

Hystrix. 3d, Compound teeth, *dentes compositi*, in which each molar tooth consists of separate laminae covered with enamel, and united by means of a softer intervening substance, called crusta, petrosa, or cementum. This structure is most clearly and strikingly displayed in the large molars of the elephant, but it occurs also in the Horse, the Ruminantia, and many Rodentia, as the Hare, the Field-mouse (*Arvicola*), and the Guinea-pig.

The diversities in the form and arrangement of the teeth are so great, that scarcely anything general can be said about them. It is the special province of zoology to set forth these specialities, and we shall therefore here give only a few of the prominent examples. Thus in the Narwhal a very peculiar formation and asymmetrical arrangement of the teeth occurs. There is usually found only upon one side of the upper jaw a very long spear-shaped projecting tusk, while that of the other side remains quite rudimentary, and is probably a mere deciduous tooth; the rest of the teeth are wanting. Hyperoodon has only some small teeth in the lower jaw. The Dolphins have a great many, often 200, mostly pointed teeth, in both jaws. The graminivorous Cetacea, *Halicore* and *Manatus*, have merely molar teeth with flat crowns; in the first the incisor teeth in the upper jaw are developed into long deflexed tusks. In the Ruminantia generally the superior incisor teeth are wanting in the intermaxillary bone, which in the Camels only supports a pair of incisors resembling canines. The canine teeth, with the exception of the Musk-deer and the Camel, are also wanting in the Ruminantia. In the Horse the males only have canines, but here also they are frequently undeveloped. Among the Pachydermata the canines are wanting in the Rhinoceros, in the Hyrax, which has rodent-shaped incisors, and in the Elephant, in which incisor teeth are also wanting in the lower jaw, while those in the intermaxillary project as long tusks. The Ornithorynchus has, upon the whole, above and below, four singular horny molar teeth. The incisors are wanting in all the Edentata, *Dasypus* *sexcinctus* only having two upper ones; the canines also are wanting in nearly all, and the molar teeth easily fall out. The Rodentia always have two long chisel-shaped incisors, covered only upon their anterior surface with enamel, continually growing from behind, and implanted in very long deep maxillary sockets; behind the superior pair in *Lepus* and *Lagomys* two lesser ones are found. The canines are here wanting without any exception, and we therefore meet with a great interval between the incisor and molar teeth. The herbivorous

Marsupialia approximate the Rodentia in the absence of canine teeth, and in having sometimes, as in *Phascalomys*, two incisors both above and below. The carnivorous Marsupialia, as *Didelphis*, correspond in the structure of their teeth with the Carnivora, whose molars are always furnished with more or less pointed, and frequently, as in *Phoca*, many jagged crowns. The more purely carnivorous the animal, and the more it feeds upon living prey, the less numerous are the molars, one of which, the largest, constitutes what is called the carnivorous tooth. The canines here become large tusks or fangs. The Cats serve as an example, in which, through the prodigious development of the canines, conspicuous intervals arise in the dental series. The Walrus has also very large canines (tusks). The Cheiroptera and insectivorous *Feræ*, as the Hedgehog and Mole, have broader molars, but with very pointed serræ; they are similar also in the Lemurs, the Makis and Loris; in the Cheiroptera the superior incisors are very small, and easily fall out. Among the Apes, those of the Old World have the same number of molars as Man (20); those of the New World have 24. They never however stand in old animals (even in the Orang-utang and Chimpanzee) in an uninterrupted row, but there are always, on account of the enormous development of the canines, conspicuous spaces in front of the molar teeth. In Man alone the teeth stand in one continuous unbroken row, and it seldom happens, save in the Negro races, that small intervals remain between the incisor and canine teeth of the upper jaw. It is only in an extinct race of Pachydermata, *Anoplotherium*, that all the teeth form an unbroken series, as in Man.

As concerns the microscopic structure of the teeth, their tubuli and enamel, &c., we are hardly prepared at present to offer any generalizations, and recourse must be had therefore to the most recent works of micrographers upon this subject. The manifold external forms and arrangements of the teeth are figured in zoological books.

The form of the *Lips* is very various. Thus many Ruminantia, like the Ox, or the Sea-cow (*Manati*), have a thick, moist, hairless upper lip, while in the Ornithorynchus hard horny kind of lips, shaped like the bill of a duck, occur. Many genera possess what are called cheek-pouches, that is, purse-shaped sacs, usually internal, seldom external, when they are always small, as in *Cælogenys* and *Askomys*. The Apes of the Old World, with the exception of the highest genera, have mostly small cheek-pouches; as likewise some

Cheiroptera. They are very large in the Hamster and other Rodentia, where they extend deeply down the neck, and are compressed by peculiar tegumentary muscles which arise from the spinous processes of the vertebræ, being detached from the trapezius muscle. The cavity of the mouth is usually smooth internally; sometimes, however, as in the Ruminantia, it is beset with hard tubercles, which are very hard and horny on the palate of Echidna. The palate is frequently provided with deep transverse furrows and projecting elevations. Some Rodentia, such as the Beaver and Hare, have a spot upon the inner surface of the cheek beset with hairs. The velum palati is more or less scooped out into a semilunar form; the uvula is wanting in nearly all animals, even in the Makis; and in the Apes where it occurs, it is smaller than in Man. In the Elephant the velum palati is very long; as also in the Cetacea, where it is drawn very far back. The mucous glands are more or less developed; in the zygomatic groove in the cheek, they not unfrequently form a ragged conglomerate gland (glandula buccalis), with several excretory ducts, which sometimes extends even into the orbit and zygomatic fossa. The tonsils are generally met with; they are largest in rapacious and carnivorous animals, as in the Bears and Cats; they are, on the contrary, very small in the Mustelidæ; in the Rodentia they are most feebly developed, and exhibit in general great diversities in the several orders. In the Apes even they are different. In the Lion and some other Cats, each tonsil forms a sac, in which the fluid secreted accumulates. A peculiar formation occurs in the Camel; there is here found a singular development of the velum palati, which is called the bursa faucium, as a moveable duplication of the velum containing many glands, which occurs in its full development only in the male, and in the rutting season swells out so much as to protrude from between the teeth.

The *Tongue* has already been considered as the organ of taste. In some animals, as the Dog and Cat, there is found in its middle line covered by flesh a band-shaped fibro-cartilage, called the worm. The lingual or hyoid bone is generally present, but exhibits very diversified forms. It is in its simplest condition in the scaly animals, as the Manis, where it forms only a slender arch, and exhibits no traces of peculiar cornua. It is of considerable size, and provided with two cornua in the Ornithorynchus and Echidna; in the latter the posterior cornu consists of three pieces. In the Cetacea, as the Dolphin, the body of the lingual bone is flat, and there are

two pairs of tolerably conspicuous cornua. In the Ruminantia, the body represents a small bow, and the anterior cornua are united with a very long styloid process, a peculiar bone in itself. The structure in the Horse is similar, only the body is larger, and the anterior cornua consist of single pieces; in both orders, as in the Pachydermata, the posterior cornua are anchylosed to the body, and very short, as in the Elephant and Rhinoceros especially. The posterior cornua are generally the longest in the Rodentia, and particularly in the Marsupialia, among which they are least in Didelphis, and their pieces are elongated and slender, as is also the case in the Carnivora. In most Apes the anterior cornua are elongated, or as long as the posterior, and simple. In the Orangs the anterior cornua are small, as in Man, in whom they are very small, and far surpassed in size by the posterior pair. In the howling Apes (Mycetes), the body is expanded into a very large, thin-walled, bony bladder, in which the voice formed in the windpipe resounds, and is thus rendered so remarkably loud.

The manducatory, lingual, and hyoid muscles present themselves generally in the Mammalia, as in Man, with, however, a number of minor differences. Thus it is only in the higher orders that the digastric muscle is truly double-bellied, and is, even in the Apes, not generally perforated by the stylo-hyoideus. The omo-hyoideus is very frequently wanting, next to it, the stylo-glossus, and stylo-hyoideus. As a rule, there is developed a peculiar masto-hyoid muscle, which draws the styloid bones powerfully backward.

The *Œsophagus* is short and very wide in the Cetacea, so also in the Carnivora and Makis. It is otherwise, as a rule, long and narrow, and in many Rodentia, as the Hamster, passes far beyond the slit in the diaphragm. It has frequently a thick epithelium, and its inner surface is longitudinally plicated, but it is rarely, as in Didelphis, provided at its inferior extremity with valvular spiral folds: as a rule, it passes to the stomach without any valve. In the Horse, however, there is developed a more or less large sickle-shaped fold, which can close the cardia, and prevent the return of food, so that the Horse can not vomit.

The *Stomach* exhibits remarkable diversities. In the greater number of Mammalia it is simple, as in Man and in most Apes, where it is, however, mostly rounder than in Man, and in the Makis, has a considerable cæcal dilatation. The slender Apes (Semnopithecus) form a striking exception; here the left half forms a large cavity many times constricted, while the right is long, narrow,

and intestinform, and puckered up by a pair of strong muscular bands, like the human colon. In Mycetes, also, at least in several species, the stomach is divided into two portions by a constriction. The stomach is always simple, and mostly very rounded (as in the Cats), in the Carnivora and Cheiroptera, least of all in the true insectivorous Bats, and in the insectivora among the Feræ, *e. g.* Centenes. In many of the Vampires it is elongated and conical, with a small cardiac cæcum. In the fructivorus Cheiroptera (Pteropus) the stomach is very long, and intestinform with a very considerable cæcum, and has a transverse position, while in the Walrus the very much elongated stomach is without a cæcal pouch, and lies perpendicularly within the abdomen. Very many differences are exhibited by the Rodentia, among which indeed most of the genera have a simple cylindrical stomach, with a tolerably large cæcum. The stomach, however, is frequently, even when it has no visible, or but an insignificant constriction externally, divided within into two very distinct portions, as in *Meriones*. In the cardiac half the epithelium is continued from the œsophagus, while the pyloric is thickly beset with glands, and coated over with a soft mucous membrane; in the Beaver it has a very dense glandular layer. Frequently as in the Hamster, the division into two halves is very striking externally. There is seldom found a long glandular proventriculus, separated, as in Birds, by a constriction from the wide muscular stomach, as in the Red-dormouse (*Myoxus avellanarius*), but not in *M. glis* and *nitela*. In the Lemming, and in most of the Musk-rats (*Hypudæus s. Arvicola*), the second or pyloric division itself is divided again into several (3) sacs or portions. The stomach is simple in most Edentata (even in the *Ornithorynchus*), and almost without a cæcum. The squamigerous Edentata (*Manis*) have a thick glandular layer in the left portion. Among the Marsupialia the stomach is simple in the carnivorous kinds; in the Kangaroo it divides into a left, middle, and right portion, and is very intestinform. Also in the Pachydermata there occurs a complex stomach, as in the Peccari, while in the Elephant and Rhinoceros it is simple, and double in the Tapir and Hyrax. In the Horse, the stomach is simple externally; the œsophagus, however, enters the middle of the lesser curvature, and the cardiac and pyloric portions are differently constructed. The sloth has a twisted intestinform, subdivided stomach; and in the Manati and Dugong the stomach has even two pedunculated cæcal pouches in the middle.

Still more peculiar is the stomach of the Ruminantia, in which order

it first merits the special name of a *Compound stomach*, from its being divided into four different cavities. The Sheep will serve best as a type of this structure, which, however, does not differ essentially in the Ox, Goat, &c. The first stomach is called the *paunch* (*rumen s. ingluvies*); it is the largest, situated most to the left side, and usually projects below into a pair of blind appendages; its inner surface presents very prominent, conical, and hard papillæ. The second stomach, the *honey-comb* (*reticulum s. ollula*) lies more in front, above and to the right of the paunch, is small and round, and has a similar hard epithelium upon the mucous membrane, the projecting folds of which unite to form hexagonal cells, which are beset with small pointed warts. The third, likewise small, placed more superiorly, and to the right behind the liver, is called the *psalterium* or *many plies* (*omasus*), the internal lining membrane of which forms numerous deep folds, lying upon each other like the leaves of a book, and beset with small hard tubercles. To this succeeds the fourth stomach, named *rennet* (*abomasus*), of larger size than the two preceding, elongated, and terminating in the duodenum, and provided with a velvety mucous membrane disposed in several longitudinal folds. The œsophagus enters to the right far into the paunch, but in such a manner, that what is called the œsophageal groove passes at the same time through the honey-comb into the third stomach, or many-plies. This groove consists of two longitudinal ridges of muscle and mucous membrane, which commence from the paunch as thin folds, and form in the reticulum two thicker lips, having between them a groove, which, by the approximation of its edges, can be converted into a canal. The food first reaches the paunch by the usual route, and is then regurgitated bit by bit from it back again through the reticulum into the gullet, and so into the mouth, where having been rechewed, it is swallowed and conveyed within the closed groove, between the folds of the psalterium, whence it advances into the fourth stomach. Fluids are conveyed directly through the œsophageal groove into the rennet. In the Camel and Llama the construction is essentially the same, but with some modifications. The paunch, and also the reticulum, have here a great number of peculiar shaped cells; the psalterium is very small, and nearly free from folds, and the rennet intestinform. The cells are indicated externally as bladder-like elevations, arranged in groups. In the Cetacea (and what is remarkable, in the carnivorous kinds) compound stomachs also occur, the structure of which is best known in the Dolphins. Four stomachs are found; the first, lying to the

right, has the largest circumference, corresponds with the paunch, and is very much corrugated internally. The second is smaller, and communicates with the very extremity of the œsophagus by a large round opening. The third stomach is the smallest, while the fourth, next in size to the first, is intestiniform, very long and curved; and opens by a very small pyloric orifice into the intestine.

The *Intestinal canal* is in general portioned off by means of a valve into an anterior longer small intestine, and a posterior shorter or large intestine. In the genuine Cetacea (not in Manatus and Halicore) no limitation is found between small and large intestine, and the cœcum is wanting, as also in the Cheiroptera, many Carnivora (*e. g.* Ursus, Mustela), and in the Insectivora, while it is very seldom wanting in the Rodentia. The cœcum, elsewhere pretty generally present, is very short in the rest of the Carnivora, namely, in the Cats; it is conspicuous in the Ruminantia, still more so in the Horse, and especially in most of the Rodentia, *e. g.* Mus, Cricetus, Cavia, Castor, and Lagomys, where it exceeds the stomach many times in size—in the Hare from 8 to 10 times. There rarely occur, as in most Birds, two small cœca, *e. g.* in Myrmecophaga and Hyrax. A vermiform appendix occurs in the Orangs and Gibbons, and rarely here and there throughout the other orders, as in Lagomys. In the Cetacea the duodenum commences by a bladder-like enlargement, which was once falsely regarded as a portion of the stomach. The clusters of Peyer's glands are, as a rule, considerably developed. The mesentery is usually longer than in Man, even in the Apes. A small and large omentum, traversed by elegantly disposed streaks of fat (as in the Otter), is regularly present. The insertion of the great omentum departs most from that of the human adult, and resembles more that of the fœtus. Frequently, as in the Rodentia, lumbar omenta occur, which penetrate partly into the inguinal canal, and are to be regarded as elongations of the peritoneal or vaginal coat of the testicle. In the female (as the Rat), the lumbar omenta are elongations of the round ligaments of the uterus. In the Ruminantia the great omentum forms a veil over the compound stomach; in the Carnivora it lies around the intestines. The intestinal villi are exceedingly large in the Rhinoceros, and very conspicuous in the Rodentia, and also in the Makis; they are larger in the Apes than in Man, and small in the Ruminantia. The length of the intestinal canal is most considerable in the latter, and is in proportion to the length of the body as 15 or 20 to 1; in

the Sheep even as 28 to 1; in most Carnivora, it is as 4 to 1; and in the Cheiroptera, as 3 to 1. Many animals, as the Cetacea, the Ornithorynchus, and the Mole, seem to have mere longitudinal folds upon the mucous membrane, but no villi.

Of the *Salivary glands* the three pairs of the human subject are generally present, yet they are wanting completely in the Cetacea. The Dugong (Halicore) alone has a very large parotid, which on the other hand is wanting along with the sublingual gland in the Seals. These glands are also partly wanting in the Monotremata. In general the salivary glands are largely developed in the Ruminantia, Pachydermata, and Rodentia, moderately so in the Quadrumana, and less in the Carnivora. In many Carnivora, as in the Dog, and in many Rodentia, as the Squirrel, and also in the Makis, the submaxillary glands are larger than, frequently as large again as the parotids. This is especially the case in the Beaver, where the two coalesce posteriorly in the nape of the neck, and form a large mass. The Edentata, also, especially the Kangaroo and Opossum, as likewise the Cheiroptera, have large salivary glands, with the exception of the sublingual, which, in the last-named order, is very slightly developed; in the Dog and Cat it is also very small. The submaxillary gland is very large in Myrmecophaga and Orycteropus.

The *Liver* of the Mammalia is fashioned after the human type; it is usually divided into two principal lobes, and is frequently more deeply bisected. In the Cetacea its two lateral lobes are very feebly indicated; in the Ruminantia there is found a third smaller lobe. The liver is three-lobed in the Hog and some Rodentia; most of the Rodentia, Marsupialia, and Apes, have, however, from 4 to 6, the Carnivora still more, 6 to 8 lobes, as the Dog, Cat, and Bear. The liver of the Orang is like that of Man.

The *Gall-bladder* is usually present, though it is also frequently wanting, as, for example, in the true Cetacea, many Ruminantia (Camel, Goat), the Horse, and most Pachydermata (though not in the Hog), and several of the Rodentia, as the Hamster, the Mouse, and in the Sloth among the Edentata. A biliary duct always passes to the intestine, into which, or into the gall-bladder, the excretory ducts of the liver pour their secretion. The pancreatic duct often joins just before it enters the intestine the termination of the biliary duct, which is in this situation frequently expanded in the shape of a bladder, as in the Elephant, the Kangaroo, the Otter, the Seal, &c. A remarkable peculiarity is possessed by the Orycteropus, in which two separate gall-bladders occur, united by a common peritoneal

covering; each of these is continued into a tortuous cystic duct, which unites with three ducts from the liver into a common excretory canal.

The *Spleen* is always present, but varies in form and size in the several orders. Thus it is, in general, elongated and small in the Ruminantia, Carnivora, and Makis; short, broad, and flat, in the Apes; largest, in relation to the liver, in Man. The Cetacea here also exhibit a striking anomaly, the Dolphins having from 5 to 6 lesser spleens, lying near to the larger one, which is always proportionally but slightly developed. In Man also there occurs in rare cases an abnormal subdivision of this organ.

The *Pancreas* is, for the most part, formed of two, and rarely of three, principal lobes. It has one or two excretory ducts, which last number occurs also not unfrequently in Man. When it is simple, as in all the Apes, the Ruminantia, and most Carnivora and Rodentia, it usually falls, as has been mentioned above, into the biliary duct, but if a second one is present, as in the Horse, Hog, Otter, and Beaver, it enters by itself farther behind into the duodenum.

ORGANS OF CIRCULATION.

THE *Heart* consists, as in Man and Birds, of two perfectly distinct auriculo-ventricular chambers. It is surrounded by a pericardium, the lower part of which is not generally united with the diaphragm, as is the case in Man and the Orang, and is frequently, as in the Hedgehog, remarkably thin and delicate. The form of the heart is, in general, more rounded and not so elongated as in Man. In the Cetacea it is very broad and flat. In the herbivorous Cetacea (*Halicore* and *Manatus*) the heart is cleft in a peculiar manner, the division into two ventricles being indicated externally by a deep fissure in its apex. The foramen ovale is, as in Man, always closed, and only open as an accidental abnormal condition. The internal arrangement of the muscles and valves exhibits several trifling varieties; thus the Eustachian valve is wanting in many genera, while on the contrary in the Elephant it is very large and spirally twisted. In the *Ornithorynchus* the fleshy condition of the valves (valv. tricuspidales) in the right heart reminds us of that in Birds. In some herbivorous Mammalia, as in the Ox, Sheep, Hog, and Goat, there is found as a normal formation, in the septum ventriculorum, below the origin of the aorta, a cruciform

ossification called the bone of the heart. The heart lies, for the most part, in the median line, parallel with the sternum, rarely having its apex, as in Man, directed to the left, though this is the case in the Apes, the Sloth, and the Mole, and also in a less degree in some other animals, as the Seal.

The *Aorta* gives off first from its root the two coronary arteries, rarely only a single one, as in the Elephant. The origin of the vessels from the arch of the aorta exhibits, as is well known, frequent varieties in Man, several of which occur as normal states in the genera and orders of Mammalia. In the Horse and the Ruminantia the aorta divides at once at its origin into an anterior trunk, or arteria innominata, which gives off both carotid and subclavian arteries, and a posterior trunk for the thoracic and abdominal aorta. In most of the Carnivora, Rodentia, Marsupialia, and in the Hog, Ant-eater and Pangolin, the left subclavian artery is distinct from the innominata, and proceeds by itself from the arch. In the Dolphin and Cheiroptera, at least in *Vespertilio murinus*, two arteriæ innominatæ arise, and give off each a carotid and subclavian upon either side. The human arrangement, namely, with three main trunks, of which the innominata gives off the right common carotid and subclavian arteries, occurs partly in the Apes, Carnivora, some Rodentia and most Edentata. It is very rarely, as in the Elephant, that both the carotids are given off from a single common trunk, situated in the middle between the two subclavian arteries. Sometimes, as in some diving animals, as the Seals and Narwhal, the aorta forms near to its exit from the heart a sac-like expansion. The subdivisions of the arterial system exhibit a host of minor differences, which can not be entered upon further here. It is only worthy of remark, that in some animals, as the Sloth and Loris, which are remarkable for the slowness of their movements, that the arteries of the arm and leg divide at the commencement of the extremities into several (3) main trunks, two of which ramify again into a number of finer anastomosing filaments (*retia mirabilia*), which wind around the middle branch. Large arterial *retia mirabilia* occur within the skull of the Ruminantia, and are situated within the cavernous sinus, and extend even to the vertebral artery. The Cetacea have many arterial plexuses in different situations—in connexion with the intercostal and thoracic arteries in the cavity of the thorax, and upon both sides of the vertebral column from the psoas muscle to the neck.

The *Pulmonary artery*, in its mode of origin and the number of its

valves, agrees for the most part with that of Man, though there sometimes occurs, as in the aorta, a sacciform expansion of its commencement, *e. g.* in the Narwhal, and in a less degree in many of the Dolphins also. The number of pulmonary veins varies considerably, and there frequently occur upon one side a greater number than upon the other (3+2), a circumstance chiefly occasioned by the number of the lobes of the lung.

Valves occur in the *Veins* of the body, and frequently, even as in the Ox, in the portal veins, where they are wanting in Man. The trunk of the superior vena cava is very frequently double, in individual animals from all the orders, as in the common Bat, Hedgehog, Squirrel, Ornithorynchus, Elephant; as a rule, however, it is single, as in the Apes, Ruminantia, most Carnivora, &c. The inferior vena cava is commonly dilated in diving animals, previous to entering the heart, and while yet within the liver, as in the Seals; in a less degree also in the Dolphin and Otter, still less so in the Beaver and Ornithorynchus; in these it forms a true sinus, like that of Fishes. This large size of the veins, in relation to that of the arteries, exerts unquestionably an important influence upon the circulation and the process of diving; and the discovery is a remarkable one, of a peculiar annular muscle, about an inch in breadth, which is met with in the Seals on the trunk of the inferior vena cava, above the diaphragm and venous sac, and which can cut off the return of blood to the heart. In the Cetacea remarkably developed venous plexuses occur; one of these lies, *e. g.* in the canal formed by the inferior spinous processes of the tail; another much more conspicuous (*plexus iliacus*) lies between the psoas muscle and the peritoneum.

The *absorbent vessels* exhibit in general the same conditions as in Man, in reference to the chyliferous ducts. The lymphatic glands of the mesentery are usually less numerous, and more blended together, than in Man. They sometimes form only a single mass lying at the root of the mesentery, called the *Pancreas Asellii* (as in the Dog and the Carnivora generally), near to which, however, some smaller lymphatic glands usually occur. This mesenteric gland is most conspicuous in the Cetacea, where the lymphatic vessels are very much developed.

The *Blood* of Mammalia very uniformly presents small, round, disc-shaped corpuscles, very similar to, but mostly somewhat smaller than in Man; this is especially the case in the Ruminantia. The largest animals, as the Elephant, have still very small cor-

puscles. In the Apes they appear of the same size as in Man. There is a remarkable exception to the form of these corpuscles in the Camels and Llamas, where they are somewhat elliptical.

ORGANS OF VOICE AND RESPIRATION.

THE larynx, trachea, and lungs, in the Mammalia, are fashioned after the type of the same organs in Man. In the larynx the same cartilages are met with as in Man, though the relations of their separate parts are frequently changed. In the Cetacea the larynx is very small, especially the thyroid and cricoid cartilages; on the contrary, the arytenoid cartilages and the epiglottis are very long, and reach as far as into the nasal cavity. The thyroid cartilage is very anomalous in form, and there are no chordæ vocales, since neither the Dolphins nor Whales have been heard to utter any sound. In the Pachydermata also the larynx is small, especially its arytenoid cartilages. The thyroid cartilage is long and deep, but narrow in the Ruminantia, and for the most part also in the Edentata. The Rodentia have a conspicuous larynx, and in the Carnivora especially, the cricoid cartilage is very large, often three times greater than the thyroid. The Cheiroptera are distinguished by their very small epiglottis. The lateral ventricles of the larynx, and with them the anterior chordæ vocales, are frequently wanting, as in the Ox, Sheep, Musk-deer, Armadillo, and Pangolin. In several Mammalia, as in the Apes (but not the Makis), and many Carnivora (*e. g.* Ursus, Canis), the two cuneiform or Wrisbergian cartilages (*cartilaginee cuneiformes*), which lie in the fold of membrane between the arytenoid cartilages and the epiglottis, are considerably developed, while in man they are wanting, or very minute. Peculiar sesamoid cartilages rest, in some Mammalia, as the Ornithorynchus, the genera *Mustela*, *Didelphis*, &c., upon the posterior border of the arytenoid cartilages. There occurs a smaller azygos interarticular cartilage (*c. interarticularis*) in many Mammalia, as the Hedgehog (where it is very conspicuous), and also in the Hog, Dog, &c., situated in the middle between the two arytenoid cartilages upon the upper border of the cricoid. The human larynx is distinguished from that of the Apes, in particular by the greater shallowness of the thyroid cartilage, the greater development of the arytenoids, the lesser size of the lateral ventricles, the absence or slight development of the Wrisbergian cartilages, and the greater degree of hardness and frequent ossification of the carti-