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VOLUME II.

MAMMALIA PLACENTALIA.



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1853.

2929. The proximal phalanx of the outer toe.

2930. The middle phalanx of the outer toe.

2931. The unguis phalanx of the outer toe.

2932. The right femur vertically and longitudinally bisected.

The canal for the medullary artery, which commences anterior to the small trochanter, extends downwards to open into a small medullary cavity at the middle of the shaft of the bone.

#### Genus *Rhinoceros*.

Dental formula :— $i \frac{2-2}{2-2}, p \frac{4-4}{4-4}, m \frac{3-3}{3-3} = 36$ .

*Note.*—The incisors are rudimental, and are absorbed in the African Rhinoceroses with two horns, one or both of which horns attain a great size. When the incisors are developed, the median pair is the largest in the upper jaw and the smallest in the lower jaw, and the small incisors are commonly lost early in both jaws. This is the case likewise with the first premolar in both jaws, which is disproportionately small.

2933. The skeleton of a Sumatran Rhinoceros (*Rhinoceros sumatrensis*).

The vertebral formula is:—7 cervical, 19 dorsal, 3 lumbar, 4 sacral, and 22 caudal. It has acquired the permanent dentition, and retains three premolars and three true molars on each side of both jaws. The epiphyses of the long bones have coalesced with their respective shafts. The pleurapophyses, from the fourth to the sixth cervical vertebræ inclusive, have the form of broad subquadrate plates: in the seventh the diapophysis only is developed, and the transverse process is consequently imperforate. The spine of this vertebra suddenly acquires great increase of length, which continues more gradually to the second and third dorsals, beyond which the spines quickly shorten, but gain in antero-posterior extent to the eleventh dorsal, beyond which they continue of the same size, shape and inclination to the lumbar region. The ribs are slender in proportion to their length. The sternum and sternal ribs are wanting in the present skeleton.

*Presented by Sir Stamford Raffles, P.Z.S.*

2934. The cranium of a male Sumatran Rhinoceros (*Rhinoceros sumatrensis*).

The right incisor is wanting; the molar series consists of  $p$  4—4,  $m$  3—3. The present cranium offers no indication of the short hinder horn in this two-horned species. A smaller

proportion of the palatine bones enters into the formation of the bony palate than in the Tapir; they chiefly form the sides of the extensive oblong hinder aperture of the nasal passages, the anterior boundary of which is opposite the first true molars. The pterygoid processes are perforated at their base, lengthwise, by the ectocarotid arteries. The nasofrontal suture is in advance of the orbits, and is shaped like the letter V. The postglenoid process is produced into a long subtriangular, obtuse process: the post-tympanic process takes the place of the true mastoid, and is here a strong quadrate process applied to the base of the paroccipital. The interspace between the post-tympanic process and the exoccipital gives exit to a cranial vein, but does not expose any part of the true mastoid. The orbits are very obscurely marked off from the temporal fossæ: there is no postorbital process, and there is no superorbital foramen. The lacrymal canal commences by two apertures defended by a rough protuberance of the lacrymal bone. There is a well-developed pit for the origin of the inferior oblique. The premaxillaries are small and do not join the nasals.

*Presented by Sir Stamford Raffles, P.Z.S.*

2935. The skull of a male Sumatran Rhinoceros (*Rhinoceros sumatrensis*).

The crown of the last true molar is beginning to appear above the formative socket. The fangs of the first premolar may be seen in the upper jaw. The left premaxillary retains the small incisor behind the larger one. The frontal bones show the rough surface for the hinder horn. The lacrymal protuberance has an accessory ossicle. The three processes, viz. paroccipital, post-tympanic, and postglenoid, are well displayed in this skull.

*Presented by Sir Stamford Raffles, P.Z.S.*

2936. The skull of a young Sumatran Rhinoceros (*Rhinoceros sumatrensis*).

The premaxillary bones and the portions of the nasal bones that have supported the anterior horn are wanting. The molars in place are the four deciduous and the first and second true molars on each side: the second deciduous molars have been artificially removed, to expose the germ of the corresponding premolar in its formative alveolus. The permanent incisors are beginning to appear in the lower jaw.

*Presented by Sir Joseph Banks, P.R.S.*

2937. The left moiety of a vertically and longitudinally bisected cranium of a Sumatran Rhinoceros (*Rhinoceros sumatrensis*).

It shows the extension of the air-cells as far back as the base of the superoccipital ridge. The postglenoid process equals in length the paroccipital, and is much thicker. The post-tympanic, situated between these, is shorter and bent forwards: there is the outlet of a venous foramen between its base and the exoccipital. There is a minute second incisor behind the socket of the larger and normally retained anterior one: the rhinencephalic compartment is large and well defined. The bones of the cranium are numbered on coloured labels corresponding with the TABLE OF SYNONYMS.

*Presented by Sir Stamford Raffles, P.Z.S.*

## 2938. The right moiety of the same cranium.

A part of the upper maxillary bone has been removed to show the germ of the fourth premolar above the fourth milk-molar, which has not been shed: the germ of the last true molar is similarly displayed.

*Presented by Sir Stamford Raffles, P.Z.S.*

## 2939. The lower jaw of the same skull.

The germ of the last premolar is exposed beneath the last deciduous molar on the right side.

*Presented by Sir Stamford Raffles, P.Z.S.*

2940. The pelvis of a male Sumatran Rhinoceros (*Rhinoceros sumatrensis*).

The sacrum consists, as in the skeleton, No. 2933, of four vertebræ: the spines of the two middle ones expand at their summit, and are ankylosed at their posterior angles to the ilia. The diapophyses of the first sacral vertebra develop articular surfaces for the anapophyses of the last lumbar.

*Presented by Sir Stamford Raffles, P.Z.S.*

2941. The skull of an African Rhinoceros (*Rhinoceros bicornis*, Linn.).

The fourth premolars are just coming into place in the upper jaw: the corresponding deciduous molar still remains on the right side of the lower jaw: the small anterior molar, *p* 1, is retained on the left side of the lower jaw: the last true molars are in their formative alveoli in both jaws. The left petrotympanic bone has been removed. The mastoid processes are better developed than in the Sumatran species.

*Purchased.*

2942. The cranium of a young African Rhinoceros (*Rhinoceros bicornis*).

The deciduous molars, four on each side, are in place, and the summit of the first true molar is beginning to appear. The dried integument and horns remain adhering to the upper surface of the skull. This specimen is called, in the former Osteological Catalogue, "*Rhinoceros Bicornis Sumatrensis*," and is stated to be "the head of the original specimen described and figured by Mr. Bell in the 'Philosophical Transactions,' vol. lxxxiii. pl. ii. \*:" but the absence of elongated premaxillaries with incisive teeth or sockets, together with the size and configuration of the molar teeth in place, prove it to belong to an African two-horned species; and, with regard to the plate referred to, it is engraved from a drawing taken in Sumatra from a male specimen the day after it was shot; and it is stated that "There were six molares or grinders on each side of the upper and lower jaw, becoming gradually larger backward, particularly in the upper. Two teeth in the front of each jaw."—Phil. Trans. 1793, vol. lxxxiii. p. 3.

*Hunterian.*

\* 4to, 1831, p. 118, No. 815.

2943. Most of the bones of the cranium of a very young African Rhinoceros (*Rhinoceros bicornis*).

The crowns of the second and third deciduous molars are beginning to protrude from their formative alveoli. The alisphenoids are connate with the basisphenoid, and the orbitosphenoids with the presphenoid. The pterygoid processes developed from the alisphenoids are perforated at their base by the ectocarotids.

*Purchased.*

2944. The lower jaw of the same foetal or very young African Rhinoceros.

The dried gum which covered the anterior end of the bone has been removed, to expose the four rudimental incisors, two on each side of the symphysis, the outer one being the largest.

*Purchased.*

The following, to No. 2958 inclusive, are parts of the same skeleton of the African Rhinoceros (*Rhinoceros bicornis*):—

*Hunterian.*

2945. The atlas.

The transverse processes are large, horizontally flattened, quadrate plates: the left one is perforated, the right notched, by the vertebral artery, which afterwards perforates the neural arch. An anterior notch indicates the original division between the bases of the neurapophyses behind which the hypapophysis develops a compressed process.

2946. The axis.

The transverse process is moderately long, slender, and perforated at its base; beyond which the articular surfaces for the atlas extend outwards on each side. A rough ridge is developed from each side of the summit of the neural spine.

2947. The fifth cervical vertebra.

The pleurapophysis extends downwards and a little outwards, expanding into a broad subquadrate plate: the diapophysis is thicker, shorter, and more obtuse than in the axis, and the perforation for the vertebral artery is considerably larger: there is a metapophysial tubercle exterior to the prozygapophysis. The neural spine is slender and simple. The centrum presents an articular ball in front and a corresponding cup behind.

2948. An anterior dorsal vertebra.

It is remarkable for the great length and terminal expansion of the neural spine. There are three costal articular surfaces on each side those of the centrum, which retains the form of the cup and ball.

## 2949. An anterior dorsal vertebra.

A strong metapophysial ridge rises between the diapophysis and zygapophysis: the groove for the nerve is almost converted into a foramen on the right side.

## 2950. One of the ribs of the right side. One of the ribs of the left side.

These are slender in proportion to their length.

## 2951. The left humerus.

It is remarkable for the strength of the tuberosities and deltoid ridge, and for the smooth basal surfaces between the tuberosities and on the outside of the external one. The medullary artery enters the back part of the bone and proceeds obliquely forwards and downwards.

## 2952. The radius.

The surface for the ulna extends along the back part of the ridge bounding that for the humerus.

## 2953. The ulna.

The two bones interlock at their distal end by reciprocally adapted cavities and tuberosities.

## 2954. The right femur.

The head is impressed by a deep semicircular pit at its margin. Ossification has extended along the ligament from the great trochanter to the third trochanter. The rotular surface is distinct from those on the condyles.

## 2955. The right tibia.

## 2956. The right fibula.

## 2957. The bones of the fore-foot, with the dried integument and hoofs.

## 2958. The dried integument and hoofs, with the unguis phalanges, of the hind foot.

2959. The germ of a penultimate molar, right side, upper jaw, of the *Rhinoceros simus*.

Presented by Wm. J. Burchell, Esq., F.L.S.

2960. The fourth deciduous molar, right side, upper jaw, of the *Rhinoceros simus*.

It is supported by four fangs, the two inner ones being confluent at their base. The crown is much worn, and the anterior fold of enamel is reduced to an island.

*Presented by Wm. J. Burchell, Esq., F.L.S.*

2961. The first true molar, left side, lower jaw, of an African Rhinoceros.

The crown is much worn, and supported on two long fangs.

*Hunterian.*

2962. The horns of an African Rhinoceros (*Rhinoceros bicornis*).

*Presented by Henry Salt, Esq.*

2963. The horns of an older Rhinoceros (*Rhinoceros bicornis*).

*Presented by Henry Salt, Esq.*

2964. The horns of an African Rhinoceros (*Rhinoceros simus*).

In this species the front horn is more than double the length of the hinder one.

*Presented by Sir Joseph Banks, P.R.S.*

2965. The horns of an African Rhinoceros.

The front horn, which is more than double the length of the hinder one, is inclined forwards through the greater part of its extent, the extremity being slightly bent back.

*Presented by Henry Salt, Esq.*

2966. The horns of a young *Rhinoceros simus*.

The length of the front horn is ten inches; its basal circumference fifteen inches.

*Presented by Wm. J. Burchell, Esq., F.L.S.*

2967. The horns of an older *Rhinoceros simus*.

*Purchased.*

2968. The horns of a full-grown *Rhinoceros simus*.

The length of the front horn is forty inches; its basal circumference is twenty-six inches.

*Presented by Wm. J. Burchell, Esq., F.L.S.*

2969. The skull of the Indian Rhinoceros (*Rhinoceros indicus*, Cuv.; *Rh. unicornis*, Linn.).

The permanent molars are in place. The first and third premolars are wanting on the right side, and all the premolars, with the last true molars, have been removed from the left side of the upper jaw. The series is complete in the lower jaw, except the first small grinder,

of which there is no trace of the socket. The two incisors of the upper jaw and the corresponding large outer incisors of the lower jaw are preserved: the post-tympanic process is much less developed than in the Sumatran Rhinoceros.

*Hunterian.*

2970. The skull of a young Indian Rhinoceros (*Rhinoceros indicus*), wanting the premaxillary bones and most of the molar teeth.

In the upper jaw the first small grinders are preserved, and the germs of the second, third and fourth premolars may be seen in their formative sockets: in the lower jaw the summits of the large external incisors are beginning to protrude, and the germs of the second, third and fourth premolars are exposed as in the upper jaw. The first true molar remains in the left ramus.

*Hunterian.*

2971. The skull of the Indian Rhinoceros (*Rhinoceros indicus*).

The permanent dentition is complete, save the first small premolar, which has been broken away from the left side of the upper jaw, and no trace of either this tooth or its socket remains in the lower jaw, in which the two small and middle incisors are preserved, with the two large outer ones.

*Purchased.*

2972. The lower jaw of an Indian Rhinoceros (*Rhinoceros indicus*).

It retains the small anterior grinders. The third deciduous molar, on the right side, has been removed, to show the germ of the permanent molar. The last true molars are still in their formative alveoli: the points of the great external incisors are beginning to protrude.

*Purchased.*

2973. The skull, wanting the premaxillaries, of a very young Indian Rhinoceros (*Rhinoceros indicus*).

The second and third deciduous molars are in place in both jaws, and the crown of the fourth is just appearing above its formative socket. The germ of the small tooth in advance of the second deciduous molar is at a similar stage of growth, which would seem to indicate that it is the first of the permanent series: it has no successor. Traces of the sockets of the rudimental deciduous incisors may be seen on the inner sides of the sockets of the large permanent incisors. The elements of the occipital bone are ununited. The post-tympanic process, which takes the place of the mastoid, touches the postglenoid process by its extremity, and circumscribes the meatus auditorius externus. The petrotympanic bones, being loose, have been lost. The superoccipital develops the whole of the crest so called. There is no distinct interparietal. The transverse frontonasal suture is parallel with the fore part of the orbit. The base of the pterygoid process is perforated by the ectocarotid. The entopterygoid, which swells into a tuberosity at its distal end, has been removed on the left side to show the palatopterygoid suture, which it overlaps. The foramen ovale is bounded by the



basisphenoid, alisphenoid, and orbitosphenoid. The bones are numbered on coloured labels according to the TABLE OF SYNONYMS.

*Presented by Joseph H. Green, Esq., F.R.S.*

2974. The right maxillary, nasal, malar, and lacrymal bones of a very young or foetal Indian Rhinoceros (*Rhinoceros indicus*).

The second and third deciduous molars have begun to protrude from their formative sockets, but their summits are unworn: the germ of the smaller molar anterior to these may be seen in its formative socket, and in front of this is a minute, simple, conical, obtuse tooth, placed like a canine close to the sutural surface which unites with the premaxillary ('Odontography,' pl. 138. fig. 13 c, p. 592).

*Presented by Prof. Owen, F.R.S.*

The following, to No. 3074 inclusive, are parts of the same skeleton of a young female Indian Rhinoceros (*Rhinoceros indicus*):—

*Purchased.*

2975. The cranium.

The calvarium has been taken off, exhibiting the numerous and large air-cavities in the neural spines of the cranial vertebræ. The bones forming the expanded neural spines of the cranial vertebræ are so curved, that the summit of the superoccipital bone, and the centre of the nasals, form the two pillars from which are suspended the parietals and frontals, forming an inverted arch. The highest point of the nasals shows a flattening of about half an inch square. From this point the nasals curve downwards, ending pointedly, at three inches distant. The petrotympanic is a distinct bone, and has been disarticulated on the right side from the neighbouring ones. The premaxillaries have been broken off. The articulation between the basi- and pre-sphenoids still remains. The ectocarotid canals, postglenoid, post-tympanic and paroccipital processes, are present, as in the other skulls of Rhinoceros.

The first small premolar is retained with the second and third deciduous molars, which are much worn; the fourth deciduous molar is likewise present, but has not been much used. The first true molar has come into place, and the edges of its crown are slightly abraded: the second true molar is in its formative cavity, almost ready for use.

2976. The lower jaw.

There is a small hole behind the symphysis, extending for some distance into the bone. The first small premolar is in place, and is slightly used; the second and third deciduous molars are more worn; the fourth deciduous molar is not much worn. The first true molar is in its place, with the crown but little abraded; the second and third true molars are in their formative sockets.

## 2977. The atlas.

The hypapophysis develops a process from the lower part of the anterior surface. The neural arch is perforated transversely by the vertebral artery.

## 2978. The axis.

The centrum supports a simple diapophysis, inclining downwards and backwards. The neural spine is thick, short, tuberculated, and divided by a deep and broad groove into two: the upper part of the spine is prolonged obliquely upwards, giving the whole a trifold character.

## 2979. The third cervical vertebra.

The pleurapophysis is inclined downwards and backwards, expanding into a broad plate.

## 2980. The fourth, fifth and sixth cervical vertebræ of the same Rhinoceros.

The pleurapophysial plate increases in size to the sixth vertebra. The diapophysial portion of the transverse process bends backwards and upwards.

## 2981. The seventh cervical vertebra.

The neural spine, which has been progressively increasing in length from the third vertebra, now becomes long and pointed. The transverse process is a simple diapophysis. The sutures are still persistent, dividing the centrum from the neural arch and diapophyses.

## 2982. The nineteen dorsal vertebræ.

A metapophysis is developed in the fourth dorsal from the back part of the diapophysis; it continues throughout the series, and becomes distinct from the diapophysis in the sixteenth dorsal. The first dorsal spine is almost vertical; the third is the longest; they then decrease to the tenth, from which their length or height does not exceed their antero-posterior extent, until the sixteenth, when they again lengthen.

## 2983. The three lumbar vertebræ of the same Rhinoceros.

The diapophysis appears suddenly in the first; it becomes shorter in the second; and still more so in the third, in which it is very strong and broad. The lower edge of the diapophysis of the second lumbar articulates with the upper edge of the diapophysis of the third, and the third articulates in the same manner with the first vertebra of the sacrum. The metapophyses are distinct, and are situated on the anterior zygapophyses in the first two lumbar: in the last they have become rudimental, and almost obsolete.

## 2984. The sacrum of the same Rhinoceros.

This consists of four anchylosed vertebræ. The articular surface for the ilium is formed by the first three. The metapophyses are distinct in the first two. The neural spines are long, strong, and tubercular at the end; the last curves very much backwards. The three interarticular cartilages between these four vertebræ have not yet become confluent with the surfaces of the adjacent bones.

## 2985. The first pair of ribs.

The tubercle is almost as large as the head, and its articular surface is of great size.

## 2986. The second pair of ribs.

Both this and the first pair are flat, very slightly curved bones, becoming expanded distally, and presenting no grooved inferior or posterior border.

## 2987. The third pair of ribs.

The inferior border is slightly grooved.

## 2988. The fourth pair of ribs.

## 2989. The fifth pair of ribs.

## 2990. The sixth pair of ribs.

## 2991. The seventh pair of ribs.

## 2992. The eighth pair of ribs.

## 2993. The ninth pair of ribs.

## 2994. The tenth pair of ribs.

The length of the rib, from the tubercle, is 2 feet 8 inches.

## 2995. The eleventh pair of ribs.

The length of the rib, from the tubercle, is 2 feet 9½ inches.

## 2996. The twelfth pair of ribs.

The length of the rib, from the tubercle, is 2 feet 10 inches. This is the longest thoracic rib.

## 2997. The thirteenth pair of ribs.

## 2998. The fourteenth pair of ribs.

2999. The fifteenth pair of ribs.                      3000. The sixteenth pair of ribs.

3001. The seventeenth pair of ribs.                      3002. The eighteenth pair of ribs.

3003. The nineteenth pair of ribs.

The head and tubercle of this last rib have their articular surfaces almost confluent, and the thickness of the rib diminishes towards its distal end, which contrasts with the flat, expanded end of the first rib. Its length is 1 foot 4 inches.

3004. The first seven caudal vertebræ.

The seventh is the last which has a neural canal.

3005. The right scapula.

3006. The left scapula.

3007. The right humerus.

3008. The left humerus.

The medullary artery enters the posterior surface of the shaft between its middle and lower thirds, and inclines downwards. Both upper and lower epiphyses are united to the shaft.

3009. The shaft of the right radius.

3010. The lower epiphysis of the right radius.

3011. The shaft of the right ulna.

3012. The lower epiphysis of the right ulna.

3013. The shaft of the left radius.

3014. The lower epiphysis of the left radius.

3015. The shaft of the left ulna.

3016. The lower epiphysis of the left ulna.

3017. The right scaphoides.

3018. The right lunare.

3019. The right cuneiforme.

3020. The right unciforme.

3021. The right os magnum. 3022. The right os trapezoides.

3023. The right innermost or radial metacarpal bone, with its separated lower epiphysis.

It answers to the second or 'index' metacarpal of the pentadactyle foot.

3024. The right middle metacarpal, with its separated lower epiphysis.

It answers to that of the third toe, or 'medius,' in the pentadactyle foot.

3025. The right outer or ulnar metacarpal, with its separated lower epiphysis.

It answers to that of the fourth toe, or 'annularis,' in the pentadactyle foot.

3026. The left scaphoides.

3027. The left lunare.

3028. The left cuneiforme.

3029. The left trapezium.

3030. The left trapezoides.

3031. The left os magnum.

3032. The left os unciforme.

3033. The left innermost or radial metacarpal, with its separated lower epiphysis.

3034. The left middle metacarpal, with its separated lower epiphysis.

3035. The left outermost or ulnar metacarpal, with its separated lower epiphysis.

3036. The right os innominatum.

3037. The left os innominatum.

3038. The shaft of the right femur.

The medullary canal commences at the back part in the upper half of the shaft, and inclines forwards and downwards. The third trochanter is a remarkable feature, from its great size and forward curvature.

3039. The epiphysial head of the same femur.

It is deeply impressed by the ligamentum teres.

3040. The epiphysial trochanter major of the same femur.

3041. The lower epiphysis of the same femur.

3042. The shaft of the left femur.

The medullary canal commences near the middle of the inner border of the shaft, and inclines obliquely upwards. The canal of another artery is seen rather above the middle of the posterior surface of the shaft, and runs downwards.

3043. The epiphysial head of the same femur.

3044. The epiphysial trochanter major of the same femur.

3045. The lower epiphysis of the same femur.

The inner wall of the trochlear surface for the patella is thicker, more prominent, and is prolonged further up the shaft of the femur than the outer wall is; the condyles are nearly of the same length.

3046. The shaft of the right tibia.      3047. The upper epiphysis of the same tibia.

3048. The lower epiphysis of the same tibia.

3049. The right fibula.      3050. The shaft of the left tibia.

3051. The upper epiphysis of the left tibia.      3052. The left fibula.

3053. The right patella.      3054. The left patella.

3055. The right astragalus.      3056. The right calcaneum.

3057. The right cuboides.      3058. The right naviculare.

3059. The right ectocuneiforme, or 'os cuneiforme externum.'

3060. The right mesocuneiforme, or 'os cuneiforme medium.'

3061. The fibular metatarsal of the right leg, of the same Rhinoceros, with its lower epiphysis free from the shaft.

3062. The right middle metatarsal, with its separated lower epiphysis.

It answers to the third metatarsal of the pentadactyle foot.

3063. The right innermost or tibial metatarsal, with its separated lower epiphysis.

It answers to the second metatarsal of the pentadactyle foot.

3064. The left astragalus.

3065. The calcaneum.

3066. The left naviculare.

3067. The left mesocuneiforme.

3068. The left ectocuneiforme.

3069. The left cuboides.

3070. The left innermost or tibial metatarsal, with its separated lower epiphysis.

3071. The left middle metatarsal, with its separated lower epiphysis.

3072. The left outermost or fibular metatarsal, with its separated lower epiphysis.

3073. The basihyal.

3074. The stylohyals.

3075. A molar tooth, left side, upper jaw, of the *Rhinoceros indicus*.

The crown is half worn, and the characteristic inflexions of the animal are very well shown.

*Presented by Sir Everard Home, Bart., V.P.R.S.*

3076. The third deciduous molar, left side, upper jaw, of the *Rhinoceros indicus*.

It is much worn, and is supported by three fangs.

*Presented by Sir Everard Home, Bart., V.P.R.S.*

3077. The last molar, left side, upper jaw, of the *Rhinoceros indicus*.

The crown has been transversely bisected, and one of the surfaces polished, to show the thickness and characteristic inflexions of the enamel.

*Presented by Sir Everard Home, Bart., V.P.R.S.*

3078. The horn, with part of the dried integument, of a young *Rhinoceros indicus*.

It has been longitudinally and vertically bisected, and the base of the horn has been detached from the subjacent skin, exposing the close-set minute pores of the bristle-like fibres, the aggregate of which composes the horn.

*Hunterian.*

The following series exemplifies the progress of growth in the horn of the Indian One-horned Rhinoceros (*Rhinoceros indicus*):—

3079. The horn of a young Rhinoceros.

It has a basal circumference of ten inches, and measures six inches in length, following the anterior curve.

*Hunterian.*

3080. The horn of a young Rhinoceros.

It measures six inches and three-quarters in length, and eleven inches and a half in basal circumference.

*Hunterian.*

3081. The horn of an older Rhinoceros.

It measures six inches and a half in length and fifteen inches in basal circumference.

*Hunterian.*

3082. The horn of an older Rhinoceros.

It measures eight inches in length and fifteen inches in basal circumference.

*Hunterian.*

3083. The horn of a similarly aged Rhinoceros.

It measures eight inches in length and fifteen inches in basal circumference.

*Hunterian.*

3084. The horn, with part of the dried integument, of an older Rhinoceros.

It measures nine inches in length and nineteen inches in basal circumference.

*Hunterian.*



## 3085. The horn of a young female Rhinoceros.

It measures eleven inches in length and thirteen inches in basal circumference.

*Hunterian.*

## 3086. The horn of a female Rhinoceros.

It measures fifteen inches in length and sixteen inches in basal circumference, and is remarkable for its slenderness and degree of curvature.

*Purchased.*

## 3087. The horn of a similarly aged male Rhinoceros.

It measures thirteen inches and a half in length and sixteen inches in basal circumference.

*Hunterian.*

## 3088. The horn of a male Rhinoceros.

It measures seventeen inches in length and twenty-three inches in basal circumference.

*Hunterian.*

## 3089. The horn of a full-grown male Rhinoceros.

It measures twenty-eight inches in length and twenty-seven inches in basal circumference.

*Hunterian.*

## 3090. The horn of an old male Rhinoceros.

It measures thirty-three inches and a half in length and twenty-seven inches in basal circumference.

*Hunterian.*

## 3091. The horn of an old male Rhinoceros.

It measures thirty-two inches and a half in length and sixteen inches in basal circumference.

*Hunterian.*

Genus *Hyrax*.

The following are parts of the same skeleton of the *Hyrax capensis*:—

*Purchased.*

## 3092. The cranium.

The last molar tooth has not yet come into place. There is a small incisive socket behind the large incisors. The petrosal has coalesced with the tympanic: the mastoid terminates in a process wedged between the petrotympanic and paroccipital. The zygomatic process of the squamosal is very short, the zygoma being formed almost wholly by the malar, which contributes a portion of the glenoid cavity. The pterygoid process is perforated lengthwise at its base. The hinder half of the palatines enter into the formation of the long oblique hinder

aperture of the nostrils. There is a large interparietal, and the upper half of the superoccipital appears to be detached from the rest. The lacrymal canal commences by two foramina, which are defended by a process. The maxillary forms the floor of the orbit, as in the Rhinoceros and Tapir: but the premaxillaries join the nasals.

### 3093. The lower jaw.

It is remarkable for the expanse of the ascending ramus. The coronoid process is perforated lengthwise at its base. The three divisions of the crown of the lower incisors have been worn down to their common base.

### 3094. The atlas.

The transverse process is perforated vertically at its fore part by the vertebral artery, which afterwards perforates the neural arch. The hypapophysis develops a short process.

### 3095. The dentata.

The simple transverse process is perforated at its base for the vertebral artery, and the neural arch is perforated on each side by the second cervical nerve.

### 3096. The five other cervical vertebræ.

The pleurapophysial part of the transverse process is much expanded in the third to the sixth inclusive: it is wanting on the left side of the seventh vertebra, but is present as a distinct element, or rudimental cervical rib, on the right side, where it completes the foramen for the vertebral artery.

### 3097. The twenty-two dorsal vertebræ.

The spines incline towards the thirteenth, which is vertical, and indicates the centre of motion of that part of the trunk. In their forms and proportions the spines resemble those of the Rhinoceros. Seven pairs of ribs directly join the sternum, which consists of six bones. The metapophysis commences on the third dorsal, and attains the outside of the zygapophysis on the fifteenth: it exceeds the diapophysis in length in all the posterior dorsals.

### 3098. The eight lumbar vertebræ.

In these the diapophyses suddenly acquire great breadth, and gradually increase in length to the last lumbar: the metapophyses are continued throughout the series. No anapophyses are developed.

## 3099. The sacral and caudal vertebræ.

They are eleven in number. The first two afford the articular surfaces for the ossa innominata: any other distinction between the sacrum and coccyx is artificial.

## 3100. The right scapula.

It has no acromion.

## 3101. The right humerus.

The proximal epiphysis is still ununited. The intercondyloid space is widely perforated.

## 3102. The bones of the right fore-arm and fore-foot.

There is no vestige of a pollex. The four digits answer to the second, third, fourth and fifth of the pentadactyle foot.

## 3103. The left scapula.

## 3104. The left humerus.

## 3105. The bones of the left fore-arm and fore-foot.

The trapezium is here preserved.

## 3106. The right os innominatum.

## 3107. The right femur.

The epiphysis is distinct at both ends: there is a rudiment of a third trochanter: the medullary artery enters near the small trochanter.

## 3108. The bones of the left leg and hind foot.

These resemble those in the Rhinoceros and Tapir, the toes being reduced to the three middle ones in the pentadactyle foot.

## 3109. The left os innominatum.

## 3110. The left femur.

## 3111. The bones of the left leg and hind foot.

## 3112. The left patella.

3113. The skull of the *Hyrax capensis*.

Traces of the suture between the super- and ex-occipitals still remain. A small triangular interparietal is wedged between the back part of the parietals. The last molar has partly emerged from its formative socket in both jaws.

*Purchased.*

3114. A mutilated cranium of a young female *Hyrax capensis*.

The four deciduous molars and first true molar are in place on each side: the second true molar is partly extricated from its socket. The crowns of the permanent incisors are exposed above the deciduous ones: they are lodged in the premaxillaries.

*Presented by the Zoological Society of London.*

## 3115. The lower jaw of the same Hyrax.

The outer alveolar wall has been removed from the right ramus, so as to expose the germs of the two permanent canines, of the second true molar, and the formative alveolus of the premolar beneath the third deciduous molar.

The following are parts of the skeleton of a young *Hyrax arboreus*:—

*Presented by the Zoological Society of London.*

## 3116. The mutilated cranium.

The deciduous incisors, the four deciduous molars, and the first permanent molar on each side, are in place: the crown of the permanent incisor is exposed on the right side. The ascending process of the malar bone articulates with the postorbital process which is formed by both the parietal and frontal bones. There is no interparietal. The tympanic, which forms the bulla ossea at the basis cranii, has not coalesced with the petrosal. The mastoid has coalesced with the squamosal. The elements of the occipital bone are still ununited.

## 3117. The lower jaw.

The deciduous incisors have the crown deeply divided into three processes, like a trident.

## 3118. The atlas.

The hypapophysis is still distinct.

## 3119. The dentata.

The centrum of the atlas, which forms the odontoid process, is still distinct.

## 3120. The five other cervical vertebræ. 3121. The twenty-one dorsal vertebræ.

3122. The seven lumbar vertebræ.

3123. The sacral and caudal vertebræ.

They are fourteen in number: of these the first seven have transverse processes, and the first three afford the articular surfaces for the ossa innominata.

3124. The sternum, with the attached cartilages of the ribs.

The sternum consists of six bones, and eight pairs of costal cartilages directly articulated therewith.

3125. The right scapula.

The coracoid is a distinct bone.

3126. The right humerus.

The proximal epiphysis is divided between the head and the great tuberosity.

3127. The right radius.

The epiphyses of both ends are distinct.

3128. The right ulna.

The proximal epiphysis forms the olecranon.

3129. The ossa innominata.

The pubis and ischium are ununited at the acetabulum, and show the proportions which they respectively contribute to that cavity.

3130. The right femur.

The head and great trochanter are formed by distinct epiphyses.

3131. The right tibia.

The epiphyses are ununited at both extremities.

3132. The left tibia.