toral muscle. In the Elephant and Horse, the whole sternum is very much compressed latterly. The ensiform process is frequently short and pointed, sometimes, however, it is very long, and expanded behind into a thin cartilaginous disc, as in Myrmecophaga, Dasypus, Manis, and some Rodentia; in some Edentata it extends nearly to the pelvis. In the Ant-eaters the anomaly is exhibited of the costal cartilages passing between two portions of the sternum so as to meet and become united from opposite sides. In the Monotremata the manubrium and body of the sternum are united by a capsular articulation. Many of the pieces of the body of the sternum frequently coalesce, as in the Horse and Elephant.

The *Scapular Arch* presents very many differences. A *Scapula* is generally present; it is very broad even in the Cetacea, and has for the most part a spine, though that may be but slightly developed, as well as a coracoid process. The latter, which is wanting in Phoca, is very long, on the contrary, in the Cheiroptera. The scapula is remarkably long and narrow in the Mole, and its form is similar though of smaller proportion in the other Insectivora, as Sorex. It is small also in the Ruminantia, throughout which order the acromion is wanting along with the clavicles. In many Rodentia a hook-shaped process arises from the spine posteriorly, as in Lepus. The broadest and most peculiar shaped scapula is seen in the Edentata. In the Cheiroptera its form approximates the human, frequently more so than that of the Apes, where it is, as in the Chimpanzee, longer, and the neck, as in the Orang-utang, usually very broad.

The *Clavicle* is completely wanting in the Cetacea, Ruminantia, Solidungula, Pachydermata, and some of the Rodentia and Carnivora, as Phoca, Ursus, Nasua; it is found very small, flat, and simply imbedded in the flesh in the Dog and Hyena, but larger in the Badger, Otter, and Cat, where it is represented by a sickle-shaped rib-like bone. It is present in the Marsupiata and Insectivora. Among the latter the Mole has a very remarkably formed, short, quadrangular clavicle provided with a joint for articulation with the humerus. In some Rodentia it is small, connected merely with the sternum, and does not extend as far as the scapula. In the Cheiroptera it is very large and strongly arched. In the Quadrumana it agrees for the most part in form with that of Man, though it is proportionately thicker and stronger, as in the Orangs.

The *Humerus* is in general a rounded and long bony tube, but exhibits most remarkable differences. In swimming and fossorial

animals it is very short, as in the true Cetacea, and in many of the digging and aquatic Mammalia. On this account it frequently obtains quite a peculiar breadth, being provided with singular processes or inequalities of surface for the attachment of muscles, as in the Mole and Monotremata. It is on the other hand longest and thinnest in the Cheiroptera, and in all the Apes, especially the Gibbons, Orang-utang, &c. It is much longer in the very anthropoid Chimpanzee, than in Man. The inferior articulating extremity is formed into one or two pulley-like surfaces for connexion with the bones of the fore-arm. The olecranal fossa is perforated in different Apes, Carnivora, and Rodentia. There occurs also frequently in these orders, as also in many Edentata and Marsupiata, an opening in the internal condyle for the passage of the median nerve and brachial artery. The structure of the scapular and humeral bones in the Monotremata—Ornithorynchus, and Echidna, is of a very opposite character, the scapular arch in them being arranged according to the type of the Saurians. The scapula is long and sabre-shaped, and, with a peculiar piece situated more inferiorly, and connected with the sternum, which corresponds completely with the coraco-clavicular bone in Birds, forms an articulating cavity for the humerus. The thin anterior clavicle, corresponding to the furcular bone, unites with that of the opposite side, and is firmly supported by the anterior border of the T-shaped manubrium sterni. Beside these, there lies upon each side a peculiar quadrangular bone between the manubrium and the coracoid, which reminds us of a similar structure in the Lizards.

Still greater differences are met with in the bones of the *Fore-arm* and *Hand*, especially the latter. The element in which the animals live, whether air or water, upon or beneath the surface of the earth, has a special influence upon these parts, which are further modified by particular wants and modes of existence. In general, we find two bones in the fore-arm, which admit of a greater degree of rotation in the Quadrumana, the Carnivora, and Marsupiata, than in the remaining classes. This motion is however less even in the higher Apes, than in Man, and pronation and supination are much more limited. The ulna is constantly longer than the radius, and provided with an olecranon of variable size, which is all but absent in the true Cetacea, where the two short bones of the fore-arm lie immovably behind each other, and are very flat like the whole extremity, which is constructed after the fashion of a fin. Even in the Rodentia and Insectivora, the radius which

lies anteriorly is very slightly moveable. In the Mole it gives off superiorly and anteriorly a free hook-shaped process. In the Edentata in particular, the ulna is very long, and its large olecranon often provided with hook-shaped processes. In the Seals both bones of the fore-arm, as well as the humerus, are bent in a peculiar manner in the form of an S. In those herbivorous quadrupeds which are organized for rapid motion, both bones lie behind each other, are immoveably united, and more or less anchylosed. The latter is the case in some Pachydermata, such as Dycotyles and Hippopotamus, but not in the Elephant. In the Horse the ulna has an olecranon of considerable size, but which soon becomes thinner and blends with the very upper portion of the radius, far from its inferior extremity, so that the latter bone is the main support of the leg. The construction is similar in the Cheiroptera, where the perfectly rudimentary, short and spine-shaped ulna frequently has appended to it a discoid olecranon, comparable to a patella, as in Pteropus, Nycteris, Rhinolophus, &c.

The *Carpus* always consists of several small variously shaped bones ranged in a double row, the number of which varies between 5 and 11; very frequently there are 8, as in Man, or 7, 9, or 10, as in the Apes. The first or posterior row exhibits in the Rodentia, Carnivora, and Marsupiata a tendency to a reduction of the number (4), by the first two bones uniting so as to form a scapholunar bone, as in the Hedgehog, while the anterior row is increased to 5, by the interposition of an additional ossicle between the scaphoid, os magnum, and cuneiform bones. The pisiform bone is frequently of considerable size, and serves as a point of attachment to a flexor muscle of the hand. The Whales have only from 3 to 5 dice-shaped carpal bones lying between thick tendons and masses of ligament. In the very broad hand of the Mole, there is superadded to its internal border an 11th very large and sickle-shaped bone.

The *Metacarpus* consists for the most part of five elongated bones, which dwindle down to four and three in the Rhinoceros, and in the Ruminantia and the Horse to a single bone, though in the latter animal there are two shorter styloid appendages, which are the rudiments of two of the lateral metacarpal bones. Five fingers are usually met with, whereof the thumb is frequently rudimentary, and consists only of a single small bone, which is also occasionally wanting. The Ruminantia have generally two fingers; the hinder claws, however, and their small phalangeal bones,

are to be viewed as farther rudiments of phalanges. The number of phalanges in a finger is seldom diminished to two (which is the usual number in the thumb), or increased to 6 or 11 in the longest finger, as in the Cetacea, where the Whale has 5 to 6, and there are even more in the Dolphin. In the Solidungula, and also in the Ruminantia, the posterior phalanx of the finger is called the fetlock, the middle the coronary, and the anterior which supports the nail or hoof, the coffin bone.

Between the metacarpus and the first row of phalanges are situated very generally certain sesamoid bones, called in the Horse splint-bones. Others also lie between the first and second row of phalanges, but are often wanting. Sesamoid bones lie between the nail bones and middle phalanges, and are called in the Horse, Ruminantia, and Pachydermata, shuttle-bones. Where only one toe is present, as in the Horse, the shuttle is single, but the splint-bone double. The Edentata, *e. g.* Dasypus, Myrmecophaga, exhibit most extraordinary proportions in the relative size of their different fingers. In the Sloths the metacarpal bones are united together posteriorly, and also with the front row of phalangeal bones. The fingers of the Apes even of the higher species are distinguished from those of Man by their length and slenderness, and the greater shortness of the thumb, so that a perfect hand is found only in the human subject, theirs being more adapted for clasping trees in the act of climbing. As a rule in the Cheiroptera, the thumb only is free, and supports a claw, though this is the case sometimes with the index finger; the remaining slender, wire-like metacarpal and phalangeal bones lie within the alary membrane.

The *Pelvis* of the Mammalia is never so broad as in the human subject, and its lateral walls are always smaller, flatter, and longer. The iliac bones are broadest and most depressed in the Tardigrada, the higher Apes, and the Elephant. In the rest of the Apes, the Makis, and Carnivora, the iliac bones are much smaller and longer, and the pelvis, owing to the backward recession of the pubic articulation, are very oblique and narrow. The pelvis is much elongated in the Cheiroptera, and especially in many of the Insectivora, where it is either connected only at the pubic articulation by a small ligament, or, as in the Mole and Shrew, is open in the form of a gap. In many Cheiroptera it is completely open like that of the Bird. The pubic articulation is frequently very deep; it is formed also by the ischia, and is very often converted into bone. In the Armadilloes, as Dasypus, the ischia with the pubis are very broad,

and united to 7 or 8 sacral vertebræ. In the Apes with tuberosities, the ischia are broad and flat inferiorly, as if cut off. The spine of the ischium occurs only in the Apes. On the other hand, in some Cheiroptera and Edentata, the spines of the ischia coalesce posteriorly, or with the sacral and caudal bones, so that the sciatic notch is always converted into a true foramen. The foramen ovale is often very large, and occasionally, as in Phoca, the two bones enclosing it are very much elongated. The acetabulum has almost always a bottom, and frequently a depression for the insertion of the ligamentum teres, which latter is, however, completely wanting even in the higher Apes. The acetabulum is very seldom perforated, as in Echidna (and in all Birds). In the Ai, which has such an unseemly gait, the acetabulum is very small and shallow. From the anterior or upper border of the pubic bones there frequently arises a pointed spine-shaped eminence (*eminantia ilio-pectinea*), which is the first indication of a marsupial bone, *e. g.* in Vespertilio spectrum. In the Monotremata and Marsupiata there is constantly placed in the same situation the marsupial bone, an elongated cylindrical and triangular bone, the free point of which is directed forward. It may be regarded as formed by a partial ossification of the fibres of the external sheath of the abdominal muscles. The pelvic bones are very simple in the Cetacea, and appear sometimes to be entirely wanting, as in Manatus. In the Dolphins they consist of two simple elongated bones lying near the anal and generative organs, which converge together from opposite sides, or else, as in many Whales, are connected by a transverse piece, this rudimentary form of pelvis frequently resembling the hyoid bone of Man; in the Dugong a small V-shaped bone is the representative of the pelvis.

The *Posterior Extremities* exhibit a great general resemblance to the anterior. The *femur* preserves the human type in the different orders more than the humerus. The trochanter major is often very large, and extends beyond the head of the bone; the internal trochanter is occasionally wanting, and in a number of animals, *e. g.* Castor, Dasypus, Equus, but in the Rhinoceros especially, we meet besides with a strong process more or less in the middle, resembling a third trochanter. In the Cheiroptera the head of the straight femur lies in a peculiar manner between the two trochanters, which are of equal height. The femur is short in the Solipedia and Ruminantia, and particularly so in the Seals. In the leg, the *tibia* is always the principal bone and the main support of the femur. The

fibula presents many varieties, and is often very rudimentary. The two bones lie near to each other, but distinct in the Apes, Carnivora, and Marsupiata. The fibula is generally very strong and thick in the Edentata, especially the Monotremata, where it far exceeds the tibia in length, by a strong process projecting from it superiorly. In Orycteropus it has coalesced with the tibia superiorly; in the Sloths it reaches beyond the tibia inferiorly, and forms an articulating surface for the astragalus. In the Rodentia, *e. g.* Dipus, but especially in the Insectivora, as Talpa, Sorex, the fibula is indicated below by a distinct line marking where it has coalesced, frequently beyond its lower half, with the tibia, while a complete space remains between the two bones above. In most Cheiroptera, the fibula is reduced to a thin fibro-cartilage, which most frequently does not reach the end of the tibia. In the Horse it exists merely as a short, slender, style-shaped appendage of the tibia. It is for the most part rudimentary in the Ruminantia, where it is represented by a small quadrangular bone, lying inferiorly against the outer side of the end of the tibia. A *patella* is very generally met with, and is perhaps only wanting in some Marsupiata. It is particularly large in the Edentata and Pachydermata, and small in the Apes. The average number of the bones of the *tarsus* is seven, as in Man, in the higher orders of Quadrumana, Carnivora, and Marsupiata. The smallest number is found in the Ruminantia; which, as a rule, have five, the astragalus and scaphoid having coalesced: the Giraffe has only a single scaphoid, and altogether but four tarsal bones. The Camels and Solidungula have six (there being two scaphoids); the Edentata have mostly seven or eight. In the Ai the Anterior bones of the tarsus have coalesced mutually, and with the metacarpal bones. In the Cheiroptera the os calcis supports a long slender thread-like bone, like a spur, which bounds the alary membrane posteriorly. The os calcis has generally a long process in the Mammalia for the attachment of the tendo-Achillis; and there is frequently developed in the substance of the latter behind this bone a sesamoid ossicle, or kind of petalla, to the calcaneum. The *metatarsus* is very similar to the metacarpus, consisting in the Ruminantia of a single bone, divided, however, internally into two cavities, and having, as in the metacarpus, its original separation marked out by an external elongated longitudinal ridge; there are also, as appears especially in several Cervine animals, two style-shaped bones loosely connected with the metatarsal bone inferiorly, and which support the phalanges of the spur or dew-claws. The

metatarsal bones of the principal toes in the leaping animals are long, and partly united together, *e. g.* in the Kangaroo, Pedetes, Dipus, where three toes have only a single metatarsal of remarkable length terminating in three articular heads. The single metatarsal of the Solidungula has only a single articular head, but two style-shaped and very slender adjacent bones. Most of the remaining orders have the number of toes from 3 to 4; the Quadrumana, Cheiroptera, and most Carnivora, have 5. The number of toes is the same as the fingers, only the great toe corresponding to the thumb is frequently rudimentary, and has only one joint, or is wanting altogether, while the remaining toes have generally three phalanges each. In the Apes the metatarsal and phalangeal bones are much slenderer than in Man.

MUSCULAR SYSTEM.

The several orders and genera of Mammalia present the greatest diversities in reference to the muscles of the extremities. In the greater number of cases, especially as regards the higher orders, the muscular system may be referred to the human type. While, however, the thin flat muscles which lie beneath, and serve to corrugate the integument, are very slightly developed in Man, and are limited to particular situations (M. frontales, occipitales, platysma-myoides, &c.), they occur in the Mammalia as muscular layers spreading over the whole face, shoulder, and abdomen. In many cases they coalesce more or less together, and in those animals particularly which can roll themselves up in a ball, they form a very large thick fleshy lamina, which can be drawn like a cap over the whole back, sides, and part of the extremities, *e. g.* in the Porcupine and Hedgehog, in which last the tegumentary muscle is short, hood-shaped, very thick, and separable into two layers.

The muscular system of the Apes, even of the highest, exhibits many departures from that of Man. The muscles of the extremities are arranged according to a more analogous type. The individual mobility of the fingers is much more limited in them than in Man, and this is particularly the case with the thumb. The short extensor of the thumb is wanting; the flexor brevis is blended with the adductor; the flexor longus pollicis is not a distinct muscle, but only a tendon of the flexor digitorum communis profundus; the extensor longus pollicis forms a common muscle with that of the index and middle fingers. The want of a distinct extensor proprius digiti indicis is the more remarkable, as, through this, the Apes are deprived of the power of mimicking the action of pointing, and the index must always in their case be extended along with the rest of the fingers. The foot of the Apes is, as regards its muscular movements, more like the hand; its interossei muscles are arranged like those of the same name in the human hand, and enable the toes to spread and approximate, in their chief movement, the act of climbing. There is found further, in the foot of the Apes, an abductor longus pollicis and minimi digiti. Other arrangements of the muscular system in the Apes depend upon their incapability of maintaining the erect posture. Certain flexor muscles of the legs, as the biceps, sartorius, gracilis, semitendinosus, are invariably inserted very low down into the leg, so that the knee always appears bent in front, and the limb can not be completely extended. The rotator muscles of the femur, such as those of the buttocks, are much more feebly developed in the Apes, than in Man. The abdominal muscles are, on the contrary, much stronger in the Apes, in order to sustain more easily the weight of the viscera, in progressing upon all fours, and the femoral and inguinal rings have much wider openings. The scapula of the Apes has much stronger and more powerful muscles than that of Man, to prevent its luxation; and it is furnished with a peculiar protractor muscle, which is wanting in Man. The cervical muscles are in like manner much stronger, and implanted higher up upon the cranium, to prevent the head sinking downward. The latissimus dorsi gives off a singular muscular slip, which is attached by tendon to the olecranon process, and is especially developed in the long-armed Apes, where it serves to sling the whole arm very rapidly and powerfully forward, a movement which is of the greatest importance for dexterously grasping remote branches while in the act of climbing. The tailed Apes, those even provided with a short stump, *e. g.* Inuus ecaudatus, have a caudal muscle very highly developed, and divided into many bundles, which act as elevators, lateralizers, and depressors of the tail. In the prehensile-tailed Apes, the tail serves even as a fifth hand, and the flexor muscles are hence very much developed. In Man the facial muscles are much more separated, and subdivided into a greater number of fasciculi than in the Apes, whence arises that manifold power of expression, which serves as a reflex of the internal workings of the mind. The Apes have only a pair of strong muscular masses which surround the

mouth, and either close or protrude that part, enabling them to expose the teeth and make other grimaces.

In the Cheiroptera, the anterior extremities are modified to serve as instruments of flight. The great pectoral muscle is therefore largely developed, as in Birds, and attached to the ridge upon the manubrium sterni. It is divided into three portions. The subclavius muscle is also very strong. Two strong flexors and extensors of the fore-arm are met with, the first of which has a particularly long tendon; the pronators and supinators are however very rudimentary, and assist only in flexion and extension. The extensor and flexor muscles of the hand have very long tendons, and work rather as abductors and adductors. The anterior alary expansion is provided, as in Birds, with a peculiar stretcher.

The muscular system of the face of the Elephant is very strongly developed; those muscles, such as the levator labii superioris, zygomaticus, which act as elevators of the heavy proboscis, being very large. The M. orbicularis oris passes also superiorly over the mouth to the base of the trunk.

Throughout the several orders, the muscular system is accommodated to the form of the skeleton, and the general economy of the animal. In the Carnivora the masseter and temporal muscles are enormously developed, and form a large fleshy cushion filling up the whole of the interval between the strong zygomatic arch and the skull, upon the upper surface of which they coalesce. The muscles of the back, especially those of the nape of the neck, are very strong in those animals which have to support a large head, which in many cases is provided with horns and antlers. They arise here from the withers, or the very long spinous processes of the anterior dorsal vertebræ, and from the ligamentum nuchæ, which is attached to the back part of the skull. In the Giraffe this ligament arises as far back as the sacral vertebræ. In those hoofed animals which are organized for rapid motion, and provided also with a long and heavy trunk, the extensors of the extremities are developed to a much greater extent than their opponent flexors, and have long tendons with short muscular bellies arising from them, as is the case in the extremities of Birds.

The muscular system of the Cetacea, from their partial want or imperfect development of extremities, presents a remarkable simplicity of structure and arrangement as compared with its high condition in the Apes. The whole conformation of the skeleton and

of the muscles is like that of Fishes, and is so disposed that these animals may overcome in the easiest manner the resistance of the water in swimming. Their movements through this element, which are performed with extraordinary force and rapidity, are effected chiefly or exclusively by means of the tail. For this purpose very strong and powerful muscles are situated upon the upper and under surface of the vertebral column, and are inserted by long tendons into the horizontal caudal fin, with which these animals can give the most tremendous blows. On account of the smallness and anchylosis of the cervical vertebræ, and the immobility of the head, the muscles of the neck and its nape are but slightly separated. All the muscles, which in the other Mammalia are destined for the movement of the fore-arm, hand, and fingers, are wanting in their rudder-like extremities, while, on the other hand, the muscles of the scapula and humerus are nearly all present, but under peculiar modifications. The whole arm of the Cetacea can indeed be only moved as a fin, and in other respects the anterior extremities seem but to serve the purpose of preserving the equilibrium of the body. The dorsal fin of the Dolphins and Rorqual consists of an elastic fibrous expansion, without muscles. A considerable tegumentary muscle lies beneath the fatty layer of the skin of the back, and a smaller one, intersected by tendinous fibres, upon the belly.

In all Mammalia, without exception, a complete diaphragm exists as in Man, which is wanting or only imperfectly developed in the remaining Vertebrata. It separates completely the thoracic and abdominal cavities, but exhibits many differences of arrangement in the several families. There frequently occur in this muscle regular ossifications—in its tendinous parts in the Camel, in the fleshy portions in the Hedgehog. In the Cetacea the tendinous parts are given off from a very muscular diaphragm, which has such an oblique direction, that the thoracic cavity gains a greater extent upon the vertebral column posteriorly than anteriorly.

The other modification of the muscular system, such as those in the fossorial animals, *e. g.* the Mole, and in the Marsupiata and Monotremata, where the pyramidal muscles are particularly developed, and act as protractors of the marsupial bones, can not be further adverted to in this place.

NERVOUS SYSTEM.

The coverings of the brain and spinal-cord agree in general, in so far as the arachnoid and pia mater with its net-work of vessels are concerned, with those of Man. The dura mater usually forms a falx, which extends deeply between the hemispheres. As a general rule, the tentorium cerebelli is present, but the falx minor is nearly always wanting, on account of the large vermiform lobe of the cerebellum projecting beyond its hemispheres. The tentorium is in many Mammalia supported by a bony plate springing from the internal surface of the skull, and is particularly strong in the Cat, and other Feræ, but feeble in the Horse, Dolphin, and some of the Apes. An osseous plate is seldom found in the falx, as in many Birds; but it occurs in the Ornithorynchus. Between the laminæ of the dura mater are found the venous sinuses.

The spinal cord of the Mammalia extends considerably lower than in Man; as a rule, it reaches as far as the sacrum, though in the Cetacea it appears to terminate higher up. The nerves themselves of the Cauda equina pass out through the openings of the most complete of the caudal vertebræ. Of the two enlargements upon the cord, the posterior is wanting where there is imperfect development of the hinder extremities, as in the Cetacea; and sometimes the two enlargements coalesce so as to form a single one of very considerable size. The central canal which is present in the fœtus of Man (perhaps also in the adult) appears in very many of the Mammalia to exist during their whole life; at all events, the fourth ventricle is more or less deeply prolonged into the spinal marrow. The brain is developed in the lowest degree, and is truly bird-like in the Ornithorynchus, where the pons is very small, and there is only a rudiment of the corpus callosum present, as in the Marsupiata, while the hemispheres of the cerebellum appear more as appendages, or lateral extensions, of the very greatly developed vermiform lobe; the corpora quadrigemina form only a pair of ganglia, the posterior pair being scarcely visible; the optic thalami coalesce in the middle by a very strong commissura mollis, and the hemispheres are without convolutions. In the Rodentia, Marsupiata, and Edentata, the vermiform portion of the cerebellum is so considerable, that the hemispheres appear to recede very much; they are already more developed in the Ruminantia and Pachydermata, and are still more highly organized in the Carnivora, the Dolphin and most Apes. It is in this order of progression also that the number of lamellæ and lobuli of the cerebellum are developed, and that the ramifications of the arbor vitæ and the corpora rhomboidea within the olivary bodies, which form indistinct external projections, become manifest. Above all we meet with a pons Varolii, the size of which increases in the order above given. One peculiar organ of the Mammalia, which does not occur in Man, is the part called trapezium, a quadrangular elevated layer of transverse medullary fibres, which lies close behind the pons near to the pyramidal bodies, and abuts against the origin of the auditory and facial nerves. The corpora quadrigemina are usually very conspicuous, and very frequently provided with an internal cavity; they lie partly, as in the Marsupiata, the Edentata, the Cheiroptera, and most Rodentia, perfectly free, and are not reached by the hemispheres; they are smallest in the Apes. In the Carnivora, the posterior pair is as a rule the largest, in the Ruminantia and Solipedia, the anterior. The thalami optici increase in size inversely, in the ascending series of animals. The corpus striatum is conspicuous, especially in the lower orders, and between it and the optic thalamus there very generally occurs the broad and often band-shaped stria cornea.

In the cerebrum are found nearly all the parts of the human brain repeated with certain modifications. The corpus callosum is very rudimentary in the Marsupiata, and generally diminutive in the Rodentia, Edentata, and Cheiroptera, where it extends but a very little distance posteriorly. The corpora albicantia form as a rule only a single mass, though sometimes, as in the higher Apes, they are separated; indications of their division are also found in the Dog and other Carnivora. The pineal gland is always present, varying in form and size, and, in those animals which have the corpora quadrigemina uncovered, lies also for the most part freely exposed, as, for example, in many of the Rodentia and Edentata. The pituitary gland is of very considerable size, and situated upon a slender infundibulum. The hemispheres exhibit the greatest number of differences. The posterior lobes are either all but wanting, or so very much shortened, that the cerebellum remains quite uncovered, as in the Marsupiata, Rodentia, Edentata, and Cheiroptera. The hemispheres are moreover quite flat, or have only a very few shallow depressions, as in Lepus and Cavia; in the Insectivora also, as Sorex, Talpa, Erinaceus, they are often altogether without sulci, and in the Carnivora they frequently exhibit nothing more than a few