THE  
HISTORY OF ANIMALS  
BY  
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mouth-an aperture through which, when men, in drinking, inhale any of the  
liquid, this liquid finds its way out through the nostrils. In betwixt the two  
openings comes the so-called epiglottis, an organ capable of being drawn  
over and covering the orifice of the windpipe communicating with the  
mouth; the end of the tongue is attached to the epiglottis.In the other  
direction the windpipe extends to the interval between the lungs, and  
hereupon bifurcates into each of the two divisions of the lung; for the lung  
in all animals possessed of the organ has a tendency to be double. In.  
viviparous animals, however,the duplication is not so plainly discernible as  
in other species, and the duplication is least discernible in man. And in man  
the organ is not split into many parts, as is the case with some vivipara,  
neither is it smooth, but its surface is uneven..  
In the case of the ovipara, such as birds and oviparous quadrupeds, the two  
parts of the organ are separated to a distance from one another, so that the.  
creatures appear to be furnished with a pair of lungs; and from the.  
windpipe, itself single, there branch off two separate parts extending to  
each of the two divisions of the lung. It is attached also to the great vein and  
to what is designated the 'aorta'. When the windpipe is charged with air, the  
air passes on to the hollow parts of the lung.These parts have divisions,  
composed of gristle, which meet at an acute angle; from the divisions run  
passages through the entire lung, giving off smaller and smaller.  
ramifications. The heart also is attached to the windpipe, by connexions of  
fat, gristle, and sinew; and at the point of juncture there is a hollow. When  
the windpipe is charged with air, the entrance of the air into the heart,  
though imperceptible in some animals, is perceptible enough in the larger  
ones. Such are the properties of the windpipe, and it takes in and throws  
out air only, and takes in nothing else either dry or liquid, or else it causes  
you pain until you shall have coughed up whatever may have gone down.  
The oesophagus communicates at the top with the mouth, close to the  
windpipe, and is attached to the backbone and the windpipe by  
membranous ligaments, and at last finds its way through the midriff into the  
belly. It is composed of flesh-like substance, and is elastic both lengthways  
and breadthways.

the inner parts of other animals whose nature in any way resembles that of  
man.  
In the first place then,the brain lies in the front part of the head.And this  
holds alike with all animals possessed of a brain;and all blooded animals are  
possessed thereof, and, by the way, molluscs as well. But, taking size for  
size of animal, the largest brain, and the moistest, is that of man.Two  
membranes enclose it: the stronger one near the bone of the skull; the inner.  
one, round the brain itself, is finer.The brain in all cases is bilateral.Behind  
this, right at the back, comes what is termed the 'cerebellum', differing in  
form from the brain as we may both feel and see.  
The back of the head is with all animals empty and hollow, whatever be its  
size in the different animals. For some creatures have big heads while the  
face below is small in proportion, as is the case with round-faced animals;  
some have little heads and long jaws, as is the case, without exception,  
among animals of the mane-and-tail species.  
The brain in all animals is bloodless, devoid of veins, and naturally cold to the.  
touch; in the great majority of animals it has a small hollow in its centre. The.  
brain-caul around it is reticulated with veins; and this brain-caul is that skin-  
like membrane which closely surrounds the brain.Above the brain is the  
thinnest and weakest bone of the head, which is termed or 'sinciput'.  
From the eye there go three ducts to the brain:the largest and the medium  
sized to the cerebellum, the least to the brain itself; and the least is the one  
and do not meet;the medium-sized ones meet-and this is particularly visible  
in fishes,-for they lie nearer than the large ones to the brain; the smallest  
pair are the most widely separate from one another, and do not meet.  
Inside the neck is what is termed the oesophagus (whose other name is  
derived oesophagus from its length and narrowness), and the windpipe. The  
windpipe is situated in front of the oesophagus in all animals that have a  
windpipe, and all animals have one that are furnished with lungs.The  
windpipe is made up of gristle, is sparingly supplied with blood, and is  
streaked all round with numerous minute veins; it is situated, in its upper  
part, near the mouth, below the aperture formed by the nostrils into the

Now the parts are obvious enough to physical perception. However, with  
the view of observing due order and sequence and of combining rational  
notions with physical perception, we shall proceed to enumerate the parts:  
firstly, the organic, and afterwards the simple or non-composite.  
7  
The chief parts into which the body as a whole is subdivided, are the head,  
the neck, the trunk (extending from the neck to the privy parts), which is  
called the thorax, two arms and two legs..  
Of the parts of which the head is composed the hair-covered portion is  
called the 'skull'. The front portion of it is termed bregma' or 'sinciput'  
developed after birth-for it is the last of all the bones in the body to acquire  
solidity,-the hinder part is termed the 'occiput, and the part intervening  
between the sinciput and the occiput is the'crown'.The brain lies  
underneath the sinciput; the occiput is hollow. The skull consists entirely of  
thin bone, rounded in shape, and contained within a wrapper of fleshless  
skin.  
The skull has sutures:one, of circular form, in the case of women; in the case  
of men, as a general rule, three meeting at a point. Instances have been  
known of a man's skull devoid of suture altogether. In the skull the middle  
line, where the hair parts, is called the crown or vertex. In some cases the  
parting is double; that is to say, some men are double crowned, not in  
regard to the bony skull, but in consequence of the double fall or set of the  
hair.  
8  
The part that lies under the skull is called the 'face':but in the case of man  
only,for the term is not applied to a fish or to an ox. In the face the part  
below the sinciput and between the eyes is termed the forehead.When men  
have large foreheads, they are slow to move; when they have small ones,  
they are fickle; when they have broad ones, they are apt to be distraught;

considerable ducts or ureters into the bladder; and others spring from the  
aorta, strong and continuous. And to the middle of each of the two kidneys  
is attached a hollow sinewy vein, stretching right along the spine through  
the narrows; by and by these veins are lost in either loin, and again become  
visible extending to the flank. And these off-branchings of the veins  
terminate in the bladder. For the bladder lies at the extremity, and is held in  
position by the ducts stretching from the kidneys, along the stalk that  
extends to the urethra; and pretty well all round it is fastened by fine sinewy  
membranes, that resemble to some extent the thoracic diaphragm. The  
bladder in man is, proportionately to his size, tolerably large.  
To the stalk of the bladder the private part is attached, the external orifices  
coalescing; but a little lower down, one of the openings communicates with  
the testicles and the other with the bladder. The penis is gristly and sinewy  
in its texture.With it are connected the testicles in male animals, and the  
properties of these organs we shall discuss in our general account of the  
said organ.  
All these organs are similar in the female; for there is no difference in regard  
to the internal organs, except in respect to the womb, and with reference to  
the appearance of this organ I must refer the reader to diagrams in my  
Anatomy'.The womb, however, is situated over the bowel, and the bladder  
lies over the womb. But we must treat by and by in our pages of the womb  
of all female animals viewed generally. For the wombs of all female animals  
are not identical, neither do their local dispositions coincide.  
These are the organs, internal and external, of man, and such is their nature  
and such their local disposition.

Again, some animals are supplied with blood, as man, the horse, and all such  
animals as are, when full-grown, either destitute of feet, or two-footed, or  
four-footed; other animals are bloodless, such as the bee and the wasp,and,  
of marine animals,the cuttle-fish, the crawfish,and all such animals as have  
more than four feet.  
5  
Again, some animals are viviparous, others oviparous, others vermiparous or  
grub-bearing'. Some are viviparous, such as man, the horse, the seal, and all  
other animals that are hair-coated, and, of marine animals, the cetaceans, as  
the dolphin, and the so-called Selachia.(Of these latter animals, some have a  
tubular air-passage and no gills, as the dolphin and the whale: the dolphin  
with the air-passage going through its back, the whale with the air-passage  
in its forehead; others have uncovered gills, as the Selachia, the sharks and  
rays.)  
What we term an egg is a certain completed result of conception out of  
which the animal that is to be develops, and in such a way that in respect to  
its primitive germ it comes from part only of the egg, while the rest serves  
for food as the germ develops. A 'grub' on the other hand is a thing out of  
which in its entirety the animal in its entirety develops, by differentiation  
and growth of the embryo.  
Of viviparous animals, some hatch eggs in their own interior, as creatures of  
the shark kind; others engender in their interior a live foetus, as man and the  
horse. When the result of conception is perfected, with some animals a  
living creature is brought forth, with others an egg is brought to light, with  
others a grub. Of the eggs, some have egg-shells and are of two different  
colours within, such as birds' eggs; others are soft-skinned and of uniform  
colour, as the eggs of animals of the shark kind.Of the grubs, some are from  
the first capable of movement, others are motionless. However, with regard  
treat of Generation.

BoOK 2  
With regard to animals in general, some parts or organs are common to all,  
as has been said, and some are common only to particular genera;the parts,  
moreover, are identical with or different from one another on the lines  
already repeatedly laid down. For as a general rule all animals that are  
generically distinct have the majority of their parts or organs different in.  
form or species; and some of them they have only analogically similar and  
diverse in kind or genus, while they have others that are alike in kind but  
specifically diverse; and many parts or organs exist in some animals, but not  
in others.  
For instance, viviparous quadrupeds have all a head and a neck, and all the  
parts or organs of the head, but they differ each from other in the shapes of.  
the parts.The lion has its neck composed of one single bone instead of  
vertebrae;but, when dissected, the animal is found in all internal characters  
to resemble the dog.  
The quadrupedal vivipara instead of arms have forelegs.This is true of all  
quadrupeds, but such of them as have toes have, practically speaking,  
organs analogous to hands; at all events, they use these fore-limbs for many.  
purposes as hands. And they have the limbs on the left-hand side less.  
distinct from those on the right than man.  
The fore-limbs then serve more or less the purpose of hands in quadrupeds,  
with the exception of the elephant.This latter animal has its toes somewhat  
indistinctly defined,and its front legs are much bigger than its hinder ones;it  
is five-toed, and has short ankles to its hind feet.But it has a nose such in  
properties and such in size as to allow of its using the same for a hand. For it.  
eats and drinks by lifting up its food with the aid of this organ into its mouth,.  
and with the same organ it lifts up articles to the driver on its back; with this  
organ it can pluck up trees by the roots, and when walking through water it  
spouts the water up by means of it; and this organ is capable of being

Next after the nose come two lips, composed of flesh, and facile of motion  
The mouth lies inside the jaws and lips.Parts of the mouth are the roof or  
palate and the pharynx.  
The part that is sensible of taste is the tongue. The sensation has its seat at  
the tip of the tongue; if the object to be tasted be placed on the flat surface  
of the organ, the taste is less sensibly experienced. The tongue is sensitive in  
all other ways wherein flesh in general is so: that is, it can appreciate  
hardness, or warmth and cold, in any part of it, just as it can appreciate  
taste.The tongue is sometimes broad, sometimes narrow, and sometimes  
of medium width; the last kind is the best and the clearest in its  
discrimination of taste. Moreover, the tongue is sometimes loosely hung,  
and sometimes fastened: as in the case of those who mumble and who lisp.  
The tongue consists of flesh, soft and spongy,and the so-called 'epiglottis'is  
a part of this organ.  
That part of the mouth that splits into two bits is called the 'tonsils';that  
part that splits into many bits, the 'gums'.Both the tonsils and the gums are  
composed of flesh. In the gums are teeth, composed of bone.  
Inside the mouth is another part, shaped like a bunch of grapes, a pillar  
streaked with veins. If this pillar gets relaxed and inflamed it is called 'uvula'  
or 'bunch of grapes', and it then has a tendency to bring about suffocation.  
12  
The neck is the part between the face and the trunk.Of this the front part is  
the larynx land the back part the ur The front part, composed of gristle,  
through which respiration and speech is effected, is termed the'windpipe';  
the part that is fleshy is the oesophagus,inside just in front of the chine.The  
part to the back of the neck is the epomis, or 'shoulder-point'.  
These then are the parts to be met with before you come to the thorax..  
To the trunk there is a front part and a back part.Next after the neck in the  
front part is the chest,with a pair of breasts.To each of the breasts is  
attached a teat or nipple, through which in the case of females the milk

of the three,the left-hand one the least,and the middle one intermediate in  
size. All these cavities, even the two small ones, are connected by passages  
with the lung, and this fact is rendered quite plain in one of the cavities. And  
below, at the point of attachment, in the largest cavity there is a connexion  
with the great vein (near which the mesentery lies); and in the middle one  
there is a connexion with the aorta.  
Canals lead from the heart into the lung, and branch off just as the windpipe  
does, running all over the lung parallel with the passages from the windpipe.  
The canals from the heart are uppermost; and there is no common passage,  
but the passages through their having a common wall receive the breath  
and pass it on to the heart; and one of the passages conveys it to the right  
cavity, and the other to the left.  
With regard to the great vein and the aorta we shall, by and by, treat of  
them together in a discussion devoted to them and to them alone.In all  
animals that are furnished with a lung, and that are both internally and  
externally viviparous, the lung is of all organs the most richly supplied with  
blood; for the lung is throughout spongy in texture, and along by every  
single pore in it go branches from the great vein.Those who imagine it to be  
empty are altogether mistaken; and they are led into their error by their  
organs the blood had all escaped immediately after death.  
Of the other internal organs the heart alone contains blood. And the lung  
has blood not in itself but in its veins,but the heart has blood in itself;for in  
each of its three cavities it has blood, but the thinnest blood is what it has in  
its central cavity.  
Under the lung comes the thoracic diaphragm or midriff, attached to the  
ribs, the hypochondria and the backbone, with a thin membrane in the  
middle of it. It has veins running through it; and the diaphragm in the case of  
man is thicker in proportion to the size of his frame than in other animals.  
Under the diaphragm on the right-hand side lies the liver', and on the left-  
hand side the 'spleen', alike in all animals that are provided with these  
organs in an ordinary and not preternatural way; for, be it observed, in some

animals is found domesticated,the same is always to be found in a wild  
condition; as we find to be the case with horses, kine, swine, (men), sheep  
goats, and dogs.  
Further,some animals emit sound while others are mute,and some are  
endowed with voice: of these latter some have articulate speech, while  
others are inarticulate; some are given to continual chirping and twittering  
some are prone to silence;some are musical, and some unmusical;but al  
animals without exception exercise their power of singing or chattering  
chiefly in connexion with the intercourse of the sexes.  
Again, some creatures live in the fields, as the cushat; some on the  
mountains, as the hoopoe; some frequent the abodes of men, as the  
pigeon.  
Some, again, are peculiarly salacious, as the partridge, the barn-door cock  
and their congeners; others are inclined to chastity, as the whole tribe of  
crows,for birds of this kind indulge but rarely in sexual intercourse  
Of marine animals, again, some live in the open seas, some near the shore,  
some on rocks.  
Furthermore, some are combative under offence; others are provident for  
defence. Of the former kind are such as act as aggressors upon others or  
retaliate when subjected to ill usage, and of the latter kind are such as  
merely have some means of guarding themselves against attack  
Animals also differ from one another in regard to character in the following.  
respects. Some are good-tempered, sluggish, and little prone to ferocity, as  
the ox; others are quick tempered, ferocious and unteachable, as the wild  
boar;some are intelligent and timid,as the stag and the hare; others are  
mean and treacherous, as the snake; others are noble and courageous and  
high-bred, as the lion; others are thorough-bred and wild and treacherous,  
as the wolf:for,by the way,an animal is highbred if it come from a noble  
stock, and an animal is thorough-bred if it does not deflect from its racial  
characteristics.

3  
Of animals otherwise, a great many have, besides the organs above-  
mentioned, an organ for excretion of the sperm:and of animals capable of  
generation one secretes into another, and the other into itself. The latter is  
termed'female', and the former'male'; but some animals have neither male  
nor female. Consequently, the organs connected with this function differ in.  
form, for some animals have a womb and others an organ analogous  
thereto. The above-mentioned organs, then, are the most indispensable  
parts of animals; and with some of them all animals without exception, and  
with others animals for the most part, must needs be provided.  
One sense, and one alone,is common to all animals-the sense of touch  
Consequently, there is no special name for the organ in which it has its seat;.  
for in some groups of animals the organ is identical, in others it is only  
analogous.  
4  
Every animal is supplied with moisture, and, if the animal be deprived of the.  
same by natural causes or artificial means, death ensues: further, every  
animal has another part in which the moisture is contained. These parts are  
blood and vein, and in other animals there is something to correspond; but  
in these latter the parts are imperfect, being merely fibre and serum or  
lymph.  
Touch has its seat in a part uniform and homogeneous, as in the flesh or  
something of the kind, and generally, with animals supplied with blood, in  
the parts charged with blood. In other animals it has its seat in parts  
analogous to the parts charged with blood; but in all cases it is seated in  
parts that in their texture are homogeneous.  
The active faculties, on the contrary, are seated in the parts that are  
heterogeneous: as, for instance, the business of preparing the food is  
seated in the mouth, and the office of locomotion in the feet, the wings, or  
in organs to correspond.

All animals move alike, four-footed and many-footed; in other words, they  
all move cross-corner-wise. And animals in general have two feet in advance;  
the crab alone has four.  
6  
Very extensive genera of animals, into which other subdivisions fall, are the  
following: one, of birds; one, of fishes; and another, of cetaceans. Now all  
these creaturesare blooded.  
There is another genus of the hard-shell kind, which is called oyster; another  
of the soft-shell kind, not as yet designated by a single term, such as the  
spiny crawfish and the various kinds of crabs and lobsters; and another of  
molluscs, as the two kinds of calamary and the cuttle-fish;that of insects is  
different. All these latter creatures are bloodless, and such of them as have  
feet have a goodly number of them; and of the insects some have wings as  
well as feet.  
Of the other animals the genera are not extensive.For in them one species  
does not comprehend many species; but in one case, as man, the species is  
simple, admitting of no differentiation, while other cases admit of  
differentiation, but the forms lack particular designations..  
So, for instance, creatures that are qudapedal and unprovided with wings  
are blooded without exception, but some of them are viviparous,and some  
oviparous.Such as are viviparous are hair-coated, and such as are oviparous  
are covered with a kind of tessellated hard substance;and the tessellated  
bits of this substance are, as it were, similar in regard to position to a scale.  
An animal that is blooded and capable of movement on dry land, but is  
naturally unprovided with feet, belongs to the serpent genus; and animals of  
this genus are coated with the tessellated horny substance. Serpents in  
general are oviparous; the adder, an exceptional case, is viviparous: for not  
all viviparous animals are hair-coated, and some fishes also are viviparous.  
All animals, however, that are hair-coated are viviparous. For, by the way,  
one must regard as a kind of hair such prickly hairs as hedgehogs and

Furthermore, some animals have feet and some are destitute thereof. Of  
and with men and birds only; some have four, as the lizard and the dog;  
some have more, as the centipede and the bee; but allsoever that have feet.  
have an even number of them.  
Of swimming creatures that are destitute of feet, some have winglets or  
fins,as fishes:and of these some have four fins, two above on the back, two  
below on the belly,as the gilthead and the basse; some have two only,-to  
wit, such as are exceedingly long and smooth, as the eel and the conger;.  
some have none at all, as the muraena, but use the sea just as snakes use dry.  
ground-and by the way, snakes swim in water in just the same way. Of the  
shark-kind some have no fins, such as those that are flat and long-tailed, as  
the ray and the sting-ray, but these fishes swim actually by the undulatory.  
motion of their flat bodies; the fishing frog,however,has fins, and so  
likewise have all such fishes as have not their flat surfaces thinned off to a  
sharp edge.  
Of those swimming creatures that appear to have feet, as is the case with  
the molluscs, these creatures swim by the aid of their feet and their fins as.  
well, and they swim most rapidly backwards in the direction of the trunk, as  
is the case with the cuttle-fish or sepia and the calamary; and, by the way,  
neither of these latter can walk as the poulpe or octopus can.  
The hard-skinned or crustaceous animals, like the crawfish, swim by the  
instrumentality of their tail-parts; and they swim most rapidly tail foremost,  
by the aid of the fins developed upon that member. The newt swims by  
means of its feet and tail; and its tail resembles that of the sheatfish,to  
compare little with great.  
Of animals that can fly some are furnished with feathered wings, as the  
eagle and the hawk; some are furnished with membranous wings, as the bee.  
and the cockchafer; others are furnished with leathern wings, as the flying  
fox and the bat. All flying creatures possessed of blood have feathered  
wings or leathern wings; the bloodless creatures have membranous wings,.  
as insects. The creatures that have feathered wings or leathern wings have

Other creatures adhere at one time to an object and detach themselves  
from it at other times, as is the case with a species of the so-called sea-.  
nettle; for some of these creatures seek their food in the night-time loose  
and unattached.  
Many creatures are unattached but motionless, as is the case with oysters  
and the so-called holothuria. Some can swim, as, for instance, fishes,  
molluscs, and crustaceans, such as the crawfish.But some of these last  
move by walking, as the crab, for it is the nature of the creature, though it  
lives in water, to move by walking.  
Of land animals some are furnished with wings, such as birds and bees, and  
these are so furnished in different ways one from another; others are  
furnished with feet. Of the animals that are furnished with feet some walk,  
some creep, and some wriggle. But no creature is able only to move by  
flying, as the fish is able only to swim, for the animals with leathern wings  
can walk; the bat has feet and the seal has imperfect feet.  
Some birds have feet of little power, and are therefore called Apodes.This  
little bird is powerful on the wing; and, as a rule, birds that resemble it are  
weak-footed and strong winged, such as the swallow and the drepanis or (?)  
Alpine swift;for all these birds resemble one another in their habits and in  
their plumage, and may easily be mistaken one for another. (The apus is to.  
be seen at all seasons, but the drepanis only after rainy weather in summer;  
for this is the time when it is seen and captured, though, as a general rule, it.  
is a rare bird.)  
Again, some animals move by walking on the ground as well as by swimming.  
in water.  
Furthermore, the following differences are manifest in their modes of living  
and in their actions. Some are gregarious, some are solitary, whether they  
be furnished with feet or wings or be fitted for a life in the water; and some  
partake of both characters, the solitary and the gregarious. And of the  
gregarious, some are disposed to combine for social purposes, others to live.  
each for its own self.

The stomach of man resembles that of a dog; for it is not much bigger than  
the bowel,but is somewhat like a bowel of more than usual width;then  
comes the bowel, single, convoluted, moderately wide.The lower part of  
the gut is like that of a pig;for it is broad, and the part from it to the  
buttocks is thick and short. The caul, or great omentum, is attached to the.  
middle of the stomach, and consists of a fatty membrane, as is the case with  
all other animals whose stomachs are single and which have teeth in both  
jaws.  
The mesentery is over the bowels; this also is membranous and broad, and  
turns to fat.It is attached to the great vein and the aorta, and there run  
through it a number of veins closely packed together, extending towards  
the region of the bowels, beginning above and ending below..  
So much for the properties of the oesophagus, the windpipe, and the  
stomach.  
17  
The heart has three cavities, and is situated above the lung at the division of  
the windpipe, and is provided with a fatty and thick membrane where it  
fastens on to the great vein and the aorta. It lies with its tapering portion  
upon the aorta, and this portion is similarly situated in relation to the chest  
in all animals that have a chest. In all animals alike, in those that have a chest  
and in those that have none, the apex of the heart points forwards  
although this fact might possibly escape notice by a change of position  
under dissection. The rounded end of the heart is at the top. The apex is to a.  
great extent fleshy and close in texture, and in the cavities of the heart are.  
sinews.As a rule the heart is situated in the middle of the chest in animals  
that have a chest,and in man it is situated a little to the left-hand side  
leaning a little way from the division of the breasts towards the left breast in  
the upper part of the chest..  
The heart is not large, and in its general shape it is not elongated; in fact, it is  
somewhat round in form: only, be it remembered, it is sharp-pointed at the.  
bottom. It has three cavities, as has been said: the right-hand one the largest.

percolates; and the breast is of a spongy texture. Milk, by the way, is found  
at times in the male; but with the male the flesh of the breast is tough, with  
the female it is soft and porous..  
13  
Next after the thorax and in front comes the belly', and its root the 'navel'  
Underneath this root the bilateral part is the flank': the undivided part  
below the navel, the'abdomen, the extremity of which is the region of the  
'pubes'; above the navel the 'hypochondrium'; the cavity common to the  
hypochondrium and the flank is the gut-cavity..  
Serving as a brace girdle to the hinder parts is the pelvis, and hence it gets  
its name (osphus),forit is symmetrical(isophues) in appearance; of the  
fundament the part for resting on is termed the'rump',and the part  
whereon the thigh pivots is termed the'socket'(or acetabulum).  
The'womb'is a part peculiar to the female;and the 'penis'is peculiar to the  
male. This latter organ is external and situated at the extremity of the trunk;  
it is composed of two separate parts: of which the extreme part is fleshy,  
does not alter in size, and is called the glans; and round about it is a skin  
devoid of any specific title, which integument if it be cut asunder never  
grows together again, any more than does the jaw or the eyelid. And the  
connexion between the latter and the glans is called the frenum.The  
remaining part of the penis is composed of gristle; it is easily susceptible of  
enlargement; and it protrudes and recedes in the reverse directions to what  
is observable in the identical organ in cats. Underneath the penis are two.  
'testicles', and the integument of these is a skin that is termed the 'scrotum'..  
Testicles are not identical with flesh,and are not altogether diverse from it  
But by and by we shall treat in an exhaustive way regarding all such parts.  
14  
The privy part of the female is in character opposite to that of the male. In  
other words, the part under the pubes is hollow or receding, and not, like

BOOK1  
1.  
OF the parts of animals some are simple:to wit, all such as divide into parts  
uniform with themselves,as flesh into flesh;others are composite,such as  
divide into parts not uniform with themselves, as, for instance, the hand  
does not divide into hands nor the face into faces.  
And of such as these, some are called not parts merely, but limbs or  
members.Such are those parts that, while entire in themselves, have within  
themselves other diverse parts: as for instance, the head,foot, hand, the  
arm as a whole, the chest;for these are all in themselves entire parts, and  
there are other diverse parts belonging to them..  
All those parts that do not subdivide into parts uniform with themselves are  
composed of parts that do so subdivide,for instance, hand is composed of  
flesh, sinews, and bones.Of animals, some resemble one another in all their  
parts, while others have parts wherein they differ. Sometimes the parts are  
identical in form or species, as, for instance, one man's nose or eye  
resembles another man's nose or eye, flesh flesh, and bone bone; and in like  
manner with a horse, and with all other animals which we reckon to be of  
one and the same species: for as the whole is to the whole, so each to each  
are the parts severally. In other cases the parts are identical, save only for a  
difference in the way of excess or defect, as is the case in such animals as  
are of one and the same genus. Bygenus'I mean, for instance, Bird or Fish  
for each of these is subject to difference in respect of its genus, and there  
are many species of fishes and of birds..  
Within the limits of genera, most of the parts as a rule exhibit differences  
through contrast of the property or accident, such as colour and shape, to  
which they are subject: in that some are more and some in a less degree the  
subject of the same property or accident; and also in the way of multitude or  
fewness, magnitude or parvitude, in short in the way of excess or defect.  
Thus in some the texture of the flesh is soft, in others firm; some have a long

cases;and the arm bends at the elbow.The inner part of the hand is termed  
the palm', and is fleshy and divided by joints or lines: in the case of long-lived  
people by one or two extending right across, in the case of the short-lived  
by two, not so extending. The joint between hand and arm is termed the  
'wrist'. The outside or back of the hand is sinewy, and has no specific  
designation.  
There is another duplicate limb, the leg'. Of this limb the double-knobbed  
part is termed the 'thigh-bone', the sliding part of the 'kneecap', the double  
boned part the leg'; the front part of this latter is termed the 'shin', and the  
part behind it the 'calf', wherein the flesh is sinewy and venous, in some  
cases drawn upwards towards the hollow behind the knee, as in the case of  
people with large hips, and in other cases drawn downwards. The lower  
extremity of the shin is the 'ankle', duplicate in either leg.The part of the  
limb that contains a multiplicity of bones is the 'foot'.The hinder part of the  
foot is the 'heel'; at the front of it the divided part consists of 'toes', five in  
number; the fleshy part underneath is the 'ball'; the upper part or back of  
the foot is sinewy and has no particular appellation; of the toe, one portion  
is the 'nail' and another the joint', and the nail is in all cases at the  
extremity; and toes are without exception single jointed. Men that have the  
inside or sole of the foot clumsy and not arched, that is, that walk resting on  
the entire under-surface of their feet, are prone to roguery. The joint.  
common to thigh and shin is the 'knee'.  
These,then,are the parts common to the male and the female sex.The  
relative position of the parts as to up and down, or to front and back, or to  
right and left, all this as regards externals might safely be left to mere  
ordinary perception. But for all that, we must treat of them for the same  
reason as the one previously brought forward;that is to say,we must refer  
to them in order that a due and regular sequence may be observed in our  
exposition, and in order that by the enumeration of these obvious facts due  
attention may be subsequently given to those parts in men and other  
In man, above all other animals, the terms 'upper' and 'lower' are used in  
harmony with their natural positions; for in him, upper and lower have the  
same meaning as when they are applied to the universe as a whole. In like.

has the passages visible whereby it hears; but the dolphin can hear, but has  
no ears, nor yet any passages visible. But man alone is unable to move his  
ears, and all other animals can move them. And the ears lie, with man, in the.  
same horizontal plane with the eyes, and not in a plane above them as is the  
case with some quadrupeds. Of ears, some are fine, some are coarse, and.  
some are of medium texture; the last kind are best for hearing, but they.  
serve in no way to indicate character. Some ears are large, some small, some  
medium-sized; again, some stand out far, some lie in close and tight, and  
some take up a medium position; of these such as are of medium size and of.  
medium position are indications of the best disposition, while the large and.  
outstanding ones indicate a tendency to irrelevant talk or chattering.The  
part intercepted between the eye, the ear, and the crown is termed the.  
'temple'. Again, there is a part of the countenance that serves as a passage  
for the breath, the 'nose'. For a man inhales and exhales by this organ, and  
sneezing is effected by its means: which last is an outward rush of collected  
breath, and is the only mode of breath used as an omen and regarded as  
supernatural. Both inhalation and exhalation go right on from the nose  
towards the chest; and with the nostrils alone and separately it is impossible  
to inhale or exhale, owing to the fact that the inspiration and respiration  
take place from the chest along the windpipe, and not by any portion  
connected with the head; and indeed it is possible for a creature to live  
without using this process of nasal respiration.  
Again, smelling takes place by means of the nose,-smelling, or the sensible  
discrimination of odour. And the nostril admits of easy motion, and is not,  
like the ear, intrinsically immovable. A part of it, composed of gristle,  
constitutes, a septum or partition, and part is an open passage; for the  
nostril consists of two separate channels. The nostril (or nose) of the  
elephant is long and strong, and the animal uses it like a hand; for by means  
of this organ it draws objects towards it, and takes hold of them, and  
introduces its food into its mouth, whether liquid or dry food, and it is the  
only living creature that does so..  
Furthermore, there are two jaws; the front part of them constitutes the  
chin,and the hinder part the cheek.All animals move the lower jaw,with the  
exception of the river crocodile; this creature moves the upper jaw only

of those that live in water some do so in one way, and some in another: that  
is to say, some live and feed in the water, take in and emit water, and cannot.  
live if deprived of water, as is the case with the great majority of fishes;  
others get their food and spend their days in the water, but do not take in  
water but air, nor do they bring forth in the water. Many of these creatures  
are furnished with feet, as the otter, the beaver, and the crocodile;some are  
furnished with wings, as the diver and the grebe; some are destitute of feet,  
as the water-snake. Some creatures get their living in the water and cannot  
exist outside it: but for all that do not take in either air or water, as, for.  
instance,the sea-nettle and the oyster.And of creatures that live in the  
water some live in the sea, some in rivers, some in lakes, and some in.  
marshes, as the frog and the newt..  
Of animals that live on dry land some take in air and emit it, which  
and all such land animals as are furnished with lungs. Others, again, do not  
inhale air,yet live and find their sustenance on dry land;as, for instance, the  
wasp, the bee, and all other insects. And by 'insects' I mean such creatures  
as have nicks or notches on their bodies, either on their bellies or on both  
backs and bellies.  
And of land animals many, as has been said, derive their subsistence from  
the water; but of creatures that live in and inhale water not a single one  
derives its subsistence from dry land..  
Some animals at first live in water, and by and by change their shape and live  
out of water, as is the case with river worms, for out of these the gadfly.  
develops.  
Furthermore, some animals are stationary, and some are erratic. Stationary  
animals are found in water, but no such creature is found on dry land.In the  
water are many creatures that live in close adhesion to an external object, as  
is the case with several kinds of oyster. And, by the way, the sponge appears  
to be endowed with a certain sensibility: as a proof of which it is alleged that  
the difficulty in detaching it from its moorings is increased if the movement  
to detach it be not covertly applied.

bill, others a short one;some have abundance of feathers, others have only  
a small quantity. It happens further that some have parts that others have  
not: for instance, some have spurs and others not, some have crests and  
others not; but as a general rule, most parts and those that go to make up  
the bulk of the body are either identical with one another,or differ from one  
another in the way of contrast and of excess and defect. For 'the more' and  
'the less'may be represented as'excess'or'defect'.  
Once again, we may have to do with animals whose parts are neither  
identical in form nor yet identical save for differences in the way of excess or  
defect: but they are the same only in the way of analogy, as, for instance,  
bone is only analogous to fish-bone,nail to hoof,hand to claw,and scale to  
feather;for what the feather is in a bird, the scale is in a fish.  
The parts, then,which animals severally possess are diverse from,or  
identical with, one another in the fashion above described.And they are so  
furthermore in the way of local disposition:for many animals have identical  
organs that differ in position; for instance, some have teats in the breast,.  
others close to the thighs..  
Of the substances that are composed of parts uniform (or homogeneous).  
with themselves, some are soft and moist, others are dry and solid.The soft  
and moist are such either absolutely or so long as they are in their natural  
conditions, as, for instance, blood, serum, lard, suet, marrow, sperm, gall,  
milk in such as have it flesh and the like; and also, in a different way, the  
superfluities, as phlegm and the excretions of the belly and the bladder.The  
dry and solid are such as sinew,skin,vein,hair,bone,gristle, nail,horna  
term which as applied to the part involves an ambiguity, since the whole  
also by virtue of its form is designated horn), and such parts as present an  
analogy to these.  
Animals differ from one another in their modes of subsistence,in their  
actions, in their habits, and in their parts. Concerning these differences we  
shall first speak in broad and general terms,and subsequently we shall treat  
of the same with close reference to each particular genus..  
Differences are manifested in modes of subsistence,in habits,in actions  
performed. For instance, some animals live in water and others on land. And.

porcupines carry; for these spines perform the office of hair, and not of feet  
as is the case with similar parts of sea-urchins.  
In the genus that combines all viviparous quadrupeds are many species, but  
under no common appellation. They are only named as it were one by one  
as we say man, lion, stag, horse, dog, and so on; though, by the way, there is  
a sort of genus that embraces all creatures that have bushy manes and  
bushy tails,such as the horse,the ass,the mule,the jennet,and the animals  
that are called Hemioni in Syria,-from their externally resembling mules,  
though they are not strictly of the same species.And that they are not so is  
proved by the fact that they mate with and breed from one another. For all  
these reasons, we must take animals species by species, and discuss their  
peculiarities severally'  
These preceding statements, then, have been put forward thus in a general  
way, as a kind of foretaste of the number of subjects and of the properties  
that we have to consider in order that we may first get a clear notion of  
distinctive character and common properties.By and by we shall discuss  
these matters with greater minuteness.  
After this we shall pass on to the discussion of causes. For to do this when  
the investigation of the details is complete is the proper and natural  
method, and that whereby the subjects and the premisses of our argument  
will afterwards be rendered plain.  
In the first place we must look to the constituent parts of animals.For it is in  
a way relative to these parts, first and foremost, that animals in their.  
entirety differ from one another: either in the fact that some have this or  
that,while they have not that or this;or by peculiarities of position or of  
arrangement; or by the differences that have been previously mentioned,  
depending upon diversity of form, or excess or defect in this or that  
particular, on analogy, or on contrasts of the accidental qualities.  
To begin with, we must take into consideration the parts of Man.For, just as  
most familiar,so must we do in other matters.And, of course,man is the  
animal with which we are all of us the most familiar.

Gregarious creatures are, among birds, such as the pigeon, the crane, and  
the swan; and, by the way, no bird furnished with crooked talons is.  
gregarious. Of creatures that live in water many kinds of fishes are  
gregarious, such as the so-called migrants, the tunny, the pelamys, and the.  
bonito.  
Man, by the way, presents a mixture of the two characters, the gregarious  
and the solitary.  
Social creatures are such as have some one common object in view; and this  
property is not common to all creatures that are gregarious. Such social  
creatures are man, the bee, the wasp, the ant, and the crane..  
Again, of these social creatures some submit to a ruler, others are subject to.  
no governance: as, for instance, the crane and the several sorts of bee  
submit to a ruler, whereas ants and numerous other creatures are every one  
his own master.  
And again, both of gregarious and of solitary animals, some are attached to  
a fixed home and others are erratic or nomad.  
Also, some are carnivorous, some graminivorous, some omnivorous: whilst  
some feed on a peculiar diet, as for instance the bees and the spiders, for  
the bee lives on honey and certain other sweets, and the spider lives by  
catching flies; and some creatures live on fish. Again, some creatures catch  
their food, others treasure it up; whereas others do not so..  
Some creatures provide themselves with a dwelling, others go without one:  
of the former kind are the mole,the mouse,the ant, the bee;of the latter  
kind are many insects and quadrupeds. Further, in respect to locality of  
dwelling place, some creatures dwell under ground, as the lizard and the  
snake; others live on the surface of the ground, as the horse and the dog..  
make to themselves holes,others do not  
Some are nocturnal, as the owl and the bat; others live in the daylight.  
Moreover,some creatures are tame and some are wild:some are at all times  
tame, as man and the mule; others are at all times savage, as the leopard.  
and the wolf; and some creatures can be rapidly tamed, as the elephant.

Further, some are crafty and mischievous, as the fox; some are spirited and  
affectionate and fawning, as the dog; others are easy-tempered and easily  
domesticated, as the elephant; others are cautious and watchful, as the  
goose; others are jealous and self-conceited, as the peacock. But of all.  
animals man alone is capable of deliberation.  
Many animals have memory,and are capable of instruction;but no other  
creature except man can recall the past at will.  
With regard to the several genera of animals,particulars as to their habits of  
life and modes of existence will be discussed more fully by and by..  
2  
Common to all animals are the organs whereby they take food and the.  
organs where into they take it; and these are either identical with one  
another, or are diverse in the ways above specified: to wit, either identical in  
form, or varying in respect of excess or defect, or resembling one another  
analogically, or differing in position.  
Furthermore, the great majority of animals have other organs besides these.  
in common, whereby they discharge the residuum of their food:I say,the  
great majority, for this statement does not apply to all. And, by the way, the.  
organ whereby food is taken in is called the mouth, and the organ whereinto  
it is taken, the belly; the remainder of the alimentary system has a great  
variety of names.  
Now the residuum of food is twofold in kind,wet and dry,and such  
creatures as have organs receptive of wet residuum are invariably found  
with organs receptive of dry residuum; but such as have organs receptive of  
dry residuum need not possess organs receptive of wet residuum. In other  
words, an animalhas a bowel or intestine if it have a bladder;but an animal  
remark that the organ receptive of wet residuum is termed 'bladder', and  
the organ receptive of dry residuum 'intestine or 'bowel'.

crooked or coiled at the tip, but not of flexing like a joint, for it is composed  
of gristle.  
Of all animals man alone can learn to make equal use of both hands.  
All animals have a part analogous to the chest in man, but not similar to his;  
for the chest in man is broad,but that of all other animals is narrow  
Moreover, no other animal but man has breasts in front; the elephant  
certainly,has two breasts,not however in the chest, but near it.  
Moreover,also,animals have the flexions of their fore and hind limbs in  
directions opposite to one another, and in directions the reverse of those  
observed in the arms and legs of man; with the exception of the elephant. In.  
other words, with the viviparous quadrupeds the front legs bend forwards  
and the hind ones backwards, and the concavities of the two pairs of limbs  
thus face one another.  
bends its legs and settles down;only that in consequence of its weight it  
cannot bend its leg on both sides simultaneously,but falls into a recumbent  
position on one side or the other, and in this position it goes to sleep. And it  
bends its hind legs just as a man bends his legs..  
In the case of the ovipara, as the crocodile and the lizard and the like, both  
pairs of legs, fore and hind, bend forwards, with a slight swerve on one side.  
The flexion is similar in the case of the multipeds; only that the legs in  
between the extreme ends always move in a manner intermediate between  
that of those in front and those behind, and accordingly bend sideways.  
rather than backwards or forwards. But man bends his arms and his legs  
towards the same point, and therefore in opposite ways:that is to say,he  
bends his arms backwards, with just a slight inclination inwards, and his legs  
frontwards. No animal bends both its fore-limbs and hind-limbs backwards;  
but in the case of all animals the flexion of the shoulders is in the opposite.  
direction to that of the elbows or the joints of the forelegs, and the flexure  
from other animals in flexion, those animals that possess such parts as these  
movethem contrariwise to man.

manner the terms, 'in front', behind','right' and left', are used in  
accordance with their natural sense.But in regard to other animals,in some  
cases these distinctions do not exist, and in others they do so, but in a vague  
way. For instance, the head with all animals is up and above in respect to  
their bodies; but man alone, as has been said, has, in maturity, this part  
uppermost in respect to the material universe..  
Next after the head comes the neck, and then the chest and the back:the  
one in front and the other behind. Next after these come the belly, the loins,  
the sexual parts, and the haunches; then the thigh and shin; and, lastly, the  
feet.  
The legs bend frontwards, in the direction of actual progression, and  
frontwards also lies that part of the foot which is the most effective of  
motion, and the flexure of that part; but the heel lies at the back, and the  
anklebones lie laterally, earwise. The arms are situated to right and left, and  
bend inwards: so that the convexities formed by bent arms and legs are  
practically face to face with one another in the case of man..  
As for the senses and for the organs of sensation, the eyes, the nostrils, and  
the tongue, all alike are situated frontwards; the sense of hearing, and the  
organ of hearing, the ear, is situated sideways, on the same horizontal plane.  
with the eyes.The eyes in man are, in proportion tohis size, nearer to one  
another than in any other animal.  
Of the senses man has the sense of touch more refined than any animal, and  
so also, but in less degree, the sense of taste; in the development of the  
other senses he is surpassed by a great number of animals..  
16  
The parts, then, that are externally visible are arranged in the way above  
stated, and as a rule have their special designations, and from use and wont  
are known familiarly to all; but this is not the case with the inner parts. For  
the fact is that the inner parts of man are to a very great extent unknown,  
and the consequence is that we must have recourse to an examination of

distinctly blue, some greyish-blue, some greenish; and this last colour is the  
sign of an excellent disposition, and is particularly well adapted for  
eyes of diverse colours. Animals, as a rule, have eyes of one colour only.  
Some horses have blue eyes.  
Of eyes, some are large, some small, some medium-sized; of these, the  
medium-sized are the best. Moreover, eyes sometimes protrude, sometimes  
recede, sometimes are neither protruding nor receding.Of these,the  
receding eye is in all animals the most acute; but the last kind are the sign of  
the best disposition. Again, eyes are sometimes inclined to wink under.  
observation, sometimes to remain open and staring, and sometimes are  
disposed neither to wink nor stare. The last kind are the sign of the best  
nature, and of the others, the latter kind indicates impudence, and the  
former indecision.  
11  
Furthermore, there is a portion of the head, whereby an animal hears, a part  
incapable of breathing, the 'ear'. I say 'incapable of breathing', for Alcmaeon  
is mistaken when he says that goats inspire through their ears. Of the ear  
one part is unnamed, the other part is called the 'lobe'; and it is entirely  
trumpet-shell, and the innermost bone is like the ear itself, and into it at the  
end the sound makes its way, as into the bottom of a jar. This receptacle  
does not communicate by any passage with the brain, but does so with the  
palate, and a vein extends from the brain towards it. The eyes also are  
connected with the brain, and each of them lies at the end of a little vein. Of  
animals possessed of ears man is the only one that cannot move this organ.  
Of creatures possessed of hearing, some have ears, whilst others have none,  
but merely have the passages for ears visible, as, for example, feathered  
animals or animals coated with horny tessellates.  
Viviparous animals, with the exception of the seal, the dolphin, and those  
others which after a similar fashion to these are cetaceans, are all provided  
with ears; for, by the way, the shark-kind are also viviparous. Now, the seal

quadrupeds these organs have been found in a transposed position. These  
organs are connected with the stomach by the caul.  
To outward view the spleen of man is narrow and long,resembling the self-  
same organ in the pig. The liver in the great majority of animals is not  
provided with a 'gall-bladder'; but the latter is present in some. The liver of a  
man is round-shaped, and resembles the same organ in the ox. And, by the  
way, the absence above referred to of a gall-bladder is at times met with in  
the practice of augury. For instance, in a certain district of the Chalcidic  
settlement in Euboea the sheep are devoid of gall-bladders; and in Naxos  
nearly all the quadrupeds have one so large that foreigners when they offer  
sacrifice with such victims are bewildered with fright, under the impression  
that the phenomenon is not due to natural causes, but bodes some mischief  
to the individual offerers of the sacrifice.  
Again, the liver is attached to the great vein, but it has no communication  
with the aorta; for the vein that goes off from the great vein goes right  
through the liver, at a point where are the so-called 'portals' of the liver. The  
spleen also is connected only with the great vein, for a vein extends to the  
spleen off from it.  
After these organs come the 'kidneys', and these are placed close to the  
backbone, and resemble in character the same organ in kine. In all animals  
that are provided with this organ, the right kidney is situated higher up than  
the other. It has also less fatty substance than the left-hand one and is less  
moist.And this phenomenon also is observable in all the other animals alike  
Furthermore, passages or ducts lead into the kidneys both from the great  
vein and from the aorta,only not into the cavity.For,by the way,there is a  
cavity in the middle of the kidney, bigger in some creatures and less in  
others; but there is none in the case of the seal. This latter animal has  
kidneys resembling in shape the identical organ in kine, but in its case the  
organs are more solid than in any other known creature. The ducts that lead  
into the kidneys lose themselves in the substance of the kidneys themselves;  
and the proof that they extend no farther rests on the fact that they contain  
no blood,nor is any clot found therein.The kidneys,however,have,as has  
been said,a small cavity.From this cavity in the kidney there lead two

either two feet or no feet at all: for there are said to be certain flying  
serpents in Ethiopia that are destitute of feet.  
Creatures that have feathered wings are classed as a genus under the name  
of 'bird; the other two genera, the leathern-winged and membrane-winged,.  
are as yet without a generic title.  
Of creatures that can fly and are bloodless some are coleopterous or sheath  
winged, for they have their wings in a sheath or shard, like the cockchafer  
and the dung-beetle; others are sheathless, and of these latter some are  
dipterous and some tetrapterous:tetrapterous, such as are comparatively  
large or have their stings in the tail, dipterous, such as are comparatively  
small or have their stings in front.The coleoptera are, without exception,  
devoid of stings; the diptera have the sting in front, as the fly, the horsefly,  
the gadfly, and the gnat.  
Bloodless animals as a general rule are inferior in point of size to blooded  
animals; though, by the way, there are found in the sea some few bloodless  
creatures of abnormal size, as in the case of certain molluscs.And of these  
bloodless genera, those are the largest that dwell in milder climates, and  
those that inhabit the sea are larger than those living on dry land or in fresh.  
water.  
All creatures that are capable of motion move with four or more points of  
motion; the blooded animals with four only: as, for instance, man with two  
hands and two feet, birds with two wings and two feet,quadrupeds and  
fishes severally with four feet and four fins.Creatures that have two  
winglets or fins, or that have none at all like serpents,move all the same  
with not less than four points of motion; for there are four bends in their  
bodies as they move, or two bends together with their fins. Bloodless and  
many footed animals,whether furnished with wings or feet, move with  
more than four points of motion; as,for instance, the dayfly moves with  
four feet and four wings: and, I may observe in passing, this creature is  
receives its name, but also because though a quadruped it has wings also.

when they have foreheads rounded or bulging out, they are quick  
tempered.  
9  
Underneath the forehead are two eyebrows.Straight eyebrows are a sign of  
softness of disposition; such as curve in towards the nose, of harshness;  
such as curve out towards the temples, of humour and dissimulation; such  
as are drawn in towards one another, of jealousy.  
Under the eyebrows come the eyes.These are naturally two in number.  
Each of them has an upper and a lower eyelid, and the hairs on the edges of  
these are termed 'eyelashes'. The central part of the eye includes the moist  
part whereby vision is effected, termed the 'pupil', and the part surrounding.  
it called the 'black'; the part outside this is the 'white'. A part common to the  
upper and lower eyelid is a pair of nicks or corners, one in the direction of  
the nose, and the other in the direction of the temples. When these are long.  
they are a sign of bad disposition; if the side toward the nostril be fleshy and  
comb-like, they are a sign of dishonesty  
All animals, as a general rule, are provided with eyes, excepting the  
ostracoderms and other imperfect creatures; at all events, all viviparous  
animals have eyes, with the exception of the mole.And yet one might assert  
that, though the mole has not eyes in the full sense,yet it has eyes in a kind  
of a way.For in point of absolute fact it cannot see,and has no eyes visible  
externally;but when the outer skin is removed,it is found to have the place  
where eyes are usually situated, and the black parts of the eyes rightly  
situated, and all the place that is usually devoted on the outside to eyes:  
showing that the parts are stunted in development, and the skin allowed to  
grow over.  
10  
Of the eye the white is pretty much the same in all creatures; but what is  
called the black differs in various animals.Some have the rim black, some

the male organ, protruding. Further, there is an 'urethra' outside the womb;  
which organ serves as a passage for the sperm of the male, and as an outlet  
for liquid excretion to both sexes).  
The part common to the neck and chest is the 'throat':the'armpit'is  
common to side, arm, and shoulder; and the 'groin' is common to thigh and  
abdomen. The part inside the thigh and buttocks is the 'perineum', and the  
part outside the thigh and buttocks is the 'hypoglutis'.  
The front parts of the trunk have now been enumerated.  
The part behind the chest is termed the 'back'.  
15  
Parts of the back are a pair of'shoulderblades',the'back-bone',and  
underneath on a level with the belly in the trunk,the loins'.Common to the  
upper and lower part of the trunk are the 'ribs', eight on either side, for as to.  
the so-called seven-ribbed Ligyans we have not received any trustworthy  
evidence.  
Man, then, has an upper and a lower part, a front and a back part, a right  
and a left side.Now the right and the left side are pretty well alike in their  
parts and identical throughout, except that the left side is the weaker of the  
two; but the back parts do not resemble the front ones, neither do the  
lower ones the upper: only that these upper and lower parts may be said to  
resemble one another thus far, that, if the face be plump or meagre, the  
abdomen is plump or meagre to correspond; and that the legs correspond  
to the arms, and where the upper arm is short the thigh is usually short also,  
and where the feet are small the hands are small correspondingly.  
Of the limbs, one set, forming a pair, is 'arms'. To the arm belong the.  
'shoulder', 'upper-arm', 'elbow', 'fore-arm', and 'hand'. To the hand belong.  
the 'palm', and the five 'fingers'. The part of the finger that bends is termed  
'knuckle', the part that is inflexible is termed the 'phalanx'. The big finger or  
thumb is single-jointed, the other fingers are double jointed. The bending  
both of the arm and of the finger takes place from without inwards in all