MEMOIR ON
THE GIBBON VARIÉ,
WITH A CRITICAL EXAMINATION OF
M. DE BLAINVILLE'S ACCOUNT
OF THE GIBBON.

By ROBERT KNOX, M.D., Edinburgh.

THE reader will have observed, from the last Number of THE LANCET, that M. De Blainville had completed his Observations on the *ascending scale* of the Simiæ, or African Apes and Monkeys; and the Translator now takes the liberty of placing before the readers of THE LANCET, *first*, a Memoir on the Gibbon Varié, of which he possesses two *authentic* specimens; and *secondly*, Critical Remarks on the present state of our knowledge respecting the Comparative Anatomy of the Orang-Outang and Chimpanzé.

And, first, of the Gibbon.

That M. De Blainville has been extremely brief in his remarks on the history of this interesting class of the quadrumana, the reader will, we think, readily admit. The truth is that M. De Blainville, notwithstanding the extent and magnitude of the Paris collection, finds no small difficulty in procuring such materials as he has pledged himself to use in compiling and composing these truly unique and splendid Lectures. M. De Blainville mentions in a note, p. 212, that he had had an opportunity of examining numerous skeletons of the Gibbon; but their want of *authenticity* rendered them useless to our scientific Author.

The drawing given by the author (*Fig. 17 p. 211*) is admitted to have been by no means perfect; but we beg the reader to recollect, that M. De Blainville has *given his word that his work shall be, in its strictest sense, scientific*, and the illustrative specimens, therefore, are not those which may have looked best, but those of which he *knew most*. We are quite aware that the greater number of skeletons to be found in Museums, (more especially in those Museums where the Proprietor is not at the same time the Conservator,) are precisely of the nature of our Author's Gibbon; that is, *composed or made up of a variety of different animals*, in many cases differing not only in species, but sometimes in genera. Thus, we have ourselves seen the trunk of an *Elk* standing on the limbs, and supplied with the pelvis, of a *common Cow*! We have seen the jaws of a young *Dugong* filled with the teeth of a *Horse*! We remember, that a Dr. S., in Edinburgh, once presented the skeleton of a Porpoise to a Dr. C., of Cambridge. A *common mechanic* was employed to prepare the skeleton; and we remember hearing the poor fellow complaining bitterly of having destroyed a skeleton of his own in supplying the deficiencies of that intended for the

Museum at Cambridge. The man, by long habit, had reached great perfection in this sort of imposture, so much so indeed that he allowed few things, *in a perfect state*, to pass from his hands. If he had a customer for any part of an animal, such as a pelvis, sections of teeth, &c., he hesitated not a moment in appropriating them, and thus supplying himself with the "Water of life," trusting to some fortunate windfall, or his own ingenuity, for supplying their place. Dr. C., of Cambridge, no doubt received the skeleton; but we trust it was by no means considered *authentic*. M. De Blainville has enabled us to place before the public in a strong light, a principle upon which we have all our lives acted, viz., avoiding the supplying the deficiencies of one skeleton with parts of another. For instance, however it may tend to ornament the skeleton of an elephant to have the tusks *in situ*, yet we hold it strictly *non-scientific*, and a highly improper and dangerous principle, to supply the lost tusks with those of another elephant.

We possess in our own private Museum two skeletons of the Gibbon Varié: one, that of an adult female; the other, that of a young specimen, also a female, and reported to be the offspring of the older specimen. Both specimens had died in India, and were sent to this country preserved in alcohol. These valuable specimens were dissected with the greatest care, and the skeletons prepared by Mr. F. Knox. Had our time permitted we should have liked much to give engravings of these skeletons, as we cannot observe that any authentic and entire specimen has been brought before the public. We copy from our MS. Catalogue a few of the most important measurements, taken, as we invariably take them, by means of a pair of *callipers*, where the surface is round or uneven.

in. lin.
Alveolar edge of jaw to occipital
tuberosity 4. 6

in. lin.
— edge of jaw to occi-
pital condyles 3. 3
Length of cervical region ... 2. 3
— dorsal region 6. 3
— lumbar region ... 3. 4½
— sacral and coccy-
geal region..... 2. 6

Total length of vertebræ, in-
cluding those of the head 17. 7½

NUMBER OF VERTEBRÆ.

Cervical 7
Dorsal 13
Lumbar 5
Sacral and subsacral 5
Coccygeal, i. e., moveable 5
Total 35

the relative proportional size of the bodies of the vertebræ, the arrangement of the spinous processes, the union of five vertebræ to form the sacrum (four of these contributing to form the sacro-iliac articulation), the whole, we repeat, presents an approximation to the human structure of the very closest nature.

We have already alluded to the want of ridges or crests on the surface of the cranium, even in the aged female, where all sutures have nearly disappeared; the measurements also which we have given, particularly the relative extent of the zygomatic arches, brings the whole cranium closely to that of man. In the sternobræ there positively exists no real differences.

REMARKS ON THE YOUNG FEMALE GIBBON.

Teeth, Incisors on each
side of each jaw 2
Canine..... 1
Anterior molars 2
Principal molars 1

$$-6 \times 6 = 12 \times 12 = 24$$

The incisors are much worn, the canines are short, scarcely projecting beyond the dental line; the first anterior molar is, like that of the human child, smaller than the one which follows, which again is a large tooth, having distinctly two external and two internal tubercles, those in the lower jaw, have a small *fifth* tubercle, placed posteriorly. These, together with the canine and incisors, are deciduous, or milk-teeth, all to be cast, and replaced by permanent teeth; and as curious a point perhaps as there exists in the whole of the phenomena of dentition, the large second anterior molar is replaced (as is seen in the adult female) by a tooth scarcely half its size. This singular fact has been much dwelt upon in human anatomy, and is supposed to be connected with the development of the jaws, many anatomists supposing that the anterior arch of the alveolar edge, not admitting of extension after a certain age, a smaller molar supplying the place of a larger one, will naturally give more room for the increase of the other teeth, that is, the canine and the incisors. However this may be, we certainly observe, that notwithstanding the extreme youth of the specimen, and that all the sutures of the cranium, together with the epiphyses of most of the other bones, remain separate and distinct, yet the symphysis of the chin is as completely obliterated as if it had never existed.

The forehead is exceedingly well raised, the frontal bone being larger proportionally than in man; the proper frontal suture has completely disappeared, as also the anterior and posterior fontanelle, the posterior being filled up as in most human crania with an epactal bone. The great wings of the sphenoid articulate extensively with the parietal; the squamous bone rises high, so as to be on a line with the external angular

process of the frontal. The entire cranium holds evidently the same great degree of development over the jaws, as we find takes place in the human subject. The delicacy of the zygomatic arch is striking, and gives different measurements from that of the adult, though even in the aged Gibbon the delicacy of this arch is very remarkable.

MEASUREMENTS OF THE HEAD.

	in. lin.	
From alveolar edge of jaw to occipital tuberosity	3	6
..... to occipital condyles	2	4½
Between parietal protuberances ..	2	4½
Breadth over zygomatic arches ..	1	10½
Between external angular processes of frontal	1	10½
Breadth in temporal fossæ	1	9
Breadth at root of nose		4½
Length of lower jaw from alveolar edge to angle	1	9

The *ossa innominata* are each growing by three separate centres of ossification, viz., an iliac, a pubic, and an ischiatic, meeting in the centre, or nearly in the centre, of the cotyloid cavity, we remark that the ascending ramus of the ischium and descending of the pubis, have already united by bone. The sacrum is perfectly wedge-shaped, and the costal appendages forming the sacro-iliac synchondrosis, distinctly visible, and separate, precisely similarly indeed to the human structure, and of which we have given an engraving page 191.

The sternobræ are in an interesting period of their development. We have six separate and distinct centres of ossification forming six sternobræ; the second uniting with the manubrium or first, and the third, fourth, and fifth uniting together, will precisely give the arrangement of the adult sternum, as seen in fig. 20, page 213.

The limbs give the following measurements:—

	in. lin.	
Humerus 4.9 Radius 5.0 Wrist and Fingers	3.6	13 3
Femur.. 4.4½ Tibia 3.7½ Ankle and Toes (foot) ..	3.6	11 6

SPINAL COLUMN.

	in. lin.	in. lin.
Cervical region	1.	3
Dorsal	2.	10½
Lumbar	1.	7½
Sacral and coccygeal	1.	7½

$$= 7. 4½$$

Add length from snout to occipital condyles	2. 4½
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Total length of the vertebræ, including those of the head	9. 9
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The animal if put in the erect position, as in the human subject, would have measured 1 foot 4 inches 4 lines. The length of the arm exceeds that of the leg by 1 inch

9 lines, the proportion not being by any means so great as in the adult specimen; showing that the juvenile proportions of those parts remain, or even increase in the adult Gibbon: the reverse of man's economy.

LECTURES

ON THE

ORGANS OF REPRODUCTION IN THE ANIMAL KINGDOM.

DELIVERED IN THE ROYAL COLLEGE OF SUR-
GEONS, LONDON.

By PROFESSOR OWEN, *F.R.S.*

LECTURE V.—APRIL 30, 1840.

BESIDES the forms of generation already spoken of in the preceding lectures, some authors admit another kind, which they call *gemmaiparous*; they suppose the granules which are produced within the cavities of the polypi to be portions of the flesh of the animal, developed and separated from the internal membrane, and afterwards covered with cilia. There exists, however, no proof of this separation, and the researches of Wagner and Farre tend to disprove such supposition; the former physiologist has examined the ova at a very early period, and has found them enclosed in distinct ovisacs, and to contain all the essential parts of the ova of higher animals, viz., the vitellus, germinal sac, and germinal spot.

We next proceed to a higher class, the *RADIATA*, beginning with the order *Acalepha* (sea nettles) in which are contained the medusæ, the berœe, and the hydrostatic genera, as the physalia, &c. Our knowledge of the modes of generation in this order are very restricted, and in one genus alone have been fully investigated, viz., in the *Medusa*; in the *Physalia* the reproductive organs are situated in the midst of the numerous tentacula, which depend from the under part of its sac; in the beautiful little *Velella*, with its pigmy sail, raised upon an oval disk, these organs are found among the tentacula, which hang from the inferior surface of the disk; they resemble tentacula in their form, and have been observed sometimes to contain a whitish, opaque fluid, and sometimes ova. The nature of the reproductive organs in the medusa is now well known; in the *Rhizostoma*, one of the commonest species, four distinct openings will be seen upon the under surface of the dome

of the animal, and near the base of the tentacula. These openings lead into four generative sacs, guarded by a valve, and separated from the digestive cavity by a thin membrane only; they have hitherto been described, by comparative anatomists, as respiratory cavities; the generative sacs may be easily seen through the transparent and jelly-like structure of the dome-shaped disk; and Ehrenberg has remarked upon the great variety of their disposition in different species; in some they are placed at considerable distances from each other, and in others they lengthen out until they become continuous; the entrance to these sacs is provided with numerous small tentacles, upon which vibratile cilia are placed, which keep up a constant current of fresh sea-water through the cavity; within the sac, when examined in the spring, is a riband-like membrane, which increases in size during the summer, and becomes plicated so as to present a surface of very considerable extent. The researches of Ehrenberg, Rudolph Wagner, and Siebold into the nature of these organs, has led to the discovery, that the *Medusæ* are dioecious; that within this plicated membrane, in the males, are produced spermatozoa, and in the females true ova of a violet colour; the spermatozoa are disposed within the membrane in a very remarkable manner; they are collected, lying parallel with each other, into small conical masses, each enclosed in a pyriform sac, the apex of the cone being formed by the terminations of their tails, and connected to the surface of the membrane. The mode of propagation in the *Medusæ* must be the same as in bivalve mollusca and fishes; the generative fluid, with these spermatozoa, must be dispersed in the neighbourhood of the females, so as to impregnate the ova. Gader observed, that during the breeding season, the generative sacs were emptied of their ova, but that there existed numerous small marsupial bags of a pyriform shape appended to the fringes of the tentacula. These marsupia contain from four to six or eight ova in different degrees of development, and are closed on all sides, so that when perfected, they escape into the surrounding medium by means of the rupture of the sac. In this curious disposition we are reminded of the peculiar mode of generation of the marsupial mammalia, and the transition of the ova from the generative sacs to these small marsupial bags is equally mysterious with the passage of the embryo from the uterus of the kangaroo into the marsupial pouch. During this remarkable transit it is known that the ova lose all trace of the germinal sac and spot; they become granular in their contents, and change their colour from violet to yellow; the spermatozoa are expelled from the plicated membrane of the generative sac in the form of a lengthened thread, the base of each