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ON

THE OSTEOLOGICAL SYMMETRY

OF

THE CAMEL.

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FROM THE TRANSACTIONS OF THE LINNEAN SOCIETY.

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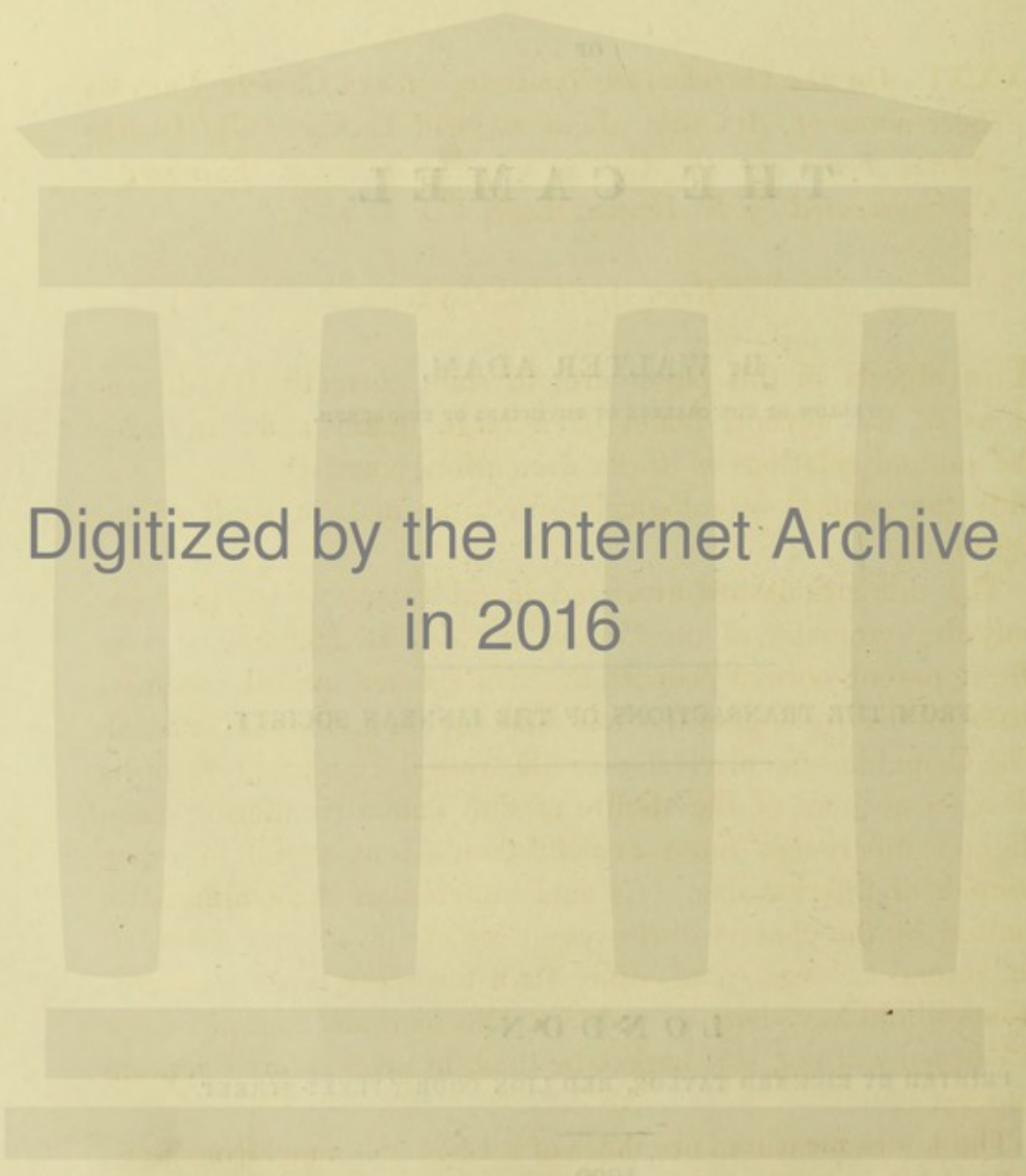

XXXI. *On the Osteological Symmetry of the Camel; Camelus Bactrianus of Aristotle, Linnæus, and Cuvier. By Walter Adam, Fellow of the College of Physicians of Edinburgh. Communicated by R. Brown, Esq., V.P.L.S.*

Read April 19, 1831.

THE objects in this paper are, to state correctly the dimensions of the several bones of a large quadruped; to trace the mutual relations of these dimensions; and thus to exemplify the general osteological form in animals of similar configuration.

The dimensions are arranged in tables, so as to show not only the symmetry of the Camel, but also the aberrations from the apparent normal proportions of a species, and the inequalities of the right and the left sides in an individual animal. The Camel has been selected to illustrate the general type of its class on account of the stature of that animal rendering these slighter differences more evident than in man and in other animals of inferior size. As such differences must always be limited by the characteristic symmetry of the species to which an animal belongs, none other than the most exact measurements would have been of value. The accuracy that has been attempted will not, it is hoped, be thought needless in a general inquiry.

The bones measured are those of a Baggage-camel from Bengal, and constitute one of many osteological specimens, for whose

whose examination the writer of this paper is indebted to the liberality of Professor Jameson.

The bones are described in accordance with the nomenclature of Dr. Barclay.

The terms 'lateral,' 'mesial,' 'rostral,' 'caudal,' are applied to all the bones, as expressing the aspects of the sides, the mesial plane, the muzzle, and the tip of the tail.

The terms 'basilar' in the head,
'sternal' in the neck and trunk,
signify the aspects of the base of the head and of the breast-bone;—in common language,
'downwards' in the head and trunk,
'forwards' in the neck.

The terms 'coronal' in the head,
'dorsal' in the neck and trunk,
signify the aspects of the forehead, and of the back-bone;—in common language,
'upwards' in the head and trunk,
'backwards' in the neck.

In the limbs, besides their more correct denominations of 'atlantal' and 'sacral', for 'fore' and 'hind', two further terms are necessary:

These are, 'proximal' towards the trunk,
'digital' towards the extremity of the limb.

The adverbial termination is *ad.*

Of the Head.

The height, the breadth, and the basilar length of the cranium are very nearly in the proportion

1. 2. 4.

The union of the lower jaws; the height from the angle of the lower jaw to the summit of the occiput; and the length from

from the muzzle to the upper margin of the occipital foramen, are in the proportion

1. 2. 3.

The common difference of the palatal, the coronal, the basilar, and the extreme lengths of the cranium, is the breadth of the cranium at the temporal fossæ: these lengths in the animal examined being respectively

12. 15. 18. 21 inches:

The chief measurements of the coronal breadth of the head are in consecutive proportion as the numbers

3. 2. 4. 5:

Those on the level of the zigomatic arch are also in consecutive proportion nearly as the numbers

8. 9. 8. 4:

While the chief measurements of breadth on the level of the palate are consecutively as the numbers

3. 4. 7.

Of the Vertebræ.—Cervical Vertebræ.

In the accompanying Tables, the dimensions of the bones of the neck are very minutely stated. This minuteness will be deemed the less superfluous, if it be considered that these bones, from their remarkable size, may be viewed as an enlarged representation of the type of the similar bones of the human body and in other mammalia.

The dimensions of the atlas and of the second vertebra of the neck are, on account of their great importance, given apart; and an endeavour has been made to trace the correspondence of their dimensions with the dimensions of the other cervical vertebræ.

The lateral extent of the atlas is equal to the distance between the inner margins of the orbits. The atlas, besides

its articulation with the occipital condyles, affords support to the lower jaw;—whence that graceful carriage of the head, so frequent a theme of the fervid eulogy of the Arabian poets.

The sternal length of the 2nd vertebra of the neck is three times that of the atlas, and half the coronal length of the head. In this bone, the dimensions of length, the distance between its arteries and the breadth of its articulation with the 3rd cervical vertebra, are even numbers of proportional parts. The other dimensions are odd numbers of these parts.

The succeeding bones of the neck diminish in length, while their dimensions of breadth and thickness increase.

The decrements of length are irregular.

Of the breadths, those of the rostral balls of articulation increase uniformly. The extremes, namely, the rostral globular articulations of the 3rd and of the 7th cervical vertebræ, are,

:: 2 : 3.

The other augments of breadth are irregular. But in the extremes, the rostral ends of the plates that shield the gullet and trachea, are, :: 3 : 4.

While the breadths at the roots of the rostral oblique processes of the same bones (the 3rd and 7th cervical vertebræ) are,

:: 1 : 2.

In the cervical vertebræ of the Camel, a depressed rudiment of a process appears on the dorsal ridge of the 5th vertebra. The 6th and 7th have complete spinous processes.

A scabrous elevation on the lateral surfaces of the sternal plates that shield the gullet and trachea, marks the incipient transverse processes that in the lumbar vertebræ attain their full development.

In the cervical vertebræ of the animal examined, a curtailment of the caudal oblique process of the 6th on the right side,

and

and perhaps the defective ossification on the right side of the 3rd and 4th over the nerval canal, show the tendency to exert the muscles of the right side more than those of the left.

Dorsal Vertebræ.

The labours of the animal have much altered the form of the bodies of the dorsal vertebræ.

The sternal length from the 3rd to the 10th inclusively appears to be the sixth part of the basilar length of the head. In this dimension, the sternal length, the 1st dorsal vertebra corresponds with the 11th; as does the 2nd with the 12th.

The greatest elevation of the spine is at the 3rd dorsal vertebra; the extreme length of that bone equalling the greatest extent of the pelvis towards the mesial plane.

The spinal lengths, rostrad and caudad from the 3rd dorsal vertebra, diminish irregularly; but so that the spinal length of the 7th dorsal vertebra is the same as that of the 1st.

The spinal length of the 12th and last dorsal vertebra is equal to the length of the 1st rib, and to the greatest breadth of the head.

The spinal epiphyses that form the nucleus of the hump, are nearly steatomatous in the 1st, 2nd, 3rd, and 4th dorsal vertebræ; as also in the 9th and 10th. In the other dorsal vertebræ the epiphyses are externally osseous.

From the 1st dorsal vertebra to the 10th, the distance between the margins of the roots of the spinous processes diminishes a third. In the same interval, the distance between the extremities of the transverse processes diminishes a fourth.

The natural breadth of the bodies of the dorsal vertebræ seems to be not greater than the wideness of the nostrils: but, owing to the great weights borne by the animal, the enlargement is such that these bones are an instance of exostosis rather than

of normal proportion: though still that enlargement has been controlled by the laws of symmetry.

The greatest breadth is attained at the connection of the 5th with the 6th dorsal vertebra: there the pressure of the burthens has evidently been most severe. The breadth so increased equals the cerebral bulge of the cranium.

As a further exemplification of strength gained under toil, and of disparity in ossification, it may be deserving of notice, that the right sides of the caudal margins of the 6th and 7th dorsal vertebræ project as a socket over the contiguous rostral margins.

Lumbar Vertebræ.

The lumbar vertebræ diminish in length and in height as they approach the sacrum.

The transverse processes occupy somewhat of an oval space. The other dimensions of breadth increase towards the sacrum.

The distance between the extremities of the 1st lumbar vertebra is equal to the spinal extent of the last dorsal vertebra, which has been stated to be also equal to the length of the 1st rib, and to the greatest breadth of the head.

The sum of the differences of the distances between the extremities of the transverse processes of the lumbar vertebræ is equal to the sum of the breadths of these vertebræ at the roots of their rostral oblique processes.

The Sacrum.

The caudal height of the sacrum is the third of its rostral height: while, again, the rostral height is two thirds of the sternal length, and equal to the caudal height of the cranium.

The rostral breadth of the sacrum equals the height of the 1st lumbar vertebra. The caudal breadth is half the length of the bone over the nerval canal.

The

The Tail.

The dimensions of the bones of the tail, relatively to the other bones of the body, are perhaps more curious than interesting.

The sum of their lengths is equal to the greatest spinal extent in the dorsal vertebræ, namely, to that of the 3rd dorsal vertebra.

The sum of their transverse breadths is equal to the greatest transverse extent in the lumbar vertebræ, namely, to that of the 5th lumbar vertebra.

The sum of the breadths at their oblique processes equals the sum of their spinous heights: and both are equal to the greatest transverse aperture of the pelvis.

The sum of their rostral thicknesses is twice the caudal height of the head: and the tip of the tail may be compared with the aperture of the auditory canal.

Of the Ribs.

The longest of the twelve ribs are the 7th and the 8th. The length of each of these equals the length of the spine of the scapula, being the greatest extent of that bone.

The decrements of length in the other ribs, rostrad from the 7th, and caudad from the 8th, are such, that

The 6th rib corresponds with the 10th,
The 5th . . . . . with the 11th,
The 4th . . . . . with the 12th.

The sum of the lengths of the twelve ribs is about ten times that of the longest rib.

At the sternal end of the ribs the breadth is greatest. The broadest are the 4th and the 5th; their breadth equals that of the cranium at the temporal fossæ.

The sum of the breadths of the ribs at their sternal ends is eight

eight times the breadth of the broadest rib, and equal to the length of the cubitus from the summit of the olecranon to the carpal articulation.

The sum of the breadths of the ribs where broadest and the ulnar length of the cubitus, the longest bone in the body of the Camel, exceed the greatest width of the chest by the common difference of the 4 longitudinal dimensions of the cranium. The width of the chest, as stated below, is equal to the greatest length of the head. The costal breadths and the length of the cubitus are therefore 5th proportionals to the 4 longitudinal dimensions of the cranium.

It will be observed in the Tables, that the ribs on the right side have been more ossified than those on the left.

Of the Cavity of the Thorax and of the Sternum.

The cartilages of the ribs being entire in the animal examined, the dimensions of the cavity of the chest are seen to agree with those of the separate bones of the body.

The greatest width of the chest is equal to the greatest length of the head.

The length of the sternum is three fourths of the greatest thickness of the body, namely, from the caudal end of the sternum to the summit of the hump at the 6th dorsal vertebra.

The length of the caudal portion of the sternum is twice the length of the 3rd and of the 5th portions; and is equal to the distance between the inner margins of the orbits.

The rostral breadth of the caudal portion of the sternum is twice its caudal breadth, and also twice its rostral thickness.

The thicknesses of the other portions of the sternum increase by regular augments as they approach the caudal portion.

Of

Of the Scapula.

The scapula bears to the pelvis the relation of similar position in regard to the limbs, and also in some degree that of conformity. But as in the Camel this bone, towards the summits of the dorsal vertebræ, terminates in a thin tendinous expansion, the osseous boundary cannot be very accurately distinguished.

The greatest breadth of this expansion is four times the greatest dimension of the glenoid cavity.

The length of the spine of the scapula, which is also the greatest extent of the bone, is four times the distance of the termination of the process of the spine of the scapula over the glenoid cavity, from the furthest point on the margin of that cavity.

Of the Pelvis.

The breadths of the pelvis rostrad from the acetabula are even numbers of proportional parts. The breadths caudad from the acetabula, including the acetabular breadth itself, are odd numbers of proportional parts.

The difference of the greatest and the smallest breadths of the pelvis caudad from the acetabula is one third of the greatest breadth rostrad from the acetabula: while the difference of the greatest caudal breadth and the acetabular breadth is half the difference of the greatest and the smallest rostral breadths.

Again: The smallest rostral breadth of the pelvis equals its smallest mesial height from the union of the ossa pubis to the floor of the nerval canal of the sacrum.

The chief dimensions of the pelvis are identical with the chief dimensions of the head.

1. The greatest dimension of the pelvis, being through the mesial plane, is equal to the greatest length of the head.

2. The

2. The greatest mesial extent of the pelvis is equal to the coronal length of the head.

3. The length of the union of the ossa pubis is equal to the length of the union of the lower jaws.

4. The lateral length of the pelvis is equal to the distance from the muzzle to the caudal surface of the zigomatic inclosure.

5. The greatest rostral breadth of the pelvis is equal to the zigomatic length of the head.

6. The acetabular breadth of the pelvis is equal to the greatest breadth of the head.

7. The greatest caudal breadth of the pelvis is equal to the distance from the muzzle to the end of the pterygoid processes.

Of the Limbs.

The lengths of the four long bones of the atlantal limbs, independently of processes and elevations, are consecutively as the numbers 22. 28. 20. 6 :—Sum 76.

The similar lengths of the four long bones of the sacral limbs are consecutively as the numbers

28. 23. 20. 5 :—Sum 76.

The correspondence is obvious :

The second number of the atlantal series is identical with the first number of the sacral series.

The last number in each series expresses the difference of the first and the second numbers of the series.

The penultimates are identical, and the sums are equal.

Osteologically, Notwithstanding the dissimilitude of flexure in the atlantal and the sacral limbs ;

The sums of what may be termed their articular lengths are equal.

The

The articular lengths of the metacarpus and of the metatarsus are identical; as appear to be the articular lengths of the cubitus and of the femur.

The difference of the articular length in the first and second bones of each limb is equal to the length of the first pastern of the limb.

In all animals there seems to be a normal locality for the entrance of the arteries that nourish the interior of the bones: but these arteries being liable to the same variations as the tubes that convey the fluids to the less compact substances of the body, the distance of the medullary arteries from the joints is here unnoted.

The bones of the atlantal limbs of the Bactrian Camel are, in their breadth and thickness, more robust and more symmetrical than the bones of the sacral limbs.

The middle breadths of the atlantal limbs are consecutively,
9. 9. 6. 4 proportional parts:—Sum 28.
Their middle thicknesses are consecutively,
8. 6. 4 proportional parts:—Sum 18.
And their middle girths are consecutively,
30. 26. 20. 12 proportional parts:—Sum 88.
The middle breadths of the sacral limbs are consecutively,
7. 8. 5. 3 proportional parts:—Sum 23.
Their middle thicknesses are consecutively,
6. 5. 4 proportional parts:—Sum 13.
And their middle girths are consecutively,
22. 20. 17. 10 proportional parts:—Sum 69.

So that the thickness of the first pasterns being omitted, the sums of the middle breadth, thickness, and girth in the atlantal limbs are even numbers of proportional parts; while the similar dimensions in the sacral limbs are odd numbers of these parts.

There is also an identity in the excesses of the sums of the middle breadths, and of the sums of the middle thicknesses in the atlantal limbs, over the sums of the similar dimensions in the sacral limbs.

It may be further remarked, that if to the four girths of the sacral limbs, that of the calcaneum be added, the sum of the five sacral girths is seven eighths of the sum of the girths of the four atlantal limbs:

The sum of the five sacral girths being 77 proportional parts.

The sum of the four atlantal girths being 88 proportional parts.

It would be tedious to dwell on the proportions of the various processes and elevations of the bones of the limbs. In the accompanying Tables, osteologists will find their dimensions in the Bactrian Camel noted with every possible accuracy.

The proportions of the rudimentary bones of the feet, of the carpus and tarsus, and of the ungual bones, are withheld; as, in an articulated specimen, these bones cannot be exactly measured.

From what has been now stated, it appears that throughout the dimensions of the bones of the Bactrian Camel there is such an agreement, that many of the dimensions are continued proportionals, and that the mutual relations of nearly all admit of a very simple expression.

Corresponding relations have been found to prevail in the bones of every species of animal examined by the writer of this paper. The prosecution of his investigations has been thwarted by unforeseen obstacles. Under more favourable circumstances, should what has been observed in the Camel be fully verified in other animals, it will result,

1. That

1. That though the hardness and durability of bones peculiarly fit them for inquiries similar to that detailed in these pages; yet as the bones always arise from and are moulded by the softer tissues, the whole organic system is determinable in its proportions.
2. That the relation of the forms of extinct animals to the forms of animals now living,—the affinities of species and genera,—the simultaneous growth of the parts of the same animal, and the rates of such growth comparatively in other animals;—the improvement of domestic races,—even the structure and development of the human frame,—are all matters both of physiological and of numerical study.
3. That Zoology is, to an equal extent with the departments of knowledge that regard inanimate things, susceptible of a classification established on the sure basis of number.

EDINBURGH,
November 1830.

TABLES.

In the first columns of the following Tables are the actual measurements of an individual Camel, taken with compasses and callipers, of a radius suited to the extent of the bones; the girths of course otherwise.

The measurements of the first columns are in the next column adjusted to the normal proportion, on the assumption that the aberrations in the form of an individual animal from the perfect form of its species may be at least as great as the inequalities of the right and the left sides of that individual animal. But the numbers assigned for these normal proportions are meant rather as an indication of what they may be, than as an averment that they really are as stated. Several, especially of those given for the vertebral dimensions, must be erroneous: they have been inserted for facility of comparison. Few adjustments exceed a quarter of an inch,—trifling in so large an animal,—and being placed beside the number of the actual measurement they can lead to no mistake.

It is not improbable, that the symmetry of the swift Dromedaries will be found to be much more complete than that of the Baggage-camel.

The proportional parts in the penultimate column are 72nd parts of the basilar length of the cranium. This length being in the animal examined 18 inches, the proportional parts are the numbers in the preceding column multiplied by 4.

The differences occupy the last column.

The relative position of the numbers in the Tables is the same as that of the parts measured.

The Roman numerals over the dimensions of the dorsal and of the succeeding vertebræ, refer to the corresponding dimensions in the cervical vertebræ.

Dimensions of the CRANIUM in the Bactrian Camel.

Dimensions in the Mesial Plane.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Difference.
Rostro-caudal Dimensions (Length) in the Mesial Plane.				
Mesial Coronal Length.				
Distance in the mesial plane from the corono-rostral margin of the nose, To the corono-caudal margin of the occipital plate	15·05	15·00	**60**	
Distance in the mesial plane from the extent of the intermaxillary bones rostrad, To the corono-caudal margin of the occipital plate	20·90	21·00	**84**	24
Mesial Zigomatic Length.				
Distance in the mesial plane from the extent of the intermaxillary bones rostrad, To the corono-caudal margin of the occipital foramen	19·45	19·50	**78**	..
Mesial Basilar Length.				
Distance in the mesial plane from the extent of the intermaxillary bones rostrad, To the caudal margin of the palate	11·85	12·00	**48**	
Distance in the mesial plane from the extent of the intermaxillary bones rostrad, To the basilo-caudal margin of the occipital foramen	18·00	18·00	**72**	24
Length of the Union of the Basilar Maxillæ.				
Distance on the mesial plane from the rostral margin of the (basilar) incisors, To the caudal termination of the union of the basilar maxillæ	6·42	6·50	**26**	..
Corono-Basilar Dimensions (Height) of the Cranium in the Mesial Plane.				
Distance in the mesial plane from the surface of the palate at the interval disjoining the rostral from the lateral teeth, To the summit of the nose	3·75	3·75	**15**	
Distance in the mesial plane from the caudal margin of the palate, To the frontal hollow over the orbits, at the corono-orbital arteries	4·65	4·75	**19**	4
Distance in the mesial plane from the basilar surface of the cuneiform process of the occipital bone, To the summit of the sagittal ridge	4·45	4·50	**18**	1
Distance in the mesial plane from the basilar surface of the basilar margin of the occipital foramen, To the summit of the occipital plate	4·40	4·50	**18**	0
Distance in the mesial plane from the basilar surface of the coronal margin of the occipital foramen, To the summit of the occipital plate	2·60	2·75	**11**	7
Caudal and greatest Height of the Head on each side of the Mesial Plane.				
Distance from the caudal termination of the basilar margin of the right basilar maxilla, To the mesio-caudal summit of the occipital plate (on the right side)	13·05	Similar dimension (on the left side) . . 13·05	13 00	**52**	..

Dimensions of the CRANIU

Rostro-caudal Dimensions (Length

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.	Actual
Lateral Zigomatic Length.					Latera
On the Right Side.	On the Left Side.				On the Right Side.
Distance from the rostral extremity of the right intermaxillary bone, To the lateral margin of the right rostro-orbital artery . 8·08	Similar dimensions on the left side . . 8·22	8·25	33		Distance from the rostral extremity of the right intermaxillary bone, To the rostral margin of the socket of the large coronal-canine tooth on the right side 2
Distance from the rostral extremity of the right intermaxillary bone, To the inner surface of the right orbit at the orbicular groove . . . . . 10·30	Similar dimensions on the left side . . 10·36	10·25	41	8	Distance from the rostral extremity of the right intermaxillary bone, To the caudal margin of the socket of the right coronal subsidiary canine tooth 4
Distance from the rostral extremity of the right intermaxillary bone, To the furthest point of the inner surface of the caudo-lateral margin of the right orbit . . . . . 12·34	Similar dimensions on the left side . . 12·48	12·50	50	9	Distance from the rostral extremity of the right intermaxillary bone, To the rostral margin of the socket of the right corono-rostral molar tooth 6
Distance from the rostral extremity of the right intermaxillary bone, To the caudal surface of the zigomatic inclosure . . . 15·52	Similar dimensions on the left side . . 15·48	15·50	62	12	Distance from the rostral extremity of the right intermaxillary bone, To the extremity of the process on the caudal surface of the socket of the (right corono-caudal) molar tooth 12
Distance from the rostral extremity of the right intermaxillary bone, To the rostral margin of the entrance of the auditory canal . . . . . 17·30	Similar dimension on the left side . . 17·30	17·25	69	7	Distance from the rostral extremity of the right intermaxillary bone, To the caudo-lateral extremity of the right pterygoid process 14
Distance from the caudo-mesial margin of the occipital plate, To the furthest point on the internal surface of the caudo-lateral margin of the right orbit . . . . . 10·20	Similar dimension on the left side . . 10·10	10·25	41	28	
Distance from the caudo-mesial margin of the occipital plate, To the inner surface of the right orbit at the orbicular groove . . 11·30	Similar dimension on the left side . . 11·43	11·25	45	4	Distance from the rostral margin of the socket of the (right corono-) rostral molar tooth, To the caudal margin of the socket of the (right corono-) caudal molar tooth . . . 5
Distance from the rostro-coronal margin of the right zigomatic inclosure, To its caudo-coronal margin . . . . . 3·60	Similar dimension on the left side . . 3·55	3·50	14	31	

he Bactrian Camel.

side of the Mesial Plane.

ents.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.
Length.					Lateral Length of the Basilar Maxillæ.				
On the Left Side.					On the Right Side.	On the Left Side.			
lar dimension on the side . .	2·03	2·00	8		Distance from the rostral margin of the (basilar) incisor teeth, To the caudal margin of the socket of the right large basilar canine tooth	3·26 Similar dimension on the left side . . 3·26	3·25	13	
lar dimension on the side . .	4·58	4·50	18	10	Distance from the rostral margin of the (basilar) incisor teeth, To the caudal margin of the socket of the right basilar subsidiary canine tooth	4·88 Similar dimension on the left side . . 4·91	5·00	20	7
lar dimension on the side . .	6·26	6·25	25	7	Distance from the rostral margin of the (basilar) incisor teeth, To the rostral margin of the socket of the (right basilar) caudal molar tooth	7·14 Similar dimension on the left side . . 7·65	7·50	30	10
lar dimension on the side . .	12·38	12·50	50	25	Distance from the rostral margin of the (basilar) incisor teeth, To the caudal margin of the socket of the (right basilo-) caudal molar tooth	12·90 Similar dimension on the left side . . 13·07	13·00	52	22
lar dimension on the side . .	14·25	14·25	57	7	Distance from the rostral margin of the (basilar) incisor teeth, To the corono-caudal extremity of the coronary process of the right basilar maxilla	16·53 Similar dimension on the left side . . 16·50	16·50	66	14
					Distance from the rostral margin of the (basilar) incisor teeth, To the basilar margin of the articular surface of the condyle of the right basilar maxilla.	17·50 Similar dimension on the left side . . 17·47	17·50	70	4
				34	Distance from the rostral margin of the (basilar) incisor teeth, To the caudal margin of the basilar maxilla at its coronal termination	17·90 Similar dimension on the left side . . 17·90	18·00	72	2
lar dimension on the side . .	5·74	5·75	23		Distance from the rostral margin of the socket of the (right basilo-) rostral molar tooth, To the caudal margin of the socket of the (right basilo-) caudal molar tooth . .	5·50 Similar dimension on the left side . . 5·50	5·50	22	50
					Distance from the basilar margin of the right basilar maxilla at its caudal termination, To the coronal extremity of its coronary process	8·95 Similar dimension on the left side . . 8·95	9·00	36	14

Dimensions of the CRANIU

Transverse Dimensions (

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.
Coronal Breadth.				
Distance coronad and rostrad between the lateral surfaces of the margins of the nostrils	2·69	2·75	11	
Smallest distance between the lateral surfaces of the coronal maxillæ interveningly to the nostrils and the orbits. Being over the rostral molar teeth	2·25	2·25	9	2
Distance between the mesial margins of the corono-orbital arteries; in the frontal hollow over the orbits	1·00	1·00	4	5
Distance between the lateral margins of the corono-orbital arteries; in the frontal hollow over the orbits	1·45	1·50	6	2
Smallest distance between the hollows of the temporal fossæ immediately caudad from the orbits	3·00	3·00	12	6
Distance between the lateral surfaces of the cerebral bulge of the cranium	3·80	3·75	15	3

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	I
Zigomatic Breadth.				
Distance between the hollows of the orbicular grooves on the mesio-rostral margins of the orbits	6·20	6·25	25	
Distance between the lateral terminations of the caudal margins of the orbits. Being the greatest breadth of the head	9·25	9·25	37	
Distance between the latero-basilar extremities of the occipital plates. Being immediately caudad from the entrance of the auditory canals	5·90	6·00	24	
Distance between the hollows of the grooves that separate the occipital plate from the occipital condyles	3·10	3·00	12	
Greatest distance between the lateral margins of the occipital condyles	3·42	3·50	14	

Dimensions of Apertures.

Dimensions of the Nasal Passage.				
Distance internally between the lateral margins of the entrance of the nasal passage	2·23	2·25	9	
Smallest distance internally between the lateral surfaces of the nasal passage. Being over the caudal margin of the palate and the caudal molar teeth	1·52	1·50	6	3
Distance internally between the lateral margins of the caudal termination of the nasal passage	2·00	2·00	8	2

Dimensions of the Orbits.							
On the Right Side.		On the Left Side.					
Distance from the internal surface of the hollow of the orbicular groove of the right orbit. To the nearest point on its caudo-lateral margin	2·20	Similar dimension on the left side	2·30	2·25	9		
Greatest distance from the inner surface of the coronal margin of the right orbit. To the inner surface of the opposite basilar margin	2·28	Similar dimension on the left side	2·47	2·25	9		

n the Bactrian Camel.

dth) of the Cranium.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.
Basilar Breadth.				
Smallest distance between the lateral surfaces of the corono-maxillary bones; immediately rostrad from the great canine teeth	2·25	2·25	9	
Greatest distance between the lateral surfaces of the sockets of the large coronal canine teeth .	2·95	3·00	12	3
Smallest distance between the lateral margins of the palate at the interval disjoining the rostral from the lateral teeth	1·15	1·25	5	7
Distance between the lateral surfaces of the sockets of the (corono-) caudal molar teeth . . .	5·25	5·25	21	16
Distance between the external surfaces of the partitions forming the lateral inclosures of the nasal passage caudad	1·85	1·75	7	14
Distance between the caudo-lateral extremities of the pterygoid processes	3·25	3·25	13	6

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.
Breadth of the Basilar Maxillæ.				
Greatest distance between the lateral surfaces of the sockets of the large basilar canine teeth .	2·50	2·50	10	
Smallest distance between the lateral surfaces of the basilar maxillæ, interveningly to the large canine teeth and the (caudal) subsidiary canines	1·33	1·25	5	5
Greatest distance between the sockets of the (caudal) subsidiary canine teeth of the basilar maxillæ	1·71	1·75	7	2
Greatest distance between the caudo-basilar margins of the basilar maxillæ	6·57	6·50	26	19
Distance between the lateral surfaces of the basilar maxillæ at the coronal terminations of the caudal margins	5·82	5·75	23	3
Distance between the lateral extremities of the condyles of the basilar maxillæ	6·58	6·50	26	3
Distance between the lateral surfaces of the coronal extremities of the coronary processes of the basilar maxillæ	5·80	5·75	23	3
Distance between the mesial margins of the arterial canals on the mesial surfaces of the basilar maxillæ and basilad from the sockets of their (caudal) subsidiary canine teeth	1·02	1·00	4	19
Distance between the mesial extremities of the processes on the mesial surfaces of the basilar maxillæ immediately caudad from the sockets of the caudal molar teeth	1·97	2·00	8	4
Greatest distance between the lateral and the mesial surfaces of the right basilar maxillæ. Being at the pene-caudal molar tooth on the right side	1·63	Similar dimension on the left side . .	1·65	1·75	7	1

Dimensions of Apertures.

Dimensions of the Occipital Foramen.

Smallest distance internally between the lateral surfaces of the occipital foramen	1·28	1·25	5	
Distance in the mesial plane from the internal surface of the coronal margin of the occipital foramen. To the internal surface of the opposite basilar margin	1·50	1·50	6	1

Dimensions of the Auditory Canal.

Width of the aperture of the auditory canal rostro-caudally on the right side	·30	Similar dimension on the left side	·31
Width of the aperture of the auditory canal corono-basilarly on the right side . .	·38	Similar dimension on the left side	·33

Dimensions of the CERVICAL VER

Rostro-caudal Dimensions (L

		I. Actual Measurements.		Supposed Normal Dimensions of Mesio-sternal Length.	Dimensions in Proportional Parts.	Diff.	II. Actual Measurements.		Supposed Normal Dimen. of Sterno-rostral Diagonal Length.	Dimensions in Proportional Parts.	Diff.
Cervical Vertebræ.	1st,	Distance in the mesial plane from the rostral margin of the sternal surface, To the caudal margin of the same surface	2·55	2·50	10		Distance in the mesial plane from the rostral margin of the sternal surface, To the caudal margin of the dorsal surface	3·25	3·25	13	
						20					19
	2nd,	Distance in the mesial plane from the rostral rounded margin of the sternal surface, To the sternal margin of the ball of articulation caudad	7·60	7·50	30		Distance in the mesial plane from the rostral rounded margin of the sternal surface, To the marginal termination of the dorsal surface caudad	8·00	8·00	32	
						3					4
	3rd,	Distance in the mesial plane from the sternal margin of the ball of articulation rostrad, To the sternal margin of the ball of articulation caudad	6·65	6·75	27		Distance in the mesial plane from the sternal margin of the ball of articulation rostrad, To the marginal termination of the dorsal surface caudad	7·00	7·00	28	
						1					1
	4th,		6·50	6·50	26			6·60	6·75	27	
						2					1
	5th,		6·00	6·00	24			6·55	6.50	26	
						3					1
	6th,		5·25	5·25	21			6·22	6·25	25	
						5					3
	7th,		4·06	4·00	16			5·58	5·50	22	
			38·61	38·50	154	34		43·20	43.25	173	29

		V. Actual Measurements.		Supposed Normal Dimensions of Mesio-dorsal Length.	Dimensions in Proportional Parts.	Diff.	VI. Actual Measurements.		Supposed Normal Dimen. of Sterno-caudal Diagonal Length.	Dimensions in Proportional Parts.	Dif
Cervical Vertebræ.	1st,	Distance in the mesial plane from the rostral margin of the dorsal surface, To the caudal margin of the same surface	2·55	2·50	10		Distance in the mesial plane from the caudal margin of the sternal surface, To the rostral margin of the dorsal surface	3·50	3·50	14	
						14					13
	2nd,	Distance in the mesial plane from the rostral process of the spinous ridge, To the marginal termination of the dorsal surface caudad	5·95	6·00	24		Distance in the mesial plane from the sternal margin of the ball of articulation caudad, To the rostral process of the spinous ridge on the dorsal surface	6·70	6·75	27	
						1					(
	3rd,		5·68	5·75	23			6·70	6·75	27	
						2					
	4th,		5·36	5·25	21			6·64	6·50	26	
						1					
	5th,		5·12	5·00	20			6·30	6·25	25	
						3					
	6th,		4.22	4·25	17			5·78	5·75	23	
						5					
	7th,		3·12	3·00	12			5·50	5·50	22	
			32·00	31·75	127	26		41·12	41·00	164	1

TEBRÆ in the Bactrian Camel.

gth) in the Mesial Plane.

Sterno-dorsal Dimensions (Thickness) in the Mesial Plane.

III. Actual Measurements.		Supposed Normal Dim. of Rostro-spinal Diagonal Length.	Dimensions in Proportional Parts.	Diff.
Distance in the mesial plane from the rostral margin of the sternal surface, To the caudal extremity of the spinous process				
. . . . .	7·05	7·00	28	7
. . . . .	8·72	8·75	35	
	15·77	15·75	63	7

IV. Actual Measurements.		Supposed Normal Dimensions of Rostral Thickness.	Dimensions in Proportional Parts.	Diff.	
Distance in the mesial plane rostrad, from the sternal, To the dorsal surface	2·10	2·00	8	1	1st
Distance in the mesial plane, from the dorsal margin of the spinous ridge, at its greatest elevation rostrad, To the nearest point on the sternal surface	2·34	2·25	9	1	2nd
Distance in the mesial plane from the dorsal margin of the spinous ridge, at its greatest elevation rostrad in 3rd, 4th, and 5th, (in 6th and 7th from the termination of the spinous process over the nerval canal,) To the nearest point on the sternal surface .	2·42	2·50	10	1	3rd
. . . . .	2·82	2·75	11	2	4th
. . . . .	3·26	3·25	13	2	5th
. . . . .	2·82	2·75	11	4	6th
. . . . .	3·70	3.75	15		7th
	19·46	19·25	77	11	

VII. Actual Measurements.		Supposed Normal Dimen. of Caudo-spinal Diagonal Length.	Dimensions in Proportional Parts.	Diff.
Distance in the mesial plane from the caudal margin of the sternal surface, To the rostral extremity of the spinous process				
. . . . .	6·50	6·50	26	7
. . . . .	8·30	8·25	33	
	14·80	14·75	59	7

VIII. Actual Measurements.		Supposed Normal Dimensions of Caudal Thickness.	Dimensions in Proportional Parts.	Diff.	
Distance in the mesial plane caudad, from the sternal, To the dorsal surface . . .	2·82	2·75	11	6	1st
Distance in the mesial plane from the sternal surface of the caudo-sternal protuberance, To the caudal summit of the spinous ridge on the dorsal surface	4·33	4·25	17		2nd
Distance in the mesial plane from the sternal margin of the caudal ball of articulation, To the nearest point on the dorsal surface caudad; in the 6th and 7th, To the common termination caudad of the caudal margin of the spinous process, and of the internal surface of the nerval canal	3·57	3·50	14	3	3rd
. . . . .	3·78	3·75	15	1	4th
. . . . .	4·05	4·00	16	1	5th
. . . . .	4·00	4·00	16	0	6th
. . . . .	4·50	4·50	18	2	7th
	27·05	26·75	107	13	

Dimensions of the CERVICAL VER

Rostro-Caudal Dimensions (Length) on each

	IX. Actual Measurements.		Supposed Normal Dimensions of smallest Sterno-lateral Length.	Dimensions in Proportional Parts.	Diff.	X. Actual
	On the Right Side.	On the Left Side.				On the Right Side.
Cervical Vertebræ. 1st,	Distance from the caudal margin of the sternal division of the arterial canal rostrad (at the sternal root of the slender rostral spoke), To the sinuosity on the caudal margin of the sternal plate . . . . . 4·32	Similar dimension on the left side . . 4·22	4·25	17	4	Distance from the sterno-lateral sinuosity of the rostral margin, To the dorso-lateral sinuosity of the caudal margin . . . . 3·80
2nd,	Smaller distance from the sinuosity on the rostral margin of the sternal plate, To the corresponding sinuosity caudad . . . . 5·32	Similar dimensions on the left side . . 5·42	5·25	21	0	Distance from the caudal margin of the dorsal division of the arterial canal rostrad (at the dorsal root of the slender rostral spoke,) To the sinuous surface caudad, at the root of the caudal oblique process . . . . 3·92
3rd,	. . . . . 5·38	. . . . 5·28	5·25	21	2	Smallest distance from the sinuous surface rostrad, at the root of the rostral oblique process, To the sinuous surface at the root of the caudal oblique process . . . 4·40
4th,	. . . . . 4·72	. . . . 4·94	4·75	19	1	. . . . . 4·36
5th,	. . . . . 4·60	. . . . 4·57	4·50	18	12	. . . . . 4·48
6th,	. . . . . 1·52	. . . . 1·48	1·50	6		. . . . . 3·47
7th,						. . . . . 1·53
	25·86	25·91	25·50	102	19	25·96

Rostro-Caudal Dimensions (Length) &c. (*continued*). | Oblique Sterno-dorsal Dimensions

	XII. Actual Measurements.		Supposed Normal Dimensions of smallest Dorsal Length of Nerval Canal.	Dimensions in Proport. Parts.	Diff.	XIII Actual
	On the Right Side.	On the Left Side.				On the Right Side.
Cervical Vertebræ. 1st,	Distance from the rostro-lateral margin of the dorsal surface, To the caudo-lateral margin of the same surface . . . . . 4·04	. . . . 4·02	4·00	16	7	
2nd,	Smallest distance from the sinuous margin on the right side of the rostro-mesial process of the dorsal surface, To the caudal margin of the same surface, between the spinous ridge and the right caudal oblique process . 5·80	Similar dimensions on the left side . . 5·80	5·75	23	1	Distance from the rostro-lateral extremity of the sternal plate, To the nearest mesial point on the spinous dorsal ridge; in 6th, To the rostral process over the nerval canal 5·15
3rd,	Smallest distance interveningly to the spinous dorsal ridge and the oblique processes, from the rostral margin of the dorsal surface, To the caudal margin of the same surface . . 5·30	Similar dimensions on the left side . . 5·62	5·50	22	1	. . . . . 6·09
4th,	. . . . . 4·80	. . . . 5·33	5·25	21	2	. . . . . 6·60
5th,	. . . . . 4·70	. . . . 4·68	4·75	19		. . . . . 6·60
6th,						
7th,						
	24·64	25·45	25·25	101	11	24·44

TEBRÆ in the Bactrian Camel.

Side of and parallel to the Mesial Plane.

Measurements.	Supposed Normal Dimensions of Dorso-lateral Sinuous Length.	Dimensions in Proportional Parts.	Diff.	XI. Actual Measurements.		Supposed Normal Dimensions of Dorso-lateral extreme Length.	Dimensions in Proportional Parts.	Diff.	
On the Left Side.				On the Right Side.	On the Left Side.				
Similar dimension on the left side . . 3·70	3·75	15		Distance from the rostral margin of the atlas dorsally, To the caudo-lateral extremity of the bone, Being the length of the inclined plane of the rounded margin whereon the caudal edge of the basilar maxilla rests in the elevated position of the head . . . 5·54	Similar dimension on the left side . . 5·86	5·75	23		1st
Similar dimension on the left side . . 3·75	3·75	15	0	Distance from the right rostral extremity of the dental process, To the caudal margin of the right caudal oblique process . . . 8·36	Similar dimension on the left side . . 8·25	8·25	33	10	2nd
Similar dimensions on the left side . . 4·35	4·50	18	3	Distance from the rostral margin of the rostral oblique process, To the caudal margin of the caudal oblique process . . . . 8·20	Similar dimensions on the left side . . 8·18	8·25	33	0	3rd
. . . . 4·50	4·50	18	0	. . . . . 8·18	. . . . . 8·28	8·25	33	0	4th
. . . . 4·50	4·50	18	0	. . . . . 7·93	. . . . . 8·10	8·00	32	1	5th
. . . . 3·74	3·75	15	3	. . . . . 7·25	. . . . . 7·50	7·50	30	2	6th
. . . . 1·54	1·50	6	9	. . . . . 6·48	. . . . . 6·30	6·50	26	4	7th
26·08	26·25	105	15	51·94	52·47	52·50	210	17	

Cervical Vertebræ.

on each Side of the Mesial Plane.

Measurements.	Supposed Normal Dimensions of Rostro-Lateral Height.	Dimensions in Proport. Parts.	Diff.	XIV. Actual Measurements.		Supposed Normal Dimensions of Caudo-lateral Height.	Dimensions in Proport. Parts.	Diff.	
On the Left Side.				On the Right Side.	On the Left Side.				
									1st
									2nd
Similar dimensions on the left side . . 5·03	5·00	20	4	Distance from the rostro-lateral extremity of the sternal plate, To the summit of the elevation of the spinous dorsal ridge in the 4th, 5th, and 6th cervical vertebræ, And to the caudo-dorsal extremity of the spinous process of the 7th . . . . . 6·44	. . . . . 6·30	6·50	26		3rd
. . . . 6·07	6·00	24	2	. . . . . 6·95	. . . . . 6·90	7·00	28	2	4th
. . . . 6·60	6·50	26	0	. . . . . *	. . . . . *	9·00	36	8	5th
. . . . 6·60	6·50	26		. . . . . 8·44	. . . . . 8·46	8·50	34	2	6th
									7th
24·30	24·00	96	6			31·00	124	12	

Cervical Vertebræ.

Dimensions of the CERVICAL VER

Transverse Dimensions (Br

	XV. Actual Measurements.		Supposed Normal Dimensions of Rostral Articular Breadth.	Dimensions in Proportional Parts.	Diff.	XVI. Actual Measurements.		Supposed Normal Dimensions of Rostro-sternal Breadth.	Dimensions in Proportional Parts.	Diff.
Cervical Vertebræ. 1st,						Distance between the mesial margins of the arterial canals on the sternal surface of the atlas	2·55	2·50	10	
2nd,	Distance between the lateral margins of the rostral globular surfaces of articulation; that surface being in each cervical vertebra connected with the similar caudal surfaces of the vertebra preceding	2·00	2·00	8	1	Distance between the lateral rounded margins of the rostral articulation	3·63	3·75	15	5
3rd,	. . . . .	2·30	2·25	9	1	Distance between lateral extremities of sternal plates rostrad	4·61	4·50	18	3
4th,	. . . . .	2·48	2·50	10	1	. . . . .	5·80	5·75	23	5
5th,	. . . . .	2·75	2·75	11	1	. . . . .	6·05	6·00	24	1
6th,	. . . . .	2·98	3·00	12		. . . . .	5·26	5·25	21	3
7th,						. . . . .	6·06	6·00	24	3
		12·51	12·50	50	4		33·96	33·75	135	20

Transverse Dimensions (Breadth) on the Sternal Aspect (*continued*).

	XIX. Actual Measurement.		Supposed Normal Dimensions of Transverso-caudal Breadth.	Dimension in Proportional Parts.	Diff.	XX. Actual Measurements.		Supposed Normal Dimensions of Caudal Articular Breadth.	Dimensions in Proportional Parts.	Diff
Cervical Vertebræ. 2nd,						Distance between the lateral margins of the caudal globular surface of articulation, connected with the similar rostral surface of the 3rd cervical vertebra	2·10	2·00	8	
3rd,	Smallest distance between the sinuosities that disjoin the transverso-sternal process of the 7th cervical vertebra from the caudal ball of articulation					Distance between the lateral margins of the caudal globular surfaces of articulation, connected with the similar rostral surfaces of the succeeding vertebræ	2·14	2·25	9	1
4th,						. . . . .	2·60	2·50	10	1
5th,						. . . . .	2·79	2·75	11	1
6th,						. . . . .	2·78	2·75	11	0
7th,	. . . . .	2·82	2·75	11		. . . . .	3·56	3·50	14	3
		2·82	2·75	11			15·97	15·75	63	6

TEBRÆ in the Bactrian Camel.

dth) on the Sternal Aspect.

XVII. Actual Measurements.		Supposed Normal Dimensions of intermediate Sternal Breadth.	Dimensions in Proportional Parts.	Diff.	XVIII. Actual Measurements.		Supposed Normal Dimensions of Caudo-sternal Breadth.	Dimensions in Proportional Parts.	Diff.	
Smallest distance between the rostral origins of the sternal plates	1·25	1·25	5		Distance between the caudo-lateral extremities of the atlas; Being the greatest breadth of that bone	6·22	6·25	25	10	1st,
Smallest distance between the lateral margins of the sternal plates, interveningly to the rostral and the caudal distance between these plates	3·47	3·50	14	9	Distance between the lateral extremities of the sternal plates caudad	3·77	3·75	15		2nd
	3·68	3·75	15	1		4·75	4·75	19	4	3rd
	4·10	4·00	16	1		4·98	5·00	20	1	4th
	4·73	4·75	19	3		4·57	4·50	18	2	5th
	5·54	5·50	22	3		4·63	4·75	19	1	6th
						6·18	6·25	25	6	7th
	22·77	22·75	91	17		35·10	35·25	141	24	

Cervical vertebræ.

Transverse Dimensions (Breadth) on the Dorsal Aspect.

XXI. Actual Measurements.		Supposed Normal Dimensions of Rostro-dorsal extreme Breadth.	Dimensions in Proportional Parts.	Diff.	XXIV. Actual Measurements.		Supposed Normal Dimensions of Caudo-dorsal extreme Breadth.	Dimensions in Proportional Parts.	Diff.	
Greatest distance dorsally between the lateral surfaces of the rostral processes of the atlas, forming the socket for receiving the occipital condyles	3·95	4·00	16							1st
Distance between the lateral surfaces of the rostral terminations of the slender spokes extended rostro-caudally over the rostral enlargement and division of the arterial canals	2·50	2·50	10	6	Distance between the lateral margins of the caudal oblique processes	3·15	3·25	13		2nd
Distance between the lateral margins of the rostral oblique processes	3·30	3·25	13	3		2·96	3·00	12	1	3rd
	3·18	3·25	13	0		3·28	3·25	13	1	4th
	3·60	3·50	14	1		3·22	3·25	13	0	5th
	3·62	3·50	14	0		3·00	3·75	15	2	6th
	4·02	4·00	16	2		4·18	4·25	17	2	7th
	24·17	24·00	96	12		19·79	20·75	83	6	

Cervical vertebræ.

Dimensions of the CERVICAL VERTEBRÆ in the Bactrian Camel.

Transverse Dimensions (Breadth) on the Dorsal Aspect (*continued*).

Cervical Vertebræ.	XXII. Actual Measurements.		Supposed Normal Dimensions of Rostro-dorsal sinuous Breadth.	Dimensions in Proportional Parts.	Diff.	XXV. Actual Measurements.		Supposed Normal Dimensions of Caudo-dorsal sinuous Breadth.	Dimensions in Proportional Parts.	Diff.
1st,	Smallest distance laterally between the lateral surfaces of the rostral processes of the atlas, forming the socket for receiving the occipital condyles	3·70	3·75	15	8	Distance between the mesial margins of the arterial canals on the dorsal surface of the atlas caudad	3·26	3·25	13	8
2nd,	Distance between the lateral surfaces of the 2nd vertebra at the attenuation in the middle of the boue	1·80	1·75	7	1	Smallest distance between the lateral sinuous surfaces at the roots of the caudal oblique processes	1·26	1·25	5	0
3rd,	Smallest distance between the lateral sinuous surfaces at the roots of the rostral oblique processes	2·00	2·00	8	2		1·25	1·25	5	1
4th,		2·48	2·50	10	1		1.50	1·50	6	0
5th,		2·80	2·75	11	2		1·60	1·50	6	1
6th,		3·18	3·25	13	3		1·80	1·75	7	1
7th,		3·94	4·00	16			2·12	2·00	8	
		19·90	20·00	80	17		12·79	12·50	50	11

Cervical Vertebræ.	XXIII. Actual Measurements.		Supposed Normal Dimensions of Intermediate Dorsal Breadth.	Dimensions in Proportional Parts.	Diff.
1st,	Distance between the mesial margins of the arterial canals on the dorsal surface of the atlas rostrad	2·32	2·25	9	4
2nd,	Smallest distance between the lateral surfaces on the dorsal aspect, interveningly to the arterial canals rostrad and the caudal oblique processes	1·28	1·25	5	0
3rd,	Smallest distance between the lateral surfaces on the dorsal aspect, interveningly to the rostral and the caudal oblique processes	1·25	1·25	5	1
4th,		1.44	1·50	6	0
5th,		1·57	1·50	6	1
6th,		1·72	1·75	7	1
7th,		2·10	2·00	8	
		11·68	11·50	46	7

Dimensions of the DORSAL VERTEBRÆ in the Bactrian Camel.

	Rostro-caudal Dimension (Length) in the Mesial Plane.				Sterno-dorsal Dimensions (Height) in the Mesial Plane.							
	I. Distance in the mesial plane from the rostral margin of the sternal surface, To the caudal margin of the same surface.				III. Distance in the mesial plane from the rostral margin of the sternal surface, To the caudal junction of the solid bone of the spinous processes with the osteo-steatomatous epiphyses that form the nucleus of the hump.				III. Distance in the mesial plane from the rostral margin of the sternal surface, To the caudo-dorsal extremity of the osteo-steatomatous epiphyses that form the nucleus of the hump.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Dorsal Vertebræ. 1st,	2·70	2·75	**11**	1	12·50	12·50	**50**	4	13·95	14·00	**56**	2
2nd,	2·40	2·50	**10**	2	13·55	13·50	**54**	5	14·50	14·50	**58**	8
3rd,	3·20	3·00	**12**	0	14·85	14·75	**59**	3	16·45	16·50	**66**	3
4th,	2·98	3·00	**12**	0	14·10	14·00	**56**	2	15·80	15·75	**63**	3
5th,	3·20	3·00	**12**	0	13·40	13·50	**54**	1	15·05	15·00	**60**	2
6th,	3·10	3·00	**12**	0	13·20	13·25	**53**	3	14·55	14·50	**58**	2
7th,	2·95	3·00	**12**	0	12·50	12·50	**50**		13·90	14·00	**56**	5
8th,	2·85	3·00	**12**	0					12·75	12·75	**51**	2
9th,	3·10	3·00	**12**	0					12·25	12·25	**49**	4
10th,	3·00	3·00	**12**	1					11·25	11·25	**45**	5
11th,	2·73	2·75	**11**	1					10·05	10·00	**40**	3
12th,	2·45	2·50	**10**						9·30	9·25	**37**	
	34·66	34·50	**138**	5	94·10	94·00	**376**	18	159·80	159·75	**639**	39

					VII. Distance in the mesial plane from the caudal margin of the sternal surface, To the rostral junction of the solid bone of the spinous processes with the osteo-steatomatous epiphyses that form the nucleus of the hump.				VII. Distance in the mesial plane from the caudal margin of the sternal surface, To the rostro-dorsal extremity of the osteo-steatomatous epiphyses that form the nucleus of the hump.			
					Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Dorsal Vertebræ. 1st,	. . . . .				11·00	11·00	**44**	4	12·45	12·50	**50**	1
2nd,	. . . . .				12·00	12·00	**48**	4	12·35	12·25	**49**	6
3rd,	. . . . .				12·90	13·00	**52**	2	13·80	13·75	**55**	1
4th,	. . . . .				12·55	12·50	**50**	1	13·95	14·00	**56**	3
5th,	. . . . .				12·85	12·75	**51**	3	13·20	13·25	**53**	5
6th,	. . . . .				12·00	12·00	**48**	4	12·05	12·00	**48**	3
7th,	. . . . .				11·00	11·00	**44**	2	11·30	11·25	**45**	2
8th,	. . . . .				10·65	10·50	**42**	2	10·80	10·75	**43**	2
9th,	. . . . .				9·90	10·00	**40**	3	10·20	10·25	**41**	3
10th,	. . . . .				9·35	9·25	**37**		9·50	9·50	**38**	0
11th,	. . . . .								9·45	9·50	**38**	2
12th,	. . . . .								9·00	9·00	**36**	
					114·20	114·00	**456**	25	138·05	138·00	**552**	28

Dimensions of the DORSAL VERTEBRÆ in the Bactrian Camel.

Transverse Dimensions (Breadth).

	XV. Distance between the rostro-lateral margins of the sternal portions (the bodies) of the dorsal vertebræ.				XXIII. Distance between the lateral margins at the roots of the spinous processes of the dorsal vertebræ.				XVI. Distance between the lateral extremities of the transverse processes of the dorsal vertebræ.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Dorsal Vertebræ. 1st,	1·88	1·75	**7**	1	1·48	1·50	**6**	0	4·96	5·00	**20**	2
2nd,	1·52	1·50	**6**	1	1·36				4·40	4·50	**18**	1
3rd,	1·72	1·75	**7**	2	1·42				4·22	4·25	**17**	0
4th,	2·26	2·25	**9**	4	1·50	1·50	**6**		4·38	4·25	**17**	0
5th,	3·20	3·25	**13**	2	1·40			1	4·40	4·25	**17**	0
6th,	3·78	3·75	**15**	4	1·32				4·25	4·25	**17**	0
7th,	2·80	2·75	**11**	1	1·22	1·25	**5**		4·22	4·25	**17**	1
8th,	2·40	2·50	**10**	1	1·24			1	3·90	4·00	**16**	0
9th,	2·16	2·25	**9**	1	1·17				3·96	4·00	**16**	1
10th,	1·97	2·00	**8**	0	1·00	1·00	**4**		3·65	3·75	**15**	0
11th,	2·00	2·00	**8**	0	·97				3·65	3·75	**15**	2
12th,	2·00	2·00	**8**		1·17				3·34	3·25	**13**	
	27·69	28·75	**111**	17	15·25				49·33	49·50	**198**	7

	XX. Distance between the caudo-lateral margins of the sternal portions (the bodies) of the dorsal vertebræ.					XIX. Smallest distance between the sinuosities that disjoin the transverse processes of the dorsal vertebræ from the caudo-lateral margins of the sternal portions (the bodies) of the vertebræ.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.		Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Dorsal Vertebræ. 1st,	2·26	2·25	**9**	0	. . . . .	2·35	2·25	**9**	3
2nd,	2·30	2·25	**9**	2	. . . . .	3·05	3·00	**12**	1
3rd,	2·82	2·75	**11**	0	. . . . .	3·22	3·25	**13**	1
4th,	2·88	2·75	**11**	4	. . . . .	3·48	3·50	**14**	1
5th,	3.73	3·75	**15**	2	. . . . .	3·30	3·25	**13**	1
6th,	3·26	3·25	**13**	0	. . . . .	2·93	3·00	**12**	1
7th,	3·32	3·25	**13**	4	. . . . .	2·78	2·75	**11**	1
8th,	2·24	2·25	**9**	1	. . . . .	2·66	2·50	**10**	0
9th,	2·03	2·00	**8**	0	. . . . .	2·50	2·50	**10**	1
10th,	2·06	2·00	**8**	0	. . . . .	2·30	2·25	**9**	0
11th,	2·03	2·00	**8**	1	. . . . .	2·20	2·25	**9**	1
12th,	2·14	2·25	**9**		. . . . .	1·98	2·00	**8**	
	31·07	30·75	**123**	14		32·75	32·50	**130**	11

Dimensions of the LUMBAR VERTEBRÆ in the Bactrian Camel.

	Rostro-caudal Dimension (Length) in the Mesial Plane.				Sterno-dorsal Dimensions (Height) in the Mesial Plane.							
	I. Distance in the mesial plane from the rostral margin of the sternal surface, To the caudal margin of the same surface.				IV. Distance in the mesial plane from the rostral margin of the sternal surface, To the dorso-rostral extremity of the spinous process.				III. Distance in the mesial plane from the rostral margin of the sternal surface, To the dorso-caudal extremity of the spinous process.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Lumbar Vertebræ. 1st,	2·58	2·50	**10**		8·55	8·50	**34**	4	7·72	7·75	**31**	3
2nd,	2·60			1	7·48	7·50	**30**	2	7·00	7·00	**28**	2
3rd,	2·60				6·90	7·00	**28**	2	6·45	6·50	**26**	2
4th,	2·65	2·75	**11**		6·46	6·50	**26**	2	6·02	6·00	**24**	1
5th,	2·65			1	5·90	6·00	**24**	1	5·82	5·75	**23**	0
6th,	2·40	2·50	**10**	2	5·62	5·75	**23**	2	5·74	5·75	**23**	3
7th,	2·00	2·00	**8**		5·31	5·25	**21**		5·02	5·00	**20**	
	17·48				46·22	46·50	**186**	13	43·77	43·75	**175**	11
					VIII. Distance in the mesial plane from the caudal margin of the sternal surface, To the dorso-caudal extremity of the spinous process.				VII. Distance in the mesial plane from the caudal margin of the sternal surface, To the dorso-rostral extremity of the spinous process.			
Lumbar Vertebræ. 1st,	. . . . .				7·25	7·25	**29**	3	8·50	8·50	**34**	3
2nd,	. . . . .				6·55	6·50	**26**	1	7·85	7·75	**31**	1
3rd,	. . . . .				6·16	6.25	**25**	2	7·50	7·50	**30**	1
4th,	. . . . .				5·67	5·75	**23**	1	7·17	7·25	**29**	3
5th,	. . . . .				5·34	5·50	**22**	1	6·54	6·50	**26**	2
6th,	. . . . .				5·40	5·25	**21**	1	6·00	6·00	**24**	1
7th,	. . . . .				5·08	5·00	**20**		5·70	5·75	**23**	
					41·45	41·50	**166**	9	49·26	49·25	**197**	11

Dimensions of the LUMBAR VERTEBRÆ in the Bactrian Camel.

Transverse Dimensions (Breadth).

Lumbar Vertebræ.	XV. Distance between the rostro-lateral margins of the sternal cylindrical portions (the bodies) of the lumbar vertebræ.				XXI. Distance between the lateral surfaces of the extremities of the rostral oblique processes.				XXII. Smallest distance between the lateral surfaces of the roots of the rostral oblique processes.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
1st,	2·11				1·78	1·75	**7**	1	1·58	1·50	**6**	1
2nd,	1·98	2·00	**8**		1·92	2·00	**8**	1	1·66	1·75	**7**	0
3rd,	1·95				2·14	2·25	**9**	1	1·70	1·75	**7**	1
4th,	1·92			2	2·54	2·50	**10**	2	2·07	2·00	**8**	1
5th,	2·04				2·90	3·00	**12**	1	2·32	2·25	**9**	3
6th,	2·19				3·30	3·25	**13**	3	2·90	3·00	**12**	3
7th,	2·40	2·50	**10**		3·92	4·00	**16**		3·80	3·75	**15**	
	14·59				18·50	18·75	**75**	9	16·03	16·00	**64**	9

Lumbar Vertebræ.	XX. Distance between the caudo-lateral margins of the sternal cylindrical portions (the bodies) of the lumbar vertebræ.				XVI. Distance between the lateral extremities of the transverse processes.				XIX. Smallest distance between the sinuosities that disjoin the transverse processes from the caudo-lateral margins of the bones.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
1st,	2·04	2·00	**8**		9·30	9·25	**37**	18	1·98	2·00	**8**	
2nd,	2·05			1	13·65	13·75	**55**	5	2·02			
3rd,	2·10				15·00	15·00	**60**	4	2·09			1
4th,	2·20	2·25	**9**		15·90	16·00	**64**	1	2·12			
5th,	2·32			1	16·25	16·25	**65**	3	2·24	2·25	**9**	
6th,	2·46				15·55	15·50	**62**	13	2·33			1
7th,	2·52	2·50	**10**		12·15	12·25	**49**		2·50	2·50	**10**	
	15·69				97·80	98·00	**392**	44	15·28			

Dimensions of the SACRUM in the Bactrian Camel.

Rostro-caudal Dimensions (Length) in the Mesial Plane.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Distance in the mesial plane from the rostral margin of the sternal surface of the sacrum, To the caudal margin of the same surface	I. 6·70	6·75	27	
Distance in the mesial plane from the rostral margin of the root of the spinous process of the rostral (1st) of four vertebræ that compose the sacrum, To the caudal margin of the root of the caudal (4th) of these four vertebræ, being over the nerval canal	V. 6·55	6·50	26	1
Distance in the mesial plane from the rostro-dorsal extremity of the spinous process of the rostral (1st) of four vertebræ that compose the sacrum, To the caudo-dorsal extremity of the caudal (4th) of these four vertebræ	V. 7·02	7·00	28	2
Distance in the mesial plane from the rostral margin of the sternal surface of the sacrum, To the caudo-dorsal extremity of the spinous process of the caudal (4th) of four vertebræ that compose the bone	III. 7·18	7·25	29	1
Distance in the mesial plane from the caudal margin of the sternal surface of the sacrum, To the rostro-dorsal extremity of the spinous process of the rostral (1st) of four vertebræ that compose the bone	VII. 7·58	7·50	30	1

Sterno-dorsal Dimensions (Height) in the Mesial Plane.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Distance in the mesial plane from the rostral margin of the sternal surface of the sacrum, To the summit of the corresponding spinous process of the rostral (1st) of four vertebræ that compose the bone	IV. 4·45	4·50	18	
Distance in the mesial plane from the summit of the rostral (1st) of four vertebræ that compose the sacrum, To the nearest point on the sternal surface of the bone	IV. 3·94	4·00	16	2
Similar dimension from the spinous summit of the 2nd vertebra of the sacrum	3·13	3·25	13	3
Similar dimension from the spinous summit of the 3rd vertebra of the sacrum	2·34	2·25	9	4
Similar dimension from the spinous summit of the caudal (4th) vertebra of the sacrum	1·96	2·00	8	1
Distance in the mesial plane from the caudal margin of the sternal surface of the sacrum, To the summit of the corresponding spinous process of the caudal (4th) of four vertebræ that compose the bone	VIII. 1·50	1·50	6	2
Distance in the mesial plane from the caudal margin of the sternal surface of the sacrum, To the caudal margin of the floor of the nerval canal	VIII. ·71	·75	3	3

Transverse Dimensions (Breadth).

On the Sternal Aspect.

Distance between the lateral terminations of the rostral margin of the sternal surface of the sacrum	XV. 8·50	8·50	34	
On the sternal surface of the sacrum. Distance between the mesial margins of the foramina intervening to the rostral (1st) and the 2nd of the vertebræ that compose the bone	XVI. 1·84			27
Similar dimension between the sternal foramina intervening to the 2nd and the 3rd vertebræ of the sacrum	1·64	1·75	7	
Similar dimension between the sternal foramina intervening to the 3rd and the caudal (4th) vertebræ of the sacrum	1·49	1·50	6	1
Distance between the lateral extremities of the caudal margin of the sternal surface of the sacrum	XX. 3·26	3·25	13	7

On the Dorsal Aspect.

On the dorsal surface of the sacrum. Distance between the mesial margins of the foramina intervening to the rostral (1st) and the 2nd of four vertebræ that compose the bone	XXV. 2·58	2·50	10	
Similar dimension between the dorsal foramina intervening to the 2nd and the 3rd vertebræ of the sacrum	2·37			3
Similar dimension between the dorsal foramina intervening to the 3rd and the caudal (4th) vertebræ of the sacrum	1·62	1·75	7	

Dimensions of the CAUDAL VERTEBRÆ in the Bactrian Camel.

Vertebræ of the Tail.	Rostro-caudal Dimensions (Length) of the Vertebræ of the Tail, in the Mesial Plane.				Sterno-dorsal Dimensions (Height) of the Vertebræ of the Tail, in the Mesial Plane.							
	I. Distance in the mesial plane from the rostral margin of the sternal surface of the vertebræ of the tail, To the caudal margin of the same surface.				IV. Distance in the mesial plane from the rostral margin of the sternal surface of the vertebræ of the tail, To the opposite dorsal margin, Being at the articulation of each vertebra with that preceding.				VIII. Distance in the mesial plane from the summit of the spinous process of each vertebra of the tail, To the nearest point on the sternal surface of the vertebra.			
	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
1st,	1·34				·75	·75	3		1·48	1·50	6	1
2nd,	1·32				·75				1·28	1·25	5	
3rd,	1·16				·78				1·20			1
4th,	1·22				·83				1·06	1·00	4	
5th,	1·22				·72				·93			
6th,	1·22				·73			1	·93			
7th,	1·23	1·25	5		·72							
8th,	1·20				·66							
9th,	1·20				·66							
10th,	1·15			1	·58							
11th,	1·18				·58							
12th,	1·12				·50	·50	2					
13th,	1·05				·43							
14th,	1·00	1·00	4		·36							
	16·61				9·05				6·88			

Transverse Dimensions (Breadth) of the Vertebræ of the Tail.

Vertebræ of the Tail.	XXI. Distance between the lateral extremities of the (rostral) oblique processes of the vertebræ of the tail.				XVI. Distance between the lateral extremities of the transverse processes of the vertebræ of the tail.			
1st,	None.				3·35	3·25	13	4
2nd,	1·36				2·18	2·25	9	1
3rd,	1·26	1·25	5		2·03	2·00	8	1
4th,	1·21			1	1·65	1·75	7	2
5th,	·99	1·00	4		1·30	1·25	5	
6th,	·89			2	1·14			2
7th,	·63				·87			
8th,	·48	·50	2		·73	·75	3	
9th,					·68			
10th,					·61			1
11th,					·54			
12th,					·47	·50	2	
13th,					·40			
14th,					·34			
	6·82				16·29			

Dimensions of the RIBS and of the Width of the THORAX in the Bactrian Camel.

Dorso-sternal Dimensions (Length) of the Ribs.

Ribs.	Distance from the summit of the dorsal edge of the mesial articulation of each rib with the rostro-lateral margin of the sternal cylindrical portion of the dorsal vertebra of the same number, and likewise with the similar caudo-lateral margin of the preceding vertebra (in the rostral (1st) rib, with that margin of the caudal, 7th cervical vertebra), To the sternal termination of the rostral margin of each rib in its sternal cartilage.					Greatest distance from the rostral extremity of the dorsal edge of the mesial articulation of each rib with the rostro-lateral margin of the sternal cylindrical portion of the dorsal vertebra of the same number, and likewise with the similar caudo-lateral margin of the preceding vertebra (in the rostral (1st) rib, with that margin of the caudal, 7th cervical vertebra,) To the sternal termination of the caudal margin of each rib in its sternal cartilage.					Distance from the summit of the caudal margin of the rostral (1st) rib—in the 2nd and nine succeeding ribs, From the rostral extremity of the elevated rostro-caudal ridge on each rib, immediately laterad from its articulation with the transverse process of the same number—the caudal (12th) rib having no transverse articulation, From a slight rostral enlargement on the summit of its curvature,—in all the twelve ribs,—To the sternal termination of the caudal margin of each rib in its sternal cartilage.				
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
	On the right side.	On the left side.				On the right side.	On the left side.				On the right side.	On the left side.			
1st,	8·40	8·45	8·50	**34**	10	8·94	9·04	9·00	**36**	8	9·28	9·28	9·25	**37**	8
2nd,	10·97	10·80	11·00	**44**	10	10·90	11·00	11·00	**44**	11	11·36	10·75	11·25	**45**	11
3rd,	13·70	13·35	13·50	**54**	10	13·90	13·55	13·75	**55**	10	14·00	13·70	14·00	**56**	10
4th,	16·10	15·80	16·00	**64**	7	16·37	16·03	16·25	**65**	8	16·60	16·20	16·50	**66**	7
5th,	17·80	17·45	17·75	**71**	4	18·30	18·07	18·25	**73**	5	18·40	18·03	18·25	**73**	5
6th,	18·73	18·30	18·75	**75**	3	19·58	19·33	19·50	**78**	3	19·60	19·17	19·50	**78**	3
7th,	19·43	19·33	19·50	**78**	2	20·22	20·00	20·25	**81**	1	20·20	20·07	20·25	**81**	0
8th,	20·00	19·82	20·00	**80**	1	20·45	20·30	20·50	**82**	0	20·25	20·03	20·25	**81**	1
9th,	19·87	19·50	19·75	**79**	1	20·50	20·10	20·50	**82**	1	20·12	19·32	20·00	**80**	2
10th,	19·70	19·15	19·50	**78**	2	20·36	19·60	20·25	**81**	3	19·50	18·95	19·50	**78**	4
11th,	19·13	18·20	19·00	**76**	7	19·64	18·76	19·50	**78**	8	18·50	17·87	18·50	**74**	10
12th,	17·37	17·03	17·25	**69**		17·54	17·42	17·50	**70**		15·90	15·90	16·00	**64**	
	201·20	197·18	200·50	**802**	57	206·70	203·20	206·25	**825**	58	203·71	199·27	203·25	**813**	61

Ribs.	Dorso-sternal Dimensions (Length) of the Ribs (*continued*). Distance from the summit of the dorso-lateral edge of the lateral articulation of each rib with the sternal surface of the lateral extremity of the transverse process of the same number, To the apparent termination of the middle of the osseous lateral surface of each rib in its sternal cartilage.					Rostro-caudal Dimensions (Breadth) of the Ribs. Distance from the sternal termination of the rostral margin of each rib, To the opposite sternal termination of its caudal margin.					Dimensions of the Width of the Thorax. Distance between the dorsal terminations of the lateral surfaces of the right and the left rostral (1st) ribs; between the caudo-lateral surfaces of the 2nd ribs; and between the caudal margins of seven right and left succeeding ribs; disregarding exostoses (from burden) on the 5th and 6th ribs.			
1st,	9·20	9·25	9·25	**37**	7	1·71	1·73	1·75	**7**	1	5·92	6·00	**24**	2
2nd,	11·00	11·00	11·00	**44**	10	2·00	1·72	2·00	**8**	1	5·52	5·50	**22**	4
3rd,	13·50	13·50	13·50	**54**	12	2·11	2·22	2·25	**9**	3	6·55	6·50	**26**	14
4th,	16·50	16·50	16·50	**66**	8	3·02	2·98	3·00	**12**	0	10·00	10·00	**40**	14
5th,	18·50	18·00	18·50	**74**	2	2·93	2·95	3·00	**12**	2	13·32	13·50	**54**	12
6th,	19·00	19·00	19·00	**76**	4	2·43	2·36	2·50	**10**	2	16·50	16·50	**66**	6
7th,	20·00	20·00	20·00	**80**	0	2·03	1·86	2·00	**8**	0	17·87	18·00	**72**	6
8th,	20·00	20·00	20·00	**80**	2	1·93	1·93	2·00	**8**	1	19·25	19·50	**78**	6
9th,	19·70	19·70	19·50	**78**	2	2·12	2·22	2·25	**9**	2	20·83	21·00	**84**	
10th,	19·00	19·00	19·00	**76**	2	1·68	1·84	1·75	**7**	2				
11th,	18·50	18·00	18·50	**74**	8	1·20	1·37	1·25	**5**	1				
12th,	16·50	16·50	16·50	**66**		1·02	1·10	1·00	**4**					
	201·40	200·45	201·25	**805**	57	24·18	24·28	24·75	**99**	15	115·76	116·50	**466**	64

Dimensions of the STERNUM and of the

Rostro-Caudal Dimensions (Length) of the separate Portions of the Sternum, in the Mesial Plane.

Portions of the Sternum.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
1st,	Distance in the mesial plane from the rostral extremity of the rostral (1st) bone of the sternum, To the caudal margin of its dermal (sternal) surface	·96	1·00	**4**	
2nd,	Distance in the mesial plane from the rostral margin of the dermal (sternal) surface, To the caudal margin of the same surface; That surface being smooth and round in the 2nd and 3rd bones; a smooth blunt ridge in the 4th; villous and bulging in the 5th; in the 6th villous and bulging laterally, smooth and deeply hollowed mesially . .	3·05	3·00	**12**	8
3rd,	. . . . .	3·56	3·50	**14**	2
4th,	. . . . .	3·30	3·25	**13**	1
5th,	. . . . .	3·53	3·50	**14**	1
6th,	. . . . .	7·10	7·00	**28**	14
		21·50	21·25	**85**	26

Dermo-pleural Dimensions

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Distance in the mesial plane from the rostral margin of the dermal (sternal) surface, To the opposite rostral margin of the pleural (dorsal) surface	·78	·75	**3**	1
. . . . .		1·00	**4**	2
. . . . .	1·42	1·50	**6**	2
. . . . .	1·98	2·00	**8**	4
. . . . .	2·90	3·00	**12**	
		8·25	**33**	9

Whole Length of the Sternum.

Distance from the rostral extremity of the rostral (1st) bone of the sternum, To the caudal margin of the caudal (6th) bone .	22·64	22·50	**90**	

Dimensions of the Depth of the Thorax.

Distance in the mesial plane from the dermal (sternal) surface of the rostral (1st) bone of the sternum, To the summit of the spinous process of the 7th cervical vertebra	30·00	30·00	**120**	30
Distance in the mesial plane from the caudal margin of the caudal (6th) bone of the sternum, To the summit of the epiphysis of the spinous process of the 6th dorsal vertebra	15·50	15·50	**62**	58

Depth of the THORAX in the Bactrian Camel.

(Thickness) of the separate Portions of the Sternum, in the Mesial Plane.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	
Greatest distance from the dermal (sternal) scabrous surface of the rostral (1st) bone of the sternum, To the opposite dorsal surface, at the sternal ends of the 1st ribs . . .	·56	·50	2	0						1st
Smallest distance in the mesial plane from the dermal (sternal), To the pleural (dorsal) surface; interveningly to the rostral and the caudal ends of each portion of the sternum	51	·50	2		Distance in the mesial plane from the caudal margin of the dermal (sternal) surface, To the opposite caudal margin of the pleural (dorsal) surface	1·04	1·00	4	2	2nd
. . . . .	·90	1·00	4	2	. . . . .	1·45	1·50	6	2	3rd
. . . . .	1·32	1·25	5	1	. . . . .	2·08	2·00	8	5	4th
. . . . .					. . . . .	3·20	3·25	13	11	5th
. . . . .					. . . . .	0·38	·50	2		6th
	3·29	3·25	13	3		8·15	8·25	33	20	

Transverse Dimensions (Breadth) of the separate Portions of the Sternum.

Portions of the Sternum.									
	1st,	Distance between the lateral scabrous surfaces of the rostral (1st) bone of the sternum, Being at the meeting of the sternal ends of the right and the left rostral (1st) ribs	·76	·75	3				
		Smallest distance between the lateral sinuous margins of the 2nd, 3rd, and 4th bones of the sternum, and between the smooth sinuous surfaces of the 5th and 6th bones, in the intervals of the junction of the cartilages of the six rostral ribs with the ligamento-cartilaginous connection of the ends				3			
	2nd,	of the bones of the sternum	1·58	1·50	6		Distance between the rounded lateral margins of the dermal (sternal) surface of the 6th bone of the sternum, at the dermal (sternal) termination of the cartilage of the 6th rib; the cartilage of the 7th rib, the last joined to the sternum being closely caudad from that of the 6th			
	3rd,	. . . . .	2·13	2·25	9	3	. . . . .			
	4th,	. . . . .	2·40	2·50	10	1	. . . . .			
	5th,	. . . . .	2·64	2·75	11	1	. . . . .			
	6th,	. . . . .	4·15	4·00	16	5	. . . . .	6·12	6·00	24
							Distance between the lateral extremities of the caudal margin of the caudal (6th) bone of the sternum	2·95	3·00	12
			13·66	13·75	55	13				

Dimensions of the SCA

Dorso-sternal Dimensions (Length).					Rostro-caudal Dimen	
Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.		Actual
On the Right Side.	On the Left Side.				On the Right Side.	
Distance from the rostral edge of the glenoid cavity, To the osseous rostral angle of the dorsal expansion of the scapula	15·10 . . . . 15·45	15·50	62		Distance from the osseous rostral angle of the dorsal expansion of the scapula, To the cartilaginous dorso-caudal extremity of the expansion of the bone	12·10
Distance from the hollow of the sinuous surface at the root of the scabrous and elongated digital process of the lateral ridge (spine), To the extremity of the cartilaginous dorsal margin (base)	18·36 . . . . 18·28	18·25	73	11	Smallest distance from the thin and falciform rostral margin of the scapula, To the firm and rounded caudal margin	3·22
Distance from the digital extremity of the scabrous and elongated digital process of the lateral ridge (spine), To the extremity of the cartilaginous dorsal margin (base) . .	20·00 . . . . 19·90	20·00	80	7		
				2	Distance from the rostral extremity of the scabrous rostral protuberance immediately over the glenoid cavity, To the caudal edge of that cavity	4·74
Distance from the caudal edge of the glenoid cavity, To the extremity of the cartilaginous dorsal margin (base) in the line of the dorsal termination of the lateral ridge . . .	19·50 . . . . 19·45	19·50	78			
Distance from the caudal edge of the glenoid cavity, To the cartilaginous dorso-caudal extremity of the dorsal expansion of the scapula	* . . . . 18·00	18·00	72	6	Distance from the rostral edge of the glenoid cavity, To the opposite caudal edge of that cavity	2·90
Distance from the caudal edge of the glenoid cavity, To the dorsal termination of the osseous portion of the firm and rounded caudal margin (costa)	16·00 . . . . 16·00	16·00	64	8		

***PULA* in the Bactrian Camel.**

sions (Breadth).				Latero-mesial Dimensions (Thickness).				
Measurements.	Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proport. Parts.	Diff.
On the Left Side.				On the Right Side.	On the Left Side.			
. . . . 12·05	12·00	**48**						
			35	Distance between the margin of the lateral ridge of the scapula at the rise of the scabrous and elongated digital process of that ridge, And the nearest point on the mesial				
. . . . 3·13	3·25	**13**		surface of the bone	2·28 . . . . . 2·30	2·25	**9**	
				Distance between the rostro-lateral extremity of the scabrous and elongated digital process of the lateral ridge, And the furthest point of the caudo-mesial rounding of the				11
			6	glenoid cavity	5·04 . . . . . 5·06	5·00	**20**	
				Distance between the lateral marginal extremity of the lateral and larger portion of the scabrous rostral protuberance immediately over the glenoid cavity, And the mesial extremity of the mesial and smaller portion of that protuberance, The separation being by				11
. . . . 4·84	4·75	**19**		a narrow proximo-digital groove. . . .	2·23 . . . . . 2·12	2·25	**9**	
				Smallest distance between the lateral and the mesial surfaces of the scapula; interveningly to the lateral ridge (spine) of the				3
			7	bone and the glenoid cavity	1·50 . . . . . 1·47	1·50	**6**	
				Distance between the lateral extremity of the caudo-lateral enlargement of the glenoid cavity, And the furthest opposite point of the				5
. . . . 2·94	3·00	**12**		mesial rounding of that cavity	2·63 . . . . . 2·72	2·75	**11**	

Dimensions of the Pelvis in the Mesial Plane.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Distance in the mesial plane from the rostral termination of the union of the ossa pubis, To the caudal termination of that union	6·15	6·25	25	
				20
Distance in the mesial plane from the rostral termination of the union of the sternal surfaces of the ossa pubis, To the rostral termination of the union of their dorsal surfaces	1·32	1·25	5	
				5
Distance in the mesial plane from the caudal termination of the union of the sternal surfaces of the ossa pubis, To the caudal termination of the union of their dorsal surfaces	2·50	2·50	10	
				42
Distance in the mesial plane from the rostral termination of the union of the sternal surfaces of the ossa pubis, To the summit of the spinous process of the 1st (rostral) vertebra of the sacrum	12·98	13·00	52	
				14
Distance in the mesial plane from the rostral termination of the union of the sternal surfaces of the ossa pubis, To the caudal margin of the floor of the nerval canal of the sacrum	9·45	9·50	38	
				4
Distance in the mesial plane from the rostral termination of the union of the sternal surfaces of the ossa pubis, To the dorso-caudal extremity of the spinous process of the 4th (and caudal) vertebra of the sacrum	10·52	10·50	42	
				18
Distance in the mesial plane from the caudal termination of the union of the sternal surfaces of the ossa pubis, To the rostro-dorsal extremity of the spinous process of the 1st (rostral) vertebra of the sacrum	15·02	15·00	60	
				5
Distance in the mesial plane from the caudal termination of the union of the sternal surfaces of the ossa pubis, To the rostro-dorsal extremity of the spinous process of the 2nd vertebra of the sacrum	13·75	13·75	55	

Dimensions of the Pelvis on each side of, and parallel or nearly parallel to, the Mesial Plane.

Actual Measurements.	On the right side.	On the left side.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Distance from the rostral extremity of the scabrous rostral margin (spine) of the right os ilium, To the rostro-lateral margin of the right thyroid foramen	11·20	11·00	11·25	45	
					5
Distance from the rostro-mesial extremity of the scabrous rostral margin (spine) of the right os ilium, To the sterno-caudal margin of the right acetabulum	12·42	12·50	12·50	50	
					7
Distance from the rostral extremity of the scabrous rostral margin (spine) of the right os ilium, To the caudal sinuous surface disjoining the scabrous caudo-mesial process of the right os ischii, and the large lateral protuberance of that bone	14·46	14·18	14·25	57	
					5
Distance from the rostral extremity of the scabrous rostral margin (spine) of the right os ilium, To the caudal extremity of the scabrous caudo-mesial process of the right os ischii	15·50	15·44	15·50	62	
					57
Smallest distance from the rostral surface of the right os pubis, To the rostral margin of the right thyroid foramen	1·22	1·30	1·25	5	
					3
Smallest distance from the caudal margin of the thyroid foramen, To the caudal sinuous surface disjoining the scabrous caudo-mesial process of the right os ischii, and the large lateral protuberance of that bone	1·95	1·93	2·00	8	

Oblique Dimensions of the Pelvis through the Mesial Plane.

Distance from the rostro-lateral extremity of the scabrous rostral margin (spine) of the right os ilium, To the hollow of the sinuous surface immediately caudad from the left acetabulum	16·75	16·67	16·75	67	
					17
Distance from the lateral extremity of the scabrous rostral margin of the right os ilium, To the caudo-lateral extremity of the large lateral protuberance of the left os ischii	21·15	20·93	21·00	84	
					29
Distance from the rostro-dorsal margin of the right acetabulum, To the lateral extremity of the large lateral protuberance of the left os ischii	13·73	13·68	13·75	55	

TIS in the Bactrian Camel.

Transverse Dimensions (Breadth) of the Pelvis.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Greatest distance between the lateral extremities of the scabrous rostral margins (spines) of the ossa ilium	19·45	19·50	**78**	40
Smallest distance between the lateral surfaces of the ossa ilium; interveningly to the rostral expansion of these bones and the rostral surfaces of the acetabula . .	9·50	9·50	**38**	10
Greatest distance between the dorso-mesial surfaces of the ossa ilium, Being interveningly to the rostral expansion of these bones and the rostral surfaces of the acetabula	7·00	7·00	**28**	19
Smallest distance between the mesial margins of the thyroid foramina	2·26	2·25	**9**	28
Smallest distance between the dorso-lateral margins of the acetabula	9·35	9·25	**37**	6
Smallest distance between the lateral surfaces of the ossa ischii: interveningly to the caudal surfaces of the acetabula and the large lateral protuberances of the ossa ischii	7·75	7·75	**31**	26
Greatest distance between the lateral extremities of the large lateral protuberances of ossa ischii	14·20	14·25	**57**	

Oblique Dimensions of the Pelvis on each side of the Mesial Plane.

Actual Measurements.	On the right Side.	On the left Side.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
Distance from the rostral termination of the union of the sternal surfaces of the ossa pubis, To the summit of the scabrous rostral margin (spine) of the right os ilium .	13·66	13·59	13·75	**55**	11
Distance from the caudal termination of the union of the sternal surfaces of the ossa pubis, To the rostro-mesial extremity of the scabrous rostral margin (spine) of the right os ilium	16·60	16·62	16·50	**66**	18
Greatest distance between the lateral extremity of the scabrous rostral margin of the right os ilium, And the furthest mesial extremity of that margin	11·95	12·20	12·00	**48**	36
Smallest distance between the sterno-lateral rounded margin of the right os ilium, And the opposite dorso-mesial rounded margin of the bone; interveningly to the rostral expansion of the os ilium and the rostral surface of the acetabulum	3·04	3·08	3·00	**12**	6
Smallest distance from the dorso-lateral margin of the right thyroid foramen, To the dorsal sinuous and fluted surface disjoining the dorso-caudal surface of the acetabulum, and the large lateral protuberance of the os ischii	1·55	1·58	1·50	**6**	15
Distance from the caudo-lateral margin of the right thyroid foramen, To the lateral extremity of the large lateral protuberance of the right os ischii	5·22	5·28	5·25	**21**	

Proximo-digital Dimensions (Length) of the Bones

	Proximo-digital Dimensions (Length) of the Humerus.					Proximo-digital Dimensio
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actu
	On the Right Side.	On the Left Side.				On the Right Side.
On the Lateral Aspect.	Distance from the proximal extremity of the prominent rostral margin of the lateral of three rostral protuberances at the proximal end of the humerus, To the digital extremity of the lateral margin of the digital articular surface of the bone . . . . 17·53	. . . 17·35	17·50	70		Distance from the lateral margin of the proximal articular surface of the cubitus, To the lateral margin of the digital articular surface of the bone . . . . . 20·9
	Distance from the most digital point laterally on the large hollow space disjoining the summits of the rostro-proximal protuberances of the humerus, and the ball of its glenoid articulation, To the digital extremity of the lateral margin of the digital articular surface of the bone . . . . 16·52	. . . 16·40	16·50	66	4	
On the Rostral Aspect.						Distance from the proximal extremity of the process of the rostral articular margin of the cubitus received within the groove on the rostro-digital articular surface of the humerus, To the digital extremity of the rostral sharp and prominent ridge separating the lateral and the mesial wide grooves at the digital end of the cubitus . 21·9
					14	
On the Caudal Aspect.	Distance from the most digital point in that part of the large proximal hollow of the humerus, adjoining to the rounded and middle of its three rostro-proximal protuberances, To the most proximal point in the caudo-digital cavity that receives the articular portion of the olecranon . . 13·02	. . . 13·10	13·00	52		Distance from the proximal scabrous summit of the olecranon, To the digital extremity of the rostral sharp and prominent ridge separating the lateral and the mesial wide grooves at the digital end of the cubitus . 24·8
	Distance from the most digital point mesially on the large hollow space disjoining the summits of the rostro-proximal protuberances of the humerus and the ball of its glenoid articulation, To the digital extremity of the mesial margin of the digital articular surface of the bone . . . . 16·14	. . . 16·04	16·00	64	12	
On the Mesial Aspect.	Distance from the proximal acuminated extremity of the prominent rostral margin of the mesial of three rostral protuberances at the proximal end of the humerus, To the digital extremity of the mesial margin of the digital articular surface of the bone 17·63	. . . 17·52	17·50	70	6	Distance from the mesial margin of the proximal articular surface of the cubitus, To the mesial margin of the digital articular surface of the bone . . . . . 21·6

: *ATLANTAL LIMBS in the Bactrian Camel.*

ength) of the Cubitus.				Proximo-digital Dimensions (Length) of the Metacarpus.					
asurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	
On the Left Side.				On the Right Side.	On the Left Side.				
. . . 20·90	21·00	**84**		Distance from the lateral margin of the articular surface at the proximal end of the metacarpus, To the digital extremity of the articular surface of the latero-digital condyle of the bone . . . . . 14·94	. . . . . 14·88	15·00	**60**		On the Lateral Aspect.
								3	
			4	Distance from the rostral margin of the proximal articular surface of the lateral portion of the metacarpus, To the rostral margin of the digital articular surface of the latero-digital condyle of the bone . 14·22	. . . . . 14·10	14·25	**57**		On the Rostral Aspect.
								7	
. . . 21·90	22·00	**88**		Distance from the rounded rostral margin of the groove disjoining the proximal articular surfaces of the lateral and the mesial portions of the metacarpus, To the rostral angle of the digital bifurcation of the bone 12·54	. . . . . 12·26	12·50	**50**		
				Distance from the rostral margin of the proximal articular surface of the mesial portion of the metacarpus, To the rostral margin of the digital articular surface of the mesio-digital condyle of the bone . 14·38	. . . . . 14·04	14·25	**57**	7	
				Distance from the mesio-caudal margin of the proximal articular surface of the lateral portion of the metacarpus, To the summit				1	
			11	of the mesial of three tubercles on the caudal articular margin of the latero-digital condyle of the bone . . . . . 13·97	. . . . . 13·68	14·00	**56**		On the Caudal Aspect.
				Distance from the blunt caudal margin of the inter-articular hollow, being the caudal enlargement of the groove disjoining the proximal articular surfaces of the lateral and the mesial portions of the metacarpus, To the caudal angle of the digital bifurcation of the bone . . . . . 12·68	. . . . . 12·48	12·50	**50**	6	
. . . 24·70	24·75	**99**		Distance from the caudal margin of the caudal extension of the proximal articular surface of the mesial portion of the metacarpus, To the summit of the middle of three tubercles on the caudal articular margin of the mesio-digital condyle of the				6	
			12	bone . . . . . 14·03	. . . . . 13·83	14·00	**56**		
				Distance from the proximal extremity of the slight prominence of the mesial articular margin at the proximal end of the metacarpus, in the interval of the two mesio-digital bones of the carpus, To the digital extremity of the articular surface of the				4	On the Mesial Aspect.
. . . 21·64	21·75	**87**		mesio-digital condyle of the bone . . . 15·10	. . . . . 14·91	15·00	**60**		

Proximo-digital Dimensions (Length) of the Bones o

	Proximo-digital Dimensions (Length) of the Femur.					Proximo-digital Dimension
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actu
	On the Right Side.	On the Left Side.				On the Right Side.
On the Lateral Aspect.	Distance from the summit of the lateral (larger) trochanter of the femur, To the most proximal point in the circular lateral cavity on the space disjoining the latero-digital condyle and the lateral margin of the patellar groove . . . . . 20·22	. . . 20·60	20·50	**82**		Distance from the proximal extremity of the slightly elevated lateral margin of the proximal articular surface of the crus, To the digital extremity of the lateral articular margin of the digital end of the bone, at the caudal portion of that margin . . . 17·61
	Distance from the summit of the lateral (larger) trochanter of the femur, To the digital extremity of the mesial rounded margin of the articular surface of the latero-digital condyle of the bone . . . 21·12	. . . 21·20	21·25	**85**	3	
On the Rostral Aspect.	Distance from the summit of the lateral (larger) trochanter of the femur, To the digital extremity of the lateral margin of the patellar groove . . . . . 21·05	. . . 21·28	21·25	**85**	0	
					0	Distance from the summit of the elevated process of the lateral margin of the mesio-proximal articular surface of the crus, for receiving the mesio-digital condyle of the femur, To the digital extremity of the process of the rostro-digital articular margin of the bone, disjoining the lateral and the mesial curvatures of that margin . . . 19·50
	Distance from the summit of the lateral (larger) trochanter of the femur, To the digital extremity of the mesial margin of the patellar groove . . . . . 21·10	. . . 21·22	21·25	**85**		
On the Caudal Aspect.	Distance from the most digital point on the depression of the proximal surface of the femur uniting the globular articulation with the lateral (larger) trochanter—the cervix,—To the blunt caudo-digital margin of the hollow disjoining the lateral and the mesial condyles at the digital end of the bone . . . . . 19·38	. . . 19·50	19·50	**78**	7	Distance from the summit of the elevated process of the mesial margin of the latero-proximal articular surface of the crus, for receiving the latero-digital condyle of the femur, To the sharp sinuous caudal margin of the articular surface of the digital end, over the caudo-lateral surface of the astragalus . . . . . 18·5
					5	Distance from the summit of the elevated process of the lateral margin of the mesio-proximal articular surface of the crus, To the mesio-caudal extremity of the digital articular margin of the bone . . . . 19·2
On the Mesial Aspect.	Distance from the most digital point on the depression of the proximal surface of the femur uniting the globular articulation with the lateral (larger) trochanter—the cervix,—To the digital extremity of the lateral rounded margin of the articular surface of the mesio-digital condyle of the bone . . . . . 20·80	. . . 20·88	20·75	**83**		Distance from the mesial margin of the proximal articular surface of the crus, To the rostro-mesial extremity of the digital articular margin of the bone . . . . 19·2

the SACRAL LIMBS in the Bactrian Camel.

(Length) of the Crus.				Proximo-digital Dimensions (Length) of the Metatarsus.					
Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	
On the Left Side.				On the Right Side.	On the Left Side.				
. . . 17·61	17·50	**70**		Distance from the lateral margin of the articular surface at the proximal end of the metatarsus, To the digital extremity of the articular surface of the latero-digital condyle of the bone . . . . . 15·10	. . . . . 15·18	15·25	**61**		On the Lateral Aspect.
			8					4	
. . . 19·50	19·50	**78**		Distance from the mesio-rostral margin of the proximal articular surface of the lateral portion of the metatarsus, To the mesio-rostral margin of the digital articular surface of the latero-digital condyle of the bone . . . . . 14·32	. . . . . 14·30	14·25	**57**		On the Rostral Aspect.
								8	
				Distance from the hollow of the groove disjoining rostrally the articular surfaces of the lateral and the mesial portions of the metatarsus, To the rostral angle of the digital bifurcation of the bone . . . . . 12·30	. . . . . *	12·25	**49**		
				Distance from the mesio-rostral margin of the proximal articular surface of the mesial portion of the metatarsus, To the nearest point (at the middle) of the rostral margin of the digital articular surface of the mesio-digital condyle of the bone . . . . . 14·00	. . . . . 14·00	14·00	**56**	7	
			4	Distance from the latero-caudal margin of the proximal articular surface of the lateral portion of the metatarsus, To the summit of the middle of three tubercles on the caudal articular margin of the latero-digital condyle . . . . . 14·30	. . . . . 14·20	14·25	**57**	1	On the Caudal Aspect.
. . . 18·50	18·50	**74**		Distance from the summit of the smooth proximal process closing caudally the groove that disjoins the proximal articular surfaces of the lateral and the mesial portions of the metatarsus, To the caudal angle of the digital bifurcation of the bone . 13·25	. . . . . 13·30	13·25	**53**	4	
			3	Distance from the caudal margin of the circular mesio-caudal articular surface of the proximal end of the mesial portion of the metatarsus, To the summit of the middle of three tubercles on the caudal articular margin of the mesio-digital condyle of the bone . . . . . 13·88	. . . . . 13·86	13·75	**55**	2	
. . . 19·12	19·25	**77**							
			0	Distance from the proximal extremity of the process of the mesial articular margin of the proximal end of the metatarsus, disjoining the two mesial bones of the tarsus, To the digital extremity of the articular surface of the mesio-digital condyle of the bone . . . . . 14·98	. . . . . 14·98	15·00	**60**	5	On the Mesial Aspect.
. . . 19·28	19·25	**77**							

Latero-mesial and Rostro-caudal Dimensions (Breadth and Thickness), Girth and

	Latero-mesial Dimensions (Breadth).					Rostro-caudal Dimen
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual
	On the Right Side.	On the Left Side.				On the Right Side.
At the Proximal end of the Bone.	At the proximal end of the humerus. Greatest distance between the lateral surface of the lateral of three rostro-proximal protuberances, And the opposite mesial surface of the mesial of these three protuberances 5·30	. . . 5·23	5·25	21		At the proximal end of the humerus. Greatest distance from the rostral surface of the rounded and middle of three rostro-proximal protuberances, To the opposite caudal margin of the ball of articulation with the glenoid cavity of the scapula . . . . 5·30
					5	At the proximal end of the humerus. Distance from the hollow of the mesial of two proximo-digital grooves on the rostral surface; at the marginal termination of the groove digitad, To the opposite caudal margin of the ball of articulation . . . . 4·52
Intermediately to the Proximal and the Digital ends of the Bone.	Smallest distance, interveningly to the proximal end of the humerus and the lateral scabrous and tuberous ridge; between the lateral And the mesial surfaces of the rostro-caudal flattening of the bone . . . . 3·92	. . . 3·88	4·00	16		
	Greatest distance between the lateral margin of the lateral scabrous ridge of the humerus, And the opposite mesial surface of the bone . . . . . 4·14	. . . 4·18	4·25	17	1	Smallest distance from the rostral surface of the humerus, To the opposite caudal surface, Being at the digital termination of the lateral scabrous ridge . . . . . 1·93
	Smallest distance between the lateral And the mesial surfaces of the humerus; interveningly to the lateral scabrous ridge and the digital end of the bone . . . . . 2·32	. . . 2·32	2·25	9	8	
At the Digital end of the Bone.	At the digital end of the humerus. Distance between the lateral surface of the scabrous ridge over the lateral condyle, And the opposite mesial surface of the smooth ridge over the mesial condyle . . . . . 4·10	. . . 4·00	4·00	16	7	At the digital end of the humerus. Distance from the rostro-mesial margin of the mesial condyle, To the caudo-mesial prominent margin of the socket for receiving the articular portion of the olecranon . . . 3·77
	At the digital end of the humerus. Distance between the digital extremity of the lateral margin of the lateral condyle, And the opposite digital extremity of the mesial margin of the mesial condyle . . . . . 3·50	. . . 3·45	3·50	14	2	At the digital end of the humerus. Distance from the rostral surface of the lateral condyle, To the caudo-lateral margin of the socket for receiving the articular portion of the olecranon . . . . . 2·52
	At the digital end of the humerus. Greatest distance between the lateral And the mesial margins of the caudal cavity that receives the articular portion of the olecranon . . *	. . . 1·50	1·50	6	8	At the digital end of the humerus. Distance from margin To margin of the mesial surface of the articulation of the mesial condyle . . . . . 2·78

Arterial Distances of the HUMERUS in the Bactrian Camel.

sions (Thickness).				Girth.				
Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Left Side.				On the Right Side.	On the Left Side.			
. . . 5·25	5·25	**21**						
			3					
. . . 4·53	4·50	**18**						
			10					
. . . 1·93	2·00	**8**		Girth of the humerus at the digital termination of the lateral scabrous ridge . . . 10·00	. . . . . 10·02	10·00	**40**	
								10
			7	Smallest girth of the humerus, interveningly to the lateral scabrous ridge and the digital end of the bone . . . . . 7·56	. . . . . 7·61	7·50	**30**	
. . . 3·76	3·75	**15**		Arterial Distance.				
			5	Actual Measurements.		Supposed Normal Distance.	Distance in Proportional Parts.	Diff.
. . . 2·52	2·50	**10**		On the Right Side.	On the Left Side.			
			1	Distance from the summit of the rounded and middle of three rostral protuberances at the proximal end of the humerus, To the digital margin of the entrance of the medullary artery, on the rostral surface of the bone . . . . . 11·35	. . . . . 11·40	11·25	**45**	
. . . 2·78	2·75	**11**						

Latero-mesial and Rostro-caudal Dimensions (Breadth and Thickness), Girth

	Latero-mesial Dimensions (Breadth).					Rostro-caudal Dimen
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual
	On the Right Side.	On the Left Side.				On the Right Side.
At the Proximal end of the Bone.	At the proximal (caudal) end of the olecranon. Distance between the scabrous elevation of the lateral surface, And the opposite mesial smooth surface . . . . . 1·78	. . . . 1·80	1·75	7		
	Smallest distance between the lateral And the mesial smooth surfaces of the olecranon; interveningly to the proximal (caudal) end, and the articulation with the digital end of the humerus . . . . . 1·00	. . . . 1·00	1·00	4	3	Smallest distance from the rostral (dorsal) margin of the olecranon, To its caudal (sternal) margin; interveningly to the proximal (caudal) end of the olecranon and the articulation with the digital end of the humerus . . . . . 3·10
	At the proximal end of the cubitus. Distance between the lateral And the mesial margins of the surface of articulation with the digital end of the humerus . . . . . 3·32	. . . . 3·32	3·25	13	9	At the proximal end of the cubitus. Smallest distance from the rostral surface of the marginal process of the articular socket, received within the articular groove separating the condyles of the humerus, To the opposite caudal margin of the bone extending digitad from the olecranon . . 3·50
	At the proximal end of the cubitus. Distance between the lateral extremity of the lateral scabrous protuberance, And the opposite mesial scabrous surface . . . . . 4·16	. . . . 4·22	4·25	17	4	
Intermediately to the Proximal and the Digital ends of the Bone.	Smallest distance between the lateral And the mesial surfaces of the cubitus; interveningly to the proximal and the digital ends of the bone . . . . . 2·23	. . . . 2·31	2·25	9	8	Smallest distance from the rostral surface of the cubitus, To the opposite caudal surface; interveningly to the proximal and the digital ends of the bone, Being towards the digital end . . . . . 1·45
At the Digital end of the Bone.	At the digital end of the cubitus. Distance between the lateral And the mesial scabrous tuberosities; over the articulation with the proximal bones of the carpus . . 4·35	. . . . 4·32	4·25	17	8	At the digital end of the cubitus. Distance from the hollow of the lateral of two wide proximo-digital grooves on the rostral surface, To the opposite caudal surface . . 1·50
	At the digital end of the cubitus. Distance between the lateral And the mesial margins of the surface of articulation with the proximal bones of the carpus . . . . . 3·68	. . . . 3·72	3·75	15	2	At the digital end of the cubitus. Distance from the rostral margin of the proximo-digital sharp and prominent ridge separating the lateral and the mesial wide articular groove on the rostral surface, To the tuberosity on the opposite caudal surface . . 2·58 At the digital end of the cubitus. Distance from the hollow of the mesial of two wide proximo-digital grooves on the rostral articular surface, To the opposite smooth caudal surface . . . . . 2·17

and Arterial Distances of the CUBITUS in the Bactrian Camel.

sions (Thickness).

Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Left Side.			
. . . . 3·05	3·00	**12**	
			2
. . . . 3·55	3·50	**14**	
			8
. . . . 1·43	1·50	**6**	
			0
. . . . 1·46	1·50	**6**	
			4
. . . . 2·58	2·50	**10**	
			1
. . . . 2·22	2·25	**9**	

Girth.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Right Side.	On the Left Side.			
Smallest girth of the cubitus, interveningly to the proximal and the digital ends of the bone, Being towards the digital end . . 6·48	. . . . . 6·53	6·50	**26**	

Arterial Distances.

Actual Measurements.		Supposed Normal Distances.	Distances in Proportional Parts.	Diff.
On the Right Side.	On the Left Side.			
Distance from the rostro-proximal surface of the unciform articular process of the cubitus, received within the caudal articular groove separating the condyles of the humerus, To the blunt proximal margin of the entrance of the medullary artery, on the mesial side of the digital prolongation of the olecranon . . . . . 5·07	. . . . . 4·73	5·00	**20**	
Distance from the rostro-proximal surface of the unciform articular process of the cubitus, received within the articular groove separating the condyles of the humerus, To the blunt digital margin of the entrance of the proximal medullary artery . . . . 5·60	. . . . . 5·35	5·50	**22**	2
Distance from the digital extremity of the latero-digital articular surface of the cubitus, To the digital margin of the entrance of the digital medullary artery, on the caudal surface of the bone and towards the lateral margin of that surface . . . . 3·78	. . . . . 3·97	3·75	**15**	7

Latero-mesial and Rostro-caudal Dimensions (Breadth and Thickness), Girt

	Latero-mesial Dimensions (Breadth).					Rostro-caudal Dime
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actu
	On the Right Side.	On the Left Side.				On the Right Side.
At the Proximal end of the Bone.	At the proximal end of the metacarpus. Distance between the lateral And the mesial margins of the surface of articulation with the carpal bones	3·02 . . . . 3·00	3·00	**12**		At the proximal end of the metacarpus. Distance from the lateral pitted surface immediately digitad from the rostral articular margin, To the opposite and similar caudal surface . . . . . 1·49
	At the proximal end of the metacarpus. Distance between the lateral And the mesial scabrous elevations immediately digitad from the articular margins	3·11 . . . . 3·10				At the proximal end of the metacarpus. Distance from the rostral protuberance immediately digitad from the rostro-mesial articular margin, To the opposite caudal scabrous surface . . . . . 2·07
					5	
Intermediately to the Proximal and the Digital ends of the Bone.	Greatest distance, interveningly to the proximal and the digital ends of the metacarpus; between the lateral And the mesial surfaces of the caudal margins of the groove occupying the caudal surface of the bone . .	1·78 . . . . 1·77	1·75	**7**		Greatest distance, interveningly to the proximal and the digital ends of the metacarpus; from the rostral surface of the lateral portion of the bone (divided from the mesial portion by a furrow-like depression), To the opposite caudo-lateral margin of the groove occupying the caudal surface . . 1·45
	Smallest distance between the lateral And the mesial surfaces of the rostral and more solid portion of the metacarpus; interveningly to the proximal and the digital ends of the bone	1·55 . . . . 1.57	1·50	**6**	1	Greatest distance, interveningly to the proximal and the digital ends of the metacarpus; from the rostral surface of the mesial portion of the bone, To the opposite caudo-mesial margin of the groove occupying the caudal surface . . . . . 1·43
						Smallest distance from the rostral surface of the metacarpus, To the opposite caudal surface; over the digital bifurcation of the bone, Being the smallest distance interveningly to the proximal and the digital ends . 1·04
					11	
At the Digital end of the Bone.	At the digital end of the metacarpus. Distance between the lateral And the mesial terminations of the rostral articular margins . .	4·22 . . . . *	4·25	**17**		At the digital end of the metacarpus. Distance from the rostro-lateral articular margin of the lateral condyle, To the hollow of the disjunction of the lateral and the middle of three tubercles on the caudal articular margin of that condyle . . . . . 1·80
	At the digital end of the metacarpus. Distance between the sinuosity on the caudo-digital extremity of the lateral articular margin, And the opposite and similar sinuosity on the mesial articular margin	3·82 . . . . *	3·75	**15**	2	At the digital end of the metacarpus. Distance from the rostro-mesial articular margin of the lateral condyle, To the caudal extremity of the mesial of three tubercles on the caudal articular margin of that condyle . . 2·01
						At the digital end of the metacarpus. Distance from the rostro-lateral articular margin of the mesial condyle, To the caudal extremity of the lateral of three tubercles on the caudal articular margin of that condyle . . 1·95

and Arterial Distances of the METACARPUS in the Bactrian Camel.

ions (Thickness).

Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Left Side.			
. . . . 1·59	1·50	6	
			2
. . . . 2·03	2·00	8	
			2
. . . . 1·48	1·50	6	
			0
. . . 1·43	1·50	6	
			2
. . . 1·00	1·00	4	
			3
. . . 1·78	1·75	7	
			1
. . . 1·95	2·00	8	
			0
. . . 1·93	2·00	8	

Girth.

Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Right Side.	On the Left Side.			
Greatest girth of the metacarpus interveningly to its proximal and its digital ends, Being at the greatest elevation of the sides of the groove that occupies the caudal surface of the bone	5·75 . . . . . 5·76	5·75	23	
Smallest girth of the metacarpus interveningly to the proximal and the digital ends of the bone, Being over its digital bifurcation .	* . . . . . 5·10	5·00	20	3

Arterial Distances.

Actual Measurements.		Supposed Normal Distances.	Distances in Proportional Parts.	Diff.
On the Right Side.	On the Left Side.			
Distance from the blunt caudal margin of the inter-articular hollow at the proximal end of the metacarpus, To the proximal margin of the entrance of the lateral of two medullary arteries in the groove occupying the caudal surface of the bone	5·58 . . . . . 5·48	5·5	22	
Distance from the blunt caudal margin of the inter-articular hollow at the proximal end of the metacarpus, To the proximal margin of the entrance of the mesial of two medullary arteries in the groove occupying the caudal surface of the bone	5·92 . . . . . 5·34	5·5	22	0

Latero-mesial and Rostro-caudal Dimensions (Breadth and Thickness), Girth a

	Latero-mesial Dimensions (Breadth).					Rostro-caudal Dime
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Act
	On the Right Side.	On the Left Side.				On the Right Side.
At the Proximal end of the Bone.	At the proximal end of the femur. Distance between the lateral surface of the lateral (larger) trochanter, And the digito-mesial margin of the globular surface of articulation with the acetabulum (the head) . .	* . . . 5·17	5·25	**21**		At the proximal end of the femur. Distance from the rostral scabrous surface of the (larger) lateral trochanter, To the caudo-mesial margin of the (mesial) opening of the cavity within the trochanter . . . 2·3
	At the proximal end of the femur. Smallest distance between the lateral smooth surface immediately digitad from the lateral (larger) trochanter, And the mesial smooth surface connecting the globular articulation of the bone with the mesial (smaller) trochanter	3·45 . . . 3·45	3·50	**14**	7	At the proximal end of the femur. Smallest distance from the rostral To the caudal surface of the flattening of the bone that unites the globular articulation with the lateral and the mesial trochanters (the cervix) . . . . . 1·2
					7	At the proximal end of the femur. Distance from the rostral To the caudal surface of the globular articulation with the acetabulum (the head) . . . . . 2·2
Intermediately to the Proximal and the Digital ends of the Bone.	Smallest distance between the lateral And the mesial surfaces of the femur; interveningly to the proximal and the digital ends of the bone	1·80 . . . 1·78	1·75	**7**		Smallest distance, interveningly to the proximal and the digital ends of the bone, from the rostral smooth surface of the femur, To the opposite caudal ridge of the linea aspera . . . . . 1·5
At the Digital end of the Bone.	At the digital end of the femur. Distance between the lateral And the mesial smooth surfaces of the rostral projection grooved proximo-digitally rostrad for the motion of the patella	1·98 . . . 2·06	2·00	**8**	1	At the digital end of the femur. Distance from the lateral rostro-digital margin of the patellar groove, To the opposite caudal surface of articulation of the lateral condyle . . . . . 4·6
	At the digital end of the femur. Distance between the smooth lateral surface of the enlargement immediately over the lateral condyle, And the mesial margin of the mesial condyle	4·50 . . . 4·74	4·50	**18**	10	At the digital end of the femur. Distance from the hollow of the patellar groove, To the opposite caudal surface disuniting the lateral and the mesial condyles . . . 3·3
						At the digital end of the femur. Distance from the mesial rostro-digital margin of the patellar groove, To the opposite caudal surface of articulation of the mesial condyle . . . . . 4·9

and Arterial Distances of the FEMUR in the Bactrian Camel.

sions (Thickness).

Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Left Side.			
. . . 2·25	2·25	**9**	
			4
. . . 1·30	1·25	**5**	
			4
. . . 2·22	2·25	**9**	
			3
. . . 1·60	1·50	**6**	
			13
. . . 4·66	4·75	**19**	
			6
. . . 3·33	3·25	**13**	
			7
. . . 4·88	5·00	**20**	

Girth.

Actual Measurements.		Supposed Normal Dimension.	Dimension in Proportional Parts.
On the Right Side.	On the Left Side.		
Smallest girth of the femur, interveningly to the proximal and the digital ends of the bone . . . . . 5·44	. . . . . 5·50	5·50	**22**

Arterial Distance.

Actual Measurements.		Supposed Normal Distance.	Distance in Proportional Parts.
On the Right Side.	On the Left Side.		
Distance from the most digital point on the proximal surface of the cervix of the femur, To the proximal margin of the entrance of the medullary artery, on the caudal surface of the bone, and within the scabrous enlargement of the linea aspera . . . 11·38	. . . . . 8·48	11·25	**45**

Latero-mesial and Rostro-caudal Dimensions (Breadth and Thickness), Girth

	Latero-mesial Dimensions (Breadth).					Rostro-caudal Dimen
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual
	On the Right Side.	On the Left Side.				On the Right Side.
At the Proximal end of the Bone.	At the proximal end of the crus. Distance between the lateral And the mesial pitted surfaces immediately digitad from the margins of the articulation with the digital end of the femur . . . . . 4·94	. . . 4·94	5·00	20	12	At the proximal end of the crus. Distance from the rostral projection of the lateral (fibular) surface of articulation, To the opposite caudal projection of the same surface . . . . . 2·53 At the proximal end of the crus. Distance from the rostral proximo-digital groove, separating the lateral (fibular) and the mesial (tibial) surface of articulation, To the opposite caudal rounded margin . . 1·76 At the proximal end of the crus. Distance from the rostro-digital extremity of the scabrous prominence of the knee, To the smooth caudo-lateral extension of the mesial articular surface . . . . . 4·80
Intermediately to the Proximal and the Digital ends of the Bone.	Smallest distance between the lateral And the mesial surfaces of the crus; interveningly to the proximal and the digital ends of the bone . . . . . 1·93	. . . 1·99	2·00	8	5	Smallest distance from the rostro-digital extremity of the scabrous prominence of the knee, To the opposite plane caudal surface of the bone; the prominence of the knee being continued digitad in a sharp falciform ridge . . . . . 3·50 Smallest distance from the rostral to the caudal surface of the crus; interveningly to the proximal and the digital ends of the bone; being towards the digital end . . 1·20
At the Digital end of the Bone.	At the digital end of the crus. Distance between the lateral extremity of the styloid termination of the rostral articular margin, And the scabrous elevation over the mesial termination of that margin . . 3·22 At the digital end of the crus. Distance between the lateral extremity of the scabrous tuberosity terminating the caudal articular margin, And the similar mesial termination of that margin; a denticular process of the proximo-lateral bone of the tarsus being interposed in the lateral disjunction of the rostral and the caudal margins . . . . . 3·44	. . . 3·28 . . . 3·48	3·25 3·50	13 14	1	At the digital end of the crus. Distance from the rostro-lateral scabrous surface over the rostral margin of articulation, To the opposite caudo-lateral scabrous surface over the caudal margin of articulation . . 1·74 At the digital end of the crus. Distance from the rostro-mesial scabrous elevation over the rostral articular margin, To the opposite caudal surface . . . . . 2·04

and Arterial Distances of the CRUS in the Bactrian Camel.

sions (Thickness).				Girth.			
Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimension.	Dimension in Proportional Parts.
On the Left Side.				On the Right Side.	On the Left Side.		
. . . 2·53	2·50	**10**					
			3				
. . . 1·77	1·75	**7**					
			12				
. . . 4·77	4·75	**19**					
			5				
. . . 3·49	3·50	**14**					
			9				
. . . 1·20	1·25	**5**		Smallest girth of the crus; interveningly to the proximal and the digital ends of the bone, Being towards the digital end . . 5·20	. . . . . 5·26	5·25	**21**
			2	**Arterial Distances.**			
				Actual Measurements.		Supposed Normal Distance.	Distance in Proportional Parts.
. . . 1·79	1·75	**7**		On the Right Side.	On the Left Side.		
			1	Distance from the caudal margin of the latero-proximal articular surface of the crus, To the digital margin of the entrance of the medullary artery, on the caudal surface of the bone, and towards the lateral margin of that surface . . . . . 4·06	. . . . . 4·03	4·00	**16**
. . . 2·04	2·00	**8**					

Latero-mesial and Rostro-caudal Dimensions (Breadth and Thickness), Girth

	Latero-mesial Dimensions (Breadth).					Rostro-caudal Dimen
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual
	On the Right Side.	On the Left Side.				On the Right Side.
At the Proximal end of the Bone.	At the proximal end of the metatarsus. Distance between the lateral And the mesial margins of the surface of articulation with the tarsal bones	2·47 . . . . 2·50	2·50	10		At the proximal end of the metatarsus. Distance from the rostro-lateral articular margin, To the opposite caudal extremity of the tuberous proximal elevation of the caudal articular margin . . . . . 2·05
	At the proximal end of the metatarsus. Distance between the lateral scabrous surface immediately digitad from the articular margin, And the extremity of the scabrous protuberance on the opposite mesial surface .	2·65 . . . . 2·75	2·75	11	1	At the proximal end of the metatarsus. Distance from the scabrous surface immediately digitad from the rostro-mesial articular margin, To the opposite smooth and flattened surface of the enlargement and proximal elevation of the caudal articular margin . . . . . 1·96
Intermediately to the Proximal and the Digital ends of the Bone.	Greatest distance; interveningly to the proximal and the digital ends of the metatarsus, between the lateral and the mesial surfaces of the caudal margins of the groove occupying the caudal surface of the bone . . .	1·56 . . . . 1·58	1·50	6	5	Greatest distance from the rostral surface of the lateral portion of the metatarsus (divided from the mesial portion by a furrow-like depression), To the caudo-lateral margin of the groove occupying the caudal surface of the bone; interveningly to the proximal and the digital ends . . . . 1·72
	Smallest distance between the lateral And the mesial surfaces of the rostral and more solid portion of the metatarsus; interveningly to the proximal and the digital ends of the bone	1·25 . . . . 1·25	1·25	5	1	Greatest distance from the rostral surface of the mesial portion of the metatarsus, To the caudo-mesial margin of the groove occupying the caudal surface of the bone; interveningly to the proximal and the digital ends . . . . . 1·48
						Smallest distance from the rostral surface of the metatarsus, To the opposite caudal surface; interveningly to the proximal and the digital ends of the bone, Being over its digital bifurcation . . . . . 1·00
At the Digital end of the Bone.	At the digital end of the metatarsus. Distance between the lateral And the mesial margins of the digital extremity of the surfaces of articulation with the plantar bones . . .	* . . . . 3·58	3·50	14	9	At the digital end of the metatarsus. Distance from the rostro-lateral articular margin of the lateral condyle, To the hollow of the disjunction of the lateral and the middle of three tubercles on the caudal articular margin of that condyle . . . . . 1·49
	At the digital end of the metatarsus. Distance between the sinuosity on the caudo-digital extremity of the lateral articular margin, And the opposite similar sinuosity on the mesial articular margin	* . . . . 3·28	3·25	13	1	At the digital end of the metatarsus. Distance from the rostro-mesial articular margin of the lateral condyle, To the caudal extremity of the mesial of three tubercles on the caudal articular margin of that condyle . . 1·58
						At the digital end of the metatarsus. Distance from the rostro-lateral articular margin of the mesial condyle, To the caudal extremity of the lateral of three tubercles on the caudal articular margin of that condyle . . 1·73

and Arterial Distances of the METATARSUS in the Bactrian Camel.

sions (Thickness).

Measurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Left Side.			
. . . . 2·00	2·00	8	
			0
. . . . 1·97	2·00	8	
			1
. . . . 1·69	1·75	7	
			1
. . . . 1·51	1·50	6	
			2
. . . . 1·00	1·00	4	
			2
. . . . 1·47	1·50	6	
			0
. . . . 1·60	1·50	6	
			1
. . . . 1·80	1·75	7	

Girth.

Actual Measurements.			Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
On the Right Side.		On the Left Side.			
Greatest girth of the metatarsus interveningly to its proximal and its digital ends, Being at the greatest elevation of the sides of the groove occupying the caudal surface of the bone	5·52	. . . . . 5·50	5·50	22	
					5
Smallest girth of the metatarsus interveningly to the proximal and the digital ends of the bone, Being over its digital bifurcation .	*	. . . . . 4·28	4·25	17	

Arterial Distances.

Actual Measurements.			Supposed Normal Distances.	Distances in Proportional Parts.	Diff.
On the Right Side.		On the Left Side.			
Distance from the summit of the smooth caudal inter-condylar process at the proximal end of the metatarsus, To the proximal margin of the entrance of the lateral of two medullary arteries in the groove occupying the caudal surface of the bone	6·28	. . . . . 6·38	6·25	25	
					0
Distance from the summit of the smooth caudal inter-condylar process at the proximal end of the metatarsus, To the proximal margin of the entrance of the mesial of two medullary arteries in the groove occupying the caudal surface of the bone	5·77	. . . . . 6·20	6·25	25	

Proximo-digital Dimensions (*Length*) *of the PALMAR and of the PLANTAR*

Proximo-digital Dimensions (Length) of the Palmar Bones.

	Actual Measurements of the Lateral Fore Pasterns.		Actual Measurements of the Mesial Fore Pasterns.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
	On the Right Side.	On the Left Side.	On the Right Side.	On the Left Side.			
Proximo-palmar Bones (First Pasterns of the Fore Feet).	Distance from the lateral margin of the proximal articular surface of the lateral of the two proximo-palmar bones, To the lateral margin of the digital articular surface of the bone	Similar dimension in the left lateral proximo-palmar bone					
	4·39	. . . 4·45 . . .	. . . . .	. . . . .	4·50	18	
	Distance from the proximal extremity of the rostro-proximal articular margin of the lateral of the two proximo-palmar bones, To the nearest point (at the middle) of the rostral margin of the digital articular surface of the bone	Similar dimension in the left lateral proximo-palmar bone	Similar dimension in the corresponding right mesial proximo-palmar bone	Similar dimension in the corresponding left mesial proximo-palmar bone			4
	3·48	. . . 3·53 . . .	. . . 3·47 . . .	. . . 3·60 . . .	3·50	14	
			Distance from the mesial margin of the proximal articular surface of the mesial of the two proximo-palmar bones, To the mesial margin of the digital articular surface of the bone	Similar dimension in the left mesial proximo-palmar bone			4
			4·37 . . .	. . . 4·41 . . .	4·50	18	
Digito-palmar Bones (Second Pasterns of the Fore Feet).	Distance from the lateral margin of the proximal articular surface of the lateral of the two digito-palmar bones, To the lateral margin of the ungual (digital) articular surface of the bone	Similar dimension in the left lateral digito-palmar bone					
	2·58 . . .	. . . 2·72 . . .	. . . . .	. . . . .	2·75	11	
	Distance from the proximal extremity of the rostro-proximal articular margin of the lateral of the two digito-palmar bones, To the nearest point (at the middle) of the rostral margin of the ungual (digital) articular surface of the bone	Similar dimension in the left lateral digito-palmar bone	Similar dimension in the corresponding right mesial digito-palmar bone	Similar dimension in the corresponding left mesial digito-palmar bone			2
	2·17 . . .	. . . 2·10 . . .	. . . 2·12 . . .	. . . 2·17 . . .	2·25	9	
			Distance from the mesial margin of the proximal articular surface of the mesial of the two digito-palmar bones, To the mesial margin of the ungual (digital) articular surface of the bone	Similar dimension in the left mesial digito-palmar bone			2
			2·60 . . .	. . . 2·62 . . .	2·75	11	

BONES (the Pasterns of the Fore and of the Hind Feet) in the Bactrian Camel.

Proximo-digital Dimensions (Length) of the Plantar Bones.

	Actual Measurements of the Lateral Hind Pasterns.		Actual Measurements of the Mesial Hind Pasterns.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
	On the Right Side.	On the Left Side.	On the Right Side.	On the Left Side.			
Proximo-plantar Bones (First Pasterns of the Hind Feet).	Distance from the lateral margin of the proximal articular surface of the lateral of the two proximo-plantar bones, To the lateral margin of the digital articular surface of the bone	Similar dimension in the left lateral proximo-plantar bone					
	3·67 . . .	. . . 3·65 . . .	. . . . .	. . . . .	3·75	15	
	Distance from the proximal extremity of the rostro-proximal articular margin of the lateral of the two proximo-plantar bones, To the nearest point (at the middle) of the rostral margin of the digital articular surface of the bone	Similar dimension in the left lateral proximo-plantar bone	Similar dimension in the corresponding right mesial proximo-plantar bone	Similar dimension in the corresponding left mesial proximo-plantar bone			2
	3·10 . . .	. . . 3·12 . . .	. . . 3·20 . . .	. . . 3·15 . . .	3·25	13	
			Distance from the mesial margin of the proximal articular surface of the mesial of the two proximo-plantar bones, To the mesial margin of the digital articular surface of the bone	Similar dimension in the left mesial proximo-plantar bone			2
			3·78 . . .	. . . . *	3·75	15	
Digito-plantar Bones (Second Pasterns of the Hind Feet).	Distance from the lateral margin of the proximal articular surface of the lateral of the two digito-plantar bones, To the lateral margin of the ungual (digital) articular surface of the bone	Similar dimension in the left lateral digito-plantar bone					
	2·22 . . .	. . . 2·35 . . .	. . . . .	. . . . .	2·25	9	
	Distance from the proximal extremity of the rostro-proximal articular margin of the lateral of the two digito-plantar bones, To the nearest point (in the middle) of the rostral margin of the ungual (digital) articular surface of the bone	Similar dimension in the left lateral digito-plantar bone	Similar dimension in the corresponding right mesial digito-plantar bone	Similar dimension in the corresponding left mesial digito-plantar bone			1
	1·83 . . .	. . . 1·92 . . .	. . . 1·92 . . .	. . . 1·98 . . .	2·00	8	
			Distance from the mesial margin of the proximal articular surface of the mesial of the two digito-plantar bones, To the mesial margin of the ungual (digital) articular surface of the bone	Similar dimension in the left mesial digito-plantar bone			1
			2·25 . . .	. . . 2·40 . . .	2·25	9	

Latero-mesial Dimensions (Breadth) of the PALMAR and of the PLANTAR BONES (the Pasterns of the Fore

Latero-mesial Dimensions (Breadth) of the Palmar Bones.

	Actual Measurements of the Lateral Fore Pasterns.		Actual Measurements of the Mesial Fore Pasterns.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
	On the Right Side.	On the Left Side.	On the Right Side.	On the Left Side.			
Proximo-palmar Bones (First Pasterns of the Fore Feet).	At the proximal end of the lateral of the two proximo-palmar bones. Distance between the lateral And the mesial margins of the surface of articulation with the metacarpus . . . . . 1·89	Similar dimensions in the left lateral proximo-palmar bone . . . 1·94 . . .	Similar dimensions in the corresponding right mesial proximo-palmar bone . . . 1·92 . . .	Similar dimensions in the corresponding left mesial proximo-palmar bone . . . 1·92 . . .	2·00	8	4
	Smallest distance between the lateral And the mesial surfaces of the lateral of the two proximo-palmar bones; interveningly to the proximal and the digital ends of the bone . . . . . ·88	. . . ·89 . . .	. . . ·87 . . .	. . . ·90 . . .	1·00	4	
	At the digital end of the lateral of the two proximo-palmar bones. Distance between the lateral And the mesial margins of the surface of articulation with the lateral of the two digito-palmar bones . . . . . 1·75	. . . 1·78 . . .	. . . 1·75 . . .	. . . 1·75 . . .	1·75	7	3
Digito-palmar bones (Second Pasterns of the Fore Feet).	At the proximal end of the lateral of the two digito-palmar bones. Distance between the lateral And the mesial margins of the surface of articulation with the lateral of the two proximo-palmar bones . . . . . 1·38	Similar dimensions in the left lateral digito-palmar bone . . . 1·38 . . .	Similar dimensions in the corresponding right mesial digito-palmar bone . . . 1·35 . . .	Similar dimensions in the corresponding left mesial digito-palmar bone . . . 1·32 . . .	1·50	6	1
	Smallest distance between the hollows of the notches on the lateral And on the mesial margins of the lateral of the two digito-palmar bones; and, interveningly to the proximal and the digital ends of the bone . 1·30	. . . 1·27 . . .	. . . 1·34 . . .	. . . 1·32 . . .	1·25	5	
	At the digital end of the lateral of the two digito-palmar bones. Distance between the lateral And the mesial margins of the surface of articulation with the lateral of the two unguo-palmar bones . . . . . 1·58	. . . 1·65 . . .	. . . 1·60 . . .	. . . 1·60 . . .	1·75	7	2

Girth of the Proximo-palmar Bones.

Actual Measurements				Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff. from the Hind.
On the Right Side.	On the Left Side.	On the Right Side.	On the Left Side.			
Smallest girth of the lateral proximo-palmar bone, interveningly to its proximal and its digital ends . . . . . 3·00	Similar girth of the left lateral proximo-palmar bone . . . 2·96 . . .	Similar girth in the corresponding right mesial proximo-palmar bone . 3·00 . . .	Similar girth in the corresponding left mesial proximo-palmar bone . 2·98 . . .	3·00	12	2

and of the Hind Feet) and Girth of the Proximo-palmar and of the Proximo-plantar Bones in the Bactrian Camel.

Latero-mesial Dimensions (Breadth) of the Plantar Bones.

	Actual Measurements of the Lateral Hind Pasterns.		Actual Measurements of the Mesial Hind Pasterns.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.
	On the Right Side.	On the Left Side.	On the Right Side.	On the Left Side.			
Proximo-plantar Bones (First Pasterns of the Hind Feet).	At the proximal end of the lateral of the two proximo-plantar bones. Distance between the lateral And the mesial margins of the surface of articulation with the metatarsus . . . . . 1·64	Similar dimensions in the left lateral proximo-plantar bone . . . 1·64 . . .	Similar dimensions in the corresponding right mesial proximo-plantar bone . . . 1·66 . . .	Similar dimensions in the corresponding left mesial proximo-plantar bone . . . 1·63 . . .	1·75	7	
	Smallest distance between the lateral And the mesial surfaces of the lateral of the two proximo-plantar bones; interveningly to the proximal and the digital ends of the bone . . . . . ·83	. . . ·83 . . .	. . . ·78 . . .	. . . ·75 . . .	·75	3	4
	At the digital end of the lateral of the two proximo-plantar bones. Distance between the lateral And the mesial margins of the surface of articulation with the lateral of the two digito-plantar bones . . . . . 1·50	. . . 1·52 . . .	. . . 1·58 . . .	. . . * . . .	1·50	6	3
Digito-plantar Bones (Second Pasterns of the Hind Feet).	At the proximal end of the lateral of the two digito-plantar bones. Distance between the lateral And the mesial margins of the surface of articulation with the lateral of the two proximo-plantar bones . . . . . 1·18	Similar dimensions in the left lateral digito-plantar bone . . . 1·20 . . .	Similar dimensions in the corresponding right mesial digito-plantar bone . . . 1·18 . . .	Similar dimensions in the corresponding left mesial digito-plantar bone. . . . 1·20 . . .	1·25	5	
	Smallest distance between the hollows of the notches on the lateral And on the mesial margins of the two digito-plantar bones; interveningly to the proximal and the digital ends of the bone . . . . . 1·06	. . . 1·00 . . .	. . . 1·09 . . .	. . . 1·00 . .	1·00	4	1
	At the digital end of the lateral of the two digito-plantar bones. Distance between the lateral And the mesial margins of the surface of articulation with the lateral of the two unguo-plantar bones . . . . . 1·53	. . . 1·43 . . .	. . . 1·58 . . .	. . . 1·44 . .	1·50	6	2

Girth of the Proximo-plantar Bones.

Actual Measurements.				Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff. from the Fore.
On the Right Side.	On the Left Side.	On the Right Side.	On the Left Side.			
Smallest girth of the lateral proximo-plantar bone, interveningly to its proximal and its digital ends . . . . . 2·52	Similar girth of the left lateral proximo-plantar bone . . . 2·52 . . .	Similar girth of the corresponding right mesial proximo-plantar bone . 2·53 . . .	Similar girth of the corresponding left mesial proximo-plantar bone . 2·53 . . .	2·50	10	2

Dimensions of the PATELLA and of

	Dimensions of the Patella.					Dimen
	Actual Measurements.		Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual
	On the Right Side.	On the Left Side.				On the Right Side.
Length.	Distance from the proximal extremity of the proximal articular surface of the patella, To the digital extremity of the digital scabrous and flattened surface of the bone . 3·61	. . . . 3·61	3·50	**14**	7	Greatest distance from the extremity of the rostral process of the lateral articular margin of the calcaneum, To the extremity of the flattened and irregular surface at the further end of the bone . . . . . 6·42 Distance from the curvature of the mesial margin of the articular surface of the calcaneum, To the extremity of the flattened and irregular surface at the further end of the bone . . . . . 4·37
Breadth.	Greatest distance between the lateral margin of the articular surface of the patella, And the opposite mesial scabrous surface of the bone, Being towards the proximal end . . 1·78	. . . . 1·78	1·75	**7**	1	Distance between the lateral margin of the surface of the calcaneum articulated with the proximo-lateral bone of the tarsus, And the opposite curved mesial margin contiguous to the astragalus . . . . . 2·32 Smallest distance between the lateral And the mesial smooth surfaces of the calcaneum; interveningly to the tarsal articulated surface and the further end of the bone . . . . . ·88 At the further end of the calcaneum (digital end). Distance between the scabrous lateral margin, And the opposite scabrous mesial surface of the bone . . . . . 1·68
Thickness.	Greatest distance from the irregular rostral surface of the patella, To the opposite caudal surface of articulation adapted to the rostro-digital groove of the femur . . . 2·00	. . . . 2·00	2·00	**8**		Smallest distance from the rostral smooth surface of the calcaneum, To the opposite caudal scabrous surface; interveningly to the tarsal articulated surface and the further end of the bone . . . . . 1·68

e CALCANEUM in the Bactrian Camel.

ns of the Calcaneum.

asurements.	Supposed Normal Dimensions.	Dimensions in Proportional Parts.	Diff.	Actual Measurements.		Supposed Normal Dimension.	Dimension in Proportional Parts.
On the Left Side.				On the Right Side.	On the Left Side.		
. . . 6·36	6·50	**26**					
			9				
. . 4·32	4·25	**17**					
			8				
. . 2·30	2·25	**9**					
			6				
. . . ·88	·75	**3**					
			4				
. . 1·68	1·75	**7**					
			0				
. . 1·64	1·75	**7**		Smallest girth of the calcaneum, interveningly to the tarsal articulated surface and the further end of the bone . . . . . 4·60	. . . . . 4.60	4.50	**18**