left lateral (Figs. 1B, 2A, B, F; Pl. 1, Figs. 2, 3; Pl. 2, Fig. 2), posterior (Fig. 2F) and dorsal views (Fig. 2D). The bones of the braincase were disarticulated prior to preservation so, relative to the floor of the braincase, most of the left side wall is displaced slightly posteriorly and ventrally with the dorsal part being rotated out a little laterally (Figs. 1, 2B, C), whereas the laterosphenoid is displaced posterodorsally and rotated so it is now visible in anterior view (Fig. 2G; Pl. 2, Fig. 1), and the right exoccipital-opisthotic is displaced posteroventrally and is visible in posterior view (Figs. 1A, 2F; Pl. 1, Fig. 1). The more anterior part of the right side wall is probably also preserved, but it is overlain by the floor of the braincase and by the quadrate (Fig. 1A). Reconstructions of the braincase in lateral and ventral views are given (Figs. 4A, B).

Basioccipital. — The basioccipital, along with the basisphenoid and parasphenoid, is visible in ventral (Figs. 1A, 2C; Pl. 1, Fig. 1) and lateral views (Figs. 1B, 2B; Pl. 1, Fig. 2), and its median length is 10 mm. The ventral surface of the occipital condyle is irregular and in life these irregularities were filled in with cartilage.

Basisphenoid and parasphenoid. — The rugose basisphenoid tubera abut against the basioccipital, and dorsolaterally a cavity indicates that the basisphenoid was incompletely ossified and that this part was orginally cartilaginous (Figs. 3A, B; Pl. 1, Fig. 3; Pl. 2, Fig. 2). The basipterygoid processes are anteroventrally directed (Figs. 1, 2A—C) and converge posteromedially in ventral view (Figs. 1A, 2C; Pl. 1, Fig. 1) to form a prominent and roughly V-shaped edge. Posterior to the apex of the V, there is a small median projection (Figs. 1A, 2A—C; Pl. 1, Figs. 1, 3; Pl. 2, Fig. 3). Anterior to this, the vertical edge of the basisphenoid borders a deep depression, the lateral walls of which are formed by the basipterygoid processes and the converging sheets of bone which merge more anteriorly as the parasphenoid process (Figs. 1A, 2B, C; Pl. 1, Fig. 1). The maximum

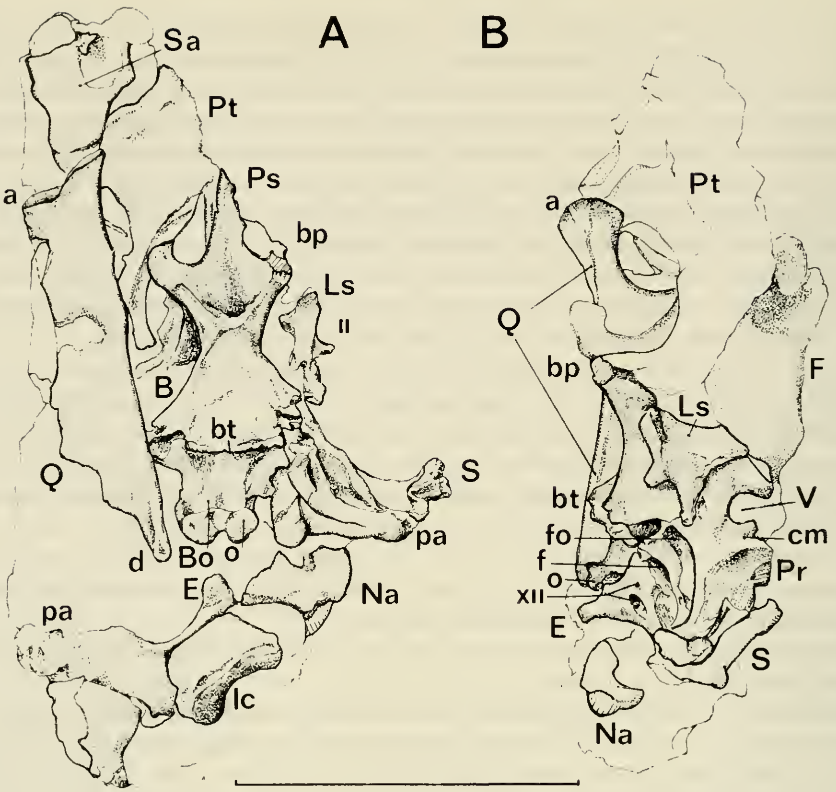
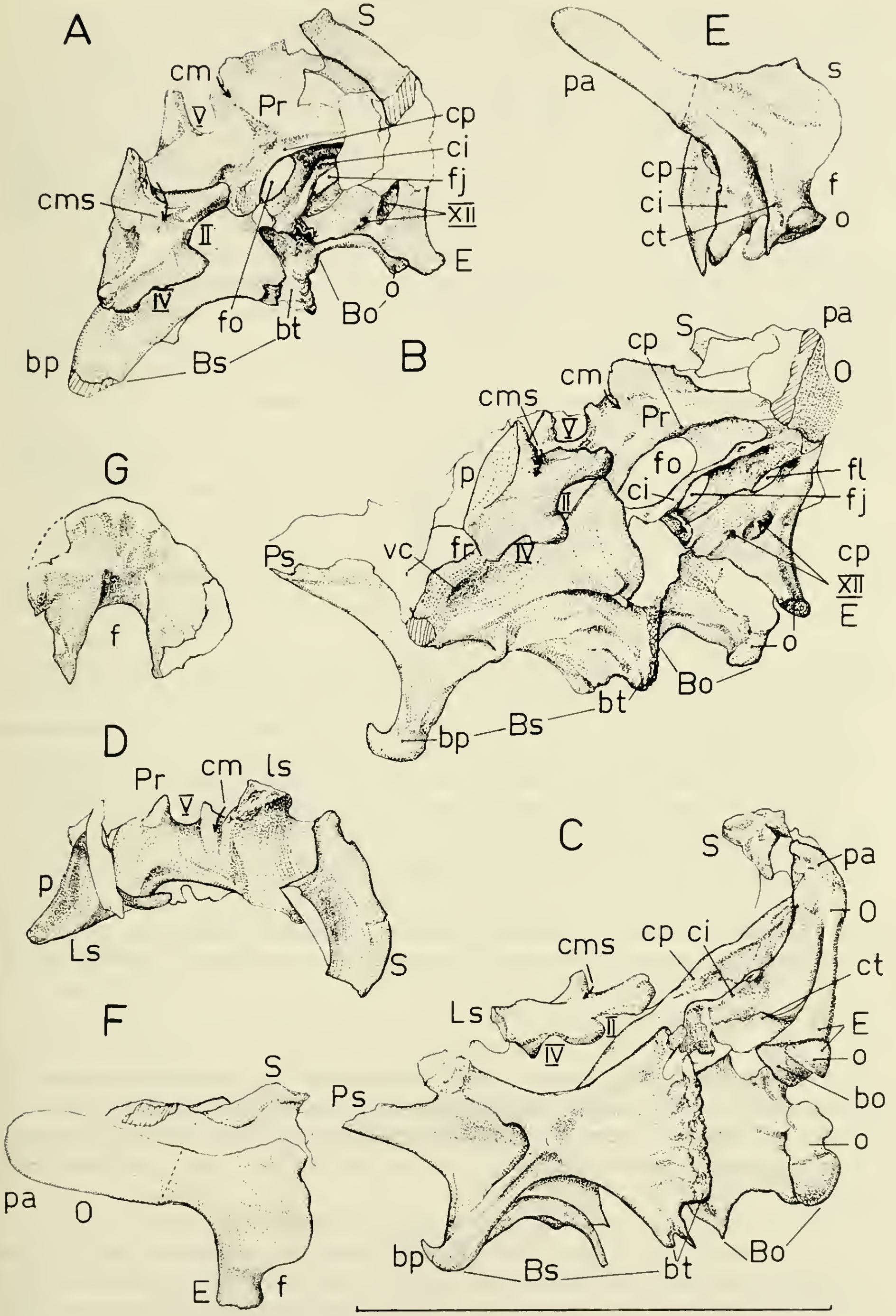


Fig. 1. *Sellosaurus gracilis,* referred specimen SMNS 12667 from the Middle Stubensandstein (Middle Keuper, mid-Norian, Upper Triassic) of Pfaffenhofen, Stromberghöhe, Nordwürttemberg. — × 0.9. Cranial block showing braincase (plus other bones); A: ventral (see Pl. 1, Fig. 1) and B: left lateral views (see Pl. 2, Fig. 1).

a = articular end for mandible; B = basisphenoid; Bo = basioccipital; bp = basipterygoid process; bt = basisphenoid tubera; cm = Vena cerebralis media; d = dorsal end; E = exoccipital; f = jugular foramen; F = frontal; fo = fenestra ovalis; Ic = intercentrum of atlas; Ls = laterosphenoid; Na = left neural arch of atlas; o = occipital condyle; pa = paraoccipital process; Pr = prootic; Ps = parasphenoid; Pt = pterygoid; Q = quadrate; S = squamosal; Sa = surangular; II—XII = cranial nerves II to XII. — Scale line represents 5 cm.

Fig. 2. *Sellosaurus gracilis,* referred specimen SMNS 12667 from the Middle Stubensandstein of Pfaffenhofen, Nordwürttemberg. — × ⅔.
A—C: braincase; A: left lateral (see Pl. 1, Fig. 2; Pl. 2, Fig. 2), B: left lateroventral (see Pl. 1, Fig. 3) and C: ventral views (see Pl. 1, Fig. 1; Pl. 2, Fig. 3); D: left laterospenoid, prootic and squamosal in dorsolateral view; E, F: left posterior part of braincase in E: posterolateral and F: posterior views; G: supraoccipital in anterior (and slightly ventrally) view.

Bo, bo = basioccipital, surface for basioccipital; bp = basipterygoid process; Bs = basisphenoid; bt = basisphenoid tubera; ci = crista interfenestralis; cm = Vena cerebralis media; cms = Vena cerebralis media secunda; cp = crista prootica; ct = crista tuberalis; E = exoccipital; f = part of foramen magnum; fj = foramen jugulare; fl = foramen lacerum posterior for cranial nerves IX to XI; fr = surface for frontal; Ls, ls =



laterosphenoid, surface for laterosphenoid; O = opisthotic; o = occipital condyle; p = surface for parietal; pa = paroccipital process; Pr = prootic; Ps = parasphenoid; S = squamosal. II—XII = cranial nerves II to XII. — Scale line represents 5 cm.

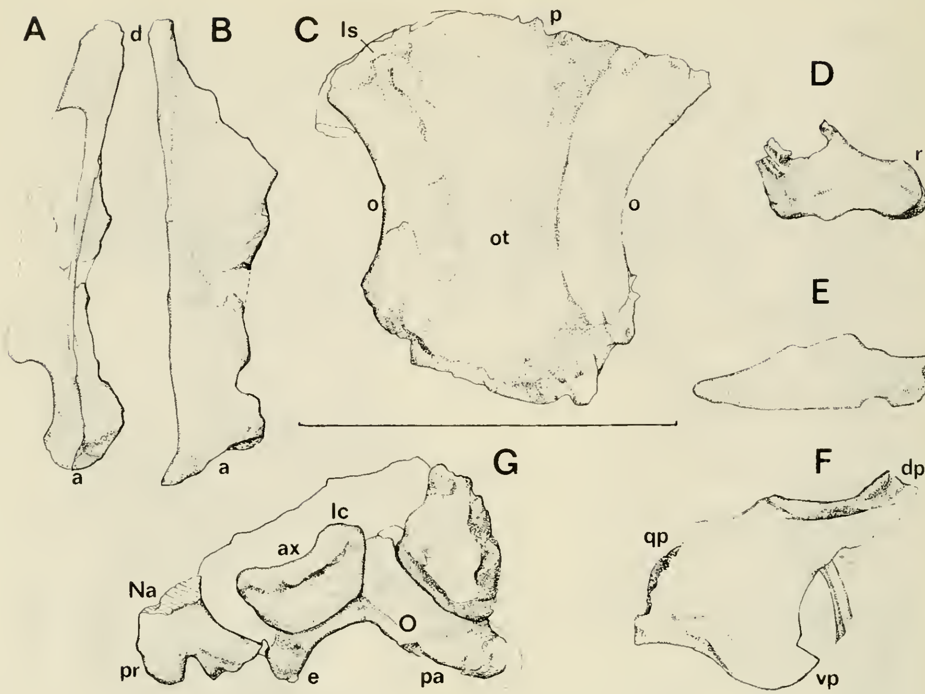


Fig. 3. *Sellosaurus gracilis*, referred specimen SMNS 12667 from Pfaffenhofen, Nordwürttemberg. — × 1.

A, B: right quadrate, A: medial and B: posterior views (see Pl. 2, Fig. 1); C: frontals and anterior part of parietal in ventral view (see Pl. 1, Fig. 1); D: posterior part of right articular in medial view; E: posterior end of right surangular in lateral view; F: quadrate flange of right pterygoid in medial view; G: right exoccipital-opisthotic in posterior view, left neural arch of atlas in lateral view, and intercentrum of atlas in ventral view.

a = articular end for mandible; ax = articular surface for axis; d = dorsal process; e = occipital condyle portion of exoccipital; Ic = intercentrum of atlas; ls = surface for laterosphenoid; Na = left neural arch of atlas; O = opisthotic; o = orbit; ot = depression for dorsal part of olfactory tracts; p = surface for parietal; pa = paroccipital process; pr = prezygapophysis; qp = quadrate process; r = retroarticular process; vp = ventral process. — Scale line represents 5 cm.

width of the basisphenoid tubera is 22 mm, the distances from the posterior end of the occipital condyle to the median base and to the distal end of the right basipterygoid are 32.5 mm and 45 mm, respectively, the length of the right process from the median is 17 mm, and the maximum width across the basipterygoid processes is estimated to be 26 mm.

Laterosphenoid. — A small and complexly shaped bone measuring 18 mm by 9.7 mm is identified as a slightly displaced left laterosphenoid; comparisons with this bone in a disarticulated skull of *Plateosaurus* (AMNH 6810, Fig. 4G; Pl. 2, Figs. 4, 5, see Galton 1984, in press) indicate that the views shown are lateral and slightly ventral (Figs. 1B, 2A; Pl. 1, Fig. 2; Pl. 2, Fig. 2), ventral and slightly lateral (Fig. 2B; Pl. 1, Fig. 3), and ventral (Figs. 1A, 2C; Pl. 1, Fig. 1, Pl. 2, Fig. 3). The straight dorsal edge (Fig. 2A) fitted against the parietal and anteriorly the bone is probably incomplete, consisting of broken bone (Figs. 1A, 2A, B). The dorsal part of the posterior edge fitted against the prootic, and the notch a little below mid-height formed part of the border of the opening for the Vena cerebralis media secunda (Figs. 2A, B, Pl. 1, Figs. 2, 3, cf. Fig. 4G; Pl. 2, Fig. 5: GALTON in press). The end of the more slender ventral part (Figs. 2A—C) also contacted the prootic so the laterosphenoid formed the anterior margin of the trigeminal foramen (V, Fig. 4A). The middle of the anteromedial edge bears a prominent process (Figs. 1B, 2A—C; Pl. 1, Figs. 2, 3) that probably separated the optic and trochlear foramina (II, IV, Figs. 3C, 4A) as in *Plateosaurus* (Pl. 2, Figs. 4, 5; GALTON in press).

Prootic. — The anterior edge of the prootic sutured against the laterosphenoid which contacted an elongate sutural surface on the dorsal half of the anterior edge and a small surface immediatedly anteroventral to the trigeminal foramen (V, Figs. 1B, 2A, B, D). The notch in the anterolateral edge dorsal to the trigeminal foramen formed part of the opening for the Vena cerebralis media (Fig. 2A; Pl. 2, Fig. 2) as in *Plateosaurus* (Figs. 4G, H; Pl. 2, Fig. 6; JANESCH 1936, GALTON 1984, in press). Posteriorly, the sharp edge of the prootic (Figs. 1B, 2A—C, E; Pl. 1, Figs. 2, 3; Pl. 2, Fig. 2) borders a deep depression that leads into the fenestra ovalis. In *Plateosaurus* the facialis foramen (VII, Figs. 4G, H; Pl. 2, Fig. 6) is in a region which is covered by the laterosphenoid in SMNS 12667 (Figs. 1B, 2A).

Exoccipital-opisthotic. — The boundary between these two elements is not visible, so their relative contributions to the posterior part of the sidewall of the braincase cannot be determined. A thin septum which connects the base of the paroccipital process to the basisphenoid tubera is the crista interfenestralis (Figs. 2A—C, E, 4A; Pl. 1, Figs. 1, 3; Pl. 2, Fig. 2) which separates the fenestra ovalis from the subcircular foramen jugularis through which passed the Vena jugularis interna (Figs. 2A, B, 3A). Posterodorsal to this is an elongate oval opening, the foramen lacerum posterius, through which the glossopharyngeal (IV), vagus (X) and accessory nerves (XI) passed (Figs. 2A, B, 4A). The two foramina for the hypoglossal nerve differ markedly in size (XII, Figs. 1B, 2A, B, 4A; Pl. 1, Figs. 2, 3; Pl. 2, Fig. 2) as in other prosauropods (Figs. 4C, E, G, H J). The exoccipital contributes to the dorsolateral part of the occipital condyle (Figs. 1A, 2C, E), and the slender left (Figs. 2E, F) and right (Fig. 2G) paroccipital processes are preserved.

Supraoccipital. — The supraoccipital is only visible in anterior view (Fig. 2G; Pl. 2, Fig. 1).

Articular. — The posterior end of the right articular is visible in medial view next to the ventral end of the quadrate (Fig. 1A; Pl. 1, Fig. 1), and the retroarticular process is complete (Fig. 3D).

Surangular. —The tapering posterior end of the right surangular is visible in lateral view (Fig. 3E) adjacent to the articular and quadrate (Fig. 1A).

A few small pieces of bone on the cranial block could not be identified (Figs. 1, 3G).

Atlas. — The incomplete left neural arch and the intercentrum (transverse width 15 mm) of the atlas (Fig. 3G) are preserved close to the occipital condyle (Fig. 1A; Pl. 1, Fig. 1).

3. Comparisons

The smooth central part of the lateral edge of the frontal bordered the orbit (Fig. 3C; Pl. 2, Fig. 1), and this is also the case for SMNS 12684, the only skull of *Sellosaurus* with a well preserved frontal, because the right pterygoid of v. HUENE (1932, pl. 16, fig. 1b) is the left frontal in dorsal view, and the sutural areas for the prefrontal and postorbital are widely separated (GALTON 1985b), as in *Anchisaurus* (GALTON 1976) and *Thecodontosaurus*

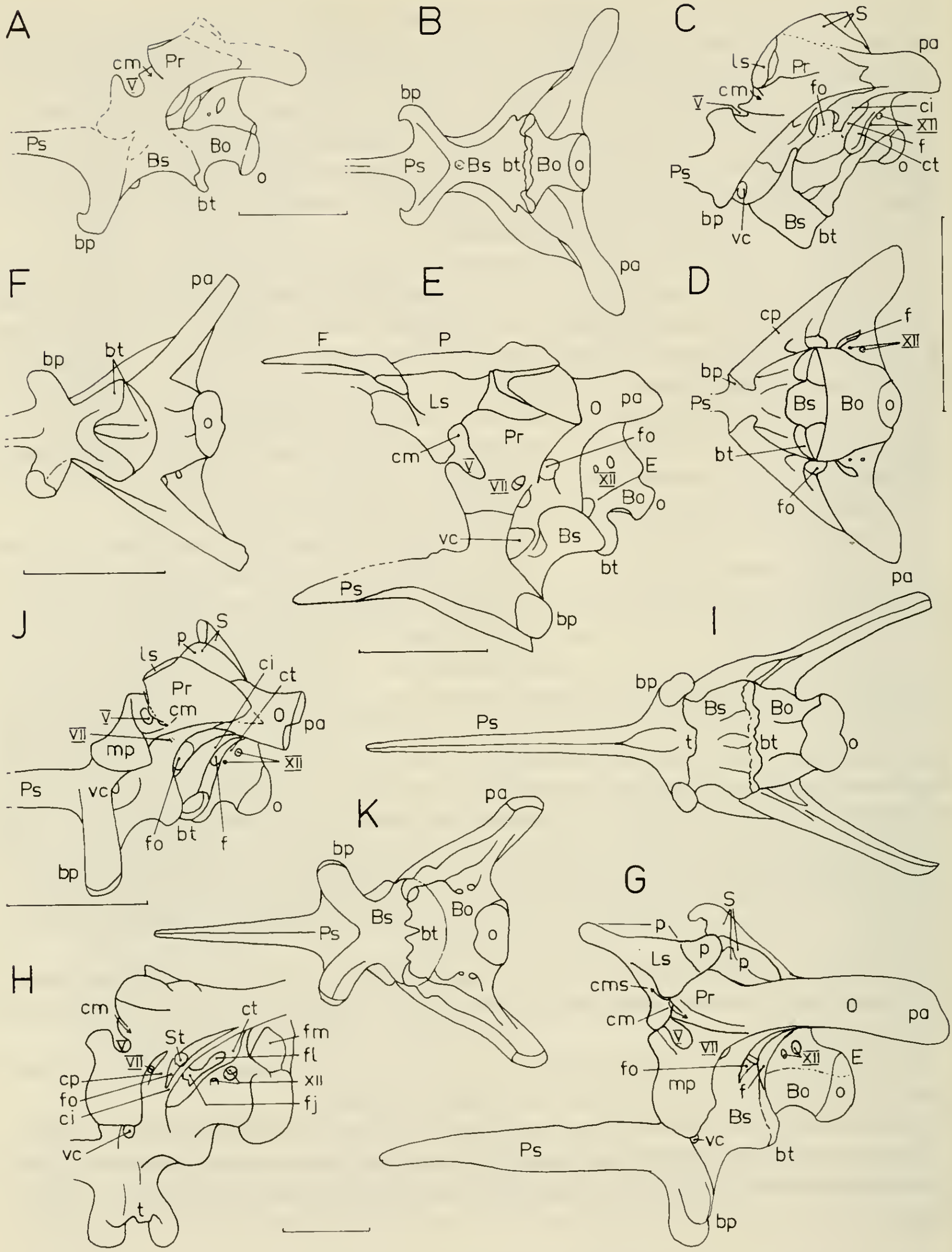


Fig. 4. Prosauropod braincases from the late Triassic (A, B, E. G—K) and early Jurassic (C, D, F) in lateral (A, C, E, G, J), lateral plus posteroventral (H) and ventral views (B, D, F, I, K).

A, B: reconstruction of braincase of *Sellosaurus*, SMNS 12667; C, D: reconstruction of braincase of *Anchisaurus*, YPM 1883, from Connecticut, U.S.A.; E: braincase with frontal and parietal of *Coloradia* from northern Argentina, after BONAPARTE (1978); F: braincase of *Massospondylus* from South Africa, after COOPER (1981); G—I: braincase of *Plateosaurus*, AMNH 6810 (Pl. 2, Figs. 4—6) from West Germany (after GALTON, (KERMACK 1984), whereas in *Plateosaurus* these bones almost completely exclude the frontal from the orbital rim (v. HUENE 1926, GALTON 1984). The form of the quadrate (Figs. 1A, B, 3A, B; Pl. 1, Figs. 1, 2) is similar to those of SMNS 12684 (v. HUENE 1932, pl. 16, figs. 2a, b) and *Plateosaurus* (GALTON 1984). Unfortunately the braincase, the best preserved part of the skull of SMNS 12667, is only represented in other specimens of *Sellosaurus* by the poorly preserved basioccipital of the Trossingen skull (v. HUENE 1915, fig. 1; Pl. 2; GALTON 1985b).

The braincase has been described in relatively few prosauropods; it has been figured for *Anchisaurus* (Figs. 4C, D; GALTON 1976), *Coloradia* (Fig. 4E; BONAPARTE 1978), *Massospondylus* (Fig. 4F; GOW 1975, COOPER 1981), *Plateosaurus* (Figs. 4G—I; Pl. 2, Figs. 4—6; GALTON 1984, in press) and *Thecodontosaurus* (Figs. 4J, K; v. HUENE 1908, 1914; KERMACK 1984). The size of the basipterygoid processes (Figs. 4A, B) is comparable to those of other prosauropods (Figs. 4E—K) except *Anchisaurus* (Figs. 4C, D) in which they are extremely short. Medially, the bases of the basipterygoid processes together form a V-shaped surface in ventral view (Fig. 4A) as in *Massospondylus* and *Thecodontosaurus* (Figs. 4F, K). In *Plateosaurus*, much of the lower part of the V is occupied by a transverse sheet of bone, the more medial part of which projects further ventrally than the rest (Figs. 4H, I; GALTON 1984). The occipital condyle is poorly preserved and relatively small (Figs. 1A, 4A, B; Pl. 1, Fig. 1) compared to those of *Plateosaurus* and *Thecodontosaurus* (Figs. 4G—K; Pl. 2, Fig. 6). This may be an age difference because the occipital condyle is small in a juvenile individual of *Thecodontosaurus* (KERMACK 1984). However, it is also small in *Anchisaurus* (? juvenile), *Coloradia* and *Massospondylus* (Figs. 4C—F). In lateral view, the extension of a line through the middle of the parasphenoid process passes through the middle of the occipital condyle in SMNS 12667 and *Thecodontosaurus* (Figs. 4A, J), whereas in *Coloradia* and *Plateosaurus* (Figs. 4E, G), it passes ventral to the occipital condyle. The situation is indeterminate in *Anchisaurus* (Fig. 4C) because only the base of the parasphenoid is preserved. The trigeminal foramen (V, Fig. 4A) is bordered anteriorly by the laterosphenoid as in *Coloradia* and *Plateosaurus* (Figs. 4E, G, H), whereas in *Thecodontosaurus* (Fig. 4J), this foramen is enclosed by the prootic. However, the latter is probably an individual variation that also occurs in some braincases of *Plateosaurus* (GALTON in press). The notch in the prootic above the trigeminal foramen (Figs. 2A, B, D, 4A) shows that the Vena cerebralis media exited through a separate foramen as was also the case in *Anchisaurus, Coloradia* and *Plateosaurus* (Figs. 4C, E, G, H; Pl. 2, Fig. 6; see GALTON 1984, in press). The laterosphenoid (Figs. 1, 2B, C, 4A; Pl. 1, Figs. 1—3) has previously been illustrated only in *Coloradia* (Fig. 4E) and *Plateosaurus* (Fig. 4G; Pl. 2, Figs. 4, 5; see GALTON 1984, in press). The proportions of the supraoccipital in anterior

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1984, in press); J. K: *Thecodontosaurus* YPM 2192 from near Bristol, England (after GALTON, in prepn.; see MARSH 1892, v. HUENE 1908, 1914).

Bo = basioccipital; bp = basipterygoid process; Bs = basisphenoid; bt = basisphenoid tubera; ci = crista interfenestralis; cm = Vena cerebralis media; cms = Vena cerebralis media secunda; cp = crista prootica; ct = erista tuberalis; E = ectopterygoid; F = frontal; f = fissura mitotica (= fj + fl); fj = foramen jugular; fl = foramen lacerum posterior for cranial nerves IX to XI; fm = foramen magnum; fo = fenestra ovalis; Ls, ls = laterosphenoid, surface for laterosphenoid; mp = area for M. protractor pterygoideus; O = opisthotic; o = occipital condyle; P, p = parietal, surface for parietal; pa = paroccipital process; Ps = parasphenoid; S = supraoccipital; St = stapes, proximal end; t = transverse sheet between basipterygoid processes; vc = vidian canal for internal carotid artery. — Scale lines represent 2.5 cm.

view (Fig. 2G) and of the exoccipital-opisthotic in posterior view (Figs. 2E, F) indicate that in posterior view the transverse width of the supraoccipital was greater than its height, as in *Anchisaurus* (GALTON 1976), *Coloradia* (BONAPARTE 1978), *Massospondylus* (COOPER 1981) and *Thecodontosaurus* (MARSH 1892, v. HUENE 1908), rather than the reverse as in *Plateosaurus* (GALTON 1984). The braincase of *Sellosaurus* (Figs. 4A, B) resembles that of *Thecodontosaurus* (Figs. 4J, K) more closely than it does those of *Anchisaurus* and *Plateosaurus* (Figs. 4C, D, G, I).

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Addresses of the authors:

Dr. PETER M. GALTON, Department of Biology, University of Bridgeport, Bridgeport, Connecticut 06601, U.S.A.

Dr. R. T. Bakker, Geology, Section, University Museum, University of Colorado, Boulder, Colorado 80309, USA.

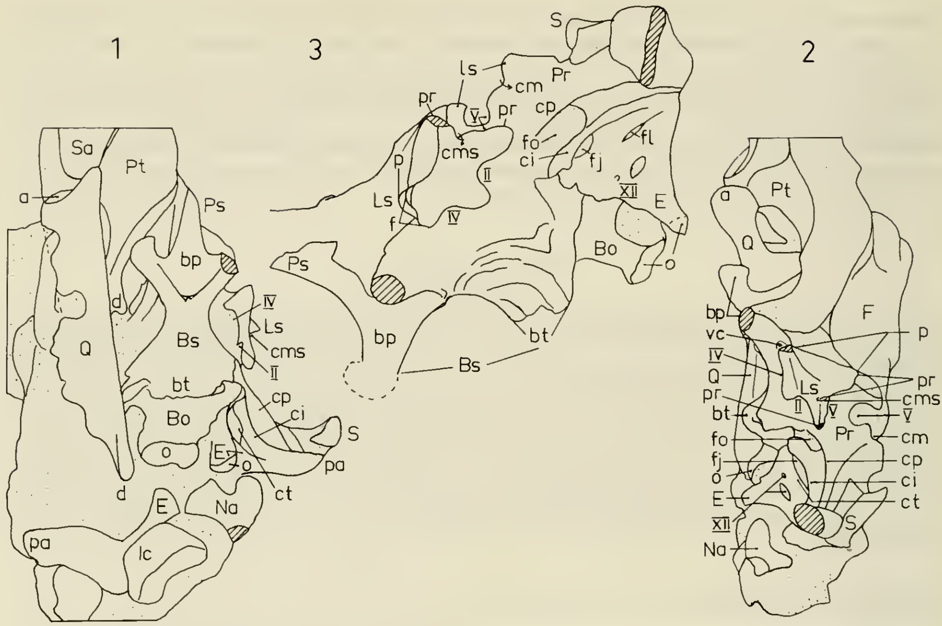


Plate 1

Sellosaurus gracilis, referred specimens SMNS 12667 (1—3) and SMNS 12668 (4, 5) from the Middle Stubensandstein (Middle Keuper, mid-Norian, Upper Triassic) of Pfaffenhofen, Stromberghöhe, Nordwürttemberg.

Fig. 1. Cranial block showing ventral view of braincase (see Fig. 1A). — × ⅔.
Fig. 3. Cranial block showing left lateral view of braincase (see Fig. 1B). — × ⅔.
Figs. 4, 5. Left quadrate; 4: posterior and 5: anterior views. — × ½.

a = articular end for mandible; Bo = basioccipital; bp = basipterygoid process; ci = crista interfenestralis; cm = Vena cerebralis media; sms = Vena cerebralis media secunda; cp = crista prootica; ct = crista tuberalis; d = dorsal end of process; E = exoccipital; f = surface for frontal; fj = jugular foramen; fl = foramen lacerum posterior for cranial nerves IX—XI; fo = fenestra ovalis; Ic = intercentrum of atlas; Ls, ls = laterosphenoid, surface for laterosphenoid; Na = neural arch of atlas; o = occipital condyle; p = surface for parietal; Pr, pr = prootic, surface for prootic; Ps = paraspenoid, Pt = pterygoid; Q = quadrate; S = squamosal; Sa = surangular; vc = vidian canal for internal carotid artery; II—XII = cranial nerves II to XII.

Scale line represents 2 cm (3), 3 cm (1, 2) and 4 cm (4, 5).

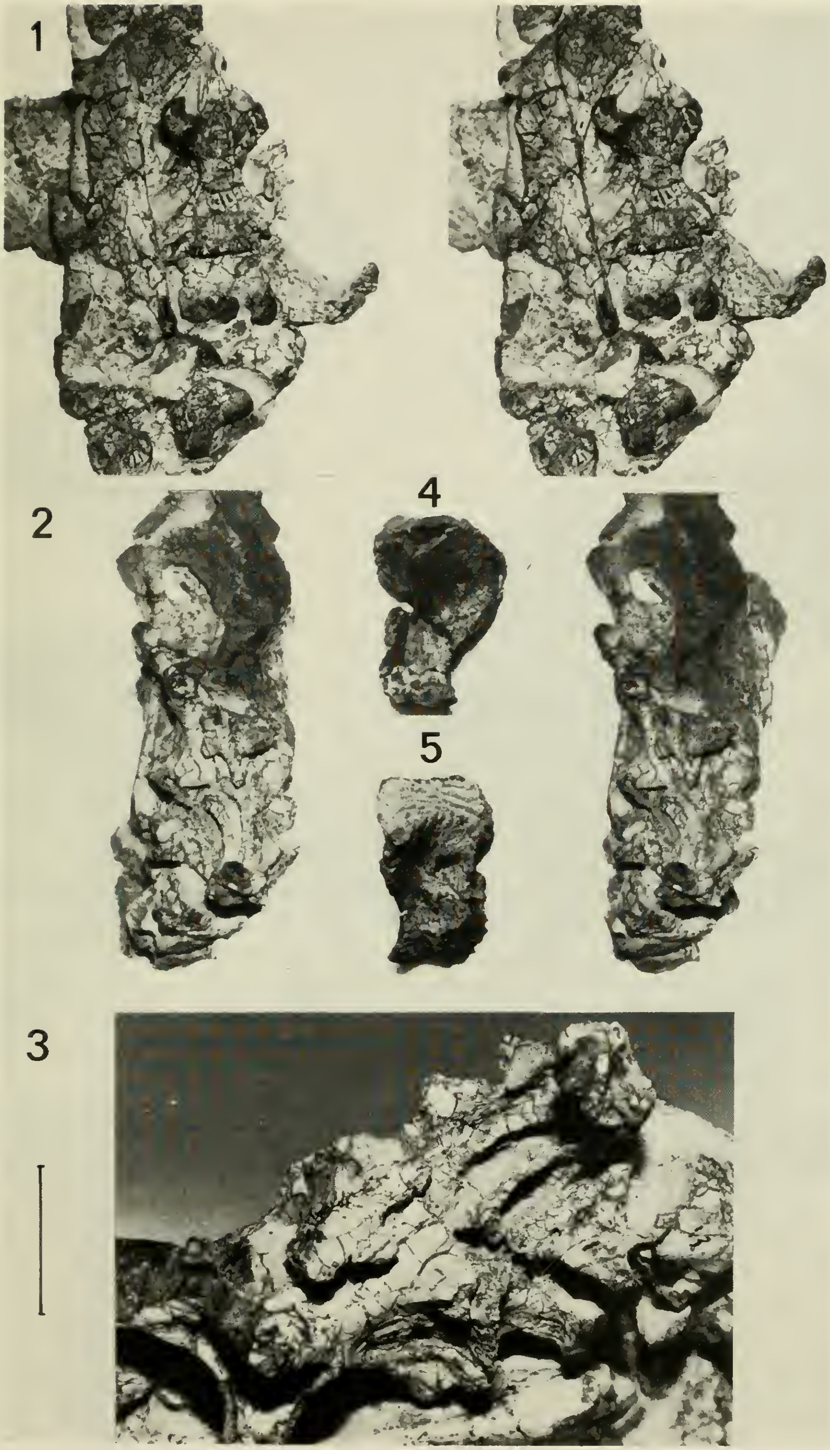
1

2

4

5

3



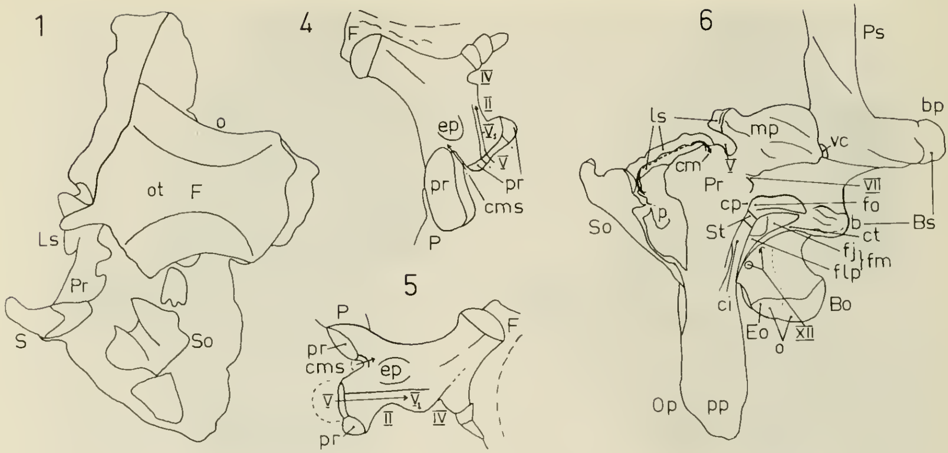


Plate 2

Sellosaurus gracilis, referred specimen SMNS 12667 from the Middle Stubensandstein of Pfaffenhofen, Stromberghöhe, Nordwürttemberg.

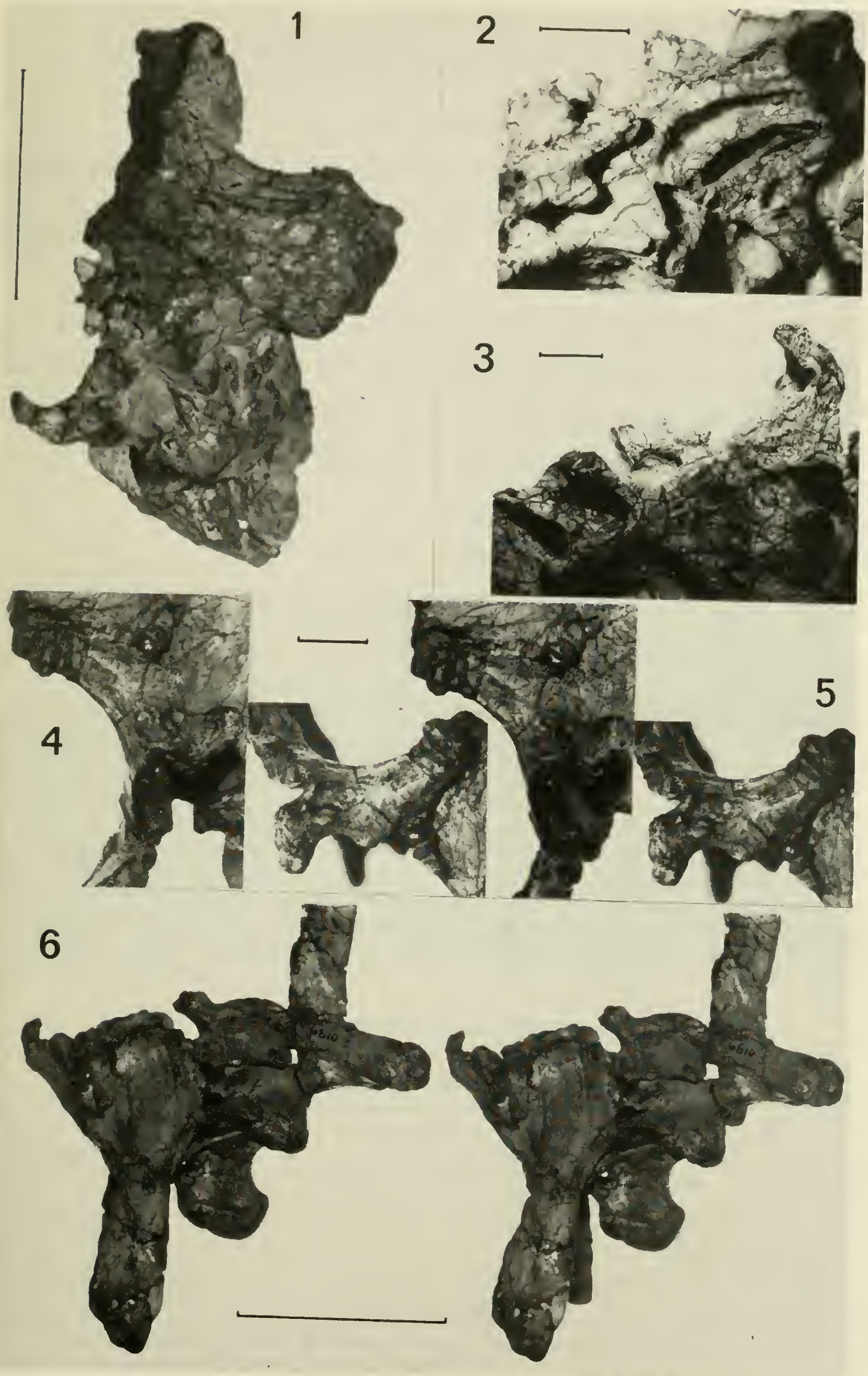
Fig. 1. Cranial block showing ventral surface of frontals and other bones. — × ⅔.
Figs. 2, 3. Braincase in 2: left lateral view (see Fig. 2A). — × ¾; 3: ventral view (see Fig. 2C). — × 0.9.

Plateosaurus engelhardti, referred specimen AMNH 6810 from the Knollenmergel (Middle Keuper, mid-Norian, Upper Triassic) of Trossingen, Nordwürttemberg.

Figs. 4, 5. Right laterosphenoid; 4: ventral and 5: right lateroventral views (see GALTON in press). — × 1.
Fig. 6. Braincase in right lateral view (see GALTON 1984). — × 0.6.

b = basisphenoid tubera; Bo = basioccipital; bp = basipterygoid process; Bs = basisphenoid; ci = crista interfenestralis; cm = Vena cerebralis media; cms = Vena cerebralis media secunda; cp = crista protica; ct = crista tuberalis; Eo = exoccipital; ep = surface for epipterygoid; F = frontal; fj = foramen jugular; flp = foramen lacerum posterior for cranial nerves IX—XI; fm = fissura metotica; fo = fenestra ovalis; Ls, ls = laterosphenoid, surface for laterosphenoid; mp = area for M. protractor pterygoideus; o = orbit; Op = opisthotic; ot = depression for dorsal part of olfactory tracts; P, p = parietal, surface for parietal; Pr, pr = prootic, surface for prootic; pp = paroccipital process; Ps = parasphenoid; S = squamosal; So = supraoccipital; St = stapes; vc = vidian canal for internal carotid artery; II—XII = cranial nerves II to XII.

Scale lines represent 1 cm (2—5) and 5 cm (1, 6).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