

# HISTORIA NATURAL

Tercera Serie | Volumen 16 (1) | 2026/77-91

Número dedicado a la Historia de las Ciencias Naturales

## THE “OSTEOLOGIE DER SÄUGETHIERE” BY GIEBEL (1874–1884) AND LECHE (1884–1898): CHRONOLOGY AND THE SOUTH AMERICAN FOSSIL MAMMALS

*La “Osteologie der Säugethiere” de Giebel (1874–1884) y Leche (1884–1898): cronología y los  
mamíferos fósiles Sudamericanos*

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**Abstract.** In this paper, I present an analysis of the almost forgotten book “Osteologie der Säugethiere” [Mammalian osteology] by Giebel (1874-1884) and finished by Leche (1884-1898). I analyze the contents and publication dates of the 31 issues (Lieferungen) published for 15 years. As far as I know, nobody has mentioned the numerous citations of fossil South American mammals it contains, so I give a listing of all citations and illustrations included.

**Keywords.** Mammalia, Osteology, South American fossils, Bibliography, Giebel, Leche.

**Resumen.** En este trabajo hago un análisis de un libro casi olvidado, la “Osteologie der Säugethiere” [Osteología de los mamíferos] escrito por Giebel (1874-1884) y continuado por Leche (1884-1898). Aquí analizo el contenido y fechas de publicación de las 31 entregas (Lieferungen) que lo integran, publicadas en un lapso de 15 años. Hasta donde yo sé, nadie ha mencionado las numerosas referencias a mamíferos fósiles sudamericanos, razón por la cual doy una lista de todas las citas e ilustraciones contenidas.

**Palabras clave.** Mammalia, Osteología, Fósiles sudamericanos, Bibliografía, Giebel, Leche.

## INTRODUCTION

*“Que otros se jacten de las páginas que han escrito; a mí me enorgullecen las que he leído”*

(JORGE LUIS BORGES, 1969:  
Un lector *in* Elogio de la sombra).

Christoph Gottfried Andreas Giebel (\*Quedlinburg, 13.10.1820 – †Halle, 14.11.1881) (Figure 1), was a prolific German zoologist and paleontologist (Giebel, 1881). Among his numerous contributions, there is an unjustly almost forgotten *Osteologie der Säugethiere* (Osteology of Mammals) (Giebel, 1874-1884; continued by Leche, 1884-1898). Here, I analyze the chronology of the different publication parts of the



**Figure 1** - Portrait of Christoph G. Giebel, reproduced from Giebel (1881).

*Osteologie* and give a systematic list of the numerous cited taxa of South American fossil mammals, indicating the sources used by both authors. To my knowledge, the book was never mentioned in papers dealing with South American fossil mammals. It is incorrectly cited by Romer et al. (1962, 1:536; 2:798) and is not related to South American fossil mammals.

The *Osteologie* is included in the first volume devoted to mammals of the zoological treatise with the general title: *“Dr. H. G. Bronn’s Klassen und Ordnungen des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild”* (Band 6, Abtheilung V. Säugethiere: Mammalia, Band 1). This volume was published in 60 issues (Lieferungen, singular Lieferung) between 1874 and 1900, containing the osteology and the beginning of the soft tissue anatomy of mammals.

The *Osteologie* comprises the first 31 issues of the volume (1874-1888). The number of issues may be misleading, since of the total of 31 numbered issues, nine are single, eight are double, and two are triple, meaning that there are only nineteen physical issues (see below and chapter “Chronology and details of the issues”). Giebel authors the first twenty-seven, and W. Leche the last five: 27, 28, 29, up to page 648, where the text of the *“Osteologie”* ends. The following issue, 30-31, published in 1888, although devoted exclusively to myology, contains the last plates of osteology (pls. 96-97). On page 649, Lieferung 29, begins *“Muskulatur”* by the Swedish zoologist Wilhelm Leche (\*Helsingborg, 04.09.1850 – †Stockholm, 29.01.1927) (Figure 2, Pohle, 1929), who continued the work three years later, after Giebel’s death (see front cover verso of Lieferung 26).

Except for the year printed on the cover of each issue, I can’t give a more precise publication date, such as the month or

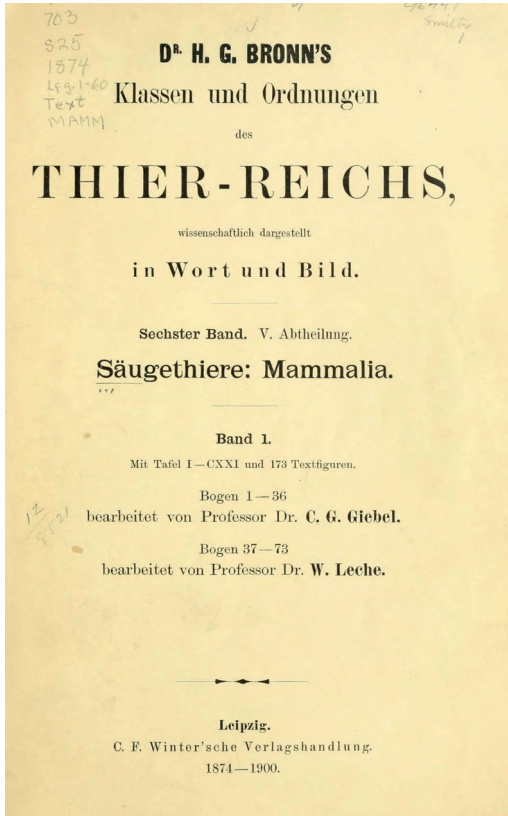


**Figure 2** - Portrait of W. Leche, reproduced from Pohle (1929).

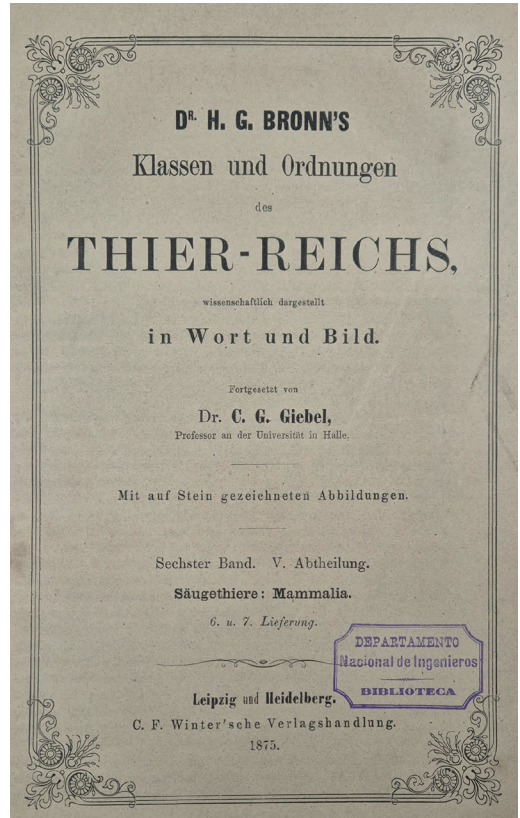
day of the year. When there is more than one issue per year, i.e., 1874 and 1875, they surely appeared on different dates. There is an inconsistency: the cover of the volume indicates a publication in booklets (*Bogen*, a *Bogen* corresponds to a 16-page booklet, the number of which appears printed at the bottom right on the first page), while the cover of the issues indicates *Lieferung* (Figure 3). Thus, it is claimed that this volume is composed of *Bogen* 1 to 36 written by Giebel and from 37 to 73 by Leche. But the fact is that the volume is composed of *Lieferungen* 1 to 27 (1874-1884) by Giebel (part of page 571 of this last issue is still Giebel's authorship) (Figure 4) and issues 27 to 60 by Leche (1884-1900). It is also interesting to note that the number of pages of text per issue

varies and does not correspond to the real number. So, issues 1, 8, 11, 12, 17, and 28 have 32 pages each, while double issues 4-5 and 9-10 have 16 pages each, double issues 2-3, 6-7, 13-14, and 21-22 have 32 pages, triple issues 18-20 and 23-25 have 80 pages each, and finally, we have issues with variable page counts: 15-16 and 26 with 48 pp.; 27 with 22 pp.; 29 with 24 pp., and 30-31 with 40 pp. Unnumbered pages with the explanation of the plates and the plates themselves are not counted here. Finally, it is worth noting that Giebel's contribution to the osteology of mammals comprises 576 pages and 91 numbered plates, plus pl. 44a (see *Lieferung* 11), whereas Leche's is limited to 77 pages and two plates. Years later, Leche described the digestive system, including the dentition (see issues 1897(47-50):982-1024 and 1898(51-53):1025-1036). Here, there is only one reference to a South American fossil mammal (1897:1005). Let us remember that Leche was mainly a zoologist and anatomist rather than a paleontologist.

After Giebel's untimely death, he was only 61 years old, Leche assumed responsibility for continuing the publication, expressing a veiled criticism of his predecessor's methodology in treating the skeleton: "*Um nicht von der Behandlungsweise, welche mein Vorgänger für den dem Skelet gewidmeten Abschnitt einmal gewählt hat, mehr als nothwendig abzuweichen und die Orientirung des Ganzen zu erschweren, berücksichtige ich die Ontogenie nur da, wo es für das Verständniss der betreffenden Befunde geboten erscheint. Ich beabsichtige die Entwicklung des Skeletes in einem der folgenden Kapitel zu behandeln.*" (Leche, 1884(27):572, note \*\*; this is not p. 572 of *Lieferung* 26) ("In order not to differ more than necessary from the treatment my predecessor once chose for the section devoted to the skeleton, and [not] to complicate the orientation of the whole, I will only consider ontogeny where it seems necessary for the understanding



**Figure 3** - Title page of C. G. Giebel and W. Leche (1874-1900), from BHL digital edition.



**Figure 4** - Title page of Lieferung 6-7 (Giebel, 1875). Alvaro Mones personal library.

of the relevant findings. I intend to cover the development of the skeleton in one of the following chapters." This and the following translations are by the present author.) Also, due to the great advances in the knowledge of tooth development in the past twenty years, Leche (1897:982, note\*) considers it necessary to review the chapter by Giebel ("Die Zähne (Dentes)", 1875-1877, Lieferungen 6-7 to 13-14, pages 90-236): "Schon von Professor Giebel ist (pag. 91 u. f.) die Beschaffenheit der Zähne der einzelnen Gruppen ausführlich behandelt worden. Da aber im Studium der Entwicklung der Zähne und in der hierauf gestützten Auffassung der Morphologie dieses Organsystemes in

den allerletzten Jahren ein vollkommener Umschwung zu verzeichnen ist, und da diese Seite in der Bearbeitung meines Vorgängers kaum berücksichtigt ist, habe ich geglaubt, hier eine gedrängte Darstellung des fraglichen Gebietes geben zu müssen." (Professor Giebel has already treated in detail (pages 91 et seq.) the nature of the teeth of the individual groups. However, since in recent years a complete reversal has taken place in the study of the development of teeth and the resulting conception of the morphology of this organ system, and since this aspect was hardly considered in my predecessor's work, I thought it necessary to provide a concise presentation of the subject in

question here.) Leche (1897(47-50):982-1024, pls. 90-93, figs. 84-107; 1898(51-53):1025-1036, figs. 103-108), under the title "Verdauungsorgane. a) Entwicklung des Zahnsystems", analyses the development of mammalian dentition.

For this contribution, I consulted the digital edition in the Biodiversity Heritage Library available in two volumes: one containing the Text –with the covers for each

issue– and the other containing the Atlas with the plates (some of them of poor quality, (compare Figures 5-6) without identifying the issues or the year of publication. This means that it is impossible to determine the date the plates were published (Text: Bd.6:Ab.5:Bd.1:Lf.1-60 (1874-1900) [Text] - Dr. H.G. Bronn's Klassen und Ordnungen des Thier-Reichs - Biodiversity Heritage Library. Atlas: Bd.6:Ab.5:Bd.1:Lf.1-60 (1874-



**Figure 5** - Plate 45 (Giebel, 1876, Lieferung 12), from BHL digital edition. Compare with Figure 6.

1900) [Plates] - Dr. H.G. Bronn's Klassen und Ordnungen des Thier-Reichs - Biodiversity Heritage Library). Fortunately, in my private library, I have an unbound printed edition with the original covers of the Lieferungen, which preserve the title pages, text, and plates for each issue, allowing me to reconstruct the publication dates of each plate. I have noticed a discrepancy between the publication date of the text

and that of some plates: e.g., in 1879b(23-25):526, Giebel cites plate 89, which was only published posthumously in 1883(26) (see plate 89, figs. 2 *Panochthus giganteus*, and 3 *Glyptodon asper*). On the other hand, pl. 89(4) relative to *Mylodon robustus*, the taxon is first mentioned in the same issue: 1883(26):566). The originals were undoubtedly ready but were not published until four years later for some editorial or economic reason. It

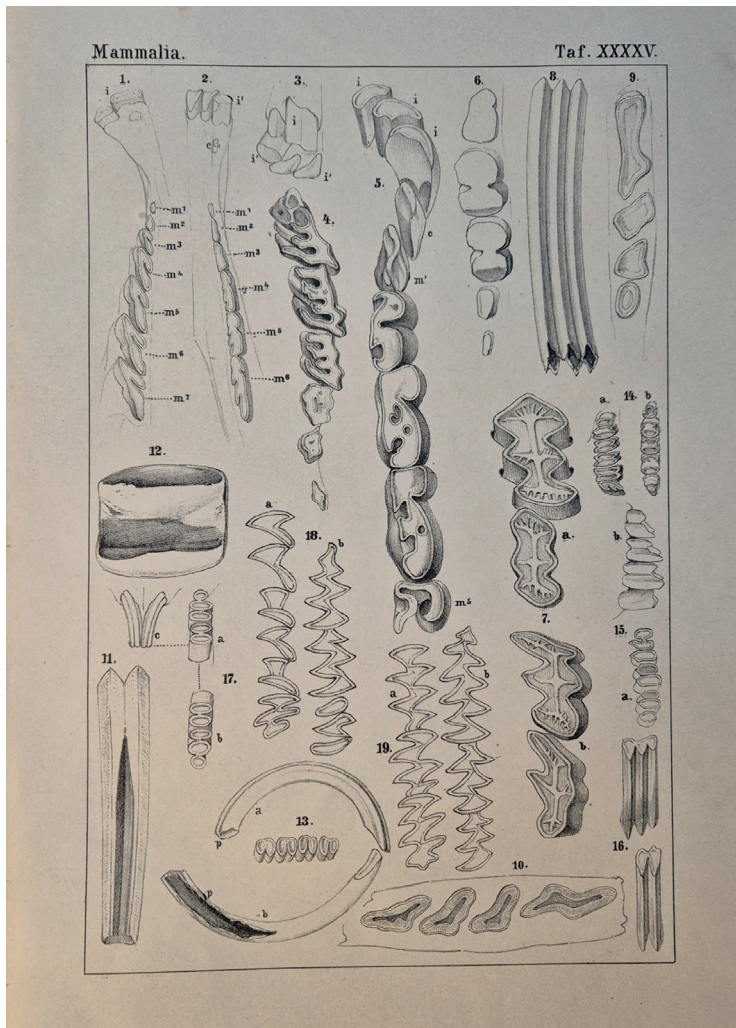


Figure 6 - Plate 45 (Giebel, 1876, Lieferung 12), from Alvaro Mones personal library. Compare with Figure 5.

is also possible that, for health reasons, as reported at the June 2, 1881, session of the Naturwissenschaftliche Verein für die Provinz Sachsen und Thüringen in Halle, Giebel was unable to complete the edition (Anonymous, 1881:457). We know that in 1861, he had already been suffering from poor heart health ("schwere Herzensleid") for 13 years (Giebel, 1881:628). His death was announced at the October 27 session (Giebel, 1881:613).

All the drawings of South American fossil mammals which appear in the plates are taken from other sources, primarily from Richard Owen (\*Lancaster, 20.07.1804–†London, 18.12.1892) and Herman/Germán Burmeister (\*Stralsund, 15.01.1807–†Buenos Aires, 02.05.1892). Giebel had a good personal relationship with Burmeister, as he was his student and assistant (Giebel, 1881). They published a joint paper (Burmeister & Giebel, 1861). He also described a species honoring Burmeister, *Toxodon burmeisteri* Giebel, 1866. I know that they maintained correspondence (Burmeister, 1865, 1867a; Giebel, 1867) and exchanged publications (see Mones, 2026, this issue). A similar relationship may have existed with Owen, but I lack any information.

### CHRONOLOGY AND DETAILS OF THE ISSUES (LIEFERUNGEN)

For every issue (Lieferung), I indicate the number and year (in bold), pages, plates (in bold), and the general systematic content at Order or superior level (in brackets), as well as the details of the mentions of South American fossil mammals. It is not possible to give a more precise date for issues printed in the same year, as mentioned above. I assume they were published on consecutive dates during that year. Throughout the text, the plates are numbered with Roman

numerals; for simplification, I converted them to Arabic numerals.

**Lieferung 1, 1874a**, pp. 1-32, pls. **1** (Carnivora); **4, 6** (Primates).

**Lieferung 2-3, 1874b**, pp. 33-64, pls. **2-3, 5** (Primates); **7-8** (Chiroptera); **9-10** (Lipotyphla); **11** (Carnivora).

**Lieferung 4-5, 1874c**, pp. 65-80, pls. **12-17** (Carnivora); **18** (Carnivora, Marsupialia); **19-21** (Marsupialia).

**Lieferung 6-7, 1875a**, pp. 81-112, pls. **22-25** (Rodentia); **26** (Rodentia, Lagomorpha); **27** (Rodentia); **28** (Rodentia, Bradypoda, figs. 6-6a: *Myiodon robustus* p. 85); **29** (Cingulata, figs. 1a, 1b, 1c *Glyptodon asper* p. 526; Vermilingua, Pholidota, Tubulidentata, Monotremata); **30** (Perissodactyla).

**Lieferung 8, 1875b**, pp. 113-144, pls. **31-33** (Artiodactyla).

**Lieferung 9-10, 1875c**, pp. 145-160, pls. **34** (Artiodactyla, Perissodactyla, Hyracoidea); **35** (Proboscidea, Perissodactyla); **36** (Carnivora), **37** (Sirenia, Proboscidea); **38-39** (Cetacea); **40** (Dental histology); **41** (Dental morphology: Proboscidea, Sirenia, Cetacea); **42** (Perissodactyla, Litopterna, figs. 16-17: *Macrauchenia patagonica* sic, p. 116).

**Lieferung 11, 1876a**, pp. 161-192, pls. **43-44** (Dental morphology); **44a** (Dental morphology: Artiodactyla). On pages 137-145, pl. 44a (XXXXIVa) is mistakenly cited as pl. XLV, not as XXXXV, which already exists.

**Lieferung 12, 1876b**, pp. 193-224, pls. **45** (Dental morphology: Notoungulata, figs. 1-3: *Toxodon burmeisteri*, fig. 4: *Nesodon ovinus*, fig. 5: *Nesodon imbricatus*; Cingulata, fig. 7: *Glyptodon asper*, fig. 8: *Panochthus tuberculatus*; Bradypoda, fig. 9: *Myiodon robustus*, fig. 10: *Scelidotherium leptocephalum*, figs. 11-12: *Megatherium*; Tubulidentata; Rodentia); **46** (Rodentia); **47** (Rodentia, Marsupialia).

**Lieferung 13-14, 1877a**, pp. 225-256, pls. **48-**

- 54 (Dental morphology); 55 (Cingulata, Glyptodontidae: *Glyptodon* (*Panochthus*) *tuberculatus*, *Hoplophorus ornatus*, *Glyptodon* (*Doedicurus*) *giganteus*).
- Lieferung 15-16, 1877b**, pp. 257-304, pls. 56 (Bradypoda, Monotremata, Cetacea, Carnivora); 57 (Perissodactyla, Artiodactyla, Bradypoda (fig. 7: *Myiodon robustus*); 58 (Cingulata, Marsupialia, Lagomorpha, Rodentia, Carnivora, Dermoptera, Chiroptera, Lipotyphla, Primates); 59 (Marsupialia); 60 (Primates, Cetacea); 61 (Carnivora).
- Lieferung 17, 1878a**, pp. 305-336, pls. 62 (Hyracoidea, Artiodactyla, Cingulata, Bradypoda); 63 (Marsupialia).
- Lieferung 18-20, 1878b**, pp. 337-416, pls. 64 (Carnivora, Lipotyphla; Chiroptera, Dermoptera, Primates); 65 (Bradypoda, fig. 1, *Myiodon robustus*, p. 340, Chiroptera, Rodentia, Lipotyphla, Lagomorpha), 66 (Cetacea); 67 (Artiodactyla, Bradypoda, fig. 2: *Myiodon gracilis* pp. 38, 393, Perissodactyla, Primates, Chiroptera, "Insectivora"); 68 (Cetacea, Proboscidea; Hyracoidea, Perissodactyla, Artiodactyla); 69 (Artiodactyla, Perissodactyla, Carnivora, Lipotyphla, fig. 6: *Macrauchenia patagonica* (sic) p. 407; 70 (Monotremata, Cingulata, Rodentia, Bradypoda, fig. 9: *Myiodon robustus* p. 410); 71 (Lagomorpha, Rodentia).
- Lieferung 21-22, 1879a**, pp. 417-448, pls. 72 (Bradypoda, Marsupialia, Carnivora, Dermoptera, Chiroptera, Insectivora), 73 (Lipotyphla, Primates), 74 (Cetacea, Sirenia), 75 (Perissodactyla, Hyracoidea, Artiodactyla), 76 (Monotremata, Bradypoda, Pholidota, Tubulidentata, Cingulata, fig. 10: *Glyptodon elongatus*, p. 440), 77 (Bradypoda, fig. 1: *Myiodon robustus*, p. 440, Lagomorpha, Rodentia), 78 (Marsupialia, Carnivora, Rodentia), 79 (Carnivora).
- Lieferung 23-25, 1879b**, pp. 449-528, pls. 80 (Carnivora, Lipotyphla, Chiroptera, Dermoptera, Primates), 81 (Primates), 82 (Sirenia, Carnivora, Proboscidea, Perissodactyla, Hyracoidea, Artiodactyla), 83 (Artiodactyla), 84 (Perissodactyla, Monotremata, Bradypoda, Tubulidentata, Cingulata, Rodentia), 85 (Lagomorpha, Marsupialia, Carnivora), 86 (Carnivora, Dermoptera), 87 (Primates, Chrysochloroidea).
- Lieferung 26, 1883**, pp. 529-576 [page 561 is erroneously numbered as 661], pls. 88 (Carnivora, Proboscidea, fig. 2: *Mastodon humboldti*, p. 521, Artiodactyla, Perissodactyla, Monotremata, Cingulata, Rodentia), 89 (Bradypoda, fig. 4: *Myiodon robustus*, p. 527, Cingulata, fig. 2: *Panochthisis* (sic) *giganteus*, p. 526, fig. 3: *Glyptodon asper*, p. 526, Rodentia, Lagomorpha, Marsupialia, Carnivora). Posthumous issue by Giebel, see comments to Lieferung 27.
- Lieferung 27, 1884**, pp. 571-592, textfigs. 1-4, pls. 90 (Carpus and hand of Chiroptera, Lipotyphla, Carnivora, Primates), 91 (Carpus and hand of Primates, Dermoptera, Chiroptera), 92 (Pelvis of Monotremata, Dermoptera, Lipotyphla, Cingulata, Primates, Lagomorpha, Rodentia, Carnivora), 93 (Pelvis and femora of Perissodactyla, Artiodactyla, Hyracoidea, Primates, Cetacea, Monotremata). From this Lieferung onwards, the author is W. Leche. On an unnumbered sheet before page 571, there is an instruction for the binder stating that pp. 571-576 of Lieferung 26 [written by Giebel with the beginning of the description of "*Das Becken, pelvis*"] should be replaced by the pages with the same number and title of Lieferung 27 [written by Leche. Giebel's original text should be deleted and replaced by Leche's.] However, the upper part of this new p. 571, with the table of measurements of the metacarpal bones of Primates, as well as pls. 90-91 are still Giebel's work. Both the digitized

BHL text and my copy preserve these pages, with Giebel's original text.

**Lieferung 28, 1885**, pp. 593-624, pl. 94 (Femur of Sirenia, Rodentia, Chiroptera, Cingulata, Perissodactyla, Carnivora, Primates, Lipotyphla).

**Lieferung 29, 1887**, pp. 625-648, pl. 95 (Tibia, fibula and tarsus of Monotremata, Cingulata, Perissodactyla, Artiodactyla, Rodentia). See Liefueung 1885(28):596, 599-601. In this Lieferung, the *Osteologie* text ends, and that of "*Muskulatur*" begins, pp. 649-656.

**Lieferung 30-31, 1888**, pp. 649-688, text figs. 16-19 (Myology), pls. 96 (Tarsus of Rodentia, Lagomorpha, Carnivora, Proboscidea, Perissodactyla, Artiodactyla); 97 (figs. 1-4, figs. 5-6, refer to Myology) (Cetacea, Lipotyphla, Primates, Dermoptera); 98 (Myology). See Lieferungen 1885(28):607, 615-617, and 1887(29):623, 626-628.

**Lieferung 37-39, 1892**, pp. 769-816, text figs. 29-37, pls. 103(fig. 5, Scapula of Monotremata); 104 (Myology).

**Lieferung 47-50, 1897**, pp. 982-1024, pls. 110 (Lipotyphla); 111 (Insectivora); 112 (Monotremata), figs. 84-107. Odontology.

**Lieferung 51-53, 1898**, pp. 1025-1036, text figs. 103-108. (Odontology). From page 1037-1072, pls. 113-115, figs. 109-121 (Digestive system).

### THE SOUTH AMERICAN FOSSIL MAMMALS AND THEIR BIBLIOGRAPHICAL SOURCES

I have tried to identify the bibliographic sources for South American fossil mammals cited by Giebel and Leche, but I am not sure I have fully succeeded.

MAMMALIA Linnaeus, 1758

SPARASSODONTA Ameghino, 1894

BORHYAENIDAE Ameghino, 1894

*Cladosictis*: Leche, 1897(47-50):1005, Ameghino (1887:7, or 1889:286).

CINGULATA Illiger, 1811

GLYPTODONTIDAE Gray, 1869

*Glyptodon*: Leche, 1884(27):583; 1885(28):599, pl. 55(fig. 1) [based on Burmeister (1870, pl. 1(fig. 1)), taken from Giebel 1877(13-14)].

*Glyptodon asper*: Giebel, 1875a(6-7):85, pl. 29(figs. 1, 1a, 1b, 1c), based on Burmeister (1872, pls. 24, 25(fig. 1), 26(fig. 1), 28(fig. 1)); 1879b(23-25):526, based on Burmeister (1872, pls. 24, 25(fig.1), 26(fig. 1)); 1875c(9-10):149, 1876b(12), pl. 45(fig. 7a, 7b), based on Burmeister (1872, pl. 27(figs. 1, 3), partial reproduction; 1883(26):526, pl. 89(fig. 3), based on Burmeister (1873, pl. 33(fig. 2).

*Glyptodon elongatus*: Giebel, 1879(23-25):512.

*Panochthus*: Giebel, 1875c(9-10):149. Leche, 1885(28):613

*Glyptodon (Panochthus) tuberculatus*/*Glyptodon tuberculatus*: Giebel, 1877a(13-14), pl. 55(1, 6), modified from Burmeister (1870, pl. 1(figs. 1, 2)) [This is the first edition of plate I, without the outline of the position of the armor on the reconstruction of the skeleton. This detail will be added in the second edition (see Burmeister, 1871a, pl. 1). The lower left side of both plates shows a very faint impression: "H. Burmeister fec. Junio 1868." and "H. Burmeister del. Junio 1868.", respectively.]; pl. 55(3), based on Burmeister (1871a, pl. 5(fig. 2); 55(5), based on Burmeister (1870, pl. 1(fig. 3)); 1877b(15-16):272; 1879b(23-25):512.

*Panochthus tuberculatus*: Giebel, 1875c(9-10):149, 1876b(12), pl. 45(fig. 8), based on Burmeister (1871a, pl. 4(fig. 3)); 1878b(18-20):379.

*Hoplophorus ornatus*/*Hoplophorus*: Giebel, 1875c(9-10):149; 1877a(13-14), pl. 55(2), based on Burmeister (1871b, pl. 20(fig. 2)), 1877b(15-16):272.

- Glophophorus* (sic): Leche, 1885(28):613, incorrect spelling of *Hoplophorus*.
- Glyptodon* (*Doedicurus*) *giganteus*/*Doedicurus giganteus*: Giebel, 1877a(13-14), pl. 55(4), modified from Burmeister (1874, pl. 42(2)), 1877b(15-16):272.
- Panochthus giganteus*: Giebel, 1879b(23-25):526-527. 1883(26):550, pl. 89(fig. 2), based on Burmeister (1873a, pl. 33(fig. 1)). In the caption of plate 89 (fig. 2), with the incorrect spelling *Panochthysis* (sic).
- Glyptodon* (*Schistopleurum*): Giebel, 1875c(9-10):149.
- Schistopleurum*: Giebel, 1877b(15-16):272.
- BRADYPODA Blumenbach, 1775
- MYLODONTIDAE Gill, 1872
- “Mylodonten”: Giebel, 1877b(15-16):272-273, based on Owen (1842:49, pl. 7); 1878a(17):307, 321; 1878b(18-20):410.
- Mylodon*: Giebel, 1875a(6-7):85; 1875b(8):150; 1877b(15-16):287; 1878a(17):321; 1878b(18-20):340, 362, 410, 440, pl. 65(figs. 1-2); 1879a(21-22):427; (23-25):471, 495, 526; 1879b(23-25):527; 1883(26):551, 566, pl. 89(fig. 4), based on Owen (1842:40, 50, 64, 80, 81, 84, 86, 87, 90, 93, pls. 1, 10-15).
- Mylodon*: Leche, 1884(27):583, 592, based on Giebel (1878(17), pl. 65(fig. 1)).
- Mylodon robustus*: Giebel, 1875a(6-7), pl. 28(fig. 6); 1875c(9-10):150; 1876b(12), pl. 45(fig. 9) 1877b(15-16), pl. 57(fig. 7); 1878b(18-20):410, pl. 70(fig. 9), based on Owen (1842:259, pls. 1, 7).
- Mylodon robustum* (sic): Giebel, 1877a(13-14):249.
- Mylodon robassus* (sic): Giebel, 1879a(21-22):440, pl. 77(fig. 1), based on Owen (1842: pl. 11(fig. 1)). Incorrect spelling of *robustus*.
- Mylodon gracilis*: Giebel, 1878b(18-20):380, 393, pl. 67(fig. 2), based on Burmeister, 1866, pl. 5(fig. 3).
- Scelidothierium*: Giebel, 1875c(9-10):150.
- Scelidothierium leptocephalum*: Giebel, 1876b(12), pl. 45(fig. 10), based on Owen, 1839, pl. 23(fig. 4).
- MEGATHERIIDAE Gray, 1821: Owen, 1842, emend.
- “Megatherien”: Giebel, 1874a(1):20, 32; 1874b(2-3):63, 66, 1874c(4-5):78, 1875a(6-7):85; 1875c(9-10):150, 1877b(15-16):287; 1878a(17):321-322; 1878b(18-20):340, 362, 365, 380, 393, 410; 1879a(21-22):427, 440; 1878b(23-25):471, 495, 496, 526-527; 1883(23):551, 566. Quotations based on Owen (1855:362, 378, pls. 18, 22-23; 1858:263, 264, 268, 270, 273, pls. 18, 20(fig. 1), 22), and Pander & d’Alton (1821, pl. 3).
- Megatherium*: Leche, 1884(27):583, 592; 1885(28):599, 605, 613.
- Megatherium*: Giebel, 1875a(6-7):85, 1875c(9-10):150; 1876b(12): pl. 45(figs. 11-12); 1878a(17):340, 362, 380, 393, based on Owen (1855:359, 378, pls. 18, 22-23); 1879a(21-22):427; 1879b(23-25):471, 495-496, 527; 1883(26):566, based on Owen (1858:263-264, 266, 268, 273, pls. 18, 20(fig. 1), 21-22).
- Megatherium americanum*: Giebel, 1878b(18-20):362; 1883(26):551, based on Owen (1855:359; 1858:270, pl. 22).
- Megatherium cuvieri*: Giebel, 1877a(13-14):249.
- NOTOUNGULATA Roth, 1903
- MESOTHERIIDAE Alston, 1876
- Typotherium* (*Mesotherium*): Leche, 1884(27):584.
- TOXODONTIDAE Owen, 1845
- Toxodontia: Leche, 1885(28):623, based on Cope (1881).
- Nesodon*: Giebel, 1875c(9-10):145, 147.
- Nesosdon ovinus*: Giebel, 1876b(12), pl. 45(fig. 4), based on Owen (1853c, pl. 15(fig. 3, parte)).
- Neodon imbricatus*: Giebel, 1876b(12), pl. 45(fig. 5), basado en Owen (1853c, pl.17(fig. 14)).
- Toxodon*: Giebel, 1875c(9-10):145, 146, 147, 152.
- Toxodon*: Leche, 1884(27):586; 1885(28):593, 608.

- Toxodon Burmeisteri*: Giebel, **1875c**(9-10):146-147; **1876b**(12):146, pl. 45(figs. 1-3), modified from Burmeister, 1867b:256, 264, 285-286, pls. 9(fig. 1), 11 (figs. 1, 4) **1883**(26):576. Quote from Burmeister (1867b, pl. 10(figs.2-3)).
- [*Toxodon*] *Oweni*: Giebel, **1875c**(9-10):147.
- CARNIVORA Bowdich, 1821
- CANIDAE Fischer, 1817
- Speothos*: Giebel, **1879b**(23-25):503.
- FELIDAE Fischer, 1817
- Machaerodus*: Giebel, **1879a**(21-22):420, (23-25):453, 505, based on Burmeister (1867c, 1 pl.; 1868:194-195).
- Machaerodus neogaeus*: Giebel, **1877a**(13-14):244; **1879b**(23-25):514.
- PROBOSCIDEA Illiger, 1811
- GOMPHOTHERIIDAE Hay, 1922; Cabrera, 1929, new rank
- Mastodon humboldti*: Giebel, **1879b**(23-25):521; **1883**(26), pl. 88(fig. 2), based on Burmeister (1867b, pl. 14(fig. 2)).
- LITOPTERNA Ameghino, 1889
- MACRAUCHENIIDAE [Gervais, 1855] Huxley, 1871, Gill, 1872, emend.
- Macrauchenia*: Giebel, **1875b**(8):116; Giebel, **1877a**(13-14):407; **1883**(26):576, based on Burmeister (1864, pl. 4(figs. 1-2)). Giebel's bibliographical citation of Burmeister is confusing because it could be interpreted as referring to plates 4 and 12, but in fact, it relates to plate 4 (figs. 1 and 2). Had the instructions for the binder (see first unnumbered page of the Lieferung (27) of 1884) been followed, and pages 571-576 of Lieferung 26 had been removed, this text would have been lost. Fortunately, it is preserved in the digitized version of BHL and the hard copy in my private library. See comments on Lieferung 27 above.
- Macranchenia* (*sic*): Giebel, **1879b**(23-25):468, incorrect subsequent spelling of *Macrauchenia*.
- Macrauchenia*: Leche, **1884**(27):586, based on Burmeister (1864:pl. 4; 1864:252, pl. 12); **1885**(28):601.
- Macrauchenia patagonica* (*sic*): Giebel, **1875b**(8):116; (9-10), pl. 42(figs. 16-17), incorrect subsequent spelling of *patachonica*. Based on or modified from Burmeister (1864, pls. 1(figs. 2 and 5)).
- Macranchenia* (*sic*) *patagonica*: Giebel, **1878b**(18-20), pl. 69(fig. 6), modified from Burmeister (1867b, pl. 12). Incorrect subsequent spelling of *Macrauchenia patachonica*.
- PERISSODACTYLA Owen, 1848
- EQUIDAE Gray, 1821
- Hippidium* (*sic*): Giebel, **1879b**(23-25):493, 524; **1883**(26):545, based on Burmeister (1875a-b:33, 85, pl. 7(fig. 3-10)). Incorrect subsequent spelling of *Hippidion*.
- Equus neogaeus*: Giebel, **1875c**(9-10):145.
- Equus principalis*: Giebel, **1875c**(9-10):145.
- Eq[uus] andium*: Leche, **1887**(29):625.

## CONCLUSIONS

In this paper, among other things, I have shown that, no matter how old a publication and in whatever language it is, there is always something to rescue. This is how I can present, for the first time, a detailed analysis and chronology of the *Osteologie der Säugethiere* as well as a systematic listing of all references to South American fossil mammals. These references have, until now, remained ignored. I recommend to read it.

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Recibido: 17/08/2025 - Aceptado: 10/03/2026 - Publicado: 17/04/2026