OSTEOLOGY OF THESCELOSAURUS, AN ORTHOPODOUS DINOSAUR FROM THE LANCE FORMATION OF WYOMING.

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INTRODUCTION.

Since the preliminary description [1] of *Thescelosaurus neglectus* was published the preparation of the type-specimen has been completed and it is now proposed to give a more detailed account of the skeletal anatomy, and a fuller discussion of its affinities and relationships than was possible at the time of publishing the original article.

The finding in the United States National Museum collections of the portions of three individuals in addition to the type-specimens serves as excellent supplimentary material and enables me to describe more accurately certain parts of the skeleton that were either missing or badly damaged in the typical specimens.

OSTEOLOGY OF THESCELOSAURUS.

SUMMARY OF KNOWN MATERIAL.

Type, No. 7757, U.S.N.M. An articulated skeleton, lacking the skull and neck, and portions of humeri, scapulae, and coracoids. From Doegie Creek, Niobrara County,[2] Wyoming. Collected by J. B. Hatcher and W. H. Utterback, 1891.

Paratype, No. 7758, U.S.N.M. Consists of a few cervical, dorsal, and caudal vertebrae, portions of both scapulae, ribs, portions of fore and hind feet, and fragmentary limb bones. From Lance Creek, Niobrara County, Wyoming. Collected by O. A. Peterson, 1889.

No. 7760, U.S.N.M. Left scapula and coracoid. From Deer Ears Buttes, Butte County, South Dakota. Collected by J. B. Hatcher, 1891.

No. 7761, U.S.N.M. Cervical centrum. From "Beecher's Quarry," Niobrara County, Wyoming. Collected by Hatcher, Sullins, and Burrell, 1891.

[1] Gilmore, Charles W., A new Dinosaur from the Lance Formation of Wyoming. Smith. Misc. Coll., vol. 61, No. 5, 1913, pp. 1-5, figs. 1-5.

[2] At the time these collections were made, Niobrara County was a part of Converse County.

No. 8065, U.S.N.M. Proximal phalanx of digit III of the pes. From Niobrara County, Wyoming. Collected by J. B. Hatcher, 1890.

No. 8016, ——, and 5031. The partial skeletons of three individuals in the American Museum of Natural History, New York, all from Dawson County, Montana. All collected by Barnum Brown.

THE VERTEBRAL COLUMN.

The vertebral column is intact and articulated from the anterior dorsal region to very near the tip of the tail. This series may be subdivided as follows: Presacrals (all dorsals) 16, sacrals 5, and caudals 48.

The number of cervicals is unknown; probably not more than nine, as in *Camptosaurus*. I am inclined to the belief that the dorsal series is complete as shown by the attachment of the most anterior sternal rib at the extreme outer corner of the sternal bone, thus leaving no room for the union of other ribs anterior to the sixteenth presacral.

The sacrum may be considered definitely determined as having five vertebrae. The tail lacks one or two vertebrae at the tip to complete the series. Tentatively the vertebral formula may be given as c9?, d16, s5, c50.

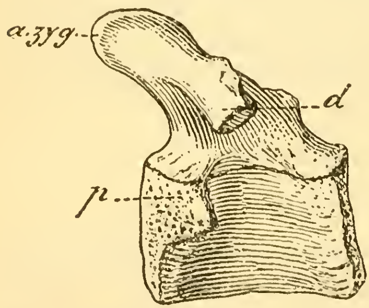

FIG. 1.—CERVICAL VERTEBRA OF THESCELOSAURUS NEGLECTUS GILMORE. PARATYPE. NO. 7758, U.S.N.M. ABOUT ¾ NAT. SIZE. VIEWED FROM LEFT SIDE. *a. zyg.*, ANTERIOR ZYGAPOPHYSIS; *d*, DIAPOPHYSIS; *p*, PARAPOPHYSIS.

Cervical vertebrae.—None of the cervical vertebrae was preserved with the type-specimen, but fragmentary parts of several pertaining to the paratype No. 7758, U.S.N.M., give a fairly good idea of the chief characteristics of the structure of the bones of the neck.

The centra are plano-concave, the concavity of the posterior end being very shallow. In contour the anterior end is shield-shaped, the upper border being slightly indented by the neural canal. The sides of the centra below the neuro-central suture are pinched in, but to a less degree than in *Camptosaurus*. Ventrally the centra are flattened. This surface is rugosely roughened and extends the entire length of the vertebra, being wider behind than in front, as shown in figure 2. This flattening of the cervicals appears distinctive of *Thescelosaurus*, for in all other dinosaurs the ventral surfaces are either keeled or broadly rounded.

The neural arches are attached to the centrum by broad pedicles, especially expanded on the anterior end, where they extend outward over the tops of the parapophysial buttresses. The neural canal is large.

In figure 1 is shown one of the cervicals from the posterior half of the neck, which has a rather slender diapophysial process which extends outward, backward, and slightly downward. The anterior zygapophyses have exceedingly broad articular surfaces placed wide apart.

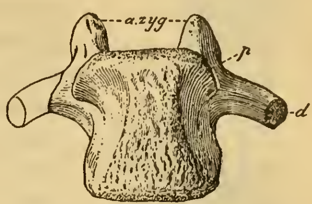

FIG. 2.—CERVICAL VERTEBRA OF THESCELOSAURUS NEGLECTUS GILMORE. PARATYPE. NO. 7758, U.S.N.M. ½ NAT. SIZE. VENTRAL VIEW. *a. zyg.*, ANTERIOR ZYGAPOPHYSES; *d*, DIAPOPHYSIS; *p*, PARAPOPHYSIS.

While nothing is known as to the precise number of vertebrae in the neck, there appears no good reason to expect a greater number than in *Hypsilophodon* or *Camptosaurus*, the latter having been definitely determined as having 9, which agrees with Huxley's[1] determination of the cervicals in *Hypsilophodon*, whereas Hulke[2] shows in his restoration only 8. Marsh[3] in his restoration of *Hypsilophodon* has certainly erred in increasing the number to 11. See plate 82.

The measurements of the centrum shown in figures 1 and 2 are: Greatest length, 40 mm.; greatest width, anterior end, 41 mm.; greatest height, anterior end, 27 mm.; greatest width, posterior end, 33 mm.

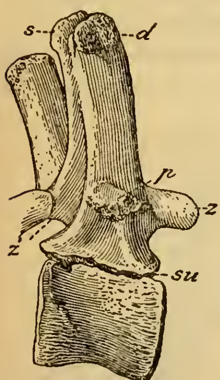

FIG. 3.—FIFTEENTH PRESACRAL VERTEBRA, PROBABLY THE 2D DORSAL OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. NO. 7757, U.S.N.M. ½ NAT. SIZE. LATERAL VIEW. *d*, DIAPOPHYSIS; *p*, PARAPOPHYSIS; *s*, SPINOUS PROCESS; *su*, NEUROCENTRAL SUTURE; *z*, ANTERIOR ZYGAPOPHYSIS; *z'*, POSTERIOR ZYGAPOPHYSIS.

Dorsal vertebrae.—The dorsal centra are slightly biconcave. In passing from the front toward the sacrum the centra gradually increase in length and in transverse diameter, reaching their maximum development in the last dorsal.

The flattened ventral surfaces of the cervicals change to a narrow rounded surface in the anterior dorsals, becoming progressively more and more broadly rounded as they approach the sacrum. For a short distance on either end of the centra, when viewed laterally, the surface is longitudinally corrugated, being especially pronounced on the ventral areas. The pinched-in depression of the cervicals changes in the dorsals, so that posterior to the mid-thoracic region the sides of the centra are approximately flat in the vertical direction. All are concave, however, longitudinally. All of the presacrals show stout transverse processes. In the anterior dorsal region these are relatively long (see fig. 3) with a capitular facet on the side of the arch. Proceeding posteriorly the transverse processes become shorter and the position of the facet changes from the side of the arch to the front

[1] Quart. Journ. Geol. Soc. London, vol. 26, 1870, p. 3, pl. 1.
[2] Philos. Trans. Roy. Soc. London, 1882, pp. 1035–1062, pl. 82.
[3] Dinosaurs of North America, 1896, pl. 84.

border of the transverse process and approaches the tuberculum until on the fourth vertebra in front of the sacrum there is but a single facet on the end of the exceedingly heavy process (see *d*, fig. 5). This vertebra, as in the remaining dorsals, all carry single headed ribs.

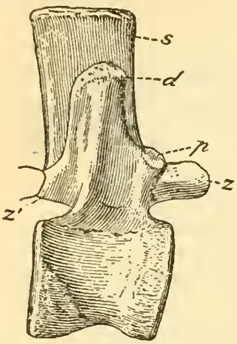

FIG. 4.—EIGHTH PRESACRAL VERTEBRA OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. NO. 7757, U.S.N.M. ½ NAT. SIZE. LATERAL VIEW. *d*, DIAPOPHYSIS; *p*, PARAPOPHYSIS; *s*, SPINOUS PROCESS; *z*, ANTERIOR ZYGAPOPHYSIS; *z'*, POSTERIOR ZYGAPOPHYSIS.

The transverse processes of the anterior dorsals are directed upward at an angle of more than 45°, so that when viewed from the side they appear to equal the spinous process in height, as shown in figure 3. Proceeding posteriorly the upward inclination becomes less and less until in the posterior dorsals it extends out nearly horizontal (fig. 5). Throughout the series the point of origin of the transverse processes is especially low down on the arch, though higher in front than behind.

The spinous processes are thin rectangular plates of bone (figs. 4 and 5), with but little transverse expansion of their upper extremities. These gradually increase in height posteriorly, reaching their maximum development in the last dorsal (first presacral). The last dorsal (or sacro-dorsal) may be distinguished by its greater bulk and especially by the great transverse diameter of its posterior end. It is the largest vertebra of the entire vertebral column. As in all known dinosaurs, there are no true lumbar vertebrae, as all bear ribs. The average intercostal space between the dorsal vertebrae, as found articulated, is about 5 mm.

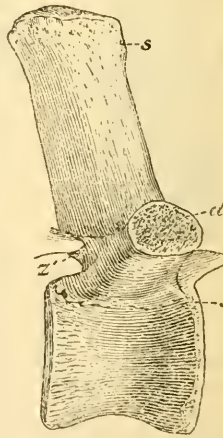

FIG. 5.—THIRD PRESACRAL VERTEBRA OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. NO. 7757, U.S.N.M. ½ NAT. SIZE. LATERAL VIEW. *d*, DIAPOPHYSIS; *s*, SPINOUS PROCESS; *su*, SUTURE; *z*, ANTERIOR ZYGAPOPHYSIS; *z'*, POSTERIOR ZYGAPOPHYSIS.

Sacrum.—The sacrum, as in *Hypsilophodon*, consists of five vertebrae that are directly united with the ilia by sacral ribs. These vertebrae are suturally united and appear to be firmly anchylosed. Sacral one may be distinguished from those that follow by the great transverse expansion of the anterior end of its centrum. The second sacral has the smallest centrum of the five and in cross-section is subcircular. The remaining three are more broadly rounded and but slightly concave antero-posteriorly. The first two sacral ribs unite with the centra intervertebrally, but the remaining three articulate laterally with their respective centra (fig. 17).

Passing outward from the centra the outer ends of the sacral ribs are expanded fore and aft to meet one another, becoming coalesced, and thus inclose a series of four sacral foramina. In *Hypsilophodon* the sacral ribs unite with the sacrals intervertebrally throughout the series, as they do in *Camptosaurus*. The spinous process of sacral one is distinct, but those of s^2, s^3, and s^4 (shown by the impressions in the rock) were closely joined and appear to have formed a continuous sheet of bone. The spinous process of the fifth is free. Viewed laterally, these spines extend but little above the superior borders of the ilia. The combined length of the five sacral centra is 195 mm.

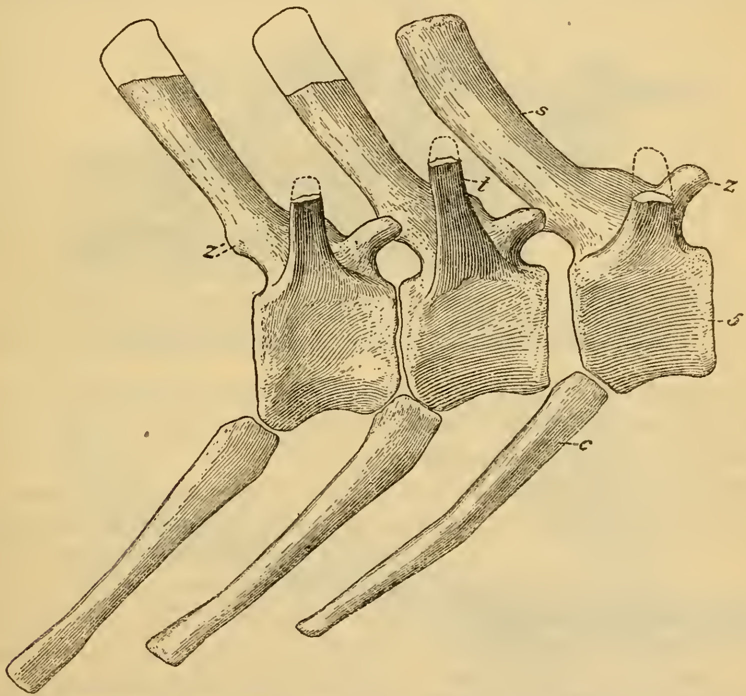

Fig. 6.—Anterior caudal vertebrae (5th, 6th, and 7th) of Thescelosaurus neglectus Gilmore. Type. No. 7757, U.S.N.M. ½ nat. size. *c*, Chevron; *s*, spinous process; *t*, transverse process; *z*, anterior zygapophysis; *z'*, posterior zygapophysis; *5*, fifth caudal.

Caudal vertebrae.—Forty-eight articulated caudal vertebrae are present with the type, and, as stated previously, it would appear as though two or more are missing from the tip of the tail, so that in *Thescelosaurus* the complete series would consist of at least 50 vertebrae. The first caudal may be recognized by the absence of chevron facets and the backward inclination of the spinous process. As in *Hypsilophodon*, the second caudal carries the first chevron. This is indicated in the type (No. 7757, U.S.N.M.) by a mutilated fragment found *in situ* between the second and third vertebrae, though the greater portions of the centra of these two vertebrae are missing.

Transverse processes are present in the first 10 caudals, whereas in *Hypsilophodon* the first 14 have transverse processes and in *Camptosaurus* the first 12. This process on the first caudal is shorter than those immediately succeeding it. They increase in length from the first to the fifth, and gradually shorten posteriorly, ending abruptly on the tenth, which has a length of 23 mm. All are given off from the side of the centra immediately below the level of the neuro-central suture (fig. 6). With the disappearance of the transverse processes the length of the centra is slightly increased and they become

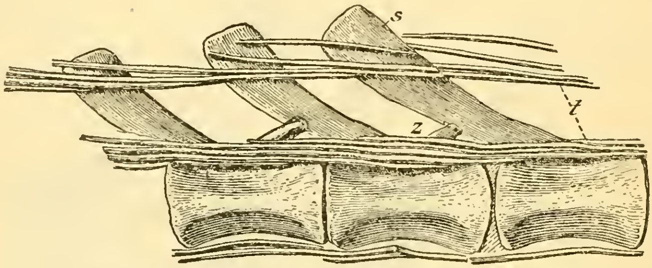

Fig. 7.—Median caudal vertebrae (24th, 25th, and 26th) of Thescelosaurus neglectus Gilmore. Type. No. 7757, U.S.N.M. ½ nat. size. *s*, Spinous process; *t*, ossified tendons; *z*, anterior zygapophysis.

more cylindrical in shape (fig. 7). This increase in length continues back to the twentieth, and from this vertebra to the tip the centra gradually decrease in this diameter.

The spinous processes have a decided backward inclination and are gradually reduced in height posteriorly, disappearing altogether on the thirty-sixth vertebra. Weak zygapophyses persist as far back as the forty-fifth. The thin anterior expansion at the base of the spinous process shown in figure 6 is present only on the first 10 caudals. The most distal caudals have short cylinderlike centra without zygapophysial articulation and with but slight expansion of the two extremities (see fig. 8).

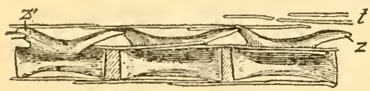

Fig. 8.—Distal caudal vertebrae (40th, 41st, and 42d) of Thescelosaurus neglectus Gilmore. Type. No. 7757, U.S.N.M. ½ nat. size. *t*, Ossified tendons; *z*, anterior zygapophysis; *z′*, posterior zygapophysis.

Chevrons.—As in *Hypsilophodon*, the chevrons are longer than the spinous processes. Their articular ends are slightly expanded antero-posteriorly, the free end flattened but without marked expansion. The first chevron is short and with a pointed distal end and rounded shaft. The two articular surfaces of the proximal end are separate. The fourth and fifth (fig. 6) are the longest of the series, but proceeding posteriorly they gradually shorten. Chevrons are known to be present as far back as the twenty-sixth caudal, but is quite likely they persist, as in many other dinosaurs, nearly to the end of the tail. The first chevron is borne on the second caudal. The fourth chevron has a length of 97 mm., the seventh measures 88 mm., the tenth 77 mm.

Principal measurements of vertebrae.

	Greatest length	Greatest width posterior end.	Greatest height with spine.		Greatest length.	Greatest width posterior end.	Greatest height with spine.
Presacrals:	*mm.*	*mm.*	*mm.*	Sacrals:	*mm.*	*mm.*	*mm.*
Sixteenth				First	41		
Fifteenth	38	29	81	Second	38		
Fourteenth	38			Third	[1] 34		
Thirteenth	37.5			Fourth	37	42	
Twelfth	37			Fifth	38		
Eleventh	37	32	85	Caudals:			
Tenth	37			First	37		
Ninth	37	35	85	Fifth	37		110
Eighth	39			Tenth	36.5		
Seventh	40			Twentieth	42		
Sixth	41	38	94	Thirtieth	38		
Fifth	41			Fortieth	28		
Fourth	42	43	107	Forty-fourth	23		
Third	42			Forty-seventh	[1] 18		
Second	42						
First	42	48	116				

Scapula and coracoid.—The scapula of *Thescelosaurus* is short, with a widely expanded upper extremity. The total length is about that

FIG 9.—LEFT SCAPULA OF THESCELOSAURUS NEGLECTUS GILMORE. PARATYPE. NO. 7758, U.S.N.M. ½ NAT. SIZE. EXTERNAL VIEW.

of the humerus. The similar lengths of these two bones is a most unusual proportion in dinosaurian anatomy, and so far as I am aware only found in *Thescelosaurus* and *Hypsilophodon* in the Orthopoda.

At the time of publishing my preliminary description of *Thescelosaurus* the proximal portion of the scapula was not represented in the available material (fig. 9), but the more recent discovery among the

[1] Estimated.

unprepared specimens in the collections of a nearly complete scapula and coracoid (No. 7760, fig. 10) now enables me to give a full description of these elements. This specimen was collected by Mr. J. B. Hatcher in 1891, at Deer Ears Buttes, Butte County, South Dakota (see 2, fig. 20), and its occurrence there greatly extends the known geographical range of the genus.

Relatively the scapula of *Thescelosaurus* is short, and the backward extension of the blade is somewhat more pronounced than in either *Hypsilophodon* or *Camptosaurus*. The upper half of the blade is thin, with flattened inner and outer surfaces. The truncated and unfinished appearance of the upper margin suggests the presence of a cartilaginous extension of the blade upon the sides of the thorax, such as is present in the extinct Mosasaurs and in recent lizards.

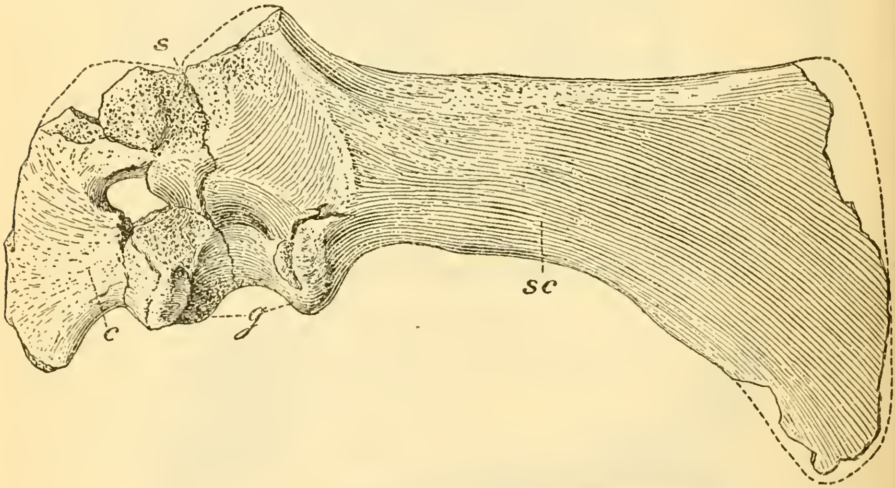

Fig. 10.—Left scapula and coracoid of Thescelosaurus neglectus Gilmore. No. 7760, U.S.N.M. ½ nat. size. Lateral view. *c*, Coracoid; *g*, glenoid cavity; *s*, suture between scapula and coracoid; *sc*, scapula.

The articulating end is expanded both vertically and transversely and presents two distinct faces or facets on the lower end, of which the longer one is for union with the coracoid, and the shorter and stouter one forms one-half of the glenoid fossa (fig. 10). On the anterior margin above the articulation for the coracoid is a short but prominent ridge that subsides rapidly upon reaching the flattened surface of the shaft. Viewed from the front the articulated scapula and coracoid is bowed from end to end and would thus conform closely to the outward curve of the body cavity. Only upper portions of the blades of the scapulae are preserved with the type-specimen, but these agree exactly with the bone here described. Compare figures 9 and 10, also plate 79.

The coracoid is a small subquadrangular plate of bone. Its glenoid border is the stoutest part, being heavier than the scapula contribution to this fossa. The internal surface is concave, the external convex. The lower border is incurved, the anterior or sternal margin is thin and regularly rounded. The coracoid foramen is placed well forward toward the center of the bone, but its large size, as shown in figure 10 is in part due to the imperfection of this part of the specimen.

Measurements of scapula and coracoid, No. 7760.

	mm.
Greatest length of scapula and coracoid	235
Greatest length of scapula	186
Greatest breadth of scapula	[1] 107
Least breadth of scapula	42
Greatest expanse of glenoid cavity	35

Humerus.—None of the humeri in the United States National Museum collections are perfectly preserved, and the description to follow is based upon a right humerus (Cat. No. 5031, Amer. Mus. Nat. Hist.) kindly loaned me by Mr. Barnum Brown, of the American Museum of Natural History, New York City. It is of the same size as the distal portions of the humeri belonging to the type, and in all probability belongs to an animal of similar proportions.

The humerus of *Thescelosaurus* is indistinguishable from that of *Camptosaurus*, except that the head instead of being centrally located on the proximal end is nearer the external border. Just above the middle of the bone is a well-developed radial crest on the antero-external border and renders the anterior aspect of this surface decidedly concave transversely (fig. 11). The shaft is slightly twisted, due to the change in direction of its surfaces. Below the deltoid ridge the shaft is constricted and suboval in cross-section, the greatest diameter being transverse.

The internal border is broadly concave from end to end; the external border is convex, the curve being somewhat less than that of the opposite border. The distal end is condylarly divided, the condyles being separated by wide, shallow grooves, both front and back. The measurements of this humerus (No. 5031, Amer. Mus. Nat. Hist.) are: Greatest length, 215 mm.; greatest width, proximal end, 65 mm.; greatest width, distal end, 44 mm.; least width of shaft, 22 mm.

Ulna.—The ulna is about equally expanded at the two ends, the shaft being contracted and subcircular in cross-section at the center. As in *Camptosaurus* and *Hypsilophodon*, the olecranon does not appear to have extended much about the articular surface for the humerus. The distal end was opposed by the ulnare and intermedium elements of the carpus, as well shown in the articulated limb (fig. 11).

The greatest length of the left ulna is 154 mm., the width of the proximal end 42 mm., and width of the distal end 32 mm.

[1] Estimated.

Radius.—The radius is more slender than the ulna, more cylindrical, and a little shorter. Its relative proportions as compared to the ulna appear to be almost identical with the forearm of *Hypsilophodon*, except perhaps that both elements in that genus are more slender. The distal end of the radius appears to have articulated exclusively with the radiale. The length of the left radius is 149 mm.; width of proximal end, 30 mm.; width of distal end (estimated), 22 mm.

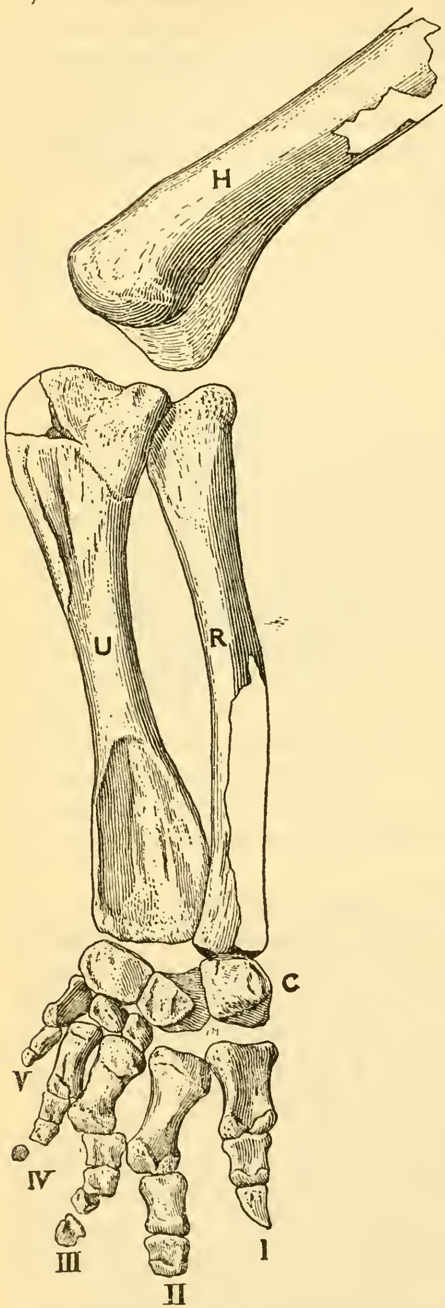

FIG. 11.—LEFT FORE LIMB OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. CAT. NO. 7757, U.S.N.M. ½ NAT. SIZE. PALMAR VIEW OF FOOT SHOWN AS FOUND IN SITU. *C*, CARPUS; *H*, HUMERUS; *R*, RADIUS; M, ULNA.

Manus.—There are five digits in the fore foot of *Thescelosaurus*. These have the phalangial formula 2, 3, 4, 3, 2, as determined from the articulated foot shown in figure 11.

The carpus consists of five elements, a proximal row of three bones of about equal proportions—the radiale, intermedium, and ulnare, and a distal row of two elements. The latter are flattened, irregularly, rounded elements that articulate with the proximal ends of metacarpals III and IV and probably represent carpalia three and four as shown in figure 11.

Phalangial formula of known Dinosaurian fore feet.

	Digits.				
	I.	II.	III.	IV.	V.
Thescelosaurus neglectus Gilmore...	2	3	4	3	2
Hypsilophodon foxii Huxley	2	3	4	3	2
Leptoceratops gracilis Brown	2	3	4	3	1
Camptosaurus dispar Marsh.......	2	3	3	3	2
Trachodon annectens Marsh	0	3	3	3	3
Iguanodon bernissartensis Boulenger..........	1	3	3	3	4

The metacarpals are much shorter than the metatarsals, the second being the longest of the series, whereas in *Camptosaurus* and *Hypsilophodon* the third is the longest. Metacarpal I is the heaviest of the five, but is more elongate than the homologous bone of the *Camptosaurus* fore foot, from which it also differs by being free from the radiale. Metacarpals III, IV, and V are progressively reduced in length, the latter articulating with the ulnare as in *Hypsilophodon*.

Digit I has two phalanges, the terminal one being a short but sharply pointed ungual. Digit II has three phalanges; the terminal is as yet unknown, but well-defined articular facets on the second phalanx, as shown in figure 11, indicates that such a bone was present in the complete foot.

The presence of four phalanges on the third digit is an unusual number and so far as I am aware only found in *Thescelosaurus* and *Hypsilophodon* among the dinosauria.[1] Of this feature in *Hypsilophodon* Hulke says:

> It is fortunate that the number of phalanges, four, in this toe (IIIrd of the manus) is beyond question, because it shows an essential structural difference between the forefoot of *Hypsilophodon* and that of *Iguanodon mantelli*, in which, upon the evidence of undisturbed specimens in the Brussels Museum, no digit has more than three phalanges.

The same may be said of the third digit of *Thescelosaurus* as compared with that of *Camptosaurus*.

The ungual of digit III is a small bluntly rounded hooflike terminal phalanx suggestive of the unguals of the primitive ceratopsian *Brachyceratops*. The terminals of digits four and five have been reduced to tiny, rounded bony nodules.

From the above figures and descriptions of the manus of *Thescelosaurus* it will be seen that the fifth digit is becoming atrophied and fast approaching a functionless condition. On account of the manus still remaining in the matrix with the palmar side up, it has not been possible to either figure or describe the opposite side.

Comparative lengths of metacarpals.

	Metacarpals.				
	I.	II.	III.	IV.	V.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Thescelosaurus neglectus	27	34	26	21	16
Hypsilophodon foxii	17	18.5	19.5	12	8
Camptosaurus dispar	26	61	76	60	40

[1] Since the above was written a description of the new Ceratopsid reptile *Leptoceratops gracilis* Brown shows that reptile as also having four phalanges on the third digit. Bull. Amer. Mus. Nat. History, vol. 33, 1914, p. 571.

THE HIND LIMB.

The hind limb in *Thescelosaurus* is less than twice the length of the fore limb, and, as usual among the orthopodous dinosaurs, is much more robust. The tibia is slightly shorter than the femur.

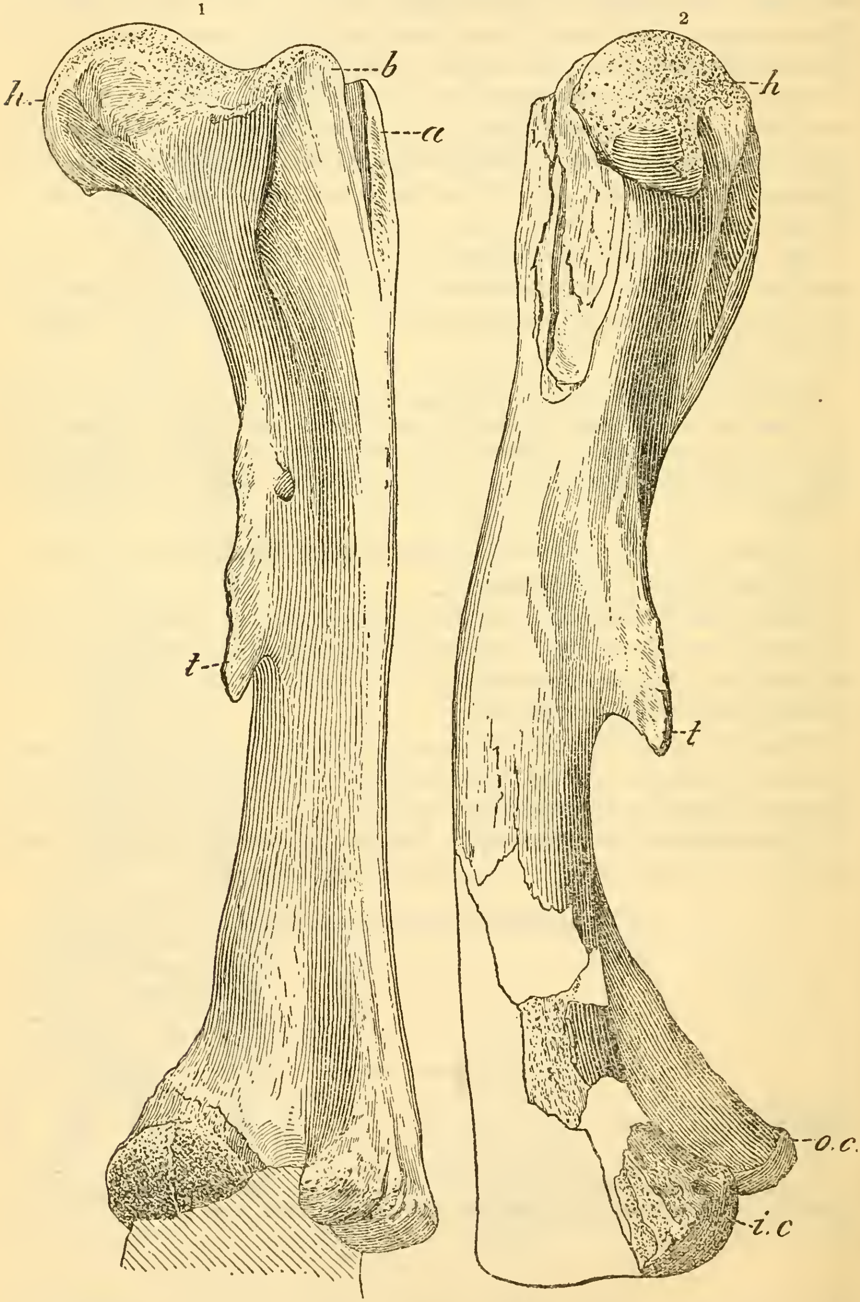

FIG. 12.—RIGHT FEMUR OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. CAT. NO. 7757, U.S.N.M. ¼ NAT. SIZE. (1) BACK VIEW; (2) EXTERNAL VIEW. *a*, LESSER TROCHANTER; *b*, GREATER TROCHANTER; *h*, HEAD; *i. c.*, INTERNAL CONDYLE; *o. c.*, OUTER CONDYLE; *t*, FOURTH TROCHANTER.

Femur.—The type has both femora preserved. The femur is bowed from end to end, as in *Camptosaurus*, *Laosaurus*, and *Dryosaurus*. It has a subglobular head borne on a distinct neck. There is a well-developed lesser trochanter on the anterior external angle of the proximal end, being separated from the upper part of the shaft by a deep vertical fissure. On the outer posterior side of this end is a projecting liplike process not before observed on the femora of other orthopodous dinosaurs (fig. 12).

The distal end has the usual condylar shape, the outer being stronger than the inner. The anterior intercondylar groove is wide and shallow. As with the humerus, the shaft of the femur is twisted, due to the alteration of the aspects of its surfaces.

On the inner and posterior aspect of the femur is a triangular inner or fourth trochanter of the "pendant" type, its apex being directed toward the distal end. It begins above but extends below the mid-line of the shaft, as in *Camptosaurus*. In *Hypsilophodon* this process is wholly upon the proximal half.

Measurements.

	mm.
Greatest length of femur	355
Greatest diameter of proximal end	92
Greatest diameter of distal end	70

Tibia.—The tibia (fig. 13) in *Thescelosaurus* resembles that of *Camptosaurus* nearer than it does that of *Hypsilophodon*.

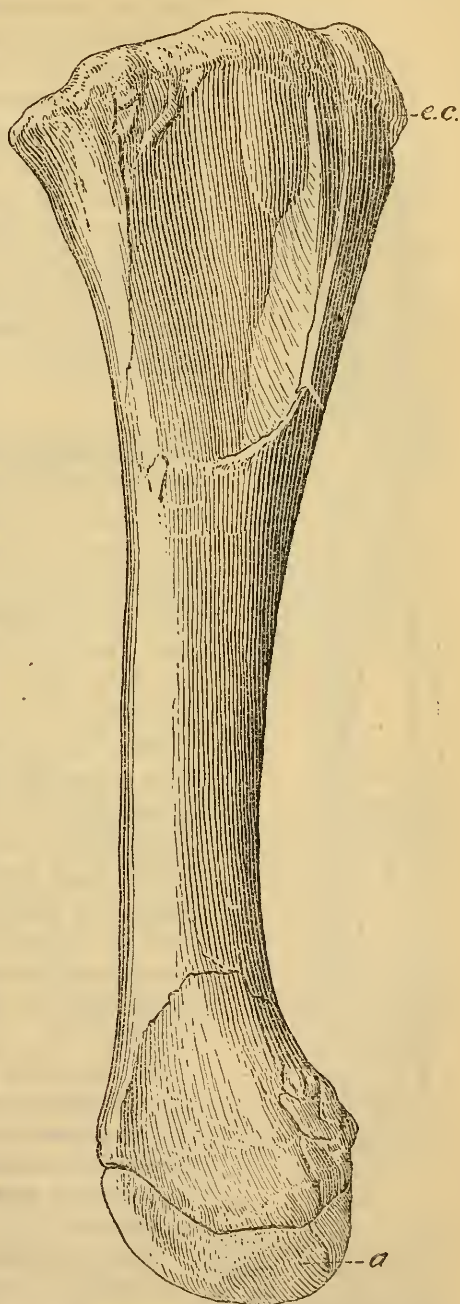

Fig. 13.—Left tibia of Thescelosaurus neglectus Gilmore. Type. Cat. No. 7757, U.S.N.M. ½ nat. size. Internal view. *a*, Astragulus: *e.c.*, enemial crest.

It is slightly shorter than the femur. The proximal end is divided into two condyles which project posteriorly and are separated by an intercondylar groove. A well-developed prenemial crest projects from the upper part of the shaft in front of the internal condyle. The distal end is divided into the two usual malleoli of which the inner is the shorter and the heavier. These are separated on the front by a shallow, vertical groove. The flattened surfaces on the lower anterior face of the bone was in contact with the distal extremities of the fibula. Transversely the distal surface of the tibia is angularly convex.

FIG. 14.—RIGHT HIND LEG OF THESCELOSAURUS NEGLECTUS. TYPE. CAT. NO. 7757, U.S.N.M. ABOUT 1/6 NAT. SIZE. FRONT VIEW, SHOWN AS FOUND ARTICULATED.

Measurements.

	mm.
Greatest length of tibia	300
Greatest diameter proximal end, antero-posteriorly	107
Greatest diameter distal end	77

Fibula.—As usual the fibula is slender and somewhat shorter than the tibia. It has a flattened shaft, above which it becomes subcylindrical, below with a flattened posterior face that lays against the opposing face of the tibia (fig. 14). It has a greatest length of 276 mm.

Pes.—In the pes of *Thescelosaurus* there are four functional digits and one (the fifth) that is vestigal. In the preliminary description of this animal it was stated, "There are four digits in the hind foot, metatarsal I being reduced; digit V is wanting." More complete preparation of the hind foot, however, disclosed a rudimentary fifth metatarsal attached to the posterior side of metatarsal IV, as shown in figure 16.

Tarsus.—The ossified tarsus is composed of four elements, the astragalus and calcaneum forming the proximal row, and two flattened blocklike bones, that articulated with the proximal ends of metatarsals III and IV to form the distal row.

The astragalus, although closely applied to the tibia, is not anchylosed with it. The calcaneum is higher than wide and articulates distally, entirely with the outer tarsal element of the distal row as in all other orthopodous dinosaurs. Viewed from the external side this bone is crescentic in outline.

The external tarsal of the distal row articulates with the outer half of the proximal end of metatarsal IV, while the inner element completely covers the upper end of metatarsal III and extends part way over metatarsal IV. The extension of this carpal bone over the joint between metatarsals III and IV, and its notched distal surface for the more perfect articulation with metatarsal IV is the most perfect mechanical joint yet observed in the Dinosauria. It is an advance in the specialization of the tarsus over any of the earlier known members of this group and is admirably adapted to resist the strains which come upon the foot.

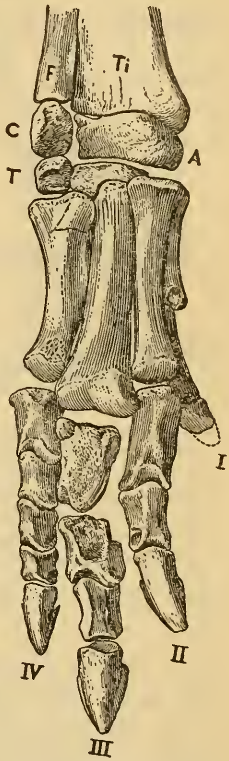

FIG. 15.—RIGHT HIND FOOT OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. CAT. NO. 7757, U.S.N.M. ¼ NAT. SIZE. SHOWN AS FOUND IN SITU. *A*, ASTRAGULUS; *C*, CALCANEUM; *F*, DISTAL END OF FIBULA; *T*, DISTAL ROW OF TARSALS; *Ti*, DISTAL END OF TIBIA; I, II, III, AND IV, DIGITS ONE TO FOUR.

Metatarsus.—The metatarsus consists of five metatarsals, of which three are large and support functional toes. Metatarsal I is reduced and metatarsal V is vestigal.

The proximal ends of the three median metatarsals are in the closest apposition, their shafts being closely applied to one another for more than half their lengths.

The proximal and distal ends of the metatarsalia II, III, and IV are stout, with deep pits for the attachment of lateral ligaments.

The relative lengths of the metatarsalia are remarkably similar to those of *Hypsilophodon* and *Camptosaurus*, as is shown in the following table:

	I.	II.	III.	IV.	V.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Thescelosaurus	65	112	127	106	28
Hypsilophodon	....	93	105	87.5	32
Camptosaurus	133	212	234	202	....

It will be observed that metatarsal III is the longest and heaviest. The first is about half the length of the third and the fifth is less than one-fourth the length of the same element. Digits II, III, and IV carried all of the weight. Digit I would scarcely have touched the ground, and was doubtless fast becoming functionless. It articulates rather loosely with metatarsal II, lying in a shallow depression on the inner proximal side of this metatarsal, as shown in figures 14 and 15.

Metatarsal V is shown in figure 16, and is a small flattened bone constricted at the middle, with slightly expanded ends. It probably did not support any phalanges.

Phalanges.—The digits have, respectively, two, three, four, and five phalanges, corresponding in number with most other bipedal dinosaurs.

The proximal phalanx of digit I is especially elongated, as in *Brachyceratops.* The ungual of this toe is broken, but judging from the remaining proximal half it appears to have been short and bluntly pointed.

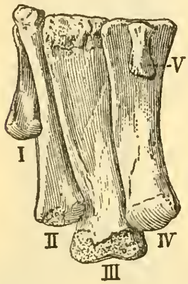

Fig. 16.—Metatarsals of right hind foot of Thescelosaurus neglectus Gilmore. Type, No. 7757, U.S.N.M. ½ nat. size. Viewed from the back, as shown as found articulated. I, II, III, IV, and V, metatarsals one to five.

The relative proportions of the remaining phalanges are remarkably similar to those of *Camptosaurus.*

Viewed from above, the phalanges have vertically concave proximal and convex distal ends. Excepting the proximal ends of the first row, all of the joints are broadly keeled, thus forming strong articulating joints, that would be proof against lateral dislocation. Well-defined pits are present for the attachment of the lateral ligaments. The ungual phalanges are curved, of moderate length, and more depressed than in *Camptosaurus.* They are relatively shorter and less sharply pointed than in *Hypsilophodon.* The lateral grooves for the external claw are well defined.

The pes of *Thescelosaurus* may be distinguished at once from the hind feet of either *Dryosaurus* or *Laosaurus* by the greater elongation of the metatarsals in those genera. In *Thescelosaurus* the greatest length of metatarsals I, II, III, and IV is less than the total lengths of the articulated phalanges of those digits. In *Hypsilophodon* this condition prevails in digits III and IV, but in digit I the metatarsal exceeds the phalanges in length, while in *Drysaurus* and *Laosaurus* the metatarsals exceed the phalanges in this measurement. In its general proportions the pes of *Thescelosaurus* resembles that of *Camptosaurus* closer than it does that of its nearest relative *Hypsilophodon.*

Measurements of hind foot of No. 7757, U.S.N.M.

	Digits.				
	I.	II.	III.	IV.	V.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Greatest length of metatarsals	65	112	127	106	28
Greatest antero-posterior diameter, proximal end of metatarsals				28	4
Greatest transverse diameter, proximal end of metatarsals				41	12
Greatest transverse diameter, distal end of metatarsals				23	11
Greatest length first row phalanges	51	53	[1] 46	35	
Greatest length second row phalanges		34	38	26	
Greatest length third row phalanges		47	35	22	
Greatest length fourth row phalanges			54	19	
Greatest length fifth row phalanges				40	

[1] Measurement from another individual (No. 7758) of same proportions.

THE PELVIC ARCH.

The pelvic arch is sufficiently diagnostic of the genus to separate *Thescelosaurus* at once from all other known dinosaurs.

The bones to be described below pertain to the type-specimen No. 7757, U.S.N.M.

Ilium.—Both ilia are present, but only the right one is available for study and it lacks a portion of the posterior end, as shown in figure 17. The ilium is elongate antero-posteriorly, and very narrow

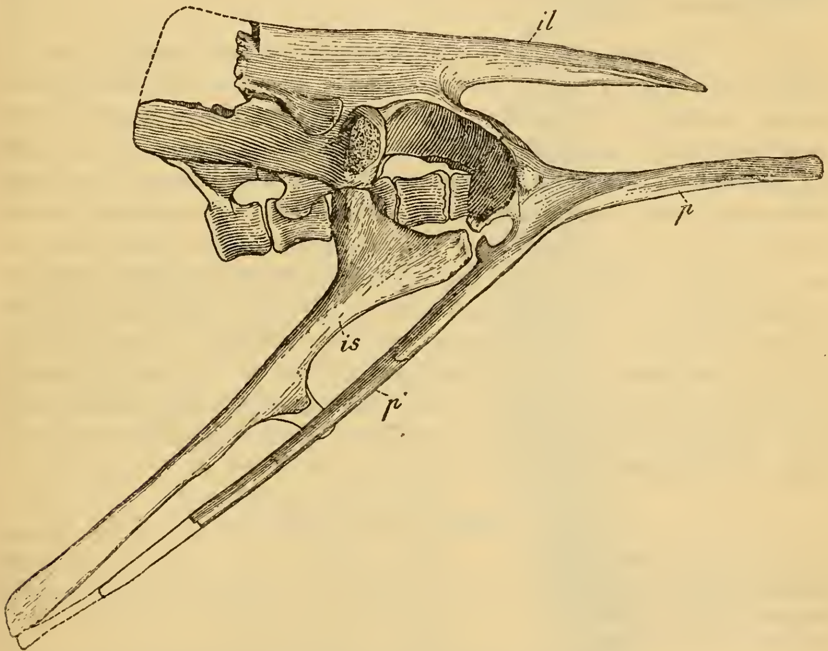

FIG. 17.—PELVIS AND SACRUM OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE. CAT. NO. 7757, U.S.N.M. ¼ NAT. SIZE. VIEWED FROM THE RIGHT SIDE. *il*, ILIUM: *is*, ISCHIUM; *p*, PREPUBIS; *p'*, POSTPUBIS. THE ILIUM IS DRAWN FROM AN OBLIQUE VIEW.

vertically. In the latter particular it is relatively narrower even than the ilium of *Camptosaurus depressus* Gilmore. The preacetabular process is long and tapering, triangular in cross-section near its middle, but flattened toward the tip, which terminates anteriorly in a sharp-pointed end.

The missing posterior portion as restored in outline in figure 17, also plate 80, is after the ilium of *Camptosaurus*. On the inner side behind the acetabulum a comparatively thin but wide shelf of bone (fig. 17) is given off at right angles to the main portion of the ilium and extends inward, articulating by suture along its inner margin with the ribs of the two posterior sacral vertebrae.

The acetabular arc ends anteriorly in a broad, but relatively light pubic peduncle, being terminated posteriorly by a heavy swelling which forms the articulation for the ischium.

The external side of the ilium is slightly concave from end to end.

Measurements of ilium, No. 7757.

	mm.
Greatest length of ilium	336
Greatest length from posterior end to the center of preacetabular notch	193
Greatest width over ischiac articulation	91
Greatest width at middle of acetabulum	48
Greatest expanse of acetabulum	78

Pubis.—The prepubic portion of the pubis is an angularly rounded rodlike bone that extends forward nearly parallel with the preacetabular process of the ilium, exceeding the latter in length. The acetabular end is thick and heavy and above is closely united with the peduncle of the ilium. Below this acetabular portion is an oval foramenal notch, that in an aged individual would doubtless become closed as it has in the pubis of *Hypsilophodon.* The postpubis is a long, slender, rodlike bone that reaches the end of the ischium. It is rounded as in *Camptosaurus,* and contrasted with the postpubis of *Hypsilophodon,* it is more flattened with a somewhat heavier shaft. In the type-specimen the distal extremities of the postpubis are missing but the impression of these bones in the matrix shows their exact length and also gives a good idea of their size and rounded shape, as indicated in figure 17.

Measurements of pubis, No. 7757.

	mm.
Greatest length of prepubis	192
Greatest length of postpubis	[1] 516
Greatest width of prepubis	11
Greatest depth of prepubis	19

Ischium.—The ischium is a long, slender, somewhat flattened bone, that when articulated is directed backward and downward from the ilium. The proximal end is moderately expanded with two distinct articular ends. The anterior one which articulates with the pubis and the heavier one that meets the ischiac peduncle of the ilium is shown in figure 17. The upper concave border between these two processes forms the greater portion of the lower boundary of the acetabulum. Below the head, the shaft contracts rapidly but again widens on the infero-internal border into a thin, narrow, upturned obturator process which curves up under the slender postpubis. This process is much more elongate and placed more distally than in *Camptosaurus,* but resembles *Hypsilophodon* in both these respects.

[1] Estimated.

Below the obturator process the ischium retains about the same width to the slightly thickened distal extremity. The inner borders of the lower third of the ischia were in contact as shown in the articulated pelvis and also by the ischium of the American Museum specimen (Cat. No. 5031, A.M.N.H.) which exhibits a flattened, thickened face for this union. The distal ends of the ischia in the type were largely missing and have been restored, but their length and shape could be quite accurately determined from the impressions remaining in the sandstone.

Ribs.—All of the known presacral vertebrae bear ribs. The four vertebrae immediately preceding the sacrum carry single-headed ribs, all others being double-headed.

In the neck, as shown by specimen No. 7758, the cervical ribs are short with the usual forked vertebral end. Their free end is rounded and pointed, and is extended antero-posteriorly.

The anterior thoracic ribs are considerably curved near the upper extremities. The shafts are moderately broad antero-posteriorly with truncated lower ends. The tubercular branch is reduced to a mere tubercle placed on the superior border where the long capitular branch joins the shaft of the rib (fig. 18). The distance between the capitulum and tuberculum gradually shortens proceeding posteriorly, until on the fourth in front of the sacrum both blend in a single articular facet which attaches to the end of the transverse process. Whether these ribs become ankylosed to the transverse process at the end as they do in *Hypsilophodon* can not be surely determined, though it is likely in an aged individual they would become firmly fastened.

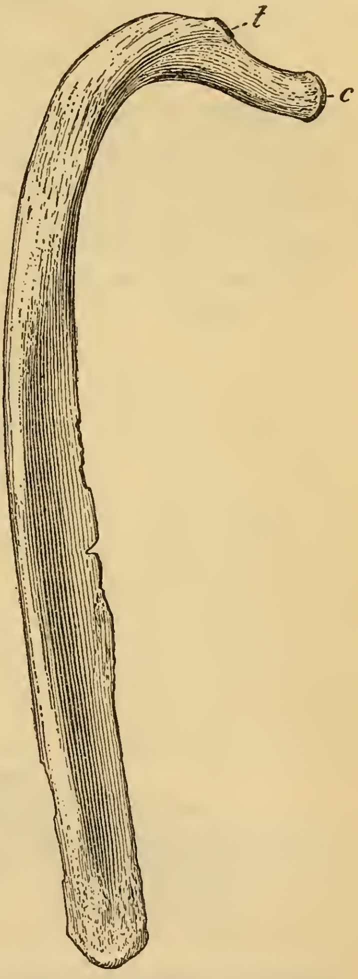

FIG. 18.—RIGHT THORACIC RIB OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE NO. 7757, U.S.N.M. ½ NAT. SIZE. VIEWED FROM THE FRONT. *c*, CAPITULUM; *t*, TUBERCULUM.

These single-headed ribs are directed decidedly forward.

The ribs posterior to the seventh in the type-specimen shorten rapidly and at the same time the shaft becomes very slender.

The first, second, third, and fourth thoracic ribs are connected with the sternum by cartilaginous ribs, as shown in figure 19. In life it is quite likely that several more may have been similarly connected.

The greatest length of the principal ribs are given in the following table of measurements:

Measurements of thoracic ribs.

	mm.
First rib preserved on the right side	265
Second rib preserved on the right side	293
Third rib preserved on the right side	295
Fourth rib preserved on the right side	280
Fifth rib preserved on the right side	269
Last rib of the series on the right side	38

The manner in which the thoracic ribs join the sternal ribs is well shown in figure 19.

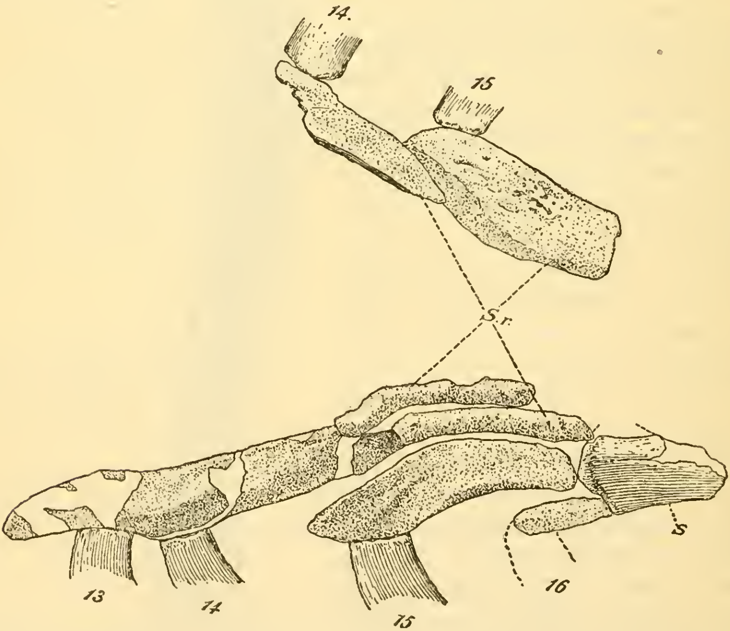

FIG. 19.—FRAGMENT OF STERNAL BONE AND STERNAL RIBS OF THESCELOSAURUS NEGLECTUS GILMORE. TYPE NO. 7757, U.S.N.M. ½ NAT. SIZE. *s*, FRAGMENT OF LEFT STERNAL BONE; *S. r.*, SACRAL RIBS; 13, 14, 15, AND 16, ENDS OF THORACIC RIBS, COUNTING FROM THE SACRUM.

Sternum.—The presence of a sternum is indicated in the type-specimen by a fragment of the posterior part of the left sternal bone retained in the matrix nearly in its proper position, and articulating with the partially ossified sternal ribs, as shown in figure 19.

The remaining portions of the sternum were weathered away before the specimen was discovered, so there is no information as to its shape and extent.

From the evidence of this specimen there were at least four thoracic ribs joined to the sternum by cartilaginous ribs. Counting from the sacrum, these ribs articulated with the thirteenth, fourteenth, fifteenth, and sixteenth presacral vertebrae.

The sternal ribs are not fully ossified, and on that account are very spongy and without well-finished surfaces.

Preservation of the epidermis.—External to the ribs and posterior to the blade of the scapula of the left side a small dark-colored area was found, which is thought to represent a portion of the carbonized epidermal covering of the animal. A second patch was found along the outer side of the anterior thoracic vertebrae, as shown in Plate 79. It presents a punctured surface, but there is no indication of a regular pattern and no evidence of dermal ossifications, though Nopcsa[1] has reported the presence of thin ossifications with the remains of *Hypsilophodon* that are regarded by him as pertaining to the skin.

POSITION OF THE SKELETON.

When the skeleton was discovered the skull, neck, and portions of the pectoral arch had been eroded away, but it appears most probable that all of these missing parts were present when the animal was first entombed. The skeleton as now exhibited (see Plate 79) lies on its left side in approximately the same position as when first discovered, with nearly all of the bones articulated. The right hind limb, when found, was disarticulated at the hip, and extended out above the sacrum at right angles to the longer axis of the skeleton. It was deemed expedient to properly articulate this leg, and this has been done, as shown in Plate 79, the original angulation of the limb and foot being preserved undisturbed. The contact for the block of matrix containing the right fore leg and foot was lost, so that it was arbitrarily placed as here shown. With these two exceptions all other parts of the skeleton are as found.

A few of the missing portions, as the ends of ribs, limb, and pelvic bones and parts of a few vertebrae, have been restored, and following the usual procedure these restored portions are painted a light color, thus making them easily distinguished from the fossil parts. At this time (November, 1915) the skull of this animal is unknown, and on that account no attempt has been made to restore it in the prepared specimen.

The position of the skeleton is that of an animal having died a natural death, for the skeleton has not been dismembered by being preyed upon. The distended ribs indicate a rapid filling of the thoracic cavity after death, and this quick covering of the entire skeleton would undoubtedly account for the excellent preservation of the specimen.

[1] Geol. Mag., vol. 2, 1905, p. 205.

The pelvic bones are all articulated and but little distorted by crushing, though the ischia and postpubes have suffered the loss of pieces since the specimen was collected.

In the preservation of a portion of one of the sternal elements and the greater number of the sternal ribs this specimen is unique, and it contributes much to our better understanding of this portion of dinosaurian anatomy.

The importance of preserving articulated dinosaurian specimens in their original position in the matrix can not be too highly estimated, particularly where they give positive information, as in the present specimen, relating to the proper articulation and angulation of the feet and limbs. Unlike the mammals, in the dinosaurs the articular surfaces are usually poorly defined, and afford little evidence concerning the exact manner of articulation of bones found detached and misplaced. So that any information conveyed by the finding of an articulated specimen with bones in sequential position in the rock is more to be relied upon than any number of expert opinions. It was in deference to the above views that a decision was reached regarding the present manner of exhibiting this specimen of *Thescelosaurus*.

I am also of the opinion that specimens so exhibited hold the attention of the average museum visitor far longer and arouse a keener interest in the genuineness of the specimen than does a skeleton that has been freed from the rock and mounted in an upright, lifelike posture.

To the layman the type of *Thescelosaurus neglectus* as now exhibited is of interest as showing the skeleton in the same position as when covered up millions of years ago, and to the vertebrate paleontologist it will long remain a standard for interpreting and coordinating the scattered and isolated parts of others of its kind.

CLASSIFICATION AND RELATIONSHIPS OF THESCELOSAURUS.

The nonunion of the pubes in front of the sacrum, the slender postpubic processes extending parallel to the ischia, and the characteristic birdlike hind feet show *Thescelosaurus* to be a true member of the suborder Orthopoda, or Predentate dinosauria.

In the first description [1] this genus was referred provisionally to the family Camptosauridae, but after a more thorough study of the type specimens I am now convinced that its family attributes are with the Hypsilophontidae. The latest definition that I am able to find of the family Hypsilophontidae is that of Zittel,[2] which follows:

> *Prämaxillaria zahnlos.* Zähne auf den Maxillaria in einer Reihe. Vordere Wirbel platycöl oder opishocöl. Sacralwirbel verschmolzen. Femur kürzer als Tibia. Hand mit 5 Fingern, Fuss mit 4 Zehen.

[1] Gilmore, Charles W., Smiths. Misc. Coll., vol. 61, 1913, No. 5, p. 5.

[2] Grundzüge der Palaontologie, 1911, pt. 2, p. 289.

Under the above definition were included the genera *Nanosaurus*, *Laosaurus*, and *Dryosaurus* from America and *Hypsilophodon* from the Wealden of the Isle of Wight.

Evidently it is a slip of the pen that the premaxillaries are described as being without teeth, for they were certainly present in the pre-

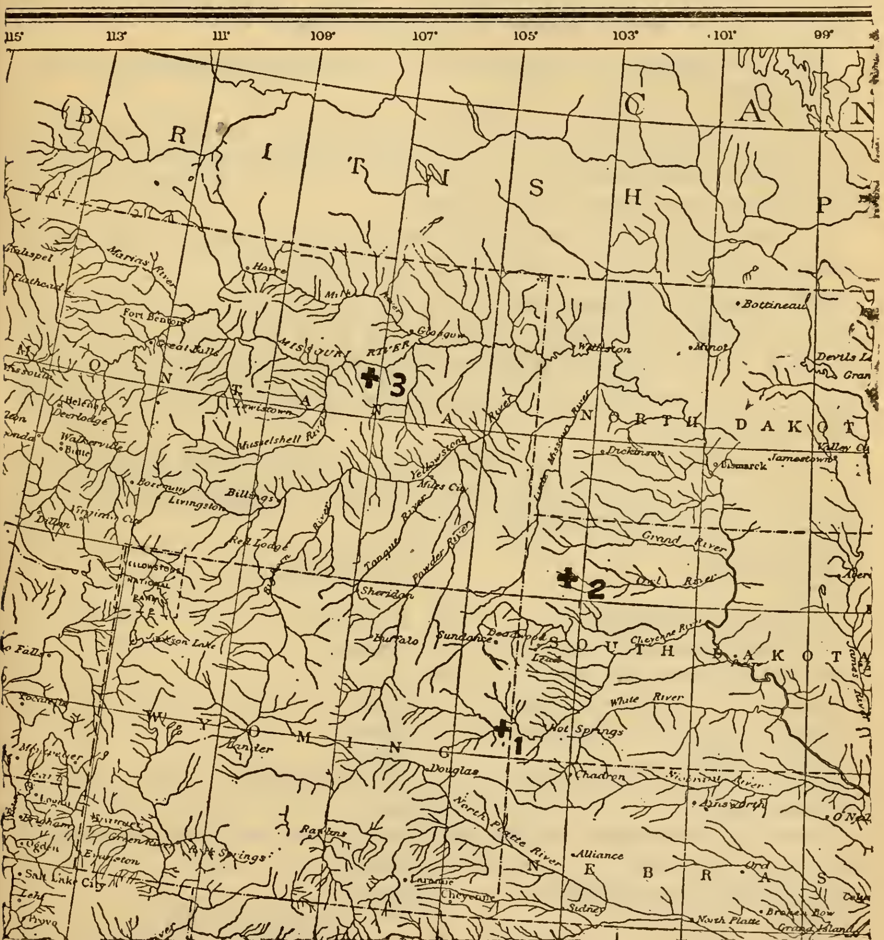

FIG. 20.—MAP SHOWING LOCALITIES WHERE THESCELOSAURUS REMAINS HAVE BEEN FOUND. (1) NIOBRARA COUNTY, WYOMING; (2) DEER EARS BUTTES, SOUTH DAKOTA; (3) HELL CREEK, IN MONTANA.

maxillae of *Hypsilophodon* (the type-genus of the family), as is abundantly demonstrated by the text and illustrations of several authors.

Whether *Thescelosaurus* will be found to have teeth in the premaxillaries is yet to be determined. It is quite probable, however, that during the great time interval that had elapsed between the

Wealden and the Lance, these teeth have disappeared in the somewhat more specialized *Thescelosaurus.*

The presence in *Thescelosaurus* of single-headed posterior thoracic ribs and four phalanges on digit III of the fore foot are structural features sufficient to separate it from all known dinosaurian genera with the exception of *Hypsilophodon,* and I would therefore assign *Thescelosaurus* to the family Hypsilophontidae.

The combination of characters now considered diagnostic of this family are:

Premaxillaries with teeth. Digit III of the hand with four phalanges. Femur either longer or shorter than tibia. Posterior thoracic ribs single-headed. *Genera.*—*Hypsilophodon* Huxley from the Wealden of the Isle of Wight and *Thescelosaurus* Gilmore from the Lance formation of Wyoming.

For obvious reasons the genera *Nanosaurus, Laosaurus,* and *Dryosaurus* should be removed to the family Laosauridae.

The genus *Thescelosaurus* may be distinguished from *Hypsilophodon* by the greater length of the femur over the tibia and by the position of the fourth trochanter below the middle of the femur, whereas in *Hypsilophodon* this trochanter is entirely upon the proximal half of that bone.

The chief similarities and differences in the skeletal structure of the two genera constituting the family Hypsilophontidae are contrasted in the parallel columns below:

Hypsilophodon.	*Thescelosaurus.*
Skull:	
Premaxillaries with teeth.	Unknown.
Maxillaries with a single row of teeth.	Unknown.
Anterior vertebrae platycoelian.	Same.
Sacrum of five vertebrae coossified.	Same.
Posterior thoracic ribs single headed.	Same.
Sternum ossified.	Same.
Scapula elongated with moderately expanded blade.	Scapula shortened with expanded blade.
Manus with five digits, metacarpals moderately lengthened.	Manus with five digits, metacarpals shortened.
Third digit with four phalanges.	Same.
Femur longer than tibia.	Femur shorter than tibia.
Fourth trochanter on proximal half of femur.	Fourth trochanter extending below middle of femur.
Pes with five digits, metatarsals elongated. Met. V vestigal.	Pes with five digits, metatarsals shortened. Met. V vestigal.
Rounded rodlike pubis with long slender postpubis.	Same.
Ischium with obturator process near center of shaft.	Ischium with obturator process nearer proximal end.
First 14 caudals with transverse processes.	First 10 caudals with transverse processes.
Pubic foramen closed.	Pubic foramen not closed.
Sacral ribs uniting with sacrum intervertebrally.	Sacral ribs uniting with sacrum in part intervertebrally and part direct.

At the present time the fossil remains of *Thescelosaurus* are known only from the Lance formation in three widely separated localities, as shown in the accompanying map, see figure 20. These are the Niobrara County area in Wyoming, Deer Ears Buttes in South Dakota, and the Hell Creek area in Montana.

RESTORATIONS OF THESCELOSAURUS.

The skeleton restoration here given, plate 80, is based upon the type-specimen of *Thescelosaurus neglectus*. The reptile is represented about one-twelfth natural size. The pose was determined after a careful study of the type-specimen and other allied forms, and it is therefore believed to be an attitude often assumed by the animal during life. When alive this animal was about 10 feet in length and 4 feet high in the position here represented. The shaded portions show bones that are present in the type or other supplementary specimens. The missing parts are restored in outline, the neck and skull being drawn after *Hypsilophodon foxii*, its nearest relative, with slight modifications of the cervical ribs. See plate 82.

The complete presacral region is indicated as consisting of 25 vertebrae, 16 being regarded as dorsal and 9 as cervical. This number is probably not far from the correct vertebral formula, and is the same as found in two species of *Camptosaurus*. It at least gives the skeleton the form of a compact, well-balanced animal. In life this reptile was evidently strong and agile in movement. The tail was long, equaling one-half the entire length of the skeleton and doubtless served as a balancing organ when the upright bipedal posture was assumed. The dorsal, sacral, and caudal regions throughout their entire length were strengthened by a series of ossified tendons.

In plate 81 is shown a life restoration modeled by the author and based upon the type-skeleton, and it will perhaps give a more graphic idea of the life appearance of the animal than could be obtained from the articulated skeleton. In preparing the restoration an attempt was made to express the light, agile nature of *Thescelosaurus* as is so clearly indicated by the skeleton and especially by the cusorial structure of the hind limbs.

EXPLANATION OF PLATES.

Plate 79.

View of the upper or right side of the skeleton of *Thescelosaurus neglectus* Gilmore. Type, Cat. No. 7757, U.S.N.M., about one-twelfth natural size. Shows the bones of the skeleton in nearly the position they occupied when found and as now exhibited.

The nonshaded portions represent restored parts. Page 611.

Plate 80.

Restoration of the skeleton of *Thescelosaurus neglectus* Gilmore. About one-twelfth natural size. Based upon the type-specimen, with head and neck restored from

Hypsilophodon foxii Huxley. Original bones present are represented by line shading, while those parts restored are left in outline. Page 615.

PLATE 81.

Life restoration of *Thescelosaurus neglectus* Gilmore. About one-twelfth natural size. Modeled by Charles W. Gilmore. Page 615.

PLATE 82.

Restoration of the skeleton of *Hypsilophodon foxii* Huxley. About one-seventh natural size. After Marsh. Page 615.

RIGHT SIDE OF THE SKELET

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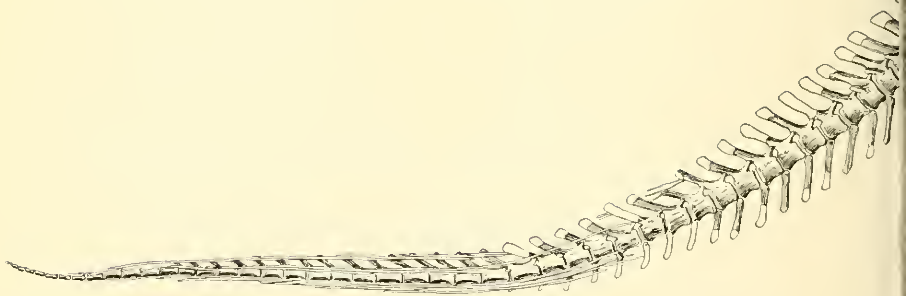
THESCELOSAURUS NEGLECTUS.

ATE SEE PAGE 615.



RESTORATION OF THE SKELETO

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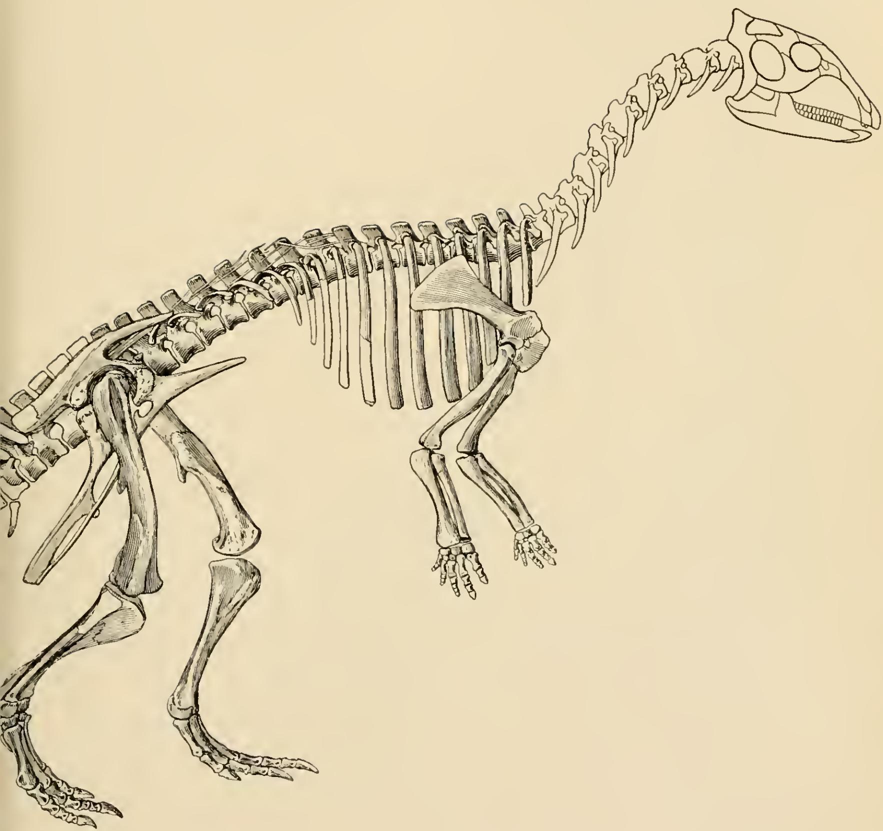

THESCELOSAURUS NEGLECTUS.

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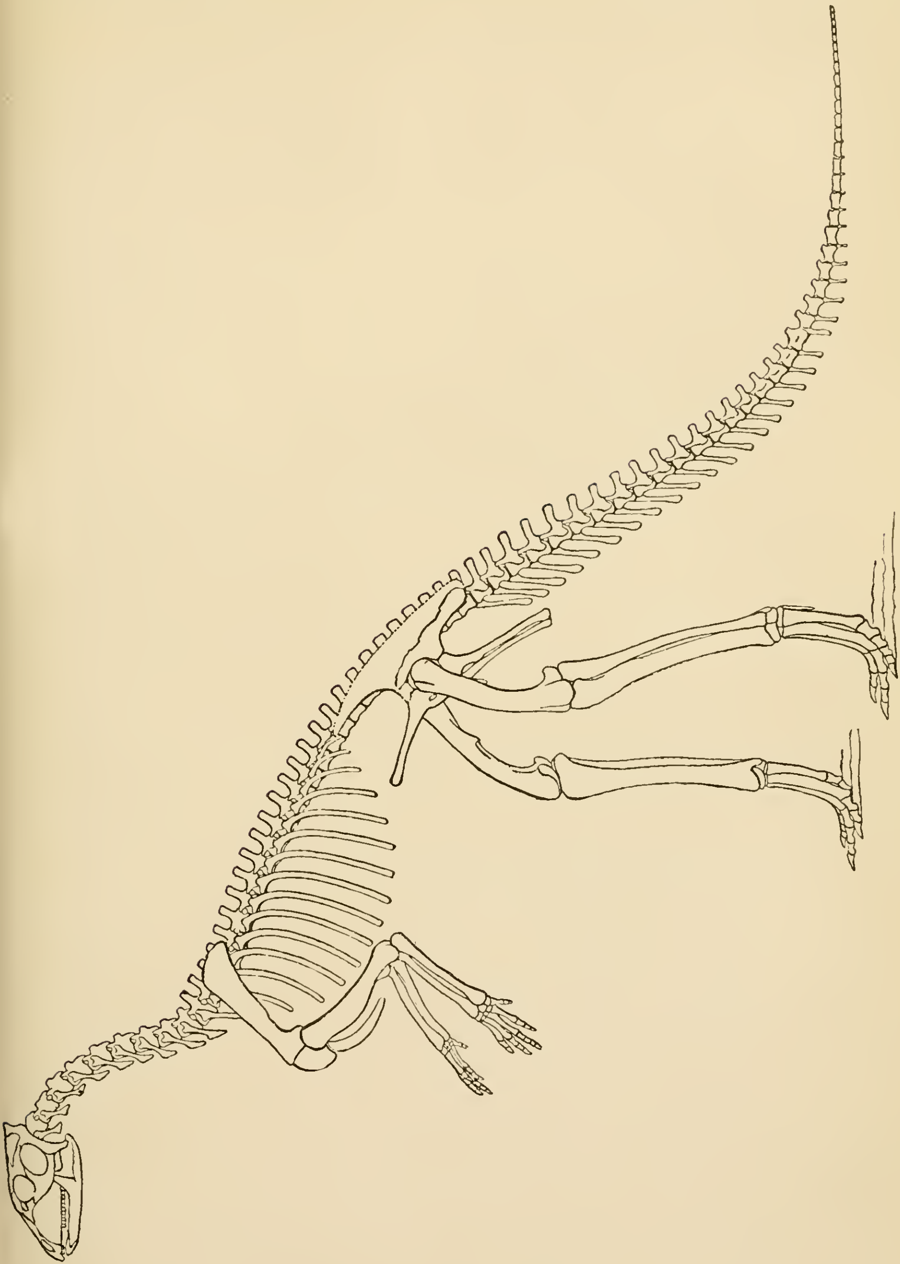
RESTORATION OF THESCELOSAURUS NEGLECTUS.

FOR EXPLANATION OF PLATE SEE PAGE 616.



Restoration of the Skeleton of Hypsilophodon foxii.

For explanation of plate see page 616.