

AMERICAN MUSEUM NOVITATES

Number 393

Published by
THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City

Dec. 24, 1929

56.9,61

NEW EURASIATIC AND AMERICAN PROBOSCIDEANS¹

BY HENRY FAIRFIELD OSBORN

The reader is referred to previous systematic revisions by the present author, also to his forthcoming Memoir, now on the American Museum press:

EVOLUTION OF THE PROBOSCIDEA

All the figures in this number of Novitates are reproduced from original type figures by Lindsey Morris Sterling in the above-mentioned Memoir. Certain of the advance page proofs of this Memoir have been sent to Mr. Arthur T. Hopwood of the British Museum and to Dr. Ángel Cabrera of the Museo de La Plata, Argentina. A full set of page proofs to the end of Chapter XX (the Elephantinæ) is accessible in the Osborn Research Room of the American Museum.

TRILOPHODON ANGUSTIDENS GAILLARDI
Lyons Mus. Type
Drawn from cast of type Amer. Mus. 21904.
jaws $\frac{1}{16}$ nat. size

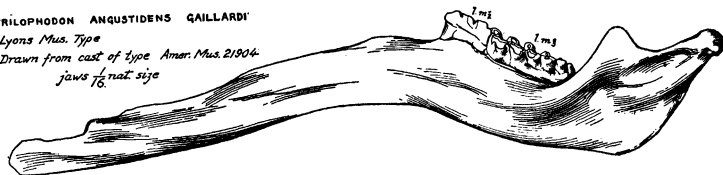


Fig. 1. Type lower jaw, with M_2 , M_3 *in situ*, of *Trilophodon angustidens gailardi* (cast Amer. Mus. 21904). One-sixteenth natural size.

Subfamily: LONGIROSTRINÆ

TRILOPHODON ANGUSTIDENS GAILLARDI, new subspecies

TYPE.—Original in the Muséum des Sciences Naturelles de Lyon, France; cast Amer. Mus. 21904, presented to the American Museum by Dr. Claude Gaillard. A lower jaw with M_2 , M_3 *in situ*.

LOCALITY.—Villefranche-d'Astarac (Gers), France.

HORIZON.—Probably of Pliocene age.

SPECIFIC CHARACTERS.—Distinguished from the typical *Mastodon* [= *Trilophodon*] *angustidens* of Simorre and Sansan by the length of the jaw (total 1495 mm.), the expansion of the ramus at the symphysis, the presence of $5\frac{1}{2}$ ridge-crests in the third inferior molars (length of $r.M_3$ 190 mm.). The distal expansion of the symphysis may relate this form to the 'shovel tuskers' *Amebelodon* Barbour and *Platybelodon* Borissiak.

See Chapter VIII of the Proboscidea Memoir.

¹This is the author's nineteenth communication on the evolution and classification of the Proboscidea since 1918, and the twenty-ninth in his total list of papers on the Proboscidea since 1907. See the author's forthcoming chronologic and classified Bibliography to the end of the year 1929.

Subfamily: **SERRIDENTINÆ****SERRIDENTINUS BIFOLIATUS**, new species

TYPE.—Amer. Mus. 1875. A third lower molar of the left side, l.M₃, presented to the American Museum by Professor Raymond of Columbia University.

PARATYPE.—Geol. Surv. Florida 7700. A left mandibular ramus with M₃ *in situ*.

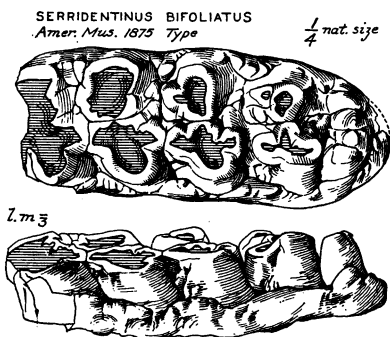


Fig. 2. Type l.M₃ of *Serridentinus bifolius* (Amer. Mus. 1875). One-fourth natural size.

LOCALITY.—Brewster, Polk County, Florida.

HORIZON.—Upper Pliocene (?), Alachua clays.

SPECIFIC CHARACTERS.—The specific name *bifolius* refers to the double trefoils shown on the three anterior ridge-crests of the type, also to the presence of five ridge-crests in the third left inferior molar, l.M₃, which measures, ap. 195 mm., tr. 81 mm., index 42. This is the most progressive stage thus far discovered.

See Chapter X of the Proboscidea Memoir.

SERRIDENTINUS HASNOTENSIS, new species

COTYPES.—Amer. Mus. 19948, an incomplete third right superior molar, r.M³, with 3+ ridge-crests (4½); Amer. Mus. 19738, a third right superior molar, r.M³, with 4½ ridge-crests; Amer. Mus. 19838, second and third superior molars of the left side, l.M² (?), l.M³, with 4 and 4½ ridge-crests respectively.

LOCALITY AND HORIZON.—Amer. Mus. 19948, two miles northeast of Hasnot, upper Middle Siwaliks; Amer. Mus. 19738, one mile northeast of Hasnot, Middle Siwaliks, above middle beds; Amer. Mus. 19838, four miles west of Dhok Pathan, *Hipparion* quarry level, 500 feet below top of Middle Siwaliks. Collected by Barnum Brown in the Dhok Pathan horizon, India, in 1922.

SPECIFIC CHARACTERS.—Ridge formula: M 2 $\frac{1}{2}$ -3- $\frac{1}{2}$ M 3 4 +talon. Ridge-crests massive, separate, vertical; strong internal, rudimentary external trefoils; cement in valleys. Measurements: r.M³, height of metaloph 75 mm., three anterior crests, proto-, meta-, and tritolophs = 146 mm.; r.M³, ap. 190 mm., tr. 94 mm., height of

metaloph 69 mm., ap. of proto-, meta-, tritolophs = 143 mm.; $l.M^2$ (?), ap. 108 mm., tr. 74 mm.; $l.M^3$, ap. 160 mm., tr. 92 mm. Agree closely in subhypsodonty with ridge-crests of *Serridentinus dhokpathanensis*.

See Chapter X of the Proboscidea Memoir.

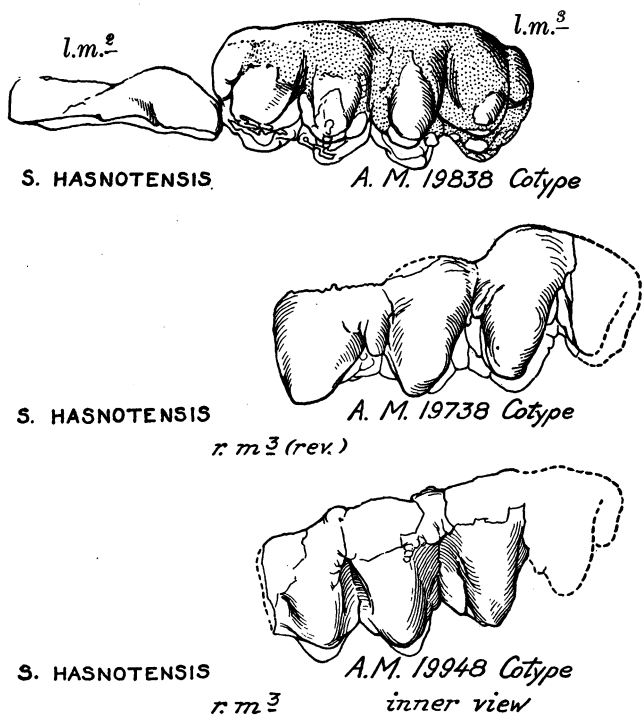


Fig. 3. Cotypes of *Serridentinus hasnotensis* (Amer. Mus. 19948, 19738, 19838) One-fourth natural size.

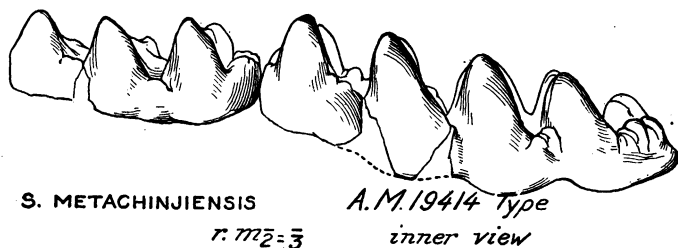


Fig. 4. Type $r.M_2$, $r.M_3$ of *Serridentinus metachinjiensis* (Amer. Mus. 19414). One-fourth natural size.

SERRIDENTINUS METACHINJIENSIS, new species

TYPE.—Amer. Mus. 19414. Portion of right inferior ramus with M_2 , M_3 complete, beautifully preserved.

LOCALITY.—One mile northwest of Chinji Bungalow, India.

HORIZON.—Collected in 1922 by Barnum Brown in the Lower Chinji horizon, 800 feet above base of Lower Siwaliks, Middle Miocene.

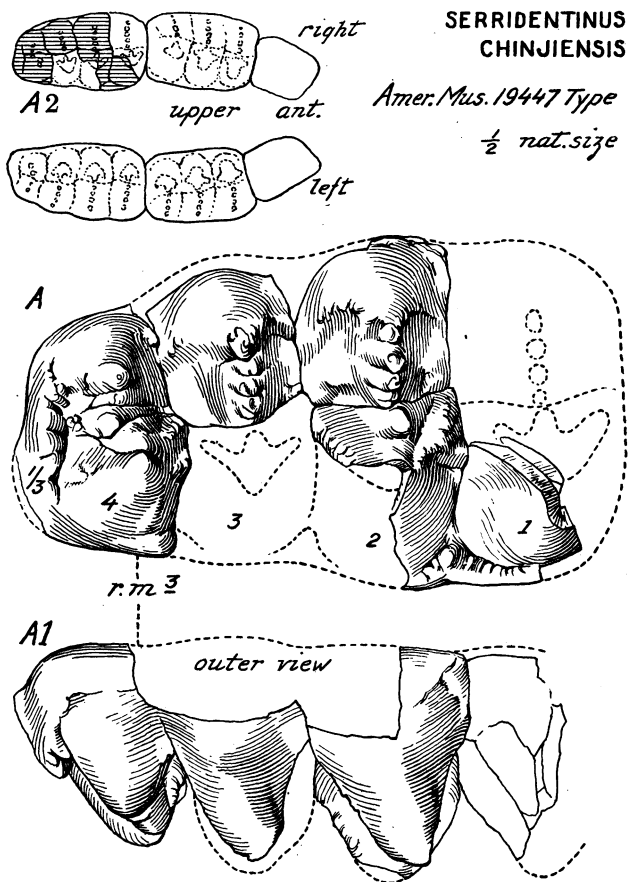


Fig. 5. Type $r.M^3$ of *Serridentinus chinjiensis* (Amer. Mus. 19447). One-half natural size.

SPECIFIC CHARACTERS.—Right third inferior molar, $r.M_3$, with $4\frac{1}{2}$ ridge-crests, subhypsodont, no cement, anteroposterior measurement 214 mm., transverse 85 mm., height of metalophid 75 mm.; $r.M_2$, anteroposterior measurement 131 mm., transverse (protolophid) 51 mm., (tritolophid) 64 mm., i.e., widening posteriorly,

height of metalophid 53 mm. Single external trefoils, low posteingulum with many conelets and single prominent cone (tetartolophid); *S. serridens* exhibits two prominent cones, also *S. prochinjiensis*, new species, has two cones, in fact, the double cones in M_2 are very characteristic. Summits of lophs with four to five conelets. Compare *S. serridens* of the Clarendon beds, Lower Pliocene of Texas, and *S. productus* of the Santa Fé marls, Upper Miocene of New Mexico.

See Chapter X of the Proboscidea Memoir.

SERRIDENTINUS CHINJIENSIS, new species

TYPE.—Amer. Mus. 19447. An imperfect right third superior molar, $r.M^3$, with 4 ridge-crests plus cingulum. Measurements: ap. 160e mm., tr. 91 mm., height of metaloph 52e mm.

LOCALITY.—One mile and a half west of Chinji Bungalow, India.

HORIZON.—Collected in 1922 by Barnum Brown 700 feet above base of Lower Siwaliks, Lower Chinji horizon. Middle Miocene.

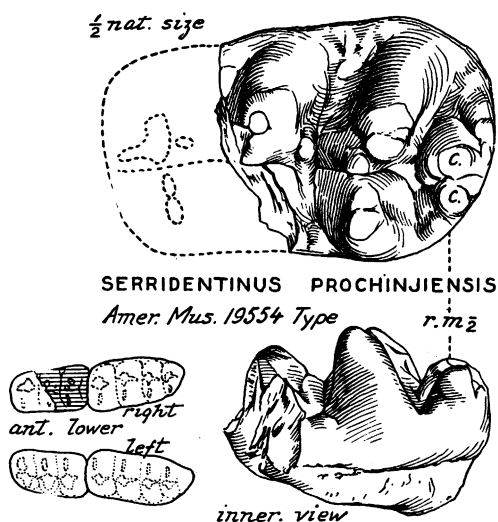


Fig. 6. Type $r.M_2$ of *Serridentinus prochinjiensis* (Amer. Mus. 19554). One-half natural size.

SPECIFIC CHARACTERS.—This stage is clearly distinguished from, and is much more primitive than *Serridentinus metachinjiensis*, new species, i.e., more brachyodont, with smooth-sided crowns, 7-6 conelets on metaloph and tritoloph, trefoils sharply defined in median aspect, both external and internal cones sloping inwards, contour of crowns subtriangular, broad anteriorly, narrowing posteriorly, tetartoloph with five conelets, internal cones less prominent than external.

See Chapter X of the Proboscidea Memoir.

SERRIDENTINUS PROCHINJIENSIS, new species

TYPE.—Amer. Mus. 19554. A right second inferior molar, r.M₂, with meta-
lophid and tritolophid and a pair of posterior cones only. Measurements: ap. 105e
mm., tr. 58 mm., height of tritolophid 41e mm.

LOCALITY.—Two miles west of Chinji Bungalow, India.

HORIZON.—Collected in 1922 by Barnum Brown 600 feet above base of Lower
Siwaliks, Lower Chinji horizon. Miocene.

SPECIFIC CHARACTERS.—Small, very primitive; rudiment of external trefoil
conule in valley between meta- and tritolophids; two small characteristic cones rising
on posterior cingulum, as in *Serridentinus serridens*; lophs low and simple, barely
subdividing into conelets; breadth of tritolophid 65 mm. as compared with 79 mm.
in *S. serridens*; height of tritolophid 41e mm. as compared with 61 mm. in *S. serridens*.

See Chapter X of the Proboscidea Memoir.

This single fractured type specimen reveals the presence in India of
an ancestral phase of *Serridentinus* much more primitive than *S. mongoliensis*
of the Lower to Middle Miocene of Mongolia.

SERRIDENTINUS FLORESCENS, new species

TYPE.—Amer. Mus. 21615. Second inferior molar of the right side, r.M₂,
crushed laterally. Length of type crown 131e mm., breadth of tritolophid 45+ mm.

LOCALITY.—Kholobolchi Nor region, Mongolia, five to eight miles north of camp.
Collected by Walter Granger on June 30, 1925.

HORIZON.—Khunuk formation, Pliocene, possibly equivalent to the Hung
Kureh beds of the Tsagan Nor region.

SPECIFIC CHARACTERS.—The specific name *florescens* refers to the remarkable
florescence or blossoming out of the external trefoil spurs into broad anteroposterior
plates crowned with four to five conelets which greatly exceed in prominence those of
any other species of *Serridentinus*. The length of the type crown (131e mm.) exceeds
that of r.M₂ in *S. mongoliensis* (108 mm.); the breadth of the tritolophid is 45+ mm.
and is greatly contracted by lateral crushing. *S. florescens* appears to represent a
progressive stage in the blunt-coned series of *Serridentinus*, beyond *S. mongoliensis*
of the Lower to Middle Miocene of Loh, out of which stage it has evolved.

See Chapter X of the Proboscidea Memoir.

Subfamily: **RYNCHOROSTRINÆ****RYNCHOTHERIUM PAREDENSIS**, new species

TYPE.—Amer. Mus. 18216B, 18218. Immature mandible containing 1. Dp₂,
r. and 1. Dp₃, Dp₄, and both tusks (Amer. Mus. 18216B); a left maxilla (Amer. Mus.
18218) containing 1. Dp², Dp³, Dp⁴ (Frick, "Tooth Sequence in Certain Trilophodont
Tetrabelodont Mastodons," Bull. Amer. Mus. Nat. Hist., Vol. LVI, Art. II, 1926, p.
170)—probably belonging to one individual.

LOCALITY.—Mt. Eden Hot Springs, San Bernardino County, California.

HORIZON.—Collected by Joseph Rak in the Eden formation, Upper Pliocene,
during the winter of 1916–1917. Part of the Frick Collection.

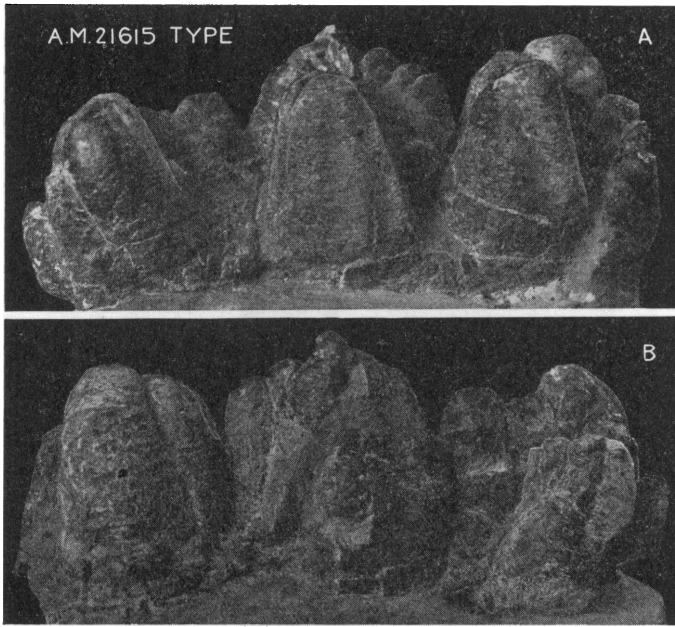


Fig. 7. Type r.M₂ of *Serridentinus florescens* (Amer. Mus. 21615). About two-thirds natural size.

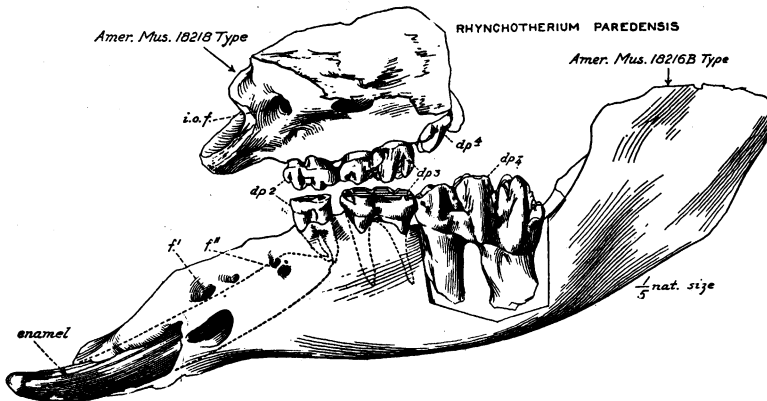


Fig. 8. Type mandible (Amer. Mus. 18216B) and maxilla (Amer. Mus. 18218) of *Rhynchotherium paredensis*. One-fifth natural size.

SPECIFIC CHARACTERS.—The right lower tusk, $r.I_2$, is closely compressed vertically; the lower deciduous premolars, Dp_3 , Dp_4 , are trilophodont or three crested, with rudimentary conelets partly blocking the valleys on the external side, while in the corresponding superior tooth, namely, $l.Dp^4$, the rudimentary conelets block the valleys on the internal side, as in *Serridentinus*; the crowns are covered with irregular tubercles or are 'chœrodont' in type, as in all deciduous premolars of the trilophodonts.

See Chapter XI of the Proboscidea Memoir.

RYNCHOTHERIUM CHINJIENSIS, new species

TYPE.—Amer. Mus. 19415. Left ramus with warped alveolus of left inferior incisor, $l.I_2$; also $l.M_2$, M_3 *in situ*.

LOCALITY.—Two miles west of Chinji Bungalow, India.

HORIZON.—Collected in 1922 by Barnum Brown 600 feet above the base of the Lower Siwaliks.

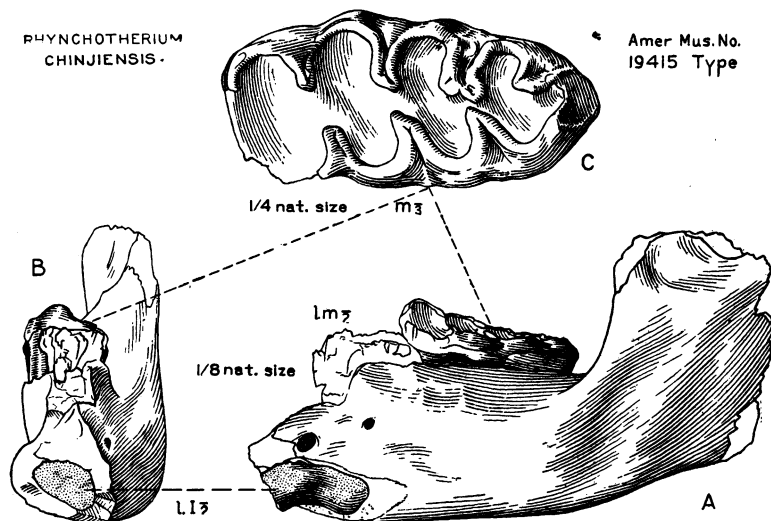


Fig. 9. Type ramus with $l.M_2$, $l.M_3$ *in situ*, also warped alveolus of $l.I_2$, of *Rhynchotherium chinjiensis* (Amer. Mus. 19415). One-eighth natural size. Crown¹ view of $l.M_3$ one-fourth natural size.

SPECIFIC CHARACTERS.—Mandibular ramus deep, abbreviate, rostrum apparently downturned, containing alveolus of a single flattened incisor, warped in the type. Third inferior molar brachyodont, four crested, with thick enamel, ap. 200 mm., tr. 92 mm., thus resembling *Rhynchotherium euhypodon*.

See Chapter XI of the Proboscidea Memoir.

The generic reference of this type is somewhat uncertain owing to the imperfect condition of the rostrum.

Subfamily: **BREVIROSTRINÆ****SYNCONOLOPHUS**, new genus

GENOTYPIC SPECIES.—*Synconolophus dhokpathanensis*, new species.

GENERIC CHARACTERS.—Skull somewhat more elongate than in *Anancus*, *Pentalophodon*, or *Stegomastodon*. Basicranium elongate, also palate. Postnarial opening far back of grinders (*Synconolophus dhokpathanensis*). Tusks large, upturned, with-

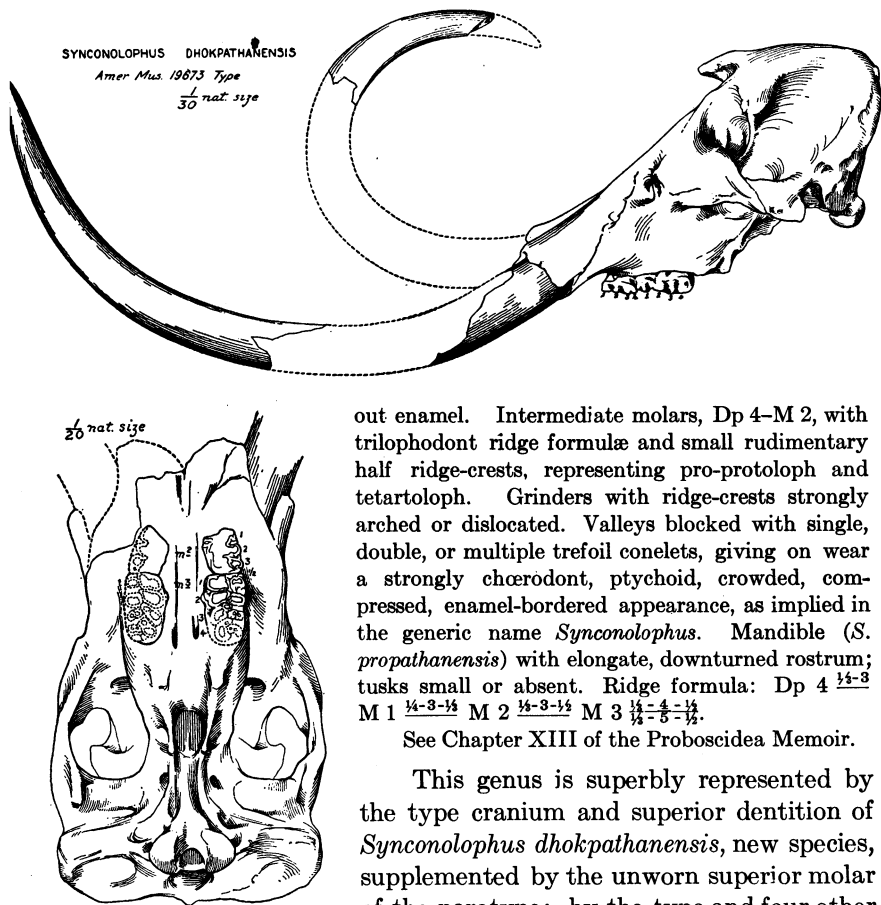


Fig. 10. Type cranium of *Synconolophus dhokpathanensis* (Amer. Mus. 19673). Left lateral view, one-thirtieth natural size; palatal view, one-twentieth natural size.

out enamel. Intermediate molars, Dp 4–M 2, with trilophodont ridge formulæ and small rudimentary half ridge-crests, representing pro-protoloph and tetartoloph. Grinders with ridge-crests strongly arched or dislocated. Valleys blocked with single, double, or multiple trefoil conelets, giving on wear a strongly chœrodont, ptychoid, crowded, compressed, enamel-bordered appearance, as implied in the generic name *Synconolophus*. Mandible (*S. propathanensis*) with elongate, downturned rostrum; tusks small or absent. Ridge formula: Dp 4 $\frac{1\frac{1}{2}-3}{1\frac{1}{2}-3}$ M 1 $\frac{1\frac{1}{2}-3-1\frac{1}{2}}{1\frac{1}{2}-3-1\frac{1}{2}}$ M 2 $\frac{1\frac{1}{2}-3-1\frac{1}{2}}{1\frac{1}{2}-3-1\frac{1}{2}}$ M 3 $\frac{1\frac{1}{2}-4-1\frac{1}{2}}{1\frac{1}{2}-4-1\frac{1}{2}}$.

See Chapter XIII of the Proboscidea Memoir.

This genus is superbly represented by the type cranium and superior dentition of *Synconolophus dhokpathanensis*, new species, supplemented by the unworn superior molar of the paratype; by the type and four other specimens referred to *Synconolophus ptychodus*, new species, of the Lower Chinji horizon, and one from 1,000 feet below the Bhandar Bone-bed; by numerous examples of grinding teeth erroneously referred by Lydekker

to the following species (*Mastodon pandionis*, *M. sivalensis*), as well as by the types of *Tetrabelodon corrugatus* and *Mastodon hasnoti* of Pilgrim, and finally by the tuskless lower jaw, with both pairs of inferior grinders, M_2 , M_3 , of *Synconolophus propathanensis*, new species. These reveal a new generic phylum extending from the Lower Chinji into the Dhok Pathan horizon, as one of the most important additions which Barnum Brown has made to the history of palæontology. As in *Anancus* and in *Stegomastodon*, the transverse crests are strongly oblique, but *Synconolophus* is readily distinguished by the multiplication of the cones and conules which finally render the molar a bewildering complex, of a warped, chærodont, Ptychoid pattern.

SYNCONOLOPHUS DHOKPATHANENSIS, new species

TYPE.—Amer. Mus. 19673. Cranium with portions of right and left superior tusks, and M^2 , M^3 of both sides *in situ*.

LOCALITY.—Three miles west of Dhok Pathan, India.

HORIZON.—Discovered by Barnum Brown (1922) 500 feet below the top of the Middle Siwaliks, Lower Pliocene.



Fig. 11. Paratype $r.M^3$ of *Synconolophus dhokpathanensis* (Amer. Mus. 19720), one-half natural size.

PARATYPE.—Amer. Mus. 19720. Unworn third right superior molar, $r.M^3$, from Dhok Pathan, India, approximately 500 feet below the top of the Middle Siwaliks, same level as *Hipparion* quarry. Length 200 mm., breadth 106 mm., index 53.

SPECIFIC CHARACTERS.—*Synconolophus dhokpathanensis* is the most progressive species of the Dhok Pathan horizon, succeeding the two somewhat simpler stages *S. corrugatus* Pilgrim and *S. hasnoti* Pilgrim. In case further material should demonstrate specific resemblance, *S. dhokpathanensis* might become a synonym of *S. corru-*

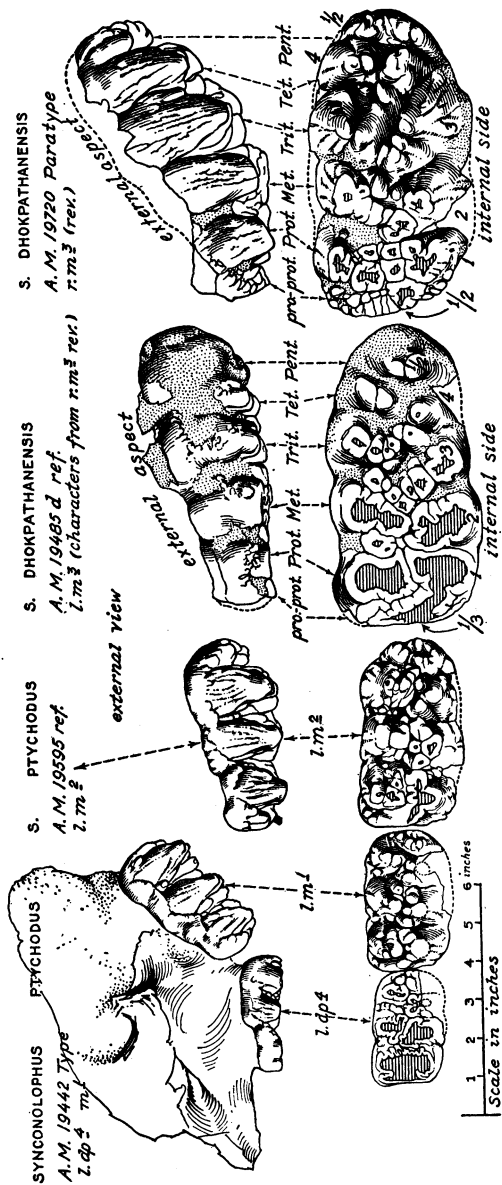


Fig. 12. Type of *Synconalophus ptychodus* (Amer. Mus. 19442) and referred specimen (Amer. Mus. 19595), also referred specimen of *S. dhokpathanensis* (Amer. Mus. 19485-d) and paratype (Amer. Mus. 19720). One-fifth natural size.

gatus. Unfortunately the aged grinding teeth of the type are badly damaged, so that it is difficult to determine the ridge formula with precision; it is apparently as follows: $r.M\ 2\ 3\frac{1}{2}$ $r.M\ 3\ 1\frac{1}{2}-4-\frac{1}{2}$.

CHARACTERS OF PARATYPE.—Cones deeply grooved; enamel ptychoid; single intermediate conelet on metaloph; cement strongly developed; total superior conelets 41–44. Ridge formula: $M\ 3\ 5\frac{1}{2}$.

See Chapter XIII of the Proboscidea Memoir.

SYNCONOLOPHUS PTYCHODUS, new species

TYPE.—Amer. Mus. 19442. Fragment of left maxilla with $l.Dp^4$, $l.M^1$.

LOCALITY.—Four miles west of Chinji Bungalow, India.

HORIZON.—Collected by Barnum Brown 800 feet above base of Lower Siwaliks, Lower Chinji horizon, Middle Miocene.

SPECIFIC CHARACTERS.—Three ridge-crests of the first superior molar, $l.M^1$, with strong cingulate pro-protoloph and half rudiment of tetartoloph; internal and external cones ptychoid on outer faces and on inner worn surfaces; internal cones slightly anterior to external cones, not directly opposite; median anterior and posterior trefoil conelets on either side of internal cones, less prominent trefoil conelets on either side of external cones, summits of transverse crests divided into four to five separate conelets.

Synconolophus ptychodus is smaller, more primitive, with more transversely placed cones and fewer intermediate trefoil conelets in the valleys than in its highly specialized successor *S. dhokpathanensis*; included for the present within this single species are three ascending mutations, namely, two very small and simple grinders (Amer. Mus. 19638a, b), from 400 feet above the base of the Lower Siwaliks, the larger and more complex type molars (Amer. Mus. 19442) from 800 feet above the base of the Lower Siwaliks, and finally the still more progressive grinder, an $l.M^2$ (Amer. Mus. 19595), from 2,000 feet above the base of the Lower Siwaliks, all from the Lower Chinji level of Pilgrim. Referable to this larger stage, but also recorded as having been found 400 feet above the base of the Lower Siwaliks, is an $l.M_3$ (Amer. Mus. 19628). From a still higher level than the Lower Chinji horizon, 1,000 feet below the Bhandar Bone-bed, is another $l.M_3$ (Amer. Mus. 19533).

See Chapter XIII of the Proboscidea Memoir.

SYNCONOLOPHUS PROPATHANENSIS, new species

TYPE.—Amer. Mus. 19487. A large and finely preserved tuskless lower jaw containing both pairs of inferior grinders, M_2 , M_3 . Measurements: $r.M_2$, ap. 106 mm., tr. 65 mm.; $l.M_3$, ap. 168 mm., max. tr. at tritolophid 76 mm.

LOCALITY.—Three miles east of Dhok Pathan, India.

HORIZON.—Collected in 1922 by Barnum Brown 500 feet below top of Middle Siwaliks, Dhok Pathan horizon. Lower Pliocene, (?) equivalent of Pikermi, Eppelsheim, etc.

SPECIFIC CHARACTERS.—Ridge-crests compressed, subhypodont; deeply covered with cement; summit of crown of M_2 wearing into a subptychodont pattern owing to the crowding of the ridge-crest conelets and (?) conules into the valleys between the main cones; main cones directly *opposite* each other, not *alternate* as in *Synconolophus dhokpathanensis*, with two median conelets crowding anteriorly into

the valleys; M_2 with $3\frac{1}{2}$ ridge-crests, M_3 with $\frac{1}{2}$ - $4\frac{1}{2}$ ridge-crests; height of tritolo-phid of M_3 60e mm.; the subptychoid pattern is best seen in the partly worn crown summit of M_3 which exhibits on the tritolo-phid and rudimentary tetartolo-phid a group of seven closely compressed conelets with crenulate borders; were it not for the directly opposite condition of the outer conelets, this grinder, M_3 (ridge-crests $\frac{1}{2}$ - $4\frac{1}{2}$), might readily be mistaken for that of *S. dhokpathanensis* (ridge-crests $5\frac{1}{2}$), or that of *S. corrugatus* (ridge-crests 4 - $5\frac{1}{2}$).

See Chapter XIII of the Proboscidea Memoir.

If confirmed, the downturned type jaw of *Synconolophus propathanensis* will afford the mandibular characters of the genus *Synconolophus*, namely, as possessing a relatively elongate, downturned, tuskless, deflected rostrum, as compared with the abbreviate rostrum of *Anancus*. The ridge formula ($M\ 3\ \frac{1}{2}$ - 4 - $\frac{1}{2}$) is more primitive than that of *S. dhokpathanensis* ($M\ 3\ \frac{5}{5}$).

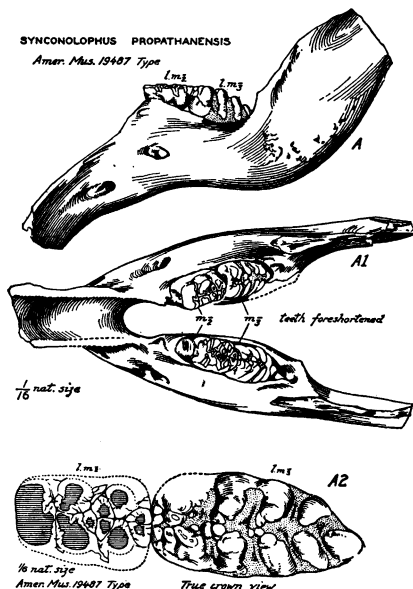


Fig. 13. A, A1, Type lower jaw of *Synconolophus propathanensis* (Amer. Mus. 19487), one-sixteenth natural size; A2, crown view of $l.M_2$, $l.M_3$, one-sixth natural size.

Subfamily: **STEGODONTINÆ**

STEGOLOPHODON NATHOTENSIS, new species

TYPE.—Amer. Mus. 19455. Posterior half of a fragmentary right third superior molar, $r.M^3$; posterior half of a right third inferior molar, $r.M_3$; and anterior half of a left second superior molar, $l.M^2$.

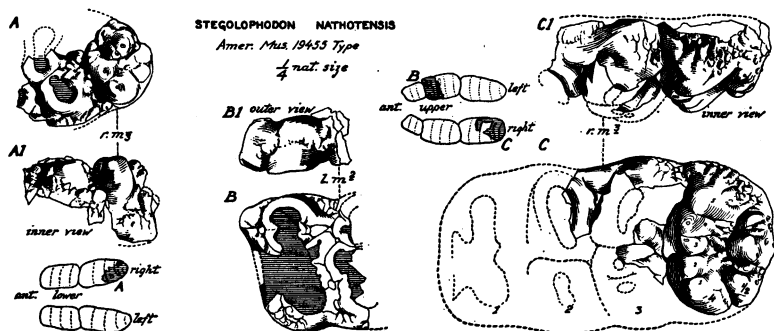


Fig. 14. Type molars of *Stegolophodon nathotensis* (Amer. Mus. 19455). One-fourth natural size.

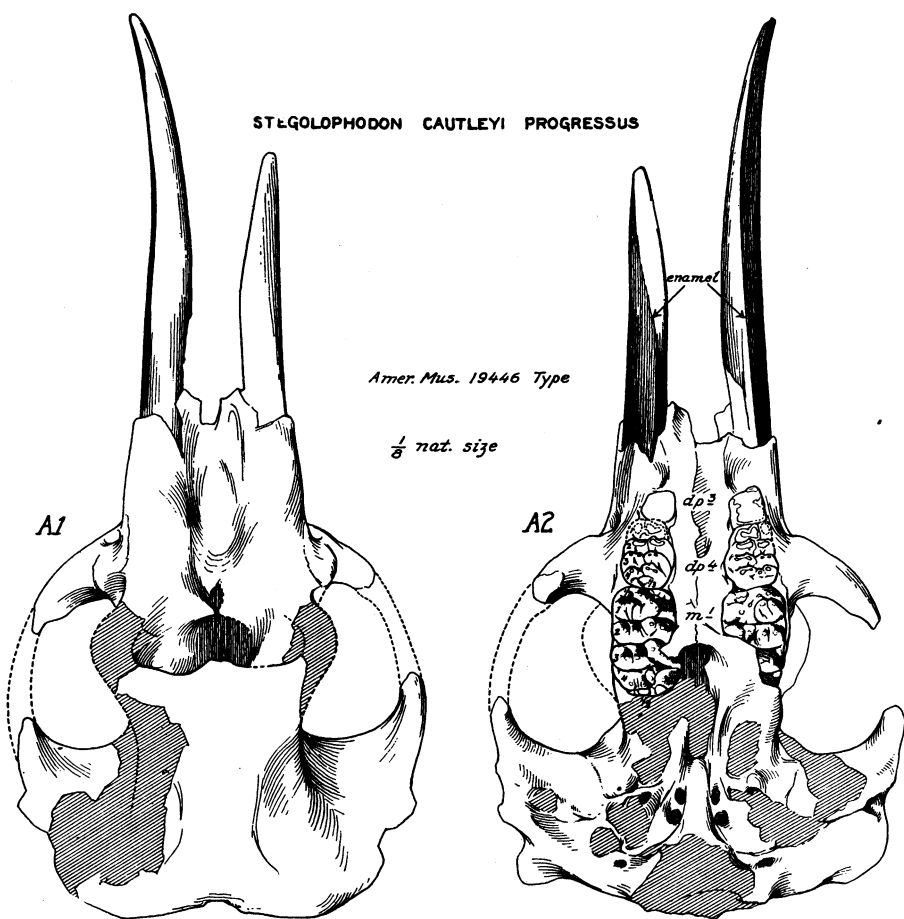


Fig. 15. Type cranium of *Stegolophodon cautleyi progressus* (Amer. Mus. 19446). One-eighth natural size.

LOCALITY.—Collected by Barnum Brown in 1922 near Nathot, India.

HORIZON.—Lower Chinji horizon, the exact level being unrecorded, lower Middle Siwaliks; Middle to Upper Miocene.

SPECIFIC CHARACTERS.—Ridge-crests low, blunted, with four to five blunted conelets on each crest; ridge-crests transversely arcuate or arched, as in *Stegolophodon stegodontoides*. Enamel thick with slightly indented border. Rugose external cingulum. Ridge-crest formula unknown, probably $M\ 3\ \frac{7\frac{1}{2}}{5\frac{1}{2}}$; characters of ridge-crests and conelets quite distinct from those of *Stegolophodon latidens*, ridge-crest formula probably lower than in *S. latidens*.

See Chapter XV of the Proboscidea Memoir.

STEGOLOPHODON CAUTLEYI PROGRESSUS, new subspecies

TYPE.—Amer. Mus. 19446. A juvenile cranium containing right and left superior tusks with broad enamel band, also *in situ* third and fourth superior deciduous premolars and first molar of both sides, Dp^{3-4} , M^1 .

LOCALITY.—Twelve miles east of Chinji Bungalow, India.

HORIZON.—Collected by Barnum Brown in 1922 at summit of Lower Chinji horizon, 2,000 feet above base of Lower Siwaliks. Middle Miocene.

SPECIFIC CHARACTERS.—Superior tusks laterally compressed, with broad external enamel band; ridge-crest formula as compared with that of *Stegolophodon cautleyi*, as follows:

Stegolophodon cautleyi progressus: $r.Dp\ 3\ \frac{3}{2}$ $r.Dp\ 4\ \frac{4\frac{1}{2}}{2}$ $r.M\ 1\ \frac{1\frac{1}{2}-4-\frac{1}{2}}{2}$

Stegolophodon cautleyi (typical): $r.Dp\ 3\ \frac{3}{2}$ $r.Dp\ 4\ \frac{1\frac{1}{2}-3-\frac{1}{2}}{2}$ $r.M\ 1\ \frac{1\frac{1}{2}-4-\frac{1}{2}}{2}$

Four ridge-crests in intermediate molars, $r.Dp^4$, $r.M^1$, with four irregular conelets on each crest; rudimentary anterior and posterior ridge-crests in $r.M^1$; conelets less blunt and crowns less brachyodont than in *Stegolophodon nathotensis*, as it belongs to a more recent geologic level; median fissure in $r.M^1$ wanting, as shown in cotype of *Stegolophodon cautleyi*, or decidedly less distinct than in *S. cautleyi* lectotype from Perim Island; traces of irregular internal trefoil conelets on $r.Dp^4$ and $r.M^1$.

Of very great importance and interest is the presence of superior incisive tusks with lateral enamel band, as well as other evidence, in the structure of the superior grinding teeth, of the affinities of this tetralophodont type with the much more primitive trilophodont mastodonts of the Lower Miocene of France.

See Chapter XV of the Proboscidea Memoir.

This type is of great importance and interest as yielding for the first time a knowledge of the cranial structure of *Stegolophodon* in its Miocene stage of evolution.

STEGODON INSIGNIS BIRMANICUS, new subspecies

TYPE.—Amer. Mus. 20002. A very large and massive left inferior jaw containing the left third inferior molar, $I.M_3$. Length of $I.M_3$ 333–362 mm., breadth 97 mm., index 29–27.

LOCALITY.—Mingoon, opposite Mandalay, Burma.

HORIZON.—Collected by Barnum Brown in 1922 in the upper levels of the Irrawaddy Series, Upper Pliocene.

SPECIFIC CHARACTERS.—The ridge-crests of $I.M_3$, namely, $\overline{12-\frac{1}{2}}$, are the same in number as in *Stegodon insignis*, but the elongation of this inferior molar and the

open character of the ridge-crests are quite distinctive from *S. insignis*; the jaw is more massive and the inferior grinding teeth surpass in length measurement those of any other stegodont type known; the grinders are larger and exhibit fewer conelets. The conelets are stout and vary in number from four to twelve on each ridge-crest. Cement is present all the way back.

See Chapter XV of the Proboscidea Memoir.

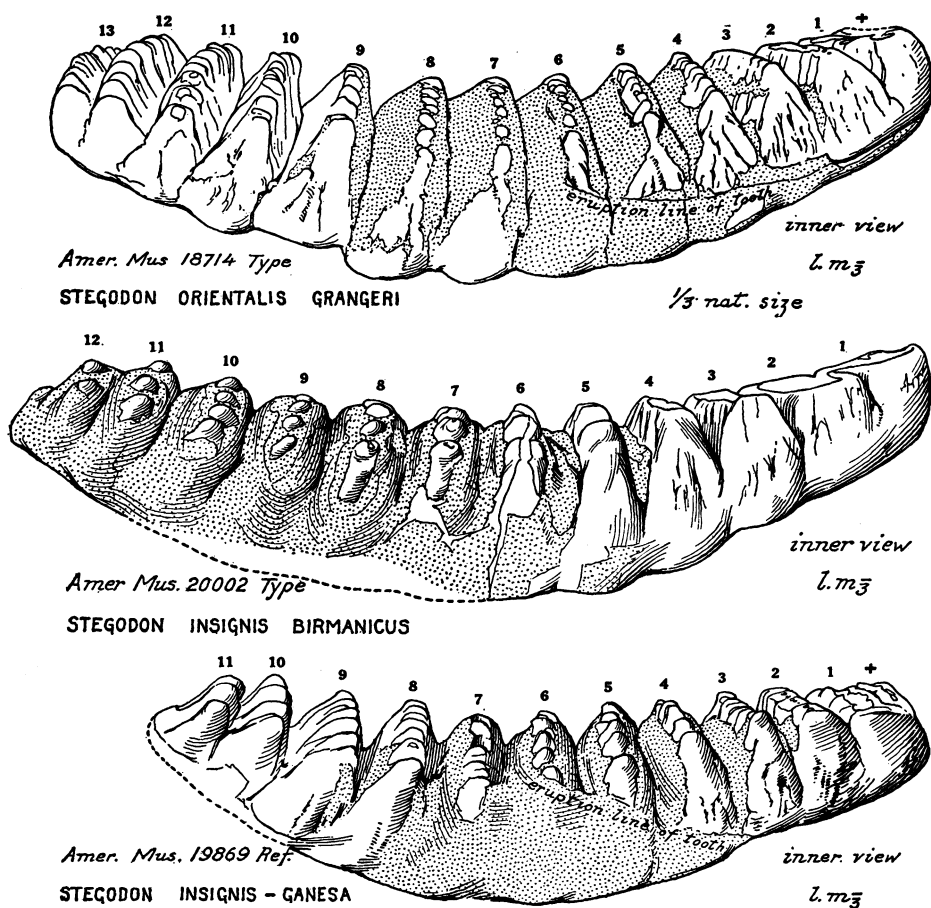


Fig. 16. *Stegolophodon orientalis grangeri* type (Amer. Mus. 18714); *Stegodon insignis birmanicus* type (Amer. Mus. 20002); *Stegodon insignis-ganesa* ref. (Amer. Mus. 19869). One-third natural size.

STEGODON ORIENTALIS GRANGERI, new subspecies

TYPE.—Amer. Mus. 18714. A third left superior molar, L.M³, and a third left inferior molar, L.M₃, of the same individual.

LOCALITY.—Part of the Granger Collection from Yen-ching-kao, near Wansien, Province of Sze-chuan, China, made during the winter of 1920–1921.

HORIZON.—Upper Pliocene.

SPECIFIC CHARACTERS.—The subspecies *Stegodon orientalis grangeri* is more primitive than the type of *S. orientalis*, which is also from a cave in Sze-chuan; the ridge-crests are less elevated and wider apart at the base and seem to be even more primitive than those of the *S. insignis* type; the cranium is much smaller and simpler than that of *S. insignis-ganessa* and resembles in its contour rather that of *S. bombifrons*.

See Chapter XV of the Proboscidea Memoir.

Aside from the type there is very abundant referred material from the same locality, including the complete superior and inferior dentition, Dp 2–Dp 4, M 1–M 3, in various stages of attrition and dental succession, constituting the most complete material of dental succession known in the fossil Proboscidea.

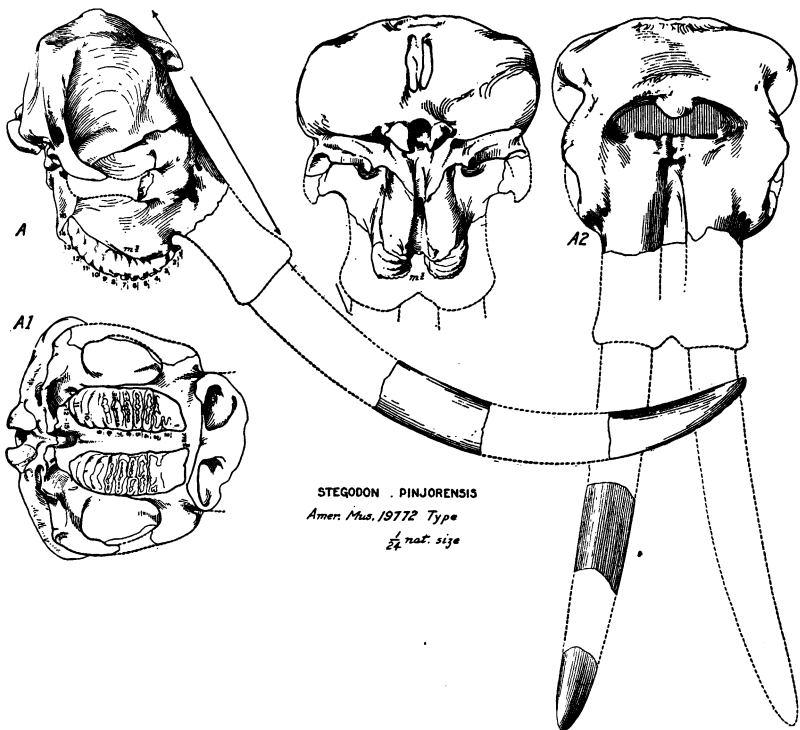


Fig. 17. Type of *Stegodon pinjorensis* (Amer. Mus. 19772). One twenty-fourth natural size.

STEGODON PINJORENSIS, new species

TYPE.—Amer. Mus. 19772. A male cranium, rostrum wanting; portions of right inferior tusk preserved.

LOCALITY AND HORIZON.—Recorded by Barnum Brown as follows: "Skull. Just below Conglomerate beds, Upper Siwaliks, three miles north of Siswan, India." This progressive cranium does not belong in the Pinjor (Upper Pliocene) horizon, as the specific name *pinjorensis* suggests, but was probably deposited from the overlying Boulder Conglomerate beds of Lower Pleistocene age.

SPECIFIC CHARACTERS.—Superior grinding teeth distinguished from those of *Stegodon insignis-ganesa* by their superior size, much more numerous ridge-crests, progressive hypsodonty; the comparative ridge formulæ of M 3 are as follows:

Stegodon pinjorensis: M 3 $\frac{14\frac{1}{2}-15}{12-14}$

Stegodon insignis birmanicus: M 3 $\frac{12-14}{12-14}$

Stegodon insignis-ganesa: M 3 $\frac{\frac{1}{2}-11-\frac{1}{2}}{12\frac{1}{4}-13}$

This type male cranium resembles that of the male type of *Stegodon ganesa* Falc., namely, with small rounded parieto-occipital crest, lofty and greatly abbreviated frontonasal surface, anterior nares correspondingly elevated, grinding surface of the large molars very strongly arched, but the cranium is relatively more depressed or bathycephalic than in *S. ganesa*.

See Chapter XV of the Proboscidea Memoir.

Subfamily: **MAMMONTINÆ****ARCHIDISKODON SONORIENSIS**, new species

TYPE.—Amer. Mus. 22637. Nearly complete skeleton, of which the palate with third superior molar, M³, of both sides, right lower jaw (lacking ascending ramus), with third inferior molar, r.M₃, *in situ*, also symphysis, are in the American Museum.

LOCALITY.—One mile east of Arizpe, northern Sonora, Mexico, on the Sonora River, 60 miles southeast of Cananea and approximately 100 miles north of La Prietas and San José de Pimas.

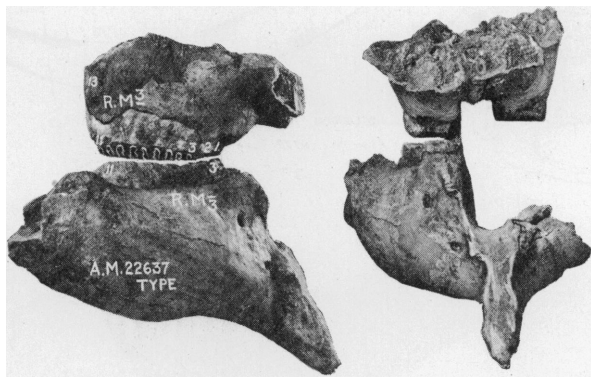


Fig. 18. *Archidiskodon sonoriensis*, anterior portion of type mandible and maxilla showing r.M³, r.M₃ (Amer. Mus. 22637). One-twelfth natural size.

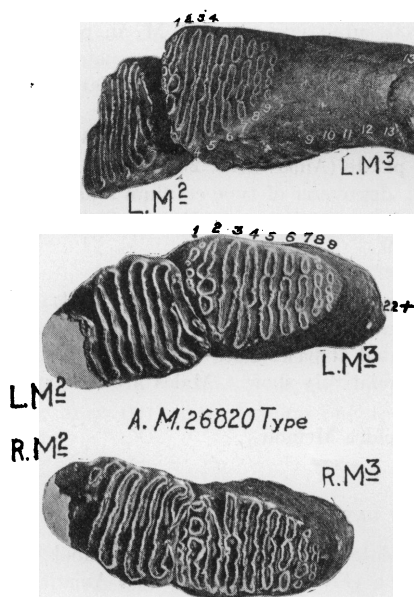
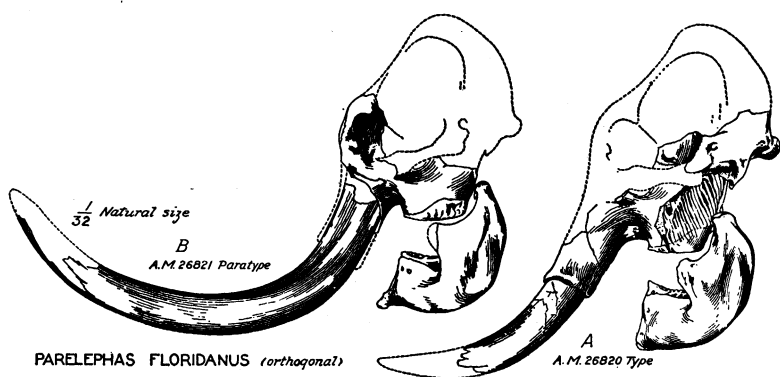
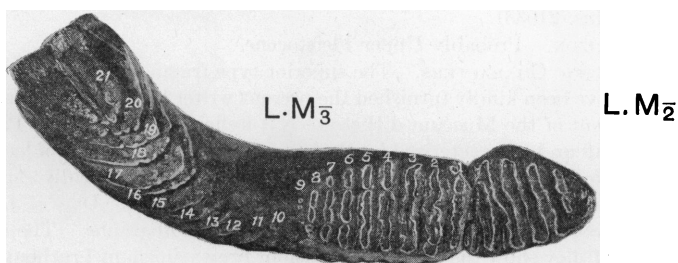


Fig. 19. Type and paratype of *Parelephas floridanus* (Amer. Mus. 26820, 26821). Crania one thirty-second natural size; type dentition one-sixth natural size.



HORIZON.—The Arizpe horizon is regarded by Barnum Brown as Lower Pleistocene (lake deposit).

SPECIFIC CHARACTERS.—Mandibular rostrum prolonged obliquely downwards, with downturned beak, as seen both in front and side views; length from symphyseal groove to tip of rostrum 230 mm., exposed length of M^3 246 mm., of M_3 346 mm.; depth from third unbroken plate to bottom of jaw 244 mm. A total of $11+2$ (?) exposed ridge-plates in M^3 , of 2 (?) + $11+3$ in M_3 .

See Chapter XVI of the Proboscidea Memoir.

PARELEPHAS FLORIDANUS, new species

TYPE.—Amer. Mus. 26820. Anterior portion of cranium, maxilla with M^2 , M^3 of both sides, and tusks, together with lower jaw, M_2 of both sides *in situ*, of a middle-aged individual; also associated (?) right femur and other skeletal parts.

PARATYPES.—Amer. Mus. 26821, adult jaw with M_2 , M_3 in place, and Amer. Mus. 26822, fragment of palate with M^3 of both sides; also associated (?) left femur and other members of vertebral skeleton of an individual of larger size (Amer. Mus. 26821).

LOCALITY.—Manatee County, Florida, two miles south of Bradenton. Discoverer of deposit and of paratype palate (Amer. Mus. 26822), J. E. Moore of Sarasota, Florida, in February of 1929; discoverer of type cranium and other material, Carl Sorensen of the American Museum, member of the Holmes Florida Expedition, in spring (March 2 to April 2) of 1929.

HORIZON.—Fluviatile fine sand, (?) Upper Pleistocene.

SPECIFIC CHARACTERS.—Superior and inferior ridge-plate formula: $M\ 3\ \frac{2\frac{2}{3}}{1\frac{1}{2}}+$, max. $\frac{2\frac{2}{3}}{2\frac{2}{3}}$, intermediate between *Parelephas columbi* ($\frac{1\frac{9}{8}}{8}+$) and *P. jeffersonii* ($\frac{2\frac{3}{4}}{2\frac{3}{4}}$); ridge-plates broad and widely separated at base, more compressed at summit. Incisive tusks extremely massive and relatively short. Males attain very large size. Femora measure 1250 to 1410 mm.

See Chapter XVII of the Proboscidea Memoir.

PARELEPHAS COLUMBI CAYENNENSIS, new subspecies

TYPE.—Three and a half ridge-plates of a third right superior molar, $r.M^3$, collected by Captain Perret in Cayenne (French Guiana), South America, and now preserved in the Muséum d'Histoire Naturelle, Marseille, France, as No. 8449 (cast Amer. Mus. 21933).

HORIZON.—Probably Upper Pleistocene.

SPECIFIC CHARACTERS.—The superior type fragments, photographs and casts of which have been kindly furnished the present writer through the courtesy of Director W. Laurent of the Muséum d'Histoire Naturelle of Marseille, and Prof. W. Repelin, Conservateur, is characterized by Professor Repelin (translation of letter of March 30, 1929) as follows: "They were in rather bad condition and so badly cemented together that I had to take away the larger part of the cement. One of these fragments, A-1, is represented in side view on one of these photographs. The lamellæ are very worn and they show the plate of blackish or brownish enamel rather in relief and the ivory forms a small median depression. The cement which separates the lamellæ is

not very thick in this specimen. In the other photograph, A-2, the specimen is shown as seen from above. Finally another fragment, B, is also represented as seen from above. It has been worn in the direction of the lamellæ, but this worn part shows only a very irregular section of ivory and enamel."

The fragment consisting of three and a half lamellæ or ridge-plates is made the type of the new subspecies *Parelephas columbi cayennensis*. These ridge-plates appear to belong to the posterior portion of the crown of a third superior molar of the right side, $r.M^3$; they are strongly concave posteriorly and are composed of coarse enamel, deeply grooved or crenulated on the sides; the external cement, formerly present, has been dissolved or worn away; the apices of the three ridge-plates present a convex profile, hence supporting the superior molar reference indicated by the posterior concavity. They correspond broadly with ridge-plates 16, 17, and 18 of an $r.M^3$ of *Parelephas columbi*; in size they correspond with ridge-plates 19, 20, and 21 of *floridanus*; they seem relatively narrow, thus agreeing with the narrow ridge-plated *P. columbi* rather than with the broad-plated *Archidiskodon imperator*.

See Chapter XVII of the Proboscidea Memoir.

Subfamily: **ELEPHANTINÆ**

ELEPHAS PLATYCEPHALUS, new species

TYPE.—Amer. Mus. 19818. Cranium with M^3 of both sides partly exposed.

LOCALITY.—Near Siswan, bed of Amilee Creek, Simla Hills, India.

HORIZON.—Found in separate mass of consolidated gravel which had apparently been washed down from an original Boulder Conglomerate bed into a shallow region bordering Amilee Creek. While not found *in situ*, it would seem to be of the same Lower Pleistocene age as the Boulder Conglomerate formation above. Barnum Brown Collection of 1922.

SPECIFIC CHARACTERS.—Cranium of very primitive elephantine affinity, low, flattened; orbit widely separated from occiput; premaxillary rostrum somewhat broadened, resembling that of *Elephas*; posterior nares deeply indented; occipital condyles on relatively low plane, not greatly elevated above grinders; relatively long and narrow cranial proportions. Cranium widely different from the elevated *Elephas hysudricus* or the greatly elevated *Elephas indicus* crania. Ridge-plates of type molars fractured or absent. Estimated ridge-plate formula: $M\ 3\ \frac{1\ 6\ 1\frac{1}{2}}$.

See Chapter XX of the Proboscidea Memoir.

The discovery by Barnum Brown of this type below the Boulder Conglomerate renders it probable that *Elephas platycephalus* is of Lower

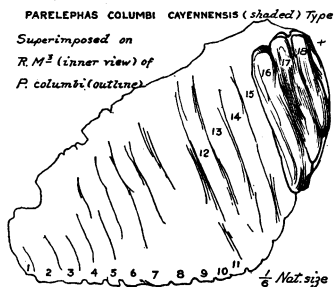


Fig. 20. Type (shaded) of *Parelephas columbi cayennensis* (Marseille Mus. 8449) placed upon outline of complete $r.M^3$ of *Parelephas columbi*. One-sixth natural size.

Pleistocene or possibly Upper Pliocene age; in its dolichocephalic proportions it appears to be even more primitive than the *Archidiskodon planifrons* cranium of Upper Pliocene age.

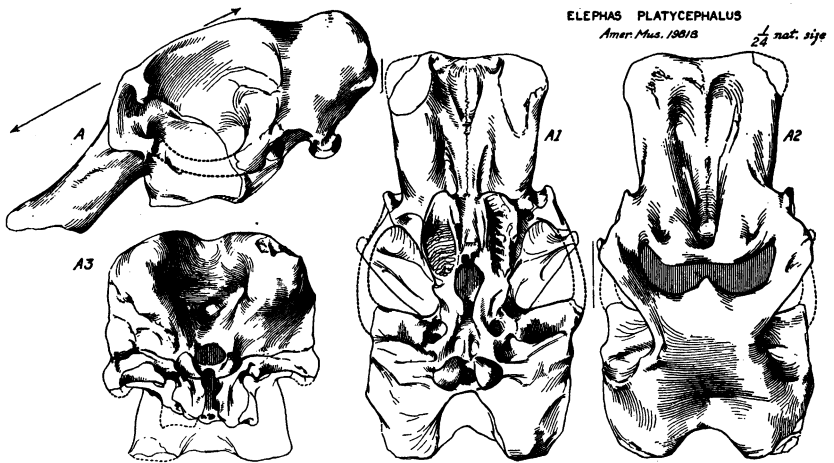


Fig. 21. Type cranium of *Elephas platycephalus* (Amer. Mus. 19818). One twenty-fourth natural size.

ELEPHAS PLATYCEPHALUS ANGUSTIDENS, new subspecies

TYPE.—Amer. Mus. 19915. Third inferior molar of the left side, I.M.₃.

LOCALITY.—Three miles west of Chandigarh, Siwalik Hills, India.

HORIZON.—Collected by Barnum Brown in 1922 “below Conglomerates,” Upper Siwaliks.

SPECIFIC CHARACTERS.—Inferior molars relatively long and narrow, with parallel ridge-plates of moderate height, very little cement, and terminating superiorly in four conelets on ridge-plates 7–14 and four to five conelets on ridge-plates 1–6. This conelet disposition is very similar to that observed in crown view of the grinders of *Elephas hysudricus*. Ridge-plate formula of I.M 3 $\frac{1}{4}$ -1 2- $\frac{3}{4}$, a total of fourteen more or less elevated and compressed ridge-plates.

See Chapter XX of the Proboscidea Memoir.

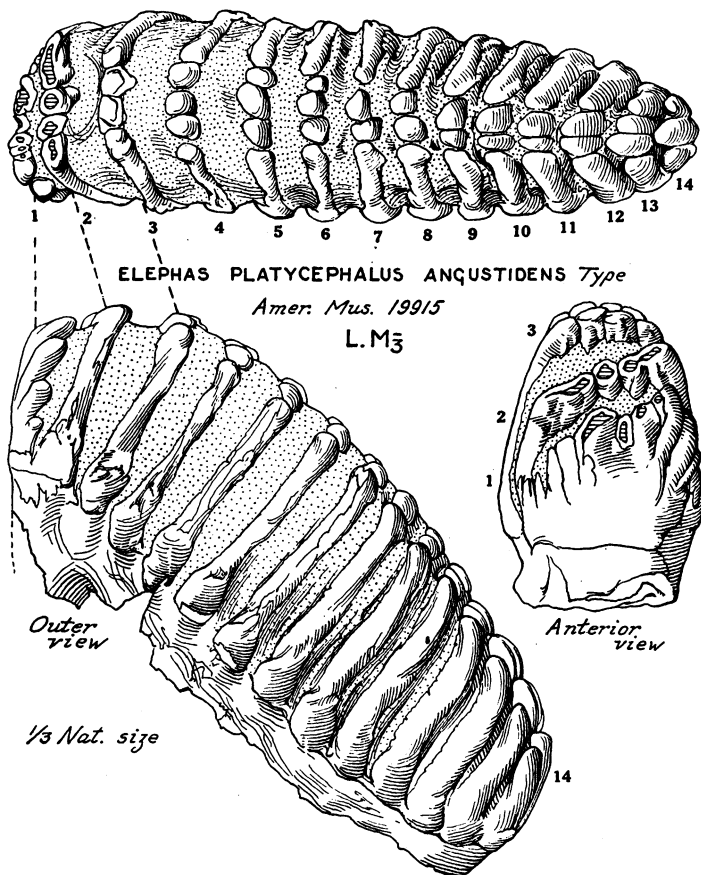


Fig. 22. Type l.M₃ of *Elephas platycephalus angustidens* (Amer. Mus. 19915). One-third natural size.

