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## A <br> $\begin{array}{llllll}\mathbf{S} & \mathbf{Y} & \mathbf{S} & \mathbf{T} & \mathbf{E} & \mathbf{M}\end{array}$ <br> OF THE <br> ANATOMY <br> OF THE

H U M A N BOAXY.

# A. <br> S $\begin{array}{llllll}\mathbf{Y} & \mathbf{S} & \mathbf{T} & \mathbf{E} & \mathbf{M}\end{array}$ <br> OF THE <br> ANATOMY. <br> of THE <br> HUMANBODY; <br> ILLUSTRATED BY 

UPWARDS OF TWO HUNDRED TABLES, TAKEN PARTLY FROM THE MOST CELEBRATED AUTHORS,

AND

PÁTLY FROM NATURE.

By ANDREW FYFE.

IN THREE VOLUMES.
THIRD EDITION, CONSIDERABLY ENLARGED AND IMPROVED.

YOL. I.

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S'unchose
A Manis colle tio

## GENTLEMEN

Attending the Medical Classes of the University of Edinburgh,

THE FOLLOWING WORK

IS DEDICATED,

With much respect, And with best wishes, By their most obedient, And very humble Servant,

ANDREW FYFE.
$\left.\begin{array}{c}\text { Univeasity of Edinburgh, } \\ \text { 1st November 1814. }\end{array}\right\}$

## CONTENTS

## FIRSTVOLUME.

## PART I.

## OF THE BONES.

Pag. Pag.Or the Bones in general,3
Pereisteun, ..... 4
Membrana Medwlarit, ..... ib.
Martow, ..... 5
Cartilages, ..... ib.
Of the Formation of Bone, ..... 6
Different kinds of Connection of Bones, ..... 7

- Motion, ..... ib.
Of the Skeleton, ..... 8
Of the Head or Skull ti eeneral, ..... ib.
Sutures,9
Of the Separate Bones of the Head, ..... 19
Os Frontis, ..... ib.
Ossa Parietalia, ..... 22
Os Occiputis, ..... ib.
Ossa Tesporzim, ..... 25
Os Ethnoides, ..... 26
Os Splienoides, ..... 27
Of the Bones of the Face, ..... 33
Ossa Nasi, ..... ib.
Ossa Unguts, rel Lacrymalia, ..... ib.
Ossa Malarum, ..... 34
Ossa Maxillaria Superiora, ..... ib.
Ossa Palati, ..... 35
Ossa Spongiosa, zel Turbinata Inferiora, ..... ib.
Ossa Trinngularia, vel Coraua Sphenoidalia, ..... 36
Maxilla Inferiòr, ..... 39
Teeth, ..... 40
Os Ifyoides, ..... 45
Bones of the Trune, ..... il.
The True Vertebre, ..... ib.
The False Vertebke, ..... 53
Os Sacrum,ib.
Os Coccygis, ..... 54
Bones of the Pelvis, ..... ib.
Os Imominatunt, ..... 51
Os ІІйм, ..... ib.
Os Sschìun, ..... 55
$O_{s}$ Pubis, ..... ib.
Bones of the Thofax, ..... 60
Costa, ..... ib.
Sternum, ..... 61
Bones of the Superior Extremities, ..... 64
Shoulder, ..... ib.
Clavicle, ..... ib.
Srapula, ..... ib.
Arm, ..... 65
Os Humeri, ..... ib.
Fure-Arm, ..... 66
Cline, ..... ib.
Radius, ..... 67
Hand, ..... ib.
Carpus, ..... ib.
Metacarpus, ..... 69
Fingens and Thumb, ..... 70
Bones of the lnferior Extremities, ..... 76
Thigh, ..... ib.
Os Femoris, ..... ib.
Leg, ..... 77
Tibra, ..... ib.
Fibnla, ..... ib.
Putella, ..... 78
Foot, ..... ib.
Tarsus, ..... ib.
Metatarsus, ..... 80
Toss, ..... 8]
Ossa Sesamoiden, ..... ib.
Principal Differencesbetween the Male and Female Sreleton, ..... 88


# PART II. OF THE MUSCLES. 



## PART III.

## of the blisie mucosie-OF the liganents and other parts of THE JOINTS.


Pag.
Pag.

Ligaments of the other Vertebra, 175 of the Ribs, 176 of the Bones of the Pelvis, 177 Ligaments of the Surerior Extremity, . . . 178

Liganvents of the Clavicle, . proper to the Scapula, . . ib. of the Joint of the Shouller, ib. of the Joint of the Elbow, 179 between the Bodies, and between the Under Ends of the Radinus and Ulua, between the Fore-Arm and Wrist,
between the Carpal and Metacarpal Bones, . . . ib between the Extrumitics of the Metacarpal Bones, . at the Base of the Metacar. pal Bone of the Thumb, and at the First Joint of the Fingers, . . . . ib. of the First and Sccond Joints of the Thumb, and

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$$

## $\begin{array}{llll}\mathbf{P} & \boldsymbol{A} & \mathrm{R} & \mathbf{T} \\ \mathrm{I}\end{array}$

of

## THEBONES.



OF THE BONES IN GENERAI.

THE Bones are the most hard, compact, and inflexihle parts of the Body.
They are more or less of a white or red colour, according to the proportions of Earth or Blood entering their composition; and are therefore whitest in the Adult, and reddest in the Child, more Earth heing found in the former, and more Blood in the latter.

In living Animals, they are of a bluish colour, in cansequence of the Blood contained ia their small Vessels appearing through their surface.

Bones are composed of Lamella, or Plates, which are formed of Fihres runuing longitodiaally, or in a radiated manner, according to the natural figure of the Bone.

The lamellated structure may be seen, by exposing them to the hcat of a strong fire; or to the weather; or by boiling them woder an increased pressure; or by ohserving thicir exfoliations when in the diseased state.
A late Author, Scarpa, deuies the lanellated struczure of the Bones, and endcavours to prove, that they have every where a cellular texture.

The Plates of Bones are originally formed by the Vessels of the Periosteun Exteroum and Memhrana Medullaris, and not, as has been supposed by some Anthors, from Layers detached from the exteroal Periosteum.

The Plates are caumectod by Fikrex, which some have considered as Claviculi or Neils, and called Perpendicutar, Oblique, \&c. according to their differeut directions.

The outer Plates of Bones are firmly compacted, so as to appear like one solid sulstance.
The inner Parts of Bones in general, whether long, round, or flat, have their Plates and Threads ronning in various directions, intersecting each other, and forming the Cancelli, or Spongy Substance of the Bones; the Cancelli every where communicating with each other.
The Cazcelli, in the middle of long Bones, axe Fibrous, and form the Reticular Substance which divides the Bone into large Cclls.
Towards the extremities of long Bones, the Cancelli are lamellated, and much more numerous than in their middie.
Cancelli, of a similar nature to those of the long Bones, are also placed between the Tables of flat, and inner parts of round Bones.
Io some of the broad Bones, however, as the Scapula, the solid parts are so much compressed, as to leave little or no rooin for Cancelli.

On the contrary, in the middle of the long Bones, as the $O_{\mathrm{a}}$ Humeri, the Cavities are so largeas to give to the Bone the appearance of a hollow Cylinder.

In some of the largest of the long Bones, as the $\mathrm{O}_{\text {s }}$ Femoris, their solid sides, near their middle, are remarkably thick, and there the Cancelli are almost imperceptible; while, at their extremities, their sides are scarcely thicker than writing-paper, and the Caucelli are so numerous as to occupy the whole space between their sides.

The Cancelli of Bones are formed by the interoal Plates passing inwards, and decussating each other; and in the long Bones, the sides of the Bone, in consequence of sending off the Cancelli, become gradoally thinner towards its extremities, while the Cazcelli in proportion become more numerous.

The Cancelli, though extremely minute, exist even in the most solid parts of Bones, as can be seen hy exposure to heat, or in Bones enlarged by disease. In either of these cases, small Cells may be observed, and are distinguishahle from the Canals for containing the Vcssels, the tormer heing irregular, and the latter cylindrical.

The Cancelli surport the Membranes containing the Marrow, ss the Cellular Substance does the Fat, and prevent one part of the column of Marrow from gravitating upon another in the various positions of the Body. They also furnish a wider surface for the diapersion of the Arteries which secrete the Marrow.

Upon the surface of Bones there anc numerous Fissures, for the more intimate comection of the Periostemm with the Bone, and for lodgement to Blood-vessels ahich pass into its substance.

Many minute Orifices are ohserved upon the surface, and particularly in the Furrows of Rones, for the transmission of Blood-vessels into their substance.

Near the middie of most of the Bones, cspecially the long ones, there is a slanting Canal for the passage of the principal Medullary Vessels, which consist of Arteries and Veins.

Numerous Oxifices, some of them yery considerable in size, are observed at the erfremities of long Bones. Some serve for the transmission of Blood-vessels, and others for giving attachnent to the Fibses of the Ligaments of the Joints.

The principal Vessels pass into the Cancelli, interoal Membrancs, and Marrow, and return to the solid sab-
stance of the Bone, whete they meet those sent inwards from the Periosteum.

In some flat Bones, as those of the Cranizm, the Bones are entrely supplied from the Vessels of the surrounding Mernbranes, ind the Vascularity there is uniform.

In the Subject, the Arteries of the Boncs, and sometimes the Teins, can be shewn by a successful iojection thrown into them; but the latter are more readily seen in Subjects that die with their Veins full of Blood; and in living Animals, when the Bones are cut neross, their Vascularity appears by the Blood which oozes from their divided extremities.

The Vascularity of Bone is also shewn, lay feeding an Animal for some time on the Rubia Tinctorum, or Mad-der-root, after which the Bones are found to be completeby tinged with the colouring matter of the Madder.

As a person advances in lifc, the Blood-vessels of the Bones contract in their diameters, as appeass from the Bones of old people having less Blood in them thau those of a person at an early period of life; from Injections being thrown into the Vessels of the Bones of old persons with more difficulty than in youth; from less of the injected matter being received in the former; and from the Bones of old Animals receiving less of the tinging matter of Madder than those of young ones.

From comparing the Bones of people of different ages, it is found, that there is a constant waste and renewal of their suhstance; that the Bones increase in weight as a person advances to maturity; that they continue nearly of the sane weight till old age begins, and then hecome lighter; that the speeifie gravity of their solid sides, on the contrary, increases lyy age ; for then they become harder and ruore compact, but thinner, and have larger Cavities than the Bones of young persons.
Bones, like other parts, have their Lymphatices, as appears by the absorption of Madder found deposited in the substance of the Bones of Animals receiving it with their Food; by the absorption of part of the Bone itself, when in the diseased state; by the absorption of Bone as a person advances is life; and even by injection.

The Nerves of the Bones are small, hut may he observed in certain parts of them; and it is presumed they exist in all.

From the minutenest of the Nerves, and rigidity of the parts on which they are dispersed, Bozes are not sensible in the sound state; and even in the diseased, the pais felt ray be owing to the Membranes within them.

The component parts of Bones are, an Earthy Matter, Cartilage, Gelatin, and Marrow, and these varying in proportion in different persons, in different Bonee of the same person, and in the same Bone at different ages. The Earthy Matter, however, beara the largest proportion; but this is less in Children than in persons of more advanced life.

The Earthy Matter is ohtained hy Caicination, or hy maceration in a diluted acid, and afterwards precipitating it, when it is found to consist chiefly of Phosphate of Lime. In either of these processes, the Bone retains
its shape; but in the former it is brittle, aud of a pure white colow, while in the latter it is ficsible, corisisting Pincipally of Cartilagianus Matter.

By boiling in water for a sufficient length of time, and cspecially if under an increased pressure, as in Papiu's Digester, the Fat and Gelatin of Boues are dissolsed and separated, and the Bone retmining its Earthy Matter, preserves also its white colour.

The general Ule of Bones is, to give firmness and shape to the Body, to furnish attachment to the Muscles, and serve as Levers for thicse to act on, and to lodge, prow tect, and support the Bowels.

## Periosteem.

The Periosfeum derives its name from its furnishing a general Covering to the Boncs.

In cestain parts, however, it is perforated by Muselec, Ligaments, or Cartilages, which are fixed immediately to the surface of the Bones; and at the Joints it separates from the Bones, to give a Covering to the Capsular Iigaments.

It is formed of many Fihres, which, in certain parts, can be divided into layers.

The outer Surface of this Memhrone is connected to the surrounding parts by Cellular Suhstance.

The inner Surface is more uniform than the outer, and its Fibres run, most frequently, in the same direction with those of the suhjacent Bone.

The inner part of the Periosteum is intimately connected to the surface of the Bones by short Filires ; and this connection is much stronger in the Child than in the Adult. Some of these Fibres may he considered as Ligamentous, but most of them are found by Injection to consist of Blood-vessels.

The Perinstoum, is well as other Membranes, muet bo supplied with Nertes; but these are too misute to he readily traced.

The Sensibitity of the Periosteum, like that of other Membranes, is by no means acute. In the inflauted state, its sensibility is very considerahle.

The principal Uses of this Membrame are,-to trans. mit the Vessels which are spread out upon its surface into the suhstance of the Boncs;-to give attachment to Mnscles;-to prevent the effects of Friction between them and the Bones;-to assist in binding the latter to gether ;-to assist in setting limits to the increase, and to check the overgrowth of Buncs ;-and, in young persons, to strengthen the junction of the Bones with their Epiphyser, Cartilager, and Ligaments.

## Memarina Medullania.

This, improperly called Periosteum Infernum, is an extremely fine Mcmbrane, which tines the inside of the Boncs in general, aends Procesges into the solid sides of these, and is divided into numberless small parts, which also line the different Cancelli. It forms so many irregu-
lar bags, commonicating with each other, and affording at large surface for the dispersion of the secretory Vessels of the Martow.

## Mamiow.

The Maryow may be considered as an Appcadage to the general Corpus Adiposum. It is found to be a species of fixed oif possessing peculiar properties, and is deposited by the Arteries in the Cavities of the Eones, at the same time that the rest of the Body is supplied with Fat.
The Blood-vesscls of the Marrow, surrounded by the Periosteun, enter the Bones by oblique Camals, which have slready becn taken uotice of in the description of the Bones in general.

When the Arteries have entered the Cavities of tise Bones, they divide into Branches, which are spread out upon the Cancelli, Membrana Mcdullaris, and Marrow; from these many minute Branches are reflected outwands to the Tables of the Bones, which communicate with those seat from the inner surlace of the Periosteum.
The Veins which return the Blood from the Marrow and Substance of the Bones, are collected into snall Truaks, which pass out where the Arteries penetrated the Bones, and discharge tbeir conteats into the weighbouring Veins.
The greater degreo of Vabcularity of the Solife in Children than in Adalts, is no where more conspicuous than here; for Injections which pass readily in these Vessels in Children, caunot be made to penetrate so far in those of persons more advanced in life. In consequence of which the Marrow is found to be thin and bloody in Children, oily and thick in Adults, and watery in old people.
Tbe Marrow, like the Fat, when viewed through a Microscope, resembtes a cluater of pearle ;-or it is contained in spherical Sacs, apon which Vessels are minute. ly dispersed, but from wbich no Excretory Ducts have been discovered to pass out.
It possesses little Sensibility in the sound state; and what it does possess is considered by the latest Autbors as belonging rather to its Membranes than to the Marrow itself.
But that this part of the Body is not without Nerver, seeme to be proved by the experiments made on the Marrow when the Bones of living Animals are cut, and by the pain a person frequently suffers from Diseases witbin the Bones.

## Cartilages.

Cartilages ane of a white Chloun of an elastic Substance, and much softer than Bones, in consequence of the smaller quantity of Earth entering their composition.
The Structure is not so evidently Fibrous as that of Bones, yet, by long Maccration, or by tearing them asuader, a Fibrous disposition is perceptible,

Their Vessels are extremely small, though they can be readily injected in Caxtilages where Bone is beginaing to form. The Vessels of the Cartilages of the Jointe seem entinely to exclude the red Blood. No Anatonist has, been able to inject them; and Madder, mined with the rood of Aninals, does not change their colour as it does that of Bones.

The existence of Lymphatic Tessels in them, is proved by their being absorbed during the process of Ossitieation, or in certain diseases,

No Nerzes can be traced to them, nor do they posess any sensibility in the soumd state. Yet the Granulations which rise on the surface of Cartilages, after Amputation at the Joints, are very seasible.

Upon their surlace there is a thin Membrane, termed Perichondrium, which, in Cartilages supplying the place of Bone, as in those of the Ribs, or at the ends of the long Bones in Children, is a coulinataion of the Perviosteum, and server the same general purposes to Cartilage as the Pcriosteum does to Bone.

The Pexichondrium of Cartilages which supply the place of Bone, or by their flexibility possess a degree of motion, has Blood-reesels, which, like those of the Periosteum, ean be injected. But the Vessels of this Membrane belongiog to other Cartilages, particularly those covering the Articular Cartilagec, cannot be injected.
Unon tlec ourrawe or Articular Cartilages, the Perichondrius is a Reflection of the inner surface of the Capsular Ligament, and is so very thin, and adheres so closely, as to appear like part of the Cartituge itself.
They have uo internal Cavity, nor Cancetli, nor internal Membrane, for lodging Marrow; their weight is nearly a thind less than that of Bone. Their texture is less cbagged by acids; but a much greater proportion of them than of Bones is deatroyed by the action of a strong fire. They are softened by maceration in water; and the Arcicular Cartilages, by long boiling, are in a great measure dissolved.
They are found to consist chiefly of albumen and water, with a small proportion of phosphate of linie.

Oac set of (artilages supply the place of Bone;-or, by their flexibility, admit of a cestain degree of motion, while their elasticity recovess their natural position ;as in the Nase, Larymn, Cartzlages of the Mibe, Curtilages stepplying Brims to Cavitice, sic.
Another set, in Childurn, supply the place of Bone, until Bone is formed, and aflord 2 Nidus for the Osseous Fibres to shoot in;-as in the long Bones of Children.
A third set, the most extensive, by the smoothness and slipperiness of their surface, allow the Boncs to move readity, without any abrasion;-as in the Abducent or Articular Cartilages. By the ir elastic nature, they render the motions easicr, and lessen the concussion in the more violent motions of the Body, as ruming, jumping, \&c. They also prevent the inordinate growth of Bones at their articulating surfaces, and the coalescence of the Fibres of the adjoining Bones.

A fourth set supply the office both of Cartilage and Ligament,

Ligament, giving the elasticity of the former, and flexibility of the latter; uniting some immoveably together, and allowing to others a small degrec of motion;-as in the Cartilnges of the Bones of the Pelvis and spine.

Cartiages are divided by some Anatomists into two Sets, viz, Temporary and Permanent. The first inelucte those in which Bone is formed in the Child ; the other consist of those of the External Ear, of the Eyc-lids, Nose, Laryux, and Tracbea, and of the Artieular, Interarticular, and Intervertebral.

## Of the Formation of Bonb,

The generality of Bones are originally formed, cither between Membranes, or in the Substance of Cartilages; the Teeth are formed in distinet Bags.
The Ossification of brond Bones begins, in some, 29 in those of the Cranium, betiseen Menibranes ouly, and in others, as in the Ossa Mlia, in Cartiłage, and it appears in each Bone in one or more plaees: There the Osseous Particles are so joined together, as to have a Fibrous appearance.

The Fibroos Structure is most distinctly scen in the Cranium of a Fcetus about three months after Conception, where the begiming of the Ossification is like a fine irregular Net-work, in the middle of which the Fibres are more closely eonnected than in the circumtercane..

In viewing the flat Bonesol a Foctus a little more advanced, the bony particles are observed to be so disposed, as to lave a distinct radiated appearance.

The vaeancies between the Fibres, which oceasion the radiated appearance, are found by Injection to be cbiefly passages for Blood-vessels.

As the Fartus becomes larger, the Osseous Fibres imcrease in number, but become less appareut, the Interstices being now, filled wyith $O$ sseous matter, which increases in quantity till a Lamina is produced; and an the Bone continues to grow, more Laminx are added, till the more solid part of a Bone is formed.

The Inner Layers of the Bones are observed to be more porous than the Oiter, and none of them are found to have the soldity they aequire in tbe Adult state, till they have arrived at thcir full growtb.
Tbe Ossification of long Bores begins between the Periosteum and Membrana Mednllaris, in a Jelly which afterwards handens into Cartilage, and forms a Cential Ring, from whicb the Fibres extend towards the eads of the Bones.
The Inferior Lamella, forming the solid sides of the long Bones, are considerably shorter than the Exterior, because they pass gradually inwards to form the Cancelli, wbile the exterior parts are continued to the extremities of the Bones.

The Ossification of spherical-shaped Bones, as in the Krist, begins by ous Nucleus, and that of isregularfornied Boncs, as in the Vertebra, by different Nuclei; and both of these sets of Boncu have thrir origin in Ciartilage.
lu proportion as $\mathrm{O}_{\text {sseous matter is deposited, the Can- }}$ tilage is absorbed, leaving belhind it the dufferent Cavities and Cancelli.
All the Epiphyses, likewise, lave their ariginal formation in Critilage.

The Ossifieation which begins in Cartilage is considerahly later than that which hass its origin betwren Membraues, and this is at very different times in different parts of the Body ; the processea being soomest completed in those Boncs which cover the Organs most esisential to lite.
When Ossification is about to begin in a parricular part, the Axteries, which were formerly ol the Serous kind, become dilated, in eonsequence of a greater determination of blood to them, and receive oow the red Blood from whicb the Osseous matter is seereted. This mater retains, for some time, the form of tbe Vessels which give it origin, till, more Arteries being by degrees dilated, and more Osseous matter deposited, the Bone at lengtb attains its complete form.
Some Bones are completely formed at the time of Pinth, ao the small Bones of the cuar.

The generality of Bones, however, are incomplete until the age of puberty, or between the fifteentb and twentieth year, and in some few instanees not until a later period.

In Children, the greater number of parts in Bones are Epiphyses or Appendices, which, in Adults, become Apophyses or Processes.

The Epiphyses begin to appear after the Bodv of the Bone is ossified, and are theniselves ossified at seren or eight yearo of agse thangh their external surtace io at ill somewhat Cartilaginous.

In the early part of life, the Body and Fid. it
Bones make three distinct parts, each of whis is 1.
econtre of Ossifieation, and the parts can reade! be eppsrated ly boiling, or by maceration in water.

The Epipbyses are joined to the Body of the Bone by Cartilagees, which are thick in Children, but gradually beeome thinner, in consequenee of absouption, as Ossification advanees, till at last, in the Adult, the externat marks of division 2re not to be seen ; though fiequently some mark of distinetion may be obscived in the Caneelli.
The Epiphyses belong cluiefly to sueh Bones as are destined for much motion, and have larger diameters than the Bones to whieh they are fixed, in consequence of whieh they form firmer Artieulation, and give a more commodious attaeliment to Museles.

## DIFFERENT KINDS

OF

## CONNECTION OF BONES,



## DIFFERENT KINDS OF MOTION.

ARTHRODIA;
the flat ends of Bones Between the Clavicle and Scapula. The Bones in the second row of the Carpus. Where the flat ends of Bones are opposed to each other with little motion. The Carpus and Metacarpus. The Tibia and Fibula. The greater number of Bones in the Tarsus. The Tarsus and Metatarsus.
GINGLIMUS;
The Bones mutually receiving
each other, and the Liga-
ments admitting of a hinge-
like motion. $\left\{\begin{array}{c}\text { Angular. } \\ \text { One Bone, in moving, } \\ \text { forming an angle } \\ \text { with another, } \\ \text { Lateral or Circular. }\end{array}\left\{\begin{array}{l}\text { The Lower Jaw and Head. The Joint of the Elbow, } \\ \text { The first and second Joints of the Thumb, and second } \\ \text { and third of the Fingers. The Joint of the Knee. } \\ \text { The Ankle. The two last Joints of the Toes. } \\ \text { Between the first Vertebra and Processus Dentatus of the } \\ \text { second. Between the Radius and Ulna, } \\ \text { Between the Occipital Bone and Atlas. Between the } \\ \text { different Vertebre. And between the Ribs and Ver- } \\ \text { tebre. }\end{array}\right.\right.$

ENARTHROSTs, $\quad$ Imer end of the Clavicle. Head of the $\mathbf{O}$ Humeri. Between the Fore-arm and Or Ball and Socket, the Ligraments allowing motion in all divections. Wrist, and between the two rows of the Carpal Bones. At the root of the Metacarpal Bone of the Thumb, and root of the first Phalanx of the Fingers. At the head of the Thigh-bone. Between the Astragalus and Os Naviculare, and at the root of the first Phalanx of the Toes.

## OF THE SKELETON:

Thouer the tem shelefore be applied to a variety of Substances, yet, in Anatomy, it is ulways understood to sigaify the Bones of Auimals, connceted together in their natural situation, after the soft pats of the Body in general are reruoved.
it is termed a Natural Skeleton, when the Bones are joined by their own Ligaments;
And an Axtificial skicleton, when joined by Wire, S.C.
Small Snbjects, and the Bones of those which are not fully ossified, are most conveniently prepared the first way; while the Bones of large Adult Animals are more readily cleaned when single, and are easily restored to their natural situation.

In vietwing the Bones in diem natural situation in the Skeleton, scurcely any of thein are oisservel to be pluced in a perpendieular direction to another; yet in an creet posture, a perpendicular line from their common centre of gravity falls in the niddle of their cominon basc. On this account, the Body is found to be as fizonly supported, as if the axis of all the Boucs had been a etraight line perpendicular to the horizon, and much greater quicknoss, ease, and strength, is given to the Body, in severral of its most necessary motions.
The Human Skeleton is generally divided into IIrad, Trunk, Superior aud Infrizor Eifremazies.

## OF TIIE HEAD OR SKULL IN GENERAL.

By the Head is meant all that part of the Skeleton which is placed above the furst Bone of the Neck. It thevefore comprebends the Cranium and Bones of the Face.

The Cranium varies in shape in diffcrent Persons, according to the original form of the Brain upon which it is moulded.

The variety in shape not only exists in differeat Persons, but in the opposite sides of the same Skuil, scarcely any one being found perfectly similar there whea minutely examined. The variety of shape has been supposed by some Authors to be increased by the different management of the Heads of Children at an early period of life. From this the difference of shape observed in the Skulls of people of different nations has been accounted for. The form, however, does not appear to be much affected by the managerant of the Head at an early period of infancy, since its characteristic marks are found to remain nearly the same, however much the cnstoms in dress and general management may vary.
The Cranium Forms a vanlted Cavity for lodging and defending the Brain, with its Membranes, Vessels, and Nerves.

The General Figure of the upper part of the Cranium is compared to that of an Egg. Tab. VIII. The medium length of it appears to be about six inches and a half, and the greatest transverse diameter, which is a little behind the Exterual Auditory passagen, about five inches.

The Cranium is of a flat form at its sides, partly by the action of the Temporal Muscles. Tab. IV.

The latness of this part of the Head is found to increase the sphere of vision, and to give a more advan-
tageous situation for the Ears, that they may receive a greater quantity of sound, while they are less exposed to danger.

The Surface of the upper and outer part of the $\mathrm{Cr}_{12}$ nium is smooth, wher it is little affected by Muscles, and is covered by the Periostenm common to all the Bones, but in the Skull termed Pericranium.

The under and outer Surfoce of the Cranium is arregudar where it gives attichnnent to Muscles, \&c. and passage to Vessels and Nerves Tab. VI.

The anterior and umier part of the Cranium is kollotro to make part of tho Outhits, Tab. 111.
The posterior Surface of the Granien is marked by the insertion of Muscles arising from the halk part of the Trunk. Tab, VI.

The rpper and inner Surface of the Cranium is Aollows, for lodging the Brain. Tab. VIII. Fig. 2.

The under. and inner Surface of the Cranium has many unequal Cavities, for lodging the Lohes and Appendages of the Brain and Cerebellum, and for allowing pasazge to the Vessels and Nerves of the Encephalon in general. Tab. VIII.

Upon the anterior part of the base of the Cranium the Anterior Lobes of the Brain rest; $;$ in the middle of the base are two deep Fossre, for lodging the Lateral Lobes, wbile the posterior Lobes and the Cerebellam occupy ${ }^{3}$ still deeper cavity behind. Tab. VIII.
Along the inner side of the Cranium are many Furnows, formed by and for the reception of the Blood-vessels of the Dura Mater. Tab. VIII. Fig. 2.

Upon the inner Surface of certain Crania, Simosities are ebserved, for lodging luxuriances of the Brain ; and here the Cranium is sometimes so thin, as to be reudered
transparent ;
transparent ; the two Tables being then closely compacted, without any Cancelli.

In some Crania, Pits are seen of different figures and sizes, for lodging Granulaws Bodies on the Dura Mater, termed Glands of PAceHions; or sometimes they are occupied by the meeting of large Veins of the Dura Mater. Here there also is often a waut of Cancelli. Tab. VIII. Fig. 3.

The Bones of the Crauium are composed of two Tables, which at the upper part are neaily parallel to each other. Tab. VIII.

The two Tables have intermediate Cancelli, termed here Diploc, though acally of the same nature with the Cancelif in other flat Bones.

The Externa! Table of the Cranium is somewhat thicker than the Interval, which. from its thmuess and consequent brittleness is catled fitrea. Tab. V. s, s.

The Diploe, or Cancelli, between the Tables, are more regular between the Bones of the upper than of the under part of the Cranium, where, in several of the had Bones, they are not observable.

The thickness of the Bones varies much in different parts of the Cranum; in a transverse section about its middle height, the Bones are about $\frac{3}{3}$ th of min inch in thickness, except at the Temples, where they are thinner; and at the Front and Occiput, where they are thicker. This thickness is understood to be in the prime of life; in youth and old age, the Bones are considerably thinner, in the former case not having attained their full growth, in the latter, part of them having been absorbod.

In the Skulls of old Subjects, the Diploc are often so obliterated, that searcely any vestige of them can be seen.

In certain digeased Bones, on the contrary, the Diploe are of great thickness, while the Tables of the Skull are thin like paper.

The Cranium is generally composed of eight Bones; ane of which are said to be proper to the Cranium, and two common to it and the Face.

The sit proper to the Cranium are,
The Os Frontio, placed in the fore part of the Cranium. Tab. IH. A.

The two Osad Parictaliu, placed in the upper and lim teral parts of the Cramium. Tab. IV. B.

The two Ossa Teupora, placed in the under and latea ral parts. Tab. IV. D.

The Os Occipitis, which forms the back, and some of the lower part of the Cramium. Tab. VII.

The two Bones common to the Cranium and Face are,
The O s Ethmoides, plaeed in the fore part of the Base of the Craniam. Tab. V. $\mathrm{C}, \mathrm{C}$.
The Os Siphenoider, situated in the middle of the Base. Tab. V.

## Sutures.

The Bones of the Cranium liave Scams or Sutures be-
tween them, whicls are five in numbes. Of these three are termed True, from having serrated appearances; and teo are called Fake or Squamous Sutures, from the Bones which form them overlapping each other, as tho Scales of Fishes do.

## The three Trwe Sutures are,

The Coronal Sutate, placed between the Frontal and Parietal Bones, and getting its name from this being the palt where the Aucients wore their Cononce or Garlands. About an inch of each of its extremitics wants the serrated appearance. Tab. IV. ni.

The Lambdoid Suture, situated where the Occipital joius the Parietal and Teinporal Bones. It begins some way below the Vertex, or Crown of the Head, from which its two Lcgs extend obliquely downwards and to each side, in form of the Gircek A. Tab. II. b. Tab. V'II.

The parts of the Lambdoid Suture, placed between tbe Occipital and Temporal Bones, have bittle of the servated appoarance, and are called Additamento Suturce Laubidovilatis.

The Sagittal Solure, sitwated between the Parictal Bones, and manod from being extended between the middle of the Coronal and Lambdoid Sutures, as an Arrow is between the String and Bow. Tab. VIII. Fig. I. $d, d$.

The Sagittal Suture is sometimes continucd through the middle of the Frontal Bone to the Nose. This is said to be more frequent in the Fcmale than in the Male. Ipon examining a great number of Cranis, the Author found it taking place in one of nine or ten.

The secrated appearance of tbe True Sutures is seca distinctly on the outside of the Cranium ouly; on the inside, the Bones appear almost to be joined in straight Jimes, Tab. VIII. Fig. I. 2.

In some Skulls, the interual Surface is found entire, while the Sutures are manifest without; the inner Plates meeting and coalescing sooner than the external.

As a person advances in Life, the True Sutwes begia to be obliterated, first on the inner, then on the outer side, till in very old age not a vestige of one of them is to be seep.

The tuo False, called also Tentporal Sutures, placed a little above the Ear, between the upper edge of the Temporal and under edge of the Parietul Bones. Tab. IV. 0.

Fach of the Portions of the False Sutures, situated betwcen the under and back part of the Parictal, and the upper and back part of the Temporal Bones, is called by some Additamentum Sutwre Squanoser, and has in that part the true serrated appearance. Tab. IV.

Pesides the Siquamous Sutures liere taken notice of, it is to be observed, that the temm Squamous is also applied to all the Sutures on which the Temporal Muscle is placed; it therefore includes part of the Coronal and Sphenoid Sutures.

Sometimes, though ravely, there is a doubte Squamous suture, dividing the sealy part of the Bone into the unequal portious. Tab. Vil. Fig. 3.

Iu the Sutures of the Cranium there are often Additional Bones, called Oswa Trituetra, from their being of a triangular form, and Ossa Wormiana, from Wormius, who, though not the discoserer, gave a description of them.

The Ossa Wormiana vary much in ligure, size, and number, and are occasionally found in the defferent fu_ tures, though most frequently in the middle of the Lambdoid. Tab. VII. Fig. L. g. Fig. 2. Fig. 3.

Wherever they oecur, the Futures surrounding them are observed to be simila to the neighbouring Sutures; of course they are equally with them distiogriblied Aum Fractures of the Skull.
Between the Boues of the Cranim and those of the Face, fire Sutures are also found, and they are said to be common to these two sets of Bones. Parts, however, of these Sutures, are only between the Boues of the (rmium. The Sutures here are,
The Ethmoid Suture, which sumounds the Etlumoid Bonc. Tab. T. C, C.
The Sphenoid Siviure, which sumrounds the Splenoid Bone. 'Tab. V. f, O.

The Ethuoid and Sphenoud Sutures ra some paris assist in forming other Sutures, especially the squamour and 'Iransverse; and in other parts, tbere is but one Suture common to these two Bones.

Their formation is cousidered to be owing to an increase iu the number of the points of Ossification, or to a deficiency in the Ossification of the ordinary Bones of the Craminus; in which last case, separate Ossifications begin in the unossified interstices.

The Transterse Suture, which ruws across the Opbitand root of the Nosc, between the Fronth1, Malar, Sphenoid, Ethnoid, Superior Maxillary, and Nasal Bones. Tab, III. $q, c, f$

The $X_{y g}$ omatic Suterres, pluced between the Tcmporal and Cheek Bones, and slanting obliquely downwards and backwards. - Tabn IU $t$.

The advantages derived truas tha Cranium being formed of different Boaes and Sutures arc, that the spheroidal figure is sooner completed; -that the Bones, which are at some distance from each other at birth, yield, and conduce to an easier Delivery;-that the Dura Mater, by the Sutures, has a firmer adhesion;-and that Fractures are frequently prevented from extending so far 28 they would do in one continued bony substance; which last cincumstance takea place in extreme old age.


## TABLESI.

## Represents a Front View of the Male Skeleton, with some of the Cartilages and Ligaments which connect the Rowfs to each other.

## Head and Neck.

A, The frontal bone.
B, The parietal bone.
C, The temporal process of the sphenoid bone,
D, The squamous part of the temporal bone.
$\mathbf{E}_{\text {, }}$ The imastoid process of that bone.
F, The malar, of check bone.
$\mathbf{G}$, The nasal hone ; behind which is the nasal process of,
$\mathbf{H}$, The superior maxillary bone.
I, The lower jaw.
K, The cervical vertebre, with their intermediate cartilages and transverse processes.

## Trunk.

A, The sternum.
B, The seventh, or last true rib.
C, The cartilages of the ribs.
D, The twelfth, or last false rib.
E. The lumbar vertebra, with their intervertebral cartilages and tranaverse processes.
$\mathbf{F}$, The as sactum.
G, The os innominatum, composed of
$a$, The os ilinm,
$b$, The os pubis,
$c$, The os ischium.

## Upper Extremity.

A, The clavicle.
Ba $_{a}$ The inner surface of the scapula.
a, The acromion of the scapula.
$b$, The coracoid process of that bonc.
C, The os humeri.
c, The head or ball of the os humeri, articulated with the glenoid cavity of the scapula.
d, The internal tubercle of the os humeri, and, farther out, the groove for lodging the teaton of the long head of the biceps muscle.
e, The imer, and,
$f$, The outer condyle of the os humeri. Between $e$ and $f$, The holtow for lodging the coronoid process of the ulna in the flexion of the fore-arm.
D, The radius.
$g$, The head of the radius.
$\mathbf{E}$, The ulna.
$h_{\text {, }}$ The coronoid process of the ulina.
$\mathbf{F}$, The bunes of the carpus.
C, The metacarpal bone of the thumb.
H , The metacarpal bones of the fingers.
I, The two bones of the thumb.
$\mathbf{K}$, The three phalanges of the fingers.

## Under Extreiaity.

A, The os femoris,
$d$, The ball or head of this bone, lodged in the acetabulum.
$c$, The cervix of the bone,
$f$, The large trochanter.
g, The small trochanter.
$h$, The inner condyle.
i, The outer condyle.
B, The patella, placed upon the trochlea of the os femoris.
C, The tibia.
$k$, The head of the tibia. Between the head of the tibia and condyles of the of femoris, the semilunar cartilages appear.
$\quad$, The tubercle of the tibia.
$n n$, The malleolus interaus.
D, The fibula; the upper end of which is connected with the tibia.
$n$, The malleolus externus.
$\mathbf{E}$, The bones of the tassus.
$o_{5}$ The projection of the os calcis.
$\mathbf{F}$, The inetatarsal bones.
G, The platanges of the toes. .

# TABLE II. 

## Represents a Back View of the Male Skeleton, with some of the Cartilnges and Ligagenta which connećt the Bones to each other,

## Head and Trusk.

A, The parictal bone.
a, The sagittal suture, and parietal bole.
B, The oceipital bone.
$b, b$, The lambdoid suture.
$\mathrm{C}_{\text {. }}$ The joining of the temporal and parietal bones.
D, The ebeek-bone.
$\mathbf{E}, \mathbf{F}$, The inner or back part of the jows, with the teeth.
G, The first cervical vertebra.
II, The second cervical vertebra.
I, The stieuth cervieal vertobra.
$c$, The spinous processes of the cervical rextebra.
K , The first dorsal vertebra.
L, The trelfth dorsal vertebra.
$d_{\text {, }}$ The spinons processes of the dorsal vertebra.
e, Their transverse processes.
M, The first lumbar vertebia.
t, The fifth lumbar vertebra.
f, Their spinous, and,
g, Their transverse processes.
O, The os sacrum.
h, The uppermost spirons process. Farther out are seen the superior oblique processes of this hone, juined to the inferior oblique of the last lumbar vertebra.
$i$, $i$, The lateral parts of the os sacrum, joined to the ossa innominata. Between $i$ and 0 , the posterior foramina of the os sacrum.
$k$, Au opening in the under and back part of this bone, covered in the subject by a ligamentous nembrane.
P, The as coccygis, joined by its shouldery to the as saerum, at the lower part of the opening $k$.
$Q$, The os ilium.
R , The os pubis.
$\stackrel{s}{ }$, The os ischiam.
T, U, The seven true ribs,
$V, V$, The five fulse ribs,

## Superior Extremity.

A, The claviele.
B, The dorsum scapulic.
a, The spine of the scapula.
$b$, The acromion of the scapula.
i, A fossa for lodging the supra-spinatus muscle,
d, An irregular surface, oceupicd by the infra-spinatus muscle.
C, The os humcri.
$c$, The ball of the os humeri.
$f$, The external tubercle of the bone.
g. The external condyle.
$k$, The internal condyle.
$i_{4}$ The cavity for lodging the olecranon of the wloa.
D, The radius.
$k$, The bead of the radius apticulated with the trochlea of the of hameri.
I, The under end of the radius, grooven by the tendons of museles.
E, The ulsa.
in, The olecranon of the ulna.
$n$, The under end of the alna, with the styloid process,
F , The bones of the earpus.
$G$, The metacarpal bone of the thumb.
H , The metzcaupal bones of the fingers,
1, The two bones of the thumb.
K , The three phalanges of the fingers.

## Inferion Extremity

A, The os femoris.
a, Past of the ball of the os femoris.
$b$, The cervix of the bone.
$c$, The trochanter major:
$d$, The trochanter minos.
c, The carity for lodging the popliteal vessels and nerve.
$f_{0}$ The exteraal condyle.
$g$, The interzal condyle.
h, The semilunar cartilages.
B, The tibia.
i, The liead of the tibia,
k, The malleolus interaus.
C, The fibula.
7, The liead of the fibula.
m, The malleolus exteraus.
D, The bones of the tarsus,
${ }^{2}$, The astragalus.
o, The as caicis.
$p_{3}$ The fore part of the tarsus,
E. The bones of the metatatsins,

F, The phalanges of the toes.


TAB.


# TABLE III. 

## A Front View of the Skull.

A, The frontal bone.
$a$, The temporal process, of cidge of the frontal bone.
$b$, The temporal fossa of that bone.
$c$, The superciliary ridge.
$d$, The foramen superciliare.
$c_{,} c$, The external and internat orbitar processes,
$f, e_{4} c$, The transverse 日uture.
$g$, The orbitar plate.
$h$, The kacrymal fosta.
B, The auder and fore part of the parietal bone.
C, The squamous part of the temporal bone.
$i$, The zygomatic process of that bone.
n , The pars plana of the ethmoid bone.
$k$, $k$, The ossa spongiuss superiora of the ethmoid bone.
E, The temporil plate of the spheaoid bone.
$l$, Part of the squamous suture.
m, The orbitar plate of the sphenoid bone.
$n$, The foramen opticum.
0 , The formmen lacerum of the sphenoid bone, and the foramen lacerum inferius of the orbit, the former above, and the latter below.
F, The os nasi; in the middle of which is a hole proper to this bone.
G; The os unguis.
$f$, The lacrymal gwove of the os unguis.

H, The os mala.
$q, q, q, q$, The four angles or processes of this boner
$r$, The internal orbitar process,
s, The external orbitar hole.
I, The fossa of the os maxillare superiua,
t. The base of the nasal process of the superior maxillary bone, where there is frequeatly such a hole as is marked in this figure.
$u$, The tuberosity at the back part of the bone.
es, The connection between the os male and os maxilture superias.
w, The connention between the superior masillary bone\%.
$r$, The alvenlar procerses, with the feeth.
$y$, The fossa nasalis.
z, The foramen infra-orbitarius,
K , The os spongiosum inferius.
L, The vomer.
M, The symphysis or middle of the lower jaw.
\& , The base of the lower jaw ;

1. Its angle;
2. The ascending plate which seads off the cononoid and condyloid processes;
3. The alveolar processes and teeth ;
4. The mental hole.

## TABLE IV.

A Profile of the Skule.

A, The os frontis.
$a$, The temporal process of this hone.
$b$, The temproxat fossa of the boac.
c, The superciliary ridge.
d, An elevation formed by the frontal sinus,
c, The external and intemal orbitar processes.
$f_{5}$ The foramen superciliare.
g, $h$, The orbitar plate.
$i$, Part of the lacrymal focsa.
$k, l$, That part of the transverse suture which unites the as frontis th the os planum and os umguis.
l, 7, The foramina orbitaria interna, anterius et posterius.
m, Part of the coronal nuture.
B, The os parietale.
$n$, The arched impression upon the surface of that bose.
0 , The squamous sinture.
$p_{9}$ Part of the lambdoid suture.
C. A small portion of the os oecipitis.
D. The pars squamosa of the temporal bone.
$q$, Part of the sqummous suture between the ternporal and sphenoid bones.
$r$, The middle of the temporal fossa.
of The zygomatic process of the temporal bane.
$t$, The aygomatic suture.
${ }^{4} 4$. The mastoid process of the temporal bone.
$v$ ) The meatus anditoriue externus.
${ }^{\text {H/ }}$ Part of the base of the pars petrosa.
E, Tbe pare plana of the ethmoid bone.
$\mathbf{F}$, The temporal plate of the sphenoid bone.
$x$, The foramen passle.
11, The ny unguis.
3/ The lacrymal fosm of the or unguis.
I, The of maliz.
$x$, The superior orbitar process of that bone.

1. The zygomatic, and,
2. 2. The maxillary proce
1. The orbitar plate of that boue.
2. The cavity for lodging part of the tempoml muscie.
3. The orbitar passage of the os male.

K , The maxillary fussa.
6. (6. The rutaged edyes of the oa nasi and os maxillare superius, to whicb the cartilages of the nose are fixed,
7. The angular process of the os maxillare superius.
8. The lacrymal fossu of that bone.
9. A duprestion of the os maxillare at the entranee of the orbit.
10. A portion of the orbit which belonge to the as maxillare.
11. The nitich at the opening of the nose.
12. The fommen infra-orbitarium,
13. 13. Several small holes in the os mf for 1 passage of blood-vesscls and nerves.
14. The spine or ridge, formed by the $t$ of the maxillaria.
15. 15. The malar processes to whieh $t \mathrm{k}$-tomin ifixed.
16. The large tuber, or bulge of the os maxillare.
17.17. Flevations of the alveoli over the roote of the teeth.
18. 18. The edge of the alveoli.

I/4 The lower jaw.
19. 19. 1ts base;
20. Its augles.
21. 21. Muscular prints.
22. The condyloid process.
23. The coronoid piocess.
24. The niteh betweeu these processes.
95. 25. The thay cedge of the corouoid process
26. The mental hole.
27. 27. The edge of the alveoli.

?
7.1/3. 5.


## TABLEV.

A View of the Inner Surface of the Base of the Cranium.

$a, a$, ThE upper edge of the zygoma. Between the antevior $a$, and the cut edge of the skull, a portion of the external temporal fossa.
$b$, The mastoid process of the temporal benc.
$c, c$, The extcmal surface of the occipital bone.
$A$, The left frontal fossa, marked with ridges and depressions.
d, Part of the froutal spine.
B , The foramen plared at the botiom of the frontal spine.
C, The cribriform plate of the cthmoid bonc.
c, The cuista galli.
$\stackrel{C}{D}$, The sella turcica.
E, The left anterior clinoid process.
E, The postecior clinoid process.
$f$, A small process of the sphenoid bone, projecting into the back-part of the ethmoid boue.
g, Part of the sphenoid suture.
h, The processus semi-olivaris.
G, The left temporal fossa of the splenoid bone.
H, The left transverse spinons process.
I, The foramen opticum.
$\mathrm{K}, \boldsymbol{i}_{\text {, }}$ A portion of the foramea lacerwm.
I, The foramen rotundhum,
M, The foramen ovale.
N , The foramen spinale.
\%, An impression made by the internal carotid artery,
$l$, The point of the pars petrosa of the temporal bone ; under which is the passage of the internal carotid artery.
At the fore-part of the process, in the shaded place, there is an irregular opening, which, in the subject, is
filled partly with bone, and partly with a cartilaginons ligameut.
O, The suture common to the sphenoid and temporal boucs.
P, The squamous part of the temporal bone, which completes the temporal fossa for the lateral lobe of the braiu.
Q, The ridge which divides the pars petrosa of the temporal bone into anterior aud posterior surfaces,
$m_{9}$ The posterion sunface of the pars petrosa.
$n$, The foramen innominatam.
o, A groove which lodges the superior petrossl sinus.
R, The meatus auditorius intervus.
S , The anterior part of the formen lacerum common to the temporal and occipital boues.
T, The posterior part of the same foramen.
V , The fossix for lodging a portion of the lateral sinus.
V , The cunciform process of the occipital bone.
W, The anterior condyloid foranen of that bone.
$\mathbf{S}$, The foramen magnum.
$Y$, 'The infcrior occipital fossa, which lodges the corresponding lobe of the cerebellum.
$Z, 7, p_{1}$, A fossa of the occipital bone for the left lateral sinus.
$\approx, z$, The inferior limb of the cruciform spine, running backwands from the foramen magnum.
$p$, Part of the lambloid suture.
g, A continuation of the fossa for the lateral simus.
;, A fossa for the inferior petiosal sinus.
$s, s$. The cut edge of the skull.

## TABLE VI.

The Outer and Under Surface of the Skull, turned a little to the Left Side.

A, The inferior posterior angle of the parietal bone.
B, B, The lambdoid suture.
$C, C$, The large trausverse arch, ridge, or spine of the occipital bone; the upper and outer part of which gives rise to the occipito-frontalis, and the middle to the trapezii muscles.
C, $m_{4} \mathrm{C}, \mathrm{m}_{9}$, Depressions made by the insertions of the complexi museles on that bone.
$n$, The spinous tubcrasity, observed ouly in some skulls.
$i, i$, The perpendicular spine. Between $m$, $m$, and the hack-parts of the temporal bones, are impressions made by the splenii muscles.
$l_{4} l_{9}$ The smaller transverse ridge or spine.
$k, k$, The cavities where the recti minores muscles are inserted. On the outer side of these cavities, the obliqui superiores and recti majores make impressions.
$\mathbf{D}$, The foramen magnum.
F , The cuneiform process.
$\mathbf{F}, \mathbf{F}$, The condyloid processes.
$h, h_{7}$ The tuherosities at the roots of the coudyles, which give attachment to the capsular ligament of the first vertebra.- The $h$ placed at the root of the left condyle, points out the superior condyloid hole.
G, $\mathbf{G}$, The posterior condyloid holes.
$\mathrm{H}_{4}$, The squamous portion of the temporal bone.
I, I, The squamous suture.
$\mathbf{K}$, $\mathbf{K}$, The mastoid processes.
$f, t$, The mastoid fissures.
$u_{4}$ The formmen mastoideum.
I., The root of the zygoma ;
$p$, Its articular process.
M , The styloid process; behind the root of which the foramen stylo-mastoideum is concealed.

N , The meatus anditorius exteruus.
0 , The glenoid cavity, for the articulation of thelower jaw.
9 , The gienoid tissure.
$P_{4}$ The foramen caroticum.
Q, The thimble-like cavity, or jugular fossa.
$\mathbf{R}, \mathbf{R}$, The pterygoid fossir, at the outer sides of which are the external pterygoid plates.
$V$, The internal pterygoid plate.
W, The book-like process, round which the circumflex muscle of the palate moves.
S, The temporal process of the sphenoid bunn.
T, The spinous process and spinous hole of that houe.
7. The osbeous mouth of the Eustachian tuhe.
$\mathbf{Y}$, The forames ovale.
si \&, Passages common to the temporal and ophenoid bozes.
X, The foramen pterygoideum.
Z, The inferior orbitar fissure.
a, The under part of the tuberosity of 11 . uper i'maral lary hone.
$b$, The palate process of that bone.
c, The foramen incisivum.
$d$, The internal surface of the on malie, which contains \& portion of the temporal muscie.
a. The under edge of the zygomatic process.
$o_{4}$ The zygomatic suture.
$f$, The palate process of the palate hone.
5. 6. The superior and inferior spongy boues.

ह. The posterior edge of the vomer.
4. The foramen gustativum.

1. 2. 3. 4. The dentes incisores.
2.2. The deutes canini.
1. \&ce. The dentes molares.

Zitso


fig. 2


Fig. 3


## TABLE VII.

## A Back View of the Skull, with the Additional Bones called Ossa Triquetra.

## FIG. I.

The SkuLl seen from its Posterior and Left Side.
$a$, The frontal bone.
b, Part of the temporal fossa of that boad.
c, $c$, The parietal bones,
d, The conoalal suture.
$e_{7}$ The sagittal suture.
$f_{4} f_{7}$ The lambdoid suture.
$\mathrm{g}, \mathrm{g}, \mathrm{O}_{\text {ssa }}$ triquetra, between the lambdoid and sagittal sutures.
$h, h$, The foramiux parietalia,
$i, i$, The arched impression of the left parietal bone.
$k$, The occipital bose.
I, Part of the large transverse arched ridge of that bone.
$m$, The squamous suture.
nt, The squamous part of the temporal boae.
$o$, The mastoid process.
$p$, The zygoma.
q, Part of the meatus auditorins externus.
$r$, Part of the teanporal fossa of the spheaoid bone.
s, The temporal lossa of the temporal bone.
t. The outer suriace of the orbitar process of the cheek. boae.
$v$, The zygomatic suture,
e, The superior orbitan process of the cheek-bone.
$w$, Pat of the superior masillary bone.
$x$, Part of the outer plate of the pterygoid process.
$y, y$, Some of the teeth.
FIG. 2.
A Portion of the Cpper and Back Parl of the Chantum, with Ossa TriqueIra.
$a, a$, Part of the parietal bones.
$b_{7}$ A portion of the sagittal suture.
$c$, $c$, The parietal foramina, uncommonly large.
$d_{4}$ The upper part of the occipital boac.
$c_{9}$ Part of the tambdoid suture.
The osss triquetra are seeu between the occipital and parictal boaes, varying considerably in figure and size.

FIG. 3.
An additional piece of Bone in the Site of the Cranium, inclosed by a dowble Squanous Stuture, and forming a kind of $\mathrm{O}_{s}$ Triguctrum.

## TABLE VIIA.

In this Table are represented the Outines of Six Skull-Caps taken from Adult Bodies, to shew how far the Human Cianium differs in its Form. The Figures are drawn about one.fourth of the original Size.

FIG. 1. 2. 3. 4.
Are from Natives of Britain.

FIG. 5.
Is taken from the Skull of an Egyptian Mumny? preserved in the Museum of Natural History belonging to
the University of this place. The Skull-Cap is remarkable for its length and narrowness.

FIG. 6.
Is from the Skull of a Person of this Country, though the history is unknown. It corresponds with the Subject of the former Figure in its diminished breadth, and great degree of tength.



## TABLE VIIB.

This and the two following Tables represent a few of the Characteristic Differences in the Skuls of People of different Nations. The Figures are only about a fourth part of the Size of those from which they are taken.

## FIG. 1.

Gives a Side View of the Cranium of the Mlummy represented in Fig. 5. of the former Table. It is remarkable not only for its length aud narrowness, but for the strong impression made by the Temporal Muscle, and for the sharpness of the Arches of the Forchend and Occiput. The Cranium from which this Figure is taken is filled with Pitch.

## FIG. 2.

Shews the Skull of another Esyptian Munmm. The Cranium is narrow and compressed at the sides, especially towards the Vertex. The Forehead is small, and elegantly arched; but the Face, from the root of the Nose to the point of the Chin, is elongated.

## FIG. 3.

Represents the Skull of a Tu\%k, which is singular for its spheroidal form. The Occiput is small, and the Foramen Magnum Occipitis is placed near the extremity of the base of the Cranium. The Forehead is broad, the Glabella prominent; the Alveoli of the Upper Jaw age short, and the Nostrils nastow.

FIG. 4.
This Figure exhibits the Skull of a Hindoo. The Cranium is smaller, but the Face rather larger in Prnpurtion than in the European. The Os Frontis is elegantly arched, and uncommonly narrow. The Orbits are large, and the Anterior Nares small. The Facial line approaches to the perpendicular.

## FIG. 5.

Is the Skull of a Lascar. Like that represented by the former Figure, the Craniam is smaller than in the Enropean, but the Bones composing it are uncommonly thick. The Ossa Nasi protrude more, and the Superior Maxilla is deeper fiom the Nose downwards than that represented in the lormor. Figure.

## FIG. 6.

Shews the Cassan Turtar: This Cranium is considered by Bluninasch as an elegant one. Here the Forehead is large and moderately arched; the Nusal Bones are well formed, descending in a proper direction from the Forchead. The Incisor Teeth of the Epper Jaw project considerably; and the Chin is somerwhat prominent. The Occipital Spine is wanting.

## TABLE VIIC.

## FIG. 1.

This Figure represents the Skull of a Tungasan. Here the Face appesurs lat, and broad towards the Zygornatic Arches. The Fprehead is depressed; the Olfactory Organs large ; the Occiput in the Caraium fiom which this Nigure is taken, is observed to be remarkably prominent behind.

FIG. 2.
Exhihits the Skull of a Coseacti. The aspect is altogether disagreeable to the eye. The Orhits are deep, depresced, and widely separated. The Superciliary Arches are prominent, and almost conjoined. The opening of the Nostrils is large and patulous. The angles of the Lower Jaw are turned outwards.

## FIG. 3.

Represents the Skull of a New Hollauder: The $\mathrm{Os}_{\mathrm{s}}$ Erontis is large, and a little flatteued. The Supereiliary Arches are elevated. The Orbite are long, when taken in a transwerse direction. The Ossa Nusi are short, and the Anterior Nares large. The under and fore part of the Upper Jaw is a little prominent, and the lower Jaw longer than in the European. The whole Skull bears a considernble resemblance to that of the Ethiopian.

FIG. 2.
Is the Shull of a North Amcrican Intian Chirf. Thr

Vertex is depressed, and the Craaium is uncommonly wide over the Teaples. The Malar Bones are somewhat promiaent, and the Conche excavated an into 2 Bulla. The Ollisetory Organy are exteosive, the superciliary Ridges large and arched. The racial hine anclines to the perpendicular. The Occiput is broader than in the Europeab. The Incisor Teeth are uncommonly small, but sharp. The Skull is light, and ull the Bones of the Cranium small,

FIG. 5.
Shews the Skull of an Esquinath, which Buumenbach considers as holding a place between the Cranium of tha Mongal and that of the American. The Face is flat, nond the projection outwards of the Malar Bones is less that in the Mongal. The Nose is small, but projects morr than in the people of that nation. The Basilar Fonsa is wide, but shallower; the Chin shaup and promi nent.

## FIG. 6.

Is the Skull of an Otalestean. The Cranium is rather nagrow, but the Bregma is protuberant. The Upper Jaw is somewhat prominent, approacling t\& that repre. sented in Fig. 3. but the Lower Jaw is shorter thau in that Figtre. The middle of the Forehead zand Occiput are wider than nsual. The Suprrciliary Auches are a little raised, and the whole Skull has thr appearance of great strength.



## TABLEVIID.

FIG. 1 .
The Skull of a Calmuck, in which there is great appearance of thickness and strength. The Cranium somewhat resembles that of the Negro in the flatness of the Occiput, the retreating Forehead, and the impression made by the action of the Temporal Muscles; hut the Face is very different. The Malar Bones project more, hut the Maxillary less, than in the Negro. The dise tauce between the Check-Bones, and the general appearance of the Face, is so remarkable, that, according to Camper, the Caluuck is the ugliest of all the inhabitants of the earth.

## FIG. 2.

Represents the Skull of a Carib- The Forehead is remarkably flattened, which is said to be from pressure applied to it at an early period of lifc. The side of the Cranium is strongly maiked by the Temporal Muscle. The Boues occupying the place of the Bregma are remarkably high. The Frontal Sinuses scarcely appear. The Superciliary Arches are small. The Orbits are large, spreadnag, and somewhat oval when taken transversely. The Olfactory Organs are large; the Superior Maxilla very prominent; the Basilar Fossa large, hooad, and flat. The Cranium is situated so wuch backwards, that the Skull, being placed upon the Table with the Under Jaw removed, the Maxilla Superior rises so much, that it does not touch the table. By this the Negro Skull can generally he dis* tinguished from the European.

FIG. 3.
Shews the Skull of the Ethiopian. All the Bones here are foumd to be thicker, beavier, and stronger, than in the European. The Prominences and Depressions are
more couspicuous, The Lider Jaw 45 remarkahly strong, and the sides of the Cranium decply depressect by the Temporal Muscles. The Os Frontis is narrow, nad fatter than in the European. The Zvgouatic Processes are much arched. Thic Malas Bones are large, promincint, aud qquar. The Antraz Masillaria are larger than in the European, but the Ossa Nasi are smaller and more depressed. The Orbits are larger and deeper, more like those of thir Simix. The Cavity of the Nose is observed to be broad and large, like that of the Ancrican Indian ; hence is supposed to arise the acuteness of swell pcculiar to thesenations; but no payt of the Negro Skull is so remarkable as the projection of the fore part ot the Alveolar Processes of the Maxillary Bones. Those are evidently more prominent than in the Skulls of any other nation ; so wuch 60, that there is a strong similarity to the Jaws of the Ape tribe. In the Negro, the Chin also retreats a little, approaching to that of the Monkey. The space between the Incisor Teetz and the Nose is longer. The Tceth have more of an oblique direction, and are larger and firmer than in the European. The Occiput is narroncr and flatter, aud couverges more to a point behiud. The foramen Magnum is more oblique, and is placed nearer the Occiput. By this obliquity, the Face of the Ethiopian is more elevated, and the Head thrown more backwards, thau in the European.

## FIG. 4. $\& \angle 5$.

Represent the Skulls of an Oerang-Outang, and the Siz mia Caudata, or Long-tailed Mlonkey, to shew the direction of the Facial fine, when compared with that of the Human Skull. In the Ourang, (Tig. 4.) the ligh Forehoad gives the Animal a sort of resemblance to the Humas Facc. In the Monker, the great size of the Maxillary Boncs, comparcd with the Clanjum, gives more the appearance of the Caninc ance.

## Os Frontis.

Ture principal thiugs to be attended to in this Bone arc,

The Siturtion of the $\mathrm{O}_{s}$ Iroatis in the fore part of the Craniun, 'Tab. III. A.
ltg Shape, which has been compared to that of a Clamshell, or to the Concha Büalowis, or Cockle. Tab. VIIL. Fig. 3, 4.
Its external Surface smooth, and above convex, being little impressed by muscular action. Tab. VIII. Fig. 3.

The external and internal Angular, or Orbitar $P$,ocesses, forming part of the Orbite. Tab. V1ill. Fig. 3. $c, c$.

The Superciliary Ridges, on which the Eycabrows are placed, extending between the exterial and interual Angular Processes on each side. Tab. VIII. Fig. 3. ht, h.

Projections, gencrally seen above the inner. ends of the Superciliary Ridges, indicating the situstion of the Cavities called Frontal Sünuses. Tab. IV. d.

The Nasnl Process, placed between the internal Angular Processea, and forming part of the Nosc. Tab. VIII. Fig. 3. f. Fig. 4. h.

Part of the Tenporal Process, or Ridge, on each side, behind the external Angular Process, which forms the boundary between the Temporal and Frontal Muscles. Tab. IV, a.

The Orbitar Processes, or Plates, which, contrary to the rest of the Bone, are bollow below, and extend a considerable way back, to form the upper parts of the $\mathrm{Or}_{\mathrm{r}}$ bits for. lodging the Eyes and their Appendages. Tab. VIII. Fig. 3. $k, k$.

The Orbitar Plates are rendered so thin by the pressure of the Brain and Fye on the opposite sides, that they become transparent, and the Cancelli, especially in ald people, are obliterated.

The Simucosity at the upper part of the Orhit, hehind the outer end of the Superciliary Ridge, on each side, for lodging the Lacrymal Gland. Tab, III. h.
Behind each internal Angular Process, 2 small Pit, to which the Cartilaginous Pulley of the Superior Oblique Muscie of the Fye is fived.

The Temporal Fasse, behiod the Temporal Process, for lodging part of the Muscle of that name. Tab. VIII. Fig. 3. $d$.

The Opening between the Orbitar Processes, for receiving the Cribriform Plate of the Ethmoid Bone. Tah. VIII. Fig. 4. p.

The Foramen Supra-orbitarium, a litle to the inner side of the middle of each Superciliary Ridge, through which a hranch of the Ocwlar Artery, and part of the

Oplithalmic Branch of the Fifth Pair of Nerves, pass to the soft parts of the Forchead. Tab. 111. d.
In some Skulls, the Vessels and Nerves are lodged in Furrows on the surface of the Bone.
Frequently, instead of a Hole, a Notch ouly is seen, the Vessels and Nerves then passing over the Superciliary Ridge; or two Holes in one side, and one in the other, \&c.
The Faramina Orbitavia Interma, Anterius ef Paveriuc, between the Orbitar Plates of the Frontal and Bithnoid Bones, and about three-fourths of an inch distant from each ocher; through which stall Twigs of Nerves from the first part of the Fith Pair, and of Arterics from the Ocular Artery, pass into the Nose. TAb. IV. l, l.

Small Perforations are found upon the under and fore part of the Froutal Bone, for the transmission of very minute Arteries or Nerves into the Siusses, or to the Suhstance of the Bone.
The concare inner and fore part of the $\mathbf{O}_{6}$ Frontis, for lodging the Anterior Lobes of the Brain.
The conres under parts, for supporting these Lobes, and covering the Eyes. Tab. V. betwera $5, ~ g$, and the fore-part of the Cramum.

The Ridges and Depressions of the Orbitar Processes, marked by the convolutions of the Brain. Tab. V. A.
Small Furroucs on the inside of the Bouc, for lodging the Bloodovessels of the Dura Mater. Tab. VIII. Fig. 4.
Slight Sizhoositien, more evideut on the under than on the apper part of the Bone, occasioned hy the consolutions of the anterior past of the Brain. Tah. V. between g. 5 , and the fore pait of the Bone.

The Froatal Spine, in the middle of the under part of the Bone, formed by the coalescence of the inner tables, for the attachment of the Falx of the Dura Mater. Tab. VIII. Fig. 4. $c$.

In such Skulls as lave the Sagittal Sutare continued to the Nose, the Frontal Spine does not appear; the inuer Plates, in such cases, not having grown together to form it.

The Frontal Furrou, extending upwards from the Spine, for lodging the upper part of the superior Longi-. tudinal Sinus of the Dura Mater, and for the attachment of the Falx. Tab. VIII. Fig. 1. d.

The Foramen Cacrma at the under part of the Spine, for the reception of a Process of the Falx, and of small Blood-vessels which penetrate into the Nose, or to the substance of the Bone. Here also the superior Lougitudinal Sinus takes its origin. This Hole is frequently. common to the Frontal and Ethmoid Bones. Tab. VIII. . Fig. 4. o, Tab, V. B.

The Frontal Sinusies, placed behind the inner ends of the Supenciliary Ridges, about an inch in height, and somewhat more than that in breadth, and, in some Skulls, forming prominences near the noot of the Nose. Tab. IV. $d$.

The Fralls of the Sinuses, fomied by a separation of the Tables of the Bone; there being no Diploe here.

The Partition between them phaced perpendicularly, and preventing thern from having any communication with each other.

Their capacities vary much in different Subjects, and they are firequently unequal in size in the same Body. In some they are wanting, which is oftener found to happen in persons having a flat Forelead, and where the sagittal Suture is continued to the Nose. In otherri, they are so large as to extend from one side of the Frontal Bone to the other. In some Skulls, each of these Sinuses has partial partitions, and, in others, one Sinus occupies the place of two,

A Communication which they sometimes have with each other. Tab. XIII. Fig. 1. C.

At the inner and under part of the interoal angular Process, a small round Passage from each, leading into the Cavity of the auterior Ethmoid Cells, and from theace to the Nosc.

The Frontal Sinuses add to the streagtb and melody of the Voice, hy warving an a vanlt to azsomed the notes. Hence, in a atoppage of the Nose, by disease or utherwise, the Voice is rendered harsh and disagreeable.

The Frontal Bone serves to defend and aupport the Anterion Lobes of the Brain. It forms a conbiderable part of the Orbits of the Eyes, assists in forming the Seprom Narium, Organ of Simelling, \&cc.

In a Fcetes of nine months, the Os Frontis is divided through its middle into two l'ieces, which are incomplete at their upper and back part, where they assigr in the formation of the Bregma or opening of the Head. - The Su. perciliary Holes and Frontal Sinuses are not yet formed,


## TABLEVIII.

## Views of the Upper Part of the Cranioma and of the Frontal. Bone.

## FIG, 1. <br> Represents the $\boldsymbol{U}_{p \text { per and }}$ Outer Surface of the Crantus.

$a$, The frontal bone.
$b, b$, The coronal suture.
$c_{2} c_{2}$ The parictal bone.
$d, d$, The sagittal suture.
$c, e$, The parictal holes.
$f$, Part of the occipital bone.
$g, g$, The middle of the lambdoid suture.
FIG. 2.

## A View of the $U_{P p e r}$ and Inner Surface of the Cranium.

2, The nuter and fore part of the frontal boze. $i, i$, Prints made by the blood-vessels of the dura mater. $k, k$, The sinuosity where the upper part of the falx is fixed, and the superior longitudinal sinus is lodged.
4, l, Pits fivequently found; the larger occasioned by tuxuriancies of the brion, and the smaller by the glands of Pacchioni, or by the meeting of blond-vessels of the dura mater.

FIG. 3.

## The Outer Surface of the Frontal Bone,

a, The middle and conver part of the frontal bone.
$b, b$, The elevations of this bone.
$c$, The muscular print of the left side.
d, Part of the teruporal fossa.
e, $e_{3}$ The external and internal angular processes, $f$, The nasal process.
b, $g$, Fminences and cavities, to which the cuasal and maxillary bones are fixed.
$h$, $h$, The superciliary arches.
$i, i$, The superciliary holes.
$k$, $k$, The orbitar plates.
1,1 , The lacrymal fosse.
$m, m$, The foramina orbitaria interva.
$n, n$, The inequalities which unite the frontal to the spheaoid bone.

## FIG. 4.

## The Ither Surface of the Frontal Bone.

a, The internal concere prasl of the frontal bone.
$\hat{b}$, The cavity which hodges the auterior lobes of the brain. $c$, The frontal spine.
$d$, A furrow where the falx is fixed, and the superior longitudinal sinns is lodged.
c, The ragged edge of the bone, which assists in forming the coronal suture.
$f, f$, Other inequalities, which join the frontal to the sphenoid bone.
$g+g, g, g$, The imer surface of the four angular processes, $h$, The posterior surface of the nasal process.
$i, i$, Other inequalitus uear the nasal process.
$k, k$, The orbitar plates.
l,l, The lacrymal fosse.
$m, m$, Cells which correspond with those of the ethmoid bone.
$n, n$, Passages from the firoutal sinuses.
0 , The foramen cacum.
$p$, The opeaing which receives the cribriform plate of the ethmoid bone.
$q, q$, The furrows which lodge the blood-vessels of the durz mater.

## Ossa Partetazia.

The paxts here to be aticuded to are,
The siturtion of the Ossa Parietalia, in the npper and Lateral parts of the Cranium. Tab. IV. B.

The figure of each Parietal Bone a Trapczium, or approaching that of a Square. Tab. IX. Fig. 1. 2.

The upper edge longest. Tab, IX.
The anterior edge next in length. Tab, IX.
The posterior edge shorter. Tab. IX.
The inferior shortest, and in form of a ragged arch, to be couneeted to the upper rounded edge of the Squamous part of the Temporal Rone. Tab. IX.
The thice first ellges of the Bone ragged, where they assist in forming the true Sutures. Tab. IX.

The corners of the Bone abtusie, excepting the undor anterior, which forms a kind of Process, Tub. IX.
The external surface of the Bune, smooth and conver. T.ib. 1X. Fig. 1.

The Tinusiorse arched Ridge, or Line, firequently of a whiter colour than the rest of the Bone, placed exterually a little below its middle height, for the origin of the Temporad Muscle. Tab. IV. n.

The radiated Fuarous at the under part of the Bone, formed by the L'ibres of the Temporal Muscle. Tab. IV. a.
Near the semicircnlar cdge, many ineqnalities, which join similar inequalities on the inside of the Temporal Bone, to form the Squamous Suture.

The Foramen Parietale, near the upper and bark part of the Roase, for the transmission of 2 Vein from the Integuments of the Head to the superior longitudinal Sinus ; and sometimes of a small Branch from the Temporal or the Occipital Artery, to the Falx of the Dura Mater. Tab. Vilf. Fig. I. 2.

In several Skulls, one of the Parietal Holes is wanting ; in some, two are found in one side; in others, none in either.

The internal concare surfice of the Bone.
The Furnous made by the Blood-vesrels of the Dura Mater; the principal of which begin by a Truak at the under and fore part of the Bouc, Tab. IX. Fig. 2. wheng frequently a full Cgnal is formed, which ought to
be attended to by Surgeons in the operatiou of the Trepan over this part.
In their progress upivarde, the Furvowe divile iste many Branches, and trequently small pasmageo are ocea running from these into the Diplue.

The dicpirssiun at the upper edge of the Bone, for the attachnrent of the upper part of tbe Falx, and lodge. ment of the superior lougitudinal sinus. Tab, vils. Fig. 2. This is most distinctly scen wheu the Bones are conjoined.

The depression for the longitudinal Sinus, like the Sinus itself, becotnes larger in its couree backswands; and frequeutly it is larger in one Boae than the other.

The Foassu at the under and back part of the Bone, for lodging a suall part of the lateral sinus. Tab. IX Fig. 2.
Numerous depressions found on the inside of the Boos, occasioned by the prominenced of the Brain.
The connection of the Parietal Bones to the On Fron tis by the Coronal, and to each other by the Sagital S ture. Tab. VIII. Fig. 1. $b, b, d, d$.

The Parictal Bones have the two Tables and Diplor the completest, and are the most equal ave amooth of any of the Cranium.

In the Fortus, the sides of the Parietal Bones are in complete, and there is no Harietul Hole. Between the Parietal Bones and the middle of the divided $\mathrm{U}_{9}$ Fromtin, there is a large interstice, terned, in common language Opening of the Itcad, and by Anatomisth, Bregma, Fons, or Fontanclla, from its having been supposed by the Anciente, that through it the enperfluous Humours of the Brain are evacuated. Tab. XI. B.

The Bregma is occupied by a strong Ligamentom Membrance, which adheres firmily to the ragged edges of the Bones, and is lined-witthin by the Dura Mater, and covered exterually by the Perieranium.
The whole of the Bregma is generally oarified by twog though somet inces not till near seven years of age ; and it In=s sometimes, though very rarcly, been found open in the Adult.

## Os Ocemitis.

Here attead to,
The situation of the Occipital Bone in the back and nuder part. of the Cranium. Tab. VI.

Its rhomboil figure, with the angle above geuerally a titte romaded. Tab, IX, Fig. 4.
The two hateral Angles obtuse. Tab. IX. Fig. 4.
The external surface convex, and snizoth at the upper part. Tah. IX. Fig, 3.
The large Arrhed Hidge, rumning across the Bone, near the roiddle of the convex surfuce, to the centrc of which the Trapezii Muncles are fixed, the outer parts giving origin to the Oecipitowfontalis, Tab. IX. Fig. 3. $\alpha_{1} c_{7} c_{\text {. }}$
The smaller Auch, half-way between the former and
the pussate termed Foranaen Magnum. Tab. IX. Fig.S. $g, h, h$.

The depressions between the middle of the lange and small Arches, for the connection of the Complexi Muscles.

The inpressiuns betweco the Archew and the Temporal Bones, for the attachment of the Splenii. Tab. IX. Figh. 3.

Cautics hetween the amaller drich and the Fermuen Magrum, for the reception of the Recti Minorrs, and impreasionu mude, more externaily by the Hecti Majores and Obliqui Superioreo. Tab. IX. Fig. 3.

The perpendicular Spine, of inconsiderable size, rubning through the middlc of the two Arches, and ocparating the Museles of the opposite sides.

The unequal edges of the Forances Mtagnum, for the iesertiun
insertion of the Ligaments, by which the Head is fixed to the Vertebre of the Neck.

The infecrior Angle, contraxy to the rest of the Bone, flattened and stretched forwards in form of a wedge; hence called Cunciform, or, from its situation, Dasilar Procest, Tab. IK, Fig. 3.p.

The unequal Surface of the Cunciform Process, for the attachment of the Recti Anteriores Musclen.

The Condyles piaced at the base of the Cuneiform Process, and at the fore and luteral parts of the Foramen Magaum, for the articulation with the Allas, or first Vertebra of the Neck. Tab. IX. Fig. 3. I, I.

The oval form and smooth Cartilaginous surface of the Condyles, corresponding with the superior ariculating Processes of the Atlas.

The Condyles rum obliquely formands and intward, and are deepest at their inner parts; in consequence of which they are prevented from sliding to either side out of the Cavities of the Atlas.

In some Subjects, each of the Condyles is more or less divided transsersely, giving the appearance of two Prom minences.

Round their roots, the surface is unequal, for the attachment of the Capsular Ligzmeuts connecting this Bone to the first one of the Neck.
The rough Prominences between the Condyles and Mastoid Processes of the Temporal Rones, for the insertion of the Recti Capitis Laterales Muscles; and, anterior to these, the Semilunar Notcles which form part of the Holes common to the Temporal and Occipital Bones. Tab. VI, between $\mathbf{F}$ and K .
The Flexion and Extension of the Head are performed at the Condyles, hut they are found to be placed behind its centre of gravity, which affords space for the Mouth, Thrbat, \&ec. ; and the Head is prevented from falling forwands by the constant action of the strong Extensor Muscles, placed on the back part of the Neck.
The internal Surface of the Bone hollow, for containing the back paxt of the Brain. Tab. IX. Fig. 4.

The Crucyform Spine of the inner side, formed by two Ridges, the one placed perpendicularly in the middle of the Boae, the other crossing the first in a horizontal direction. Tab. IX, Fig. 4. $a, f, b, b$.
The upper Limb of the perpendicular Spine kollow in the middle, or fiequently at one side, for the reception of the superior longitudinal Sinus, and the attachment of the Falx. Tab. 1.. Fig. 4. a-b.
The lateral-Limibs, placed opposite to the great external arched Spine, and hollow in the middle, for containing the lateral Sinuses, and giving attachment to the Tentorium Dure Matris. Tab. IX. Fig. 4. b, b.
The hollow in one of the lateral Limbs, and more especially the right oue, is frequeutly the continuation of that made in the perpendicular Spine by the longitudina!

Sinus, and therefore is often larger than the other, which, in such cases, is occupied by a continuation of the Vein termed Torcular Heropami.
The lower Limb short, for the attaclument of the Falk Miuor, and sometimes hollow, the the reception of an Occipital Sinus.
The Fosser at the sides of the upper Limb, for containing the posterior Lobes of the Cerbrum. Tab. IX. Fig. 4. $c$, e.

The Foust at the sides of the lower Lind, for containing the Cerebellum. Tab. 1X. Fig. 1. c, e.
Auterior to the Fossa for lodging thi Cerebellum, tuo Cavities for receiving the lateral sinuses, previous to their leaving the Cavity of the Cranium.
The cmarase suifface of the Cumeiform Process, for receiving the Medilla Oblougata and Basilar Artery. Tab. IA. Fig. 4. $n$.
The depresions at each side of the Cumeiform Process, where the infetior Petrosal tinuses are placrd. Tab. V. $r, r$

The Foramen Mragnum, behind the Basilar Process, and between the Condyles, tor the passage of the M!ciulla Oblongata, Yertebral Blood-veasele, and Accesoory Nerves. Tab. Y. X.
The supervior or auterior Condylord Foraming, zt itin sides of the Foramen Magrum, and in medrately ores .. Condyles, for the passage of the ninth par at Nuisa. Tab. IX. Fig. S. $n, n$.
The postarior Condylorid Foratrina, at the back paut of the root of the Condyles, for the passage of lenus from the Occiput, or from the Ycitebral Vews, into the lateral sisusce, near their terminhations. Tab. IA, m, mt.
Frequently one of the posterior Condyloid Foranimu is wanting ; sometimes hoth, when the leins pass through the Foramen Magnum.
Besides the Holes above taken notice of, others are often found, near the edges of the Bone, for the transmission of Veins, the number and size of which are uncertain.

The connection of the Bone to the Ossa Parictalia, by the Lambdoid Suture. Tab, VII.

This Bone is among the thickest of the Cranium, though very unequal; being thick and strong above, where it is little impressed by Muscles, and so thin below; where it is pressed by the weight of the Cerebellum internally, and affected by the action of the Muscles exterually; as to be in many Skulls rendered transparent. But the thick Muscles and strong Spine of the Bone assist greatly in preventing injuries frou liappening here.

In the Foctus, the Occipital Bone is divided into four preces; the first, which is larger than the other three, forms all the part of the Bone above the Foramen Magnum ; the second and third are placed at the sides of that Foramen, and constitute alinost the whote of the Condyies ; and the fourth forms the Cureiform Process.

## ' A BLE EX.

Views of the Parietal and Occipital Bones.

## 1IG. I.

The Extenal Surface of the Right Parietal Bone. $a$, The middle convex part of the bone.
$b, b$, The upper ragged edge of the bone, which, when joined to its fellow, forms the sagittal suture.
$r, c$, The anterior edge, which assists in forming the cow ronal suture.
d, The posterior edge, which joins the oceipital bone, and assists in forming the lambdoid suture.
$e, e$, The inferior semilunar edge, which is joined to the prars struamosa of the temporal hone.
$f$, The parietal bole.
g) $g$, The arched ridge of the parietal bone, which gives oririn to a large share of the temporal muscle.
$h$, The antcrior and superios angle of the hone.
$i$, The anterior-interior angle.
$k, k$, The posterior augles.

## FIG. 2.

## The Internal Surface of the same Parietal Bonz.

$a$, The middle intermal concave part.
$b, b$, The inner surface of the upper edge of the bone, where the indeotations axe more apparent than those of the outer nide.
$r$, The inner orifice of the parietal hole.
$d, d$, The auterior serrated edge of the bone.
$e, c$, The posterior edge, more strongly marked with indentatioue than its anterior edge.
$f, f$, The superior angles.
g) The infcrior-anterior angle, where the beginning of the furrow is seen, whiek lodges the trunk of the principal artery of the dura mater.
$h_{n} h_{n} h_{3} h_{\%}$ The ramifications of that furrow.
$i$, $i$, Small forrows of the bone, which correspond to its posterior-infecior angle.
$k$, A depression which lodges part of the lateral sinus.
f, The raterior edge of the bonc, considerably thimer than the rest.

FIG. 3 .
A Tiew of the Ezteraal Surface of the Occifital Bone.
$a_{4}$ The superior aogle of the bonc.
$b, b$, The ragged edge of the banc, which assists in forming the lambdoid suture.
$c, c$, The irregularities at the lateral and inferior parts of the bone, where it is joined to the oess temporum.
d, e, e, The large transwerse arched ringe, or spiac.
$e, c$, Muscular prints apon the transverac ndge.
$f$, The perpendieular spine.
$g$, The smaller arched ridge, nunning acrass the spue of the bone.
$i$, $h$, Muscular prints above the foramen maguum.
$i$, $i$, The edge of,
$k$, The foramen magnum.
7, $I$, The occipital condyles.
$m, m$, The posterior condyloid foramina.
$n$, $n$, The inner side of the left, and outer side of to right anterior condyloid foramina.
$\mathrm{O}_{9} \mathrm{O}$, Nitches which assist in forming the holes commons to the occipital and temporal bones.
$p$. The extremity of the cunciform process, upon which are seen,
$q, q$, Prints which give origin to some of the flexor muse cles of the head.

FIG. 4.

## The Internal Suafice of the Occipital Bone.

$a$, The superior angle of the bone.
$b, b$, The middle, or lateral angles.
$c, c$, dsc. The eminences and eavities which assist in forming the laubdoid suture.
$d$, $d$, The superior ocelpitial forssa, which lodge is share of the posterior lobes of the cerebrum,
$e, c$, The inferior orcipital fosse, which lodge a part of the eerebtllum.
$f, f$, The extremities of the crucial ridge or spine. The undernost $f$, points out the attachment of the falx minor.
g, The fossa which lodges the superior longitudinal sinus, and has the falx fixed to its edges.
$h$, The middle of the crueial ridge.
The fossic which lodge the lateral sinuses, and have the tentoriun fixed to their edges, are included between the letters $k, b, b$.
$i, i$, The openings of the os occipitis, which form part of the formina lacera, common to the occipital and temporal boues.
$k, h$, The suall processes of the os occipitia, which assist in forvaing part of the foramina lacerz.
1, 1, The internal orifice of the posterior condyloid holen.
i", The anterior condyloid lole of the on occipitis of the right sile.
$n$, The concave surface of the cuneiform process.
0 , The incqualitiey of the cunciform process of the os oc. eipitis, by which it is united with the sphenoid bose.
$p$, The foramen maguum.

Tits 9

Fial. 1.


Fig 3



## OSSA TEMPORUM.

In these we observe,
The situation of each Temporal Booe in the under and lateral part of the Craniums. Tab. IV. D.
The Squamous Plate, which forms a part of the Temple, and gives origin to a portion of the Temporal Muscle. Tab. IV. D.
The Squamous Plate appearing equal and smonth externally, with a thin semicircular edge aloove, which, by overlappiog the under edge of the Parietal Bouc, gives name to this Process. Tab. VII. Fig. 1. N, N,
The Mastoid or Mammillary Process, giving inbertioo to strong Muscles, particularly the Sterno-mastoid; and cootaining Cells which communicate with each other, and with the Cavity of the Ear, called Tympanum. Tab. IV. $\boldsymbol{*}$.

The Petrous Process, remarkably hand, very unequal, and of au obloog form, but becoming emaller in its progress; placed at the base of the Bone, from which it runs obliquely forwards and inwards, and contains the internal Organ of Hearing, to he afterwards descrihed. Tah. X. Fig. 6. f, q.

The 2 ygamatic Process, running from the under aod fore part of the Squamous Plate, to join the $\mathrm{O}_{\mathrm{s}}$ Mala; forming an Arch, oo the inner side of which the Temporal Musele passes to the Lower Jaw, while ite edges give attachment to part of the Temporal Muscle, and to the Aponeurosis Temporalis. Tab. X. Fig. 5. e. Tah. IV. s.

A Tubercle of ao oblong form at the root of this Process, coverrd with a smooth Cartilage, making part of the Articulation of the Lower Jaw. Tab. IV. behind s.
The Styboid Process, placed at the root of the Pars Petrosa, and going obliquely downwards aod forwarde, to give origin to Muscles which bonow part of their name from it, and helong to the Tongue and Throat. Tah. K. Fig, 5. r. Tab. VI. M.
It is geocrally about an inch in lengh, though sometimes a great deal more, and is remarkably sleoder. It is frequeotly, eveo in Adults, not eatirely ossified, and is therefore apt to drop off io macerating the Bones.
The Iaginal Process, of an inconsiderable size, surrounding the root of the Styloid Process, and deepest at ite fore part. Tab. X. Fig. 5. n.
The Rough Semicircular Ridge, at the under part of the external Meatus; sometimes also considered as a Process, and called duditory, for the conocetion of the Cartilage of the Ear. Trub. X. Fig. 5. n.
A Groore at the inoer part of the root of the Mastoid Process, giving origin to the Digastric Muscle; and a bitle anterior to this another Groove, in which the Occipital Artery runs. Tab. VI. $t$.
The Glemoid or diticular Cavity, behind the root of the Zygoma, of an ohlong or somewhat oval fonn, of
Vol. I.
great size, and lined with Cartilage, for the Articulation of the Lower Jaw. Tah. IV. 0.

The Glenoid Fissurc, at the back part of this Cavity, and betweeo it and the Pars Petrosa, and also between the Pars Petrosa and Sphenoid Bonc, for the attachment of part of the Capsular Ligameot of the Articulation of the Lower Jaw. Tab. VI. q. Tab. X. Fig. 5. o.
A Depression between the Glewoid Fissure and ! tyloid Process, for lodging a portion of the Parotid Giland. Tab. VI. between Giand the Styloid Process M.

The Thimble-like Cavily, on the Jugular Firsa, at the inoer side of the wot of the Styloid Process, for lodging the top of the interual Jugular Vein. Tab. Y1. Q.
This Cavity is frequently larger in the one side of the Head than the other, conresponding with the size of the
Vein which goes through it.
The Meatus Auchiturius Externms,-2 large Canal, hetween the Mastoid and Zygomatic Proceasts, leading inwards and forwards to the Organ of Hearings Tab, 1V. $v$.
Around the external Meatus, a rough Surface, frin the connection of the Cartilages and Ligaments o:
Tab. VI. before N.
The Forumen Siylo-mastorilcum, or Aguedict of Iallopius, between the styloid and Mastoid 1-wrebses, for the transmissiou of the Portio Dura of the feventh Fair of Nerves.
The Foramen Carolicum, or Canalis Conotictr; at the inner and fare part of the Jugular Fossia, zoud alst, befere and at the inside of the Styloid Prooess, leading up wards, theo forwards, through the point of the Para Petrosa, for the transmission of the intemal Carotid Atery to, and of the Gieat Sympathetic Nerve from, the inzin. Tah. VI, P.

In the upper and back part of the Canal, one, sometimes two, minute Holes arc observed, through whuch the internal Carotid Artery seods one or two 'Twigs to the Tympamum.
The Iter a Palato ad Aurem, or Eustachian Tube, betwees the Fissure for the Capsular Liganseot of the Lower Jaw, and the passage of the interand Carotid Artery, exteoding ontwards and hackwards io a horizontal direction, till it terminates io the Tympaum.

Io the Subject, it is formed, by the addition of Cartilage and Liganeot, into a trumpet-like Tube, which is coutinued forwards and inwards to the back part of the Nostril, and conveys air from the Nose to the Tympanum of the Ear. Tab. with views of the Ear, Vol. II.
On the external side of the Osseous part of the Eusfaemian Tube, and at the top of the Glewoid Fissure, is the course of the Nerse terned Chorda Tyapani.

The Furanen Mastoideum, occasionally fourd at the back part of the Mastoid Process, or in the Lambdoid D Sorture.

Suture. When present, it sometimes transmits an Artery to the Dura Mater, but more commonly a Vein from the Integuments of the Head to the Lateral Sinus. Tab. V1. u.
Sonctimes two or three Foramina Mastoidea are observed, serving the same purpose with that already noticed; but these, like all the other passages for Veins leading into the sinuses, are very unocrtais.

The upper and imer Edge of the Squamous Plate formed into Ridges and Furrouss, wheve it is connected with the Parietal Bone. Tab. X. Fig. 6. a, a.

The inner Surface of the Squamous Plate, unequal where it is marked by the Convolutions of the middle part of the Brain, and by the Arteries of the Dura Mater. Tab. X. Fig. 6. b, b.

The Pars Petrosa, of great size, running fonvards and inwards, with a shasp angle above, and two flat sides; one facing obliquely forwards and outwards, and the other as much back wards and inwards.

The anterior and outer Snrffuce of the Pars Petrosa opposed to the latcral Lobes of the Brain. Tab. V. $u, a$.

The pasterior and iuner Surface of the Pars Petrosa opposed to the Cerehellum. Tab. V. o, nt.

The Ridge between the two Surfaces of the Pars Petrose, for the attachment of the Tentorium Dure Matris, Tah. V. Q.
A Grrove frequently found upon the Ridge of the Pars Petross, for lodging the superior Petrosal Sinus. Tab, V.o.
A Fassa, at the root of the Posterior Surface of the Pars Petrosa, and opposite to the Mastoid Procests, for lodging the Lateral sinus, where it turns downwands to go out of the Cranium. In this Fossa the passage is observed which correspoads with the Forameu Mastoideum. Tab. V. $m$.

This Cavity is frequently larger in one Temporal Bone than in the other, which happens in eases when the Lateral sinuses ane of unequal gize.

The Meatus fuditorius Internus, or Foramen Auditivem, passing outwards and backwards, in the posterior Surface of the Pars Petrosa, for the passage of the Seventh Pair of Nerves, and the principal Artery belonging to the luner Ear. Tab. V. R.
In the bottom of this passage, there are many Foria-
mina; ; oue above, more cousputuous than the rest, is the begining of the passage fur the Portio Durz of the Sicventh Pair of Nerves. The othera are the Passages of the Branches of the Portio Molls of that Nerve. Tub. LiMIA. Fig. 1.

Someway below the Meatus Internus, is the opening of the passage ternued, by Cotusnius, Aquedrutus Curthece; and near the same distance behind the Bleatus, and on the same side of the Bonc, is the mouth of the Aquaductus Vestibuli.

The Foramen Innominatum, near the middle of the Anterior Surface of the Pars Petrosa, and leading buekwards for the passage of the Vidians Nerre, whicb is reflceted from the second Branwh of the Fitib, to the Portio Dura of the Seventh Paiv. Tab. V. n.

The oritice of the Canulis Caroticus appearing under part of the Pars Petrosa. Tah. V.

The Foramen Lacerwm Posterius, or Hole common to the Pars Petrosa and Cunciform Process of the Occipital Bone, for the passage of the Lateral Simus, the Eighth Pair, and Aecessory Nerves. Tab. V. S, T.
The Nerves pass through the fore part of the Holc, and are separated from the Sinus by a Process of the Dura Matter, stretclied between two small Processes of these Bones. lu somie skulls, an Osseous Partition separates the Nerves fiom the Sinus.
The Connection of the Bone, at its upper curvel Edge, to the Parietal Boue by the Squamous Suture. Iab. IV. o.

To the under and back part of the Parietal Bone, by the Additanientum Suture Squamosz. Tah. 1V.
To the Occipital Boue, by the Additaneutum Suture Lambdoidalis.

The Squamous part of the Temporal Bene is thin, but equal, while the Pars Petrosa is thick and strong, but irregular, having within it several Cavities, Proeesses, and Bones, which belong to the Organ of Hearing.
In a Foctus, the Siquamous is separated from the Pe . trous part by a Fissure; there is uo appearance of $\mathrm{M}_{2}$ toid or Styloid Process, and instead of an Osseous Mcatus Fxternus, there is ouly a King of Bonc, in which the Membrana Tympani is fised. Tah. M.

## OS ETHMOIDES.

Observz here,
The Situation of the Etbmoid, or Cribriform Bone, in the fore part of the Base of the Cranium.

## Its Cuboid Figure.

The Cribriform Plate, from which the Bone has its name, placed horizontally, and perforated, excepting at its hack part, with many Holes, disposed isregularly and
of different sizeq, for the tmasnission of the Branclics of the First or Olfactory P'air of Nerres. Tab. A. Fig. 4.e.
In the recent Subject, these Ifoles are so much filled up by the Processes of the Dura Mater which inclose the Nerves, that they are much less evident than is Bones where the Menibrancs lave been remosed.

The Crista Galli, arising perpendiculady from the middle of the Criluiform Plate, and highest at the upper and fore part. Tab. X. Fig. 4. b.
To the edge of this Process, and to the unimperforated part of the Cribrifoum Plate, the Falx of the Dura Mater is fixed.
A Notch at the fore part of the root of the Crista Galli, coutributing, in a small degree, to the formation of the Foramen Cxcum of the Frontal Bone.

The Nasal Plate, extending downwards and forwayds from the hase of the Crista Galli, to form the upper and back part of the Scptum Narimm, or Partitiou of the Nostrils. Tab. NIII. Fig. 2. F.

The greater part of this Process is very thin, hut to wards its anterior and under edge it becomes thicker, lor its frmer juection with the Bones and niddle Cartilage of the Nose.

It is frequently bout a little to one side ; in such cases, the two Nostrils become unequal in size.

The Ethmoid Cells, of an indeterninate number and Form, placed under the Cribriform Plate, a little to the outside of the Nasal Lamella, separated from each other by thin Partitions, and serving the same purposes as the Frontal Sinuses. Tab. M. Fig. 4. d. Trab. XIII. Fig. I. G, H.

Their Communications with each other, with the Fron. tal Sinuses, and also with the Cavity of the Nose. Tab. XIII. Fig. S. B.

The Os : Spong iosum Superius, on each side, projecting inwards and downwards from the Ethmoid Cells at the side of the Nasal Lamella, for cnlauging the Organ of Smell. Tab. X. Fig. 3.e.

The Triangular Form and Spongy Texture of each. Tab. XII. Fig. 1. $k, 7, m, n$.

In the Quadruped, this Bone is convoluted like a Tur:ban; hence, in the Human Species, it is fiequeutly called Turbinatum.
Its Cunvcrity towands the Septum, and Concarity outwards. Tab. . . Fig. 3.e.
The Ossa Plana, or Orbitur Plates, for covering a large share of the Ethmoid Cells, and forming the greater part of the imer sides of the Orbits. Tab. X. Fig. 4. g. Tab. IV. E.
On the upper edge of each $\mathrm{Os}^{\text {s }}$ Planum, two small Notches appear, which, with similar Notches in the Froutal Bone, form the interaal Orbitar Holes. Tals. IV. 1, 1.

The Cornection of the Cribriform Plate to the Orbitar Plates of the Froatal lione by the Ethmoid Suture; and to the Sphenoid Bone by a Suture common to the twa Bones, but generally considered as belonging to the latter. Tab. V. $f, g, g$.

The Conncefion of the Oska Plana to the Orbitar Plates of the Frontal Bone, by part of the Transverse Suture. Tab, IV, k, $l$.
The posterior edge of the Nasal Plate, joined to the Processus Azygos of the sphenoid Bone. Tab. XIII. Fig. 2.
It6 upper evjge, joined to the Nasal Processes of the Frontal and Nasal Bones, Tab. XIII. Fig. 2.

Its anterior edge, joined to the middle Cartilage of the Nose. Tab. XIII. Fig. \%. I.
In the Forus, the Ethmoid Bone is divided into two by a Cartilaginous Partition, which afterwards forms the Nasal Plate and Crista Galli. The other parts of the Bone are completely ossified. Tab, XI.

## OS SPHENOIDES.

Here altend to,
The Situation of the Sphenoid or Cuneiform Bone, in the middlc of the Crawium. Tab. V. g, f, O, F.
Its invegular Fïgure, which has been compared to that of a Bat with extended wings. Tab. X. Fig. 2.

The Tempor al Plates, or II'ings, placed at the sides of the Eone, and each hollow at the upper and outer part, for lodging a share of the Temporal Muscle. Tab. IN.f,
The Uithitur Plates, at the fore put of the Temporal Wings, forming a portion of the ontssde of the Orbits. Tab. III. $m$.
The Spintors Process, at the under and back part of each Tcmporil Plate. Tab. X. Fig. 2. s.

A Styloid Prucess, ficcuuently obscrved at the point of the "pinous, from both of which the Circuuflexus Palati wribes. Tab, X. Fig. 2.

Between the Temponal and Spinous Processes, an fred for receiving the fore part of the 'Te mporal Bone. Tab. IV. q. Tab. X. Fig. 2. $q$.

The two Pferygoid, or Aliform Processes, placed almost perpendicularly to the Base of the Cranium. The Pterygoid Processes are compared to the wings, though more properly resemblung the leet, of the Bat. Each is composed of two Plates,

The External Plate, broad and hollow without, where the Esterual Pterygoid Muscle has its origin. Between the root of this Plate and that of the Teinporal one, a large Depression, where the principal part of the External Pterygoid Muscle has its origin. At the fore part of this is zuother Depression, lorming part of the opening common to the Sphenoid, and to the Malar and superior Mavillary Boncs.
The Internal Plete, naryourer and longer than the Extermal, and, with its fellow on the oprosite side, forming the back part of the Nose.

A hooki-like Prveess upou the Internal Plate, over which the Circumflesu. P'alati moves as on a P'ulley.
The Fossa Pteryguitica, lacing backwards between the

Pterygoid Plates, giving rise to the interval Pterygoid Muscle. Tab, VI, R.

A small Depression at the back part of the root of the internal Pterygoid Plate, which gives origin to part of the Cireumfiex Muscle of the Palate.

A Grome on each side, which extends at the inner part of the Bone, between the root of the Styloid Process and that of the intermal Pterygoid Plate, assisting in the loranation of the Eustachian ' Fube.

The two Triangular Processes, which adhere to the under part of the sphenoid, and to the Ethmoid Bone, and which are considered as two of the Bonea of the Face. Tab. X. Fig. 1, b, Fig. 3. k:

The Processuns dxygus, staiding single, aud forming a sharp ridge, which projects firon under the mididle and fore part of the Bone. 'Tab. X. Fig. 1. a. This Process is often hent to one side, dividing the two Nostrils unequally.

The Clinoid Procpsses, sean on the inside of the Bone, compand to the supporters of a hex, of which there are,

Tus Anterior, projecting from the fore part of the Body of the Bone, and esteuding horizontally outwards ; each terminatiug in a point which obt.ins the name of Transterse Sprisous Prutess; 'Jab. V. E. Tab. X. Fig. 2, c. and,

One Posterior, situated transversely, some way hehind a the anterior Processes, and frequently ending in two Kinohs, which incline obliquely forwards. Tah- X. Fig. 2. h.

Sometimes one or hoth of the anterior Clinoid Processes are united with the posterior, forming an Arch over the internal Garotid Artery:

The Processus Olivaris, considered by some as a fourth Clinoid Procest, lying between, and a little behind, the roots of tbe anterior Cbioid Processes. Tah, V. h.

Between the anterior Clinoid Y'rocesses, a small-painted Procesy fiequently juts forwards, to join the Cribriform Plate of the Etlumoid Bone, from which it is sometimes called Ethmoid Process. Tab. V. $f$.

The Tempnral Fossce of this Bone, which lodge a share of the lateral Lobes of the Brain. Tah, V. P.
A. Fossa hetween the anterior Clinoid Processes, where part of the anterior Lobes of the Brain rests,

A Depression before the Processus Olivaris, where the conjoined Optic Nerves lie ; and a Fossa on each side of it, where thene Nerves are situated, previous to their cntering the Orbits. Tab. X. D.

The Fossas Pifuilaria, Sella Turcict, Ephippium, or Turlivich Saddle, between the Processus Olivaris and poss rerior Cbueid Process, for lodging the Glaudula Pítuitaria. Tab. V. D. Tab. X. Fig. 2, 1.

A Depression, ruming first upwards, then forwards, upon cach side of the posterior CThnoid Procesa and Sella Turcica, and terninating in a Pit at the root of the auterior Clinoid Process. These Depressions point out the enurse of the internal Carotid Arteries, when they have entered the Crasivm, and previous to their perforating
the Dura Mater, to be dispersed upon the Brain. Tah. v. $k$.

Hesides these Impressions, several others may be observed, made by Nerves and Vessels leading to or fiom their renpective Holes in the base of the Crawium.

The Firunina Optica at the roots of the anterior Cbnoid Processet, for the transmission of the Optic Nerte and Ocular Asteries. Tab, X. Kig. Z. $f$.

The Forantina Lacera Sitperiura, or Supertior Orbvitar Eissures, under the anterior Clinoid Processea and their trausverse Spinous Parts, for the passage of the third, fourth, first part of the fifth, and the sixth pair ol Nerves, with the Ocular Veins. Tab. X. Fig. 2. i.

The Formmind Lacera are largest at their inmer cads, At their puter extwanities they were considerably smaller, and are forued there by the Os Frontis; hence they may be ranhed sunong the coumon Holes of the Cranium.

The Eurromina Roturda, a little belind the Foramina Lacem, for the passage of the second part of the fifth pair of Nerves, which are tetmed also Superior Masillary. Tab. X. Fis. 2. $n_{1}$

The Foramina Otalia, considerably larger than the Formaina liotunda, and placed farther hack, and moro externally, for the passage of the third part of the 6fth pair of Nerves, and, commonly, for the pastage of the Veims which accompany the principal Arteries of the Dura Mater. Tab, X. Fig. 2. o.

The Fbrumina Sipinalia, a little to the onter and back part of the Foranina Ovalia, and in the points of the Spinous Processes, for the transmission of the principal Arteries of the Dura Mater, the impressions of which are so conspicuous on the inner side of the Temporal Hones, Tab. X. Fig. 2. p.;

The Fioramina Plerygoiden, termed also, after the discoverce, Foramina Vidiana, at the ruots of the inner Plates of the Pterygoid Processeb, for the passage of two reflected branches of the second part of the fifth pair of Nerves. 'Tah. X, Fig. 1, n. Tab. VI. X.

The Formina Mterygoidea aro the smallest of the Sphenoid Holes, and cannot be distinctly seen in the entire sikull, being partly concealed by the Palate-Bonce.

Sometimes one or more sunall passages are observed in or near the Sella Turcica, for the tiansmission of Bloodvessels into the Sphenoid Sinuses, or to the substance of the Bone. These passages were, in former times, considered by some Authors as conducting Pitnita by the Sphenoidal Sinuses into the Nose.

The Foramina Lacera Anterionk, common to the points of the Partes Petrosce and the Sphenoid Bone. Tab. V. before $l$.

In a recent Skull, each of these Holes is filled behind hy a thin plate of Bone, which covers the internal Caro-. tid Artery, and farther forwayds, by a Cartilaginous Ligament, which lies over the Eusrachian Tube, both of which drop out by maceration. 'Ilurough this opening, also, Mucus was formerly supposed to be conveyed from the Glandula Pituitaria to the Nose.

The Sphenoid Sinnses, occupying the whole of the
Body

Body of the Booe, at the under and fore part of the into one of the Nostrils. In some Subjecte, instead of Sella Turcica, zoswering the same purposes with the Sinuses, the Body of the Bone is composed of large Cells. Ethmoid uud Frontal Cells. Tab. X. Fig. 1.c. The Substance of this Bone is the most unequal of any
A counplete Partition between the right and left Sphenoid Sinuses. Tab. X. between $c, c$.
A Passage from the upper and fore part of each of the Sphenoid sinuses, desceoding, in a slanting direction, into the superior-posterior parts of the Nose. See Tab. with the Nervesef the Nose. 'Iab.CLNXXIV. Fig. 1.O.
The two Sinuses are frequently of unequal size, and sometimes there is but one large Cavity, with an opening
others are thicker than most parts of the Cranium.
The Connection of the Bone to all the other Bones of the Cranium, by the Sphenoid Suture, though others, as the Transverse, Ethmoid, \&c. are caufounded with it.

In the Foctus, the Temporal Wings ane separated from the Body of the Bone by maceration, and there are no Sphenoil Simuses. Tab, XI.

# TABLEX. 

Represents the Sphenoid, Ethmoid, and Temporal Bones.

FIG. 1.
A Tieve of the Outer and Chder Surface of the Sphenold Bone.
$a$, The processus azygos of the sphenoid bone.
$b, b$, The small triangular bones, which, in old people, grow to the body of this bone.
c, $c$, The oxitices of the sphenoid sinuses.
$d, d$, The formina lacera.
e, The anterior and superior part of the body of the bone.
$f_{1} f_{4}$ The external surface of the transverse processes.
g, g , The orbitar plates.
$h, h$, The superior extremitien of the temporal processes.
$i$, $i$, The middle of the temporal processes, which form part of the temporal fossa.
$k$, $k$, The asperities by which this hone is joined to the ossa malarom.
$l, l$, Gutters in the os sphenoides, which lodge branches of the fifth pair of nerves.
$m, m$, The formina notunda.
$n_{5}, n_{9}$ The loramina pterygoidea.
0,0 , The anterior openings, which assist in forming the spheno-mixillary lissures.
$p, r$, The forannina ovalia.
$q, q$, The spinous processes.
$r, r$, The ronts of the pterygoid processes.
$s_{4} x_{3}$ The internal plates of the pierygoid processes.
t, $t$, The hook-like processes, at the-extremities of the intermal plates.
$u, v$, Small simuasities in the hook-like processes, over which the tendons of the circumflicx muscles of the palate play.
$x, x$, The external plates of the pterygoid processes,
$y, y$, The pars of the bone sdipted to the ossa palati,
2, 2 , The posterior openinge, common to the sphenoid and temporal bones, over which the intesnal carotid arteries pass.

F1G. 2,
A View of the Inver and Upper Surfuce of the SpHEnoid Bone,
ay $a$, The superior and anterior patt of the splenoid bone, which is joined to the under and back part of the frontal bone.
$b, b$, The temporil plater, or processes of the bone.
c, $c$, The transverse processes.
$d$, The small antemor process, which unites with the eil. moid bone.
c. A protuberance situated before the unon of the optic nerves.
$f, f$, The foramina optica.
$g, g$, The anterior clivoid processes.
$h_{3} h_{3}$, The posterior clinoid processes.
$i, i$, Part ol the foramina lacera.
$k, k$, Impressions made by the internal carotid arteries.
1, 'The bella 'I uroica.
$p, m$, The cavities of the temporal processes, which receive the lateral lobes of the brain.
$n, n$, The foramina rotunda.
0 , O , The foramina ovalia.
$p_{9} p_{9}$ The foranina spinalia.
$q$, $q$, The ragged edge of the bone, which assists in forming the splienoid suture.
r, Part of the spheuoid bone, which joins the cuneiform process of the occipital bone.
$s, x$, Part of the apinous processes.
$t, t$, Prart of the pterygerid procesces.

## FIG. S.

The Outer and Urder Surface of the Exhmoid Bone.
$a$, The anterior extremity of the nassl plate, which forms the upper part of the septum narium.
$b$, The posterior extremity of the nasal plate, whirh is very thin.
$f_{1} c$, the ethruoid groowes, or chinks which separate the nasal plate from the ossa spongiosa superiora.
$d$, $d$, 'The passages for the hraches of the olfactory nerves.
$c, c$, The ossa spongiosa superiona.
$f_{4} f$, The cavities of the ossa upongiosa superiora.
g. $g$, Part of the ethmoid cells.
$i, h$, Inequalities of the ethmoid bone, by which if 15 joined to the frontal bone.
$i$, $i$, The pasterior extremity, which is joinel to the sphenoid bone.
$k_{2}, k_{\text {, }}$ The small cornsa, or triangular bones, which, is actulte, ate joined to the body of the aphenoid boase.

FIG.

## Тін. 10



Fig. 4.

fig.s.


Fig. 6.


FIG. 4.

## The imucr and appor Surfuce of the Ethmoid Bone.

$a_{3}$ The sutecior extuemity of the bone, terminating in a small flat process.
$b$, The upper part of the crista galli.
$c, c$, The cribrilorm plate, with the different passages of the olfactory nerves.
$d, d$, Some of the cells of the etlimoid bone.
$e$, The posterior extremity of the aasal plate, which forms pari of the septun nariun.
$f_{1} f$, The posteriot margins of the ethmoid bone.
g , A great part of the os planum of the left side.
$h, A_{\text {, }}$ The upper part of the tringular bones which are joined to the body of the sphenoid boue.
$i$, The joining of the triangular bones with the ethmoid bone.
$h_{4}$. Holes formerl by the uniou of the triangular hones with the ethmoid boue.

FTG. 5.
A V"ew of the Outer Surface of the Temroral Bone.
$a$, The upper and squamous part of the temporal boue.
$b_{4}$ The middle of the squamons part.
$c$, The under part, whach lodges a portion of the temporal muscle.
$d$, That part of the temporal boue, which, when jowned to the under and back part of the os parietale, forms the additamentum suture squamosa.
$c$, The xygomatic process.
$f$. The base of the zygonatic process.
th, The transverse, or articular process,
$h, h$, The mastoid process.
$i, i$, Several small holes which transmit vessels to the sulistance of the houe, or to the dura mater.
$k, k$, Two holes at the root of the zygomatic process, for the transmissiou of vessels to the substance of the bone, or to the dura mater.
$I$, The meatus auditorius externus.
$m$, Incquadities at the beginning of the meatus.
$n_{1}$ The glenoid cavity for the articulation of the lower jaw.
o, The glenoid fissure, to which part of the aticular ligament is lixed.
$p$, The vaginal process.
4, Part of the nuastoid groove.
$x$, The styloid process.
$n_{4}$ The lormen mastoideun.
t, The base, or upper part of the mastoid process,
$v$, The inferior and anterior part of the timporal bowe, which is joined to the os splienoidey.
$x$, A portion of the Eustachisn tube.
$y$, A portion of the pars petrosa.
FIG. 6.
A View of the Inner Surface of the Temporal Bone..
$a, a$, The upper edge of the squamous process.
$b, b$, Depressions which corcespond with the circumvolutions of the brair.
c, Part of the temporal bone, which is joined to the os splienoides.
d, The nitch which receives the posterion and inferior angle of the parietal boue.
c, The upper part of the pars petrosa.
$f_{1}$. The groove which lodges the superior petrosal simets.
g , The fossa which lodges a part of the lateral sinus.
$h$, The meatus auditorius interpus,
$i$, The nitch which assists in forming the foramen lacerum.
$k$, Part of the fossa of the temporal bone, which lodges the beginning of the internal jugular vein.
7, The posterior part of the boue, which is joined to the oceipital one.
$m$, The inner surface of the foramen mastoideum.
$n$, A portion of the mastoid process.
o, A considerable part of the mastoid groove.
$p$, The styloid process.
$\eta$, The imner extrenity of the pars petrons, clisisled into two protions.

## TABLE XI.

Views of the Feetal Bones of the Head.

FIG. 1.
A Lateral Fiew of the Skull.
A, The frontal bone, not yet complete in its middle and upper part.
B, Part of the fontanella.
C, The cononal suture, which is here in part membraдоия.
D, The parietal bone, formed of radiated fibres.
$\mathrm{E}_{\text {, }}$ A protion of the left parietal bone.
F , The sagital suture.
G. The occipital bone,
$\mathrm{H}_{\text {, }}$, The lambdoid suture.
I, The fontanella postcrior, seen only in some bones.
$\mathbf{K}$, The squamous part of the teniporal bone.
L., The zygomatic process of that bone.

M, The mastoid process.
$\mathrm{N}_{\text {, The squamous suture, partly membranous. }}$
$O$, The membrana tympani.
P , The temporal plate of the spaenoid bone.
$Q$, The nasal process of the superior maxiliary bone.
R, The body of that bone.
S , The orbit.
T, The os malx.
$\mathrm{V}_{\text {, }}$, The lower jaw.
FIG. 2.
The Outce Surfarce of the Two Pieces which form the Fronial Bone.

A, The right, and,
$B$, The left portion of the frontal bone.
$\mathrm{C}, \mathrm{C}$, The orbitar plates.

$$
\text { FIG. } 3
$$

The Oufer Surface of the Left Pabietal Bonh, ơn which the radiated Appeavarce of the Osweons Filhres is scen; the under and niddle purt appeasts prominent, and mose sompuct than the rest of the Bone.

## FIG. 4.

The Outer Surface of the same Bonc.

FIG 5.
The Outer Surfice of the four Precen whach form the Occirital Bone.
A, The upper and largest portion.
B, B, The two lateral portions, with the condyles and condyloid foramina.
C, The portion which forms the cunciform process.
FIG. 6.
The Outer Surface of the Tentroral Bone of the Kight side.
A, The squanous plate.
B, The zygunatic process.
C, The aulucular ceavity.
D, The osseous circle, in which the membrana tympani is incased.

FIG. 7.
The Inver Surface of the same Bone.
A, Inequalities which facilitate the union between the squaraous and petrous portions.
B, The bsure of the osseous circle, in which the membrana tymppuai is incased.

FIG. 8.
The Outer Suryace of the Petrons part of the Tenron atal Bone.
A, The cellular texture of the bone.
B, The part which forms the future mastoid process.
C, The bottom of the tympanum, with passages belonging to the internal argan of hearing.

$$
\text { FIG. } 9 .
$$

The Lateral Portions of the Ethnoid Bone.
FIG. 10.
The three Pieces which furm the Spaenoid Bone.
A, A, The temposal wings, sce.
B, The middle portion, forving the body of the bone, with the clinoid processes and sella Turcica.


## OF THE BONES OF THE FACE.

Thy Bones of the Face, and the relative propartions betweeu the Face and Cranium, vary considerably among people of different nations, but they likewise vary among the individuale of the same country. It is dificult, therefore, to ascectain the proportions with aceuracy. An Angle termed Facial, however, is considered by some late Autiors as being the simplest method of deternining this eircumstance.

The Freial Angle is formed by drawing a line througls the exterual Auditory Passage and bottom of the Nostril, and another, terned Pocial, from the convexity of the Forehead to the urder and fore part of the Upper Jaw, 30 as to intersect the former.
In the Grecian, as measured from the Antique Statue, the Facial Augle is frund to be about $90^{\circ}$, or between $90^{\circ}$ and $100^{\circ}$; in the European, about $80^{\circ}$, or between $80^{\circ}$ and $90^{\circ}$; and in the African, on account of the greater promineuce of the Jaws, about $70^{\circ}$.
Aceording to Dr Camper, the Boundaries of the Facial Angle, in the Human Subject, aue $80^{\circ}$ and $80^{\circ}$.

By a vertical longitudinal section of the Head, the area of the Face in the European is observed to be only half of that of the Cranium, but is somewhat more in the Negro; or, the Face is larger in the one, while the Cranium is bigger in the other.

In the Boues of the Face we observe,
Their Division into Upper and Inder Jenzs.
The Upper Jaw, or Maxilla Superior, besides the Teeth, compased of seven Paú of Bones, and one without a fellow, viz.

Tun Ossan Nasi ${ }_{i}$. Two Ossa Unguis; Two Ossa Mfalarum; Twa Ossa Mavillaria Superiora; Tzo Ossa Palati; Two Ossa Spongiosa Inferiora; Two Ossa Triangularia; and the Yoniter.

The Lower Jaw, or Maxilla Inferior, consists of a single Bone, with the Teeth.

The Bones of the Upper Jaw are jowed toget her by Sutures which have no distinct Iudentations, like those of the Cramiun; but, like them, they are frequently found obliterated in the Skulls of uld people. The Rones here, in consequence of the atature of the Sutures, have no motion but what they posesess in cormou with the Cranimu. The Futures shall be taken notice of in the description of the Bones between which they are placed.

## $O_{\text {sisa }} \mathrm{Nast}$

Their Situation in the upper and fore part of the Nosc. Tab. III. F.

The oblong Form of each, though irregularly so. Tub. SII. Fig. 3 .

Vol. I.
E

The thick, ragged, upper end, where it forms a stuong conuection with the Frontal Bonc. Tab, XII. Fig. 3.
Each narrowest a hittle below the upper end, and beat back wards.

The inferior Extremity, thinner and broader than the rest of the Bone, and urequal where it gives attachment to the Carctilaginous part of the Nose. Tab. XIL. Fig. 3.

The under half eouvex externally, by which, when the Bone is joined to its fellow, a strong Areb is formed, that is fitted for resisting injury. Talb. III. F.

Its internal Coneavity, where it forins part of the Crvity of the Nose. Tab. XII. Fig. 4.

The Spinous Process, which joins the Nasal Lamella of the Ethmoid Bone, and therely forms part of the partition of the Nosc. Tab. XII. Fig. 4. C.

One or more Holes exterually, for transmitting Vessels into the Substance of the Bonc, or to the Membrane of the Nose. 'Tab, IV, $x$.
Its Connection to the Frontal Boue by the Transverse Suture. Tab. III. $f$, zud,
To its fellow by the anterior Nasal Suture. Tab. III. before $\mathbf{F}$.
In the Foetus, the Ossa Nasi ase proportionally short, but are ocherwise coaplete.

## Ossa Unguts, be Lacrymalia.

Thoir Situation at the inner and fore part of the Orbit. Tab. IV, H.

The Diviston of each extemally, iuto thea depressed Surffuces, with a Ridge between them, which forms the boundaky of the Orbit at the inuer Augle. Tab. SII. Fig. 5. C..

The pasterior Dequression, the larger of the twa, forming part of the Orvit. Tab. XII. Kig. 5. B.

The antervior Depression, lodging part of the Lacrymal Sae and Duct, and perforated by swall Holes, through which Fibres pass, to wake a tirm comnection betwecn the Boue and its investing Membrame. Tab. MII. Fig. 5. A.

In the Auterior Depression, the perforation is made in performing the operation for Fistuld Lacrymalis.

The inner. Siwface, composed of a Fursur and two iwegular concre Surfaces, correspoudiug with the antexior Pthmoid Cells. Tab. SII. Fig. 6.

The Substance of the Bone is the thinnest and mact Intitte of any in the Body, in consequence of which it is firequently unct with in an imperfeet state.

Its Connection to the Froutal Bone by the Transverse Suture, and to the Os Plaum by the Ethmoid Suture. Internally, it is connected with the Ethmoid Cells. Lu the Fatus, it is fully formed.

## Ossa Malarum.

The Sifuation of each in the outer part of the Cheek. Tub. IV. 1.

The external comex, smooth Surface. Tab. III. H.
The posterior hollow Surfare, for lodging part of the Temporal Musele. Tiab. NII. Fig. b. F.

The saperior Orbitar Process, forming part of the outside of the Orbit. Tab. IV. z.

The inferiow Orbiter Procesa, forming part of the lower Edge of the Orbit. 'Tab. IV. uppermost ?:

The Mavillary Processi, forming the ander part of the Prominence of the Check. Tab. 11I. undermost $q$.

The Ared between the Orbitar Processes, which forms near a third part of the anterior Cincumference of the Urbit. Tab. IV. 3.

The $Z_{\text {ygomatic }}$ Process, the most conspicuous, slanting downwards and backwards to join the Zygoma of the T'empoyal Bone, and with it to form an Arch over the Temporal Muscle. Tab. IV. I.

The Internal Orbitar Plate, extending back letween the Orbitar Processes, and forming a share ol the outer, under, and fore part of the Orbit. Tab. III. r:

A Passage through the Bone, for the transmission of small Vessels or Nerves from the Orbit to the Face, and sometimes from the Face to the Orbit. Tab. III. s.

A Notch in the outer part of the internal Orbitar Process, assisting in the formation of the large slit at the Lattom of the Orbit.
The Connection of the superior Orbitar Process and interaal Orbitar Plate to the Frontaland Sphenoid Bones, by the 'Pransverse Suture. Tab. III. $q, r$.

The Connection of the Zygomatic Process to the Temporal Bone, by the Zygomatic Suture. Tab. IV, 1.

The Substance of the Bone is thick and hard, with some Cancelli.

Iu the Foetus, the Bone is fully ossified.

## Ossa Maxillaria Superiora.

Their Situation in the fore part of the Epper Juw, and -ides of the Nose. T:ab. I11. I.
'Their Size, the largest of the Bones of the Epper Jaw, on which account the Bones lave got their name. Tab. VII. Fig. 1.

The Nasal, or fagular Process of each, forming part of the side of the Nose, and of the inmer part of the Orhit, and overlipping the outer Fdge of the Os Nasi above, while tlat Pone covers the Edge of the Nasal Process belens: Tiab. III. $t$.

1 Ridge at the under and inner side of the Nasal Pro. ces, for supporting part of the $\mathrm{O}_{3}$ Spangiosum Inicrius.
Tab. XII. Fig. Y, 6 .

The Urbitar Plate, forning a large slaare of the under side of the O.bit. 'Tiab. IV. 10.

The Mfralar Process, anequal and ragged, where it contributes, with the O. Malx, to lowm the Prominence of the Cheek. Tab, XIF. Fris, 1, e, cf,f, $f$ :
The Tubtiosity, or Bulge at the hack part of the Eonc,
which forms the posterior houndary of the Cavity called Antrum Miaxillare, and gives origin to a portion of the 1taterual Pterygoid Muscle, Iub. IV. 16.

The Alevalar Alch, of a Spongy nature, where the Alveoli or Sockets of the 'leeti are placed. '1 ib. III, x.

The Palate Plate, or Prucess, placed horizontally, forming part of the Roof ot the Mouth, and of the Hottom ol' the Nose. 'Tib. H. $b$.

The Palate Plate, thin is ite middle, and thich at its eatges ; smooth towarls the Nose, but rungh and unequal below, for the firm connection of the Membranc of the D'alate. Tab. KII. Kig.t.

The Nasal Sipise, contributing, in a small degree, to the formation of the Septuns of the Nose. Tiab. XIf. Fig. 2. $h$.

A Depression behind the Malar Process, where the under end of the 'lemporal Mascle plays. 'Tab. III. a.
A. Depression at the under and fore part of the Milar Process, where the Muscles which raise the Upper Lip and comer of the Mouth originate, and where a Branch of the Fifth Pair of Nerves is lodged, and commonly 2 large portion of Fat. Tab. 111. 1.

An firk formed by the P'alate Plate, both ahove and below, for enlarging the Cavities of the Nose and Mouth. 'Tab. VL. $b$.

In advanced life, where the Teeth have fallen out, the Fioof of the Mouth, which was formerly avehed, becomed flat, in consequence of an absorption ol the Alveoli, and the Cavity of the Month is diminished in size.
A. Notch forming the under and lore part of the Nostril, to the edge of which, and to the corresponding one of the Nasal Process, the Cartilages of the side of the Nose are connected. T'ab. III. $y$.

The Alveolh, or Sickets for the Teeth, porazes for the Grmer authesion of the reflected Membrane of the Gumb, and for the transmission of Blood-vessels into the Substance of the Bones; the number of Sockets correspond. ing to the Fangs of the 'leeth. Tab. XIV. Fig. . A, B, C, D.

The Lat7 ymal Fossa, nhich, with that of the Os Frguis, formo a passage for the Lacrymal Duct into the Nose. Trab. IV. b.

A Canal in the Ortitar Plate, terminated anterionly by the Foramen Infra-orbitarium, through which the Liffa-orbitar Pirancli of the second part of the Fifth Paiz of Aerves, with a liranch of the interual Maxillay Artery, pass to the Face. 'Tab. XII. Fig. 1. d. Tab. MI. is
The Furamen Incisirum, vel Palationm Antoriks, be hind the Fore-'Teeth, common to both Ronce below, but proper to each above, and filled with a Yrocess of the Soft Palate, and with moall Vessela and Nerves, which run betwcen the Membranes of the Mouth and Nose. I'ab. VI. C.

In some Subjects, there is a distinct Dretur Incigiows Icading from one or from each Nostril into the Cavity of the Mouth, similar to that which is always found in the lage Guadrupeals.

A small $\boldsymbol{I}$ lole commonly found in the Nasal Process, and some minate Passages at the back prart ol' the 'Tubt-
sosity, for the transnission of Blood-Vessels and Norves into the Substance of the Bone and 'Teeth, and into the Antrum Maxillare. Tab, 111. $t$.

The Simus Maxillaris, Antrum Maxillare, or, firon its deseriber, ealled Highmorianam, of great size, oceupying the whole imer part of the Body of the Bone, situatcd under the Orbitar. Plate, and above the lavge Dentes Molares, destined for the same purposes as the other Sinuses of the Bones of the Head. Tab. SII. Fig. 2. c, c. Tab. XIII. Fig. 3. L, M, N, O.
The Partition between the Sinus and Sockets of the Teeth is commonly of considerable thickness; but not unfrequently there is only a thin Plate interposed, aud small Promineaces, containing the poiuts of the roots of the Teeth, may often be observed in the uiddile of this Cavity.

The Opening of the Sinus, large in the separated ALasillaty Bone, but, in the connceted state, so covered by the inferior Spongy Bone, and by the Palate-Bone and Membranes, as to leave ouly onc, or sometimes two Apertures, little larger thau to adnit the point of a Surgeon's Probe. The Aperture is situated at the upper part of the sinus, and desceuds obliquely backwards to terminate between the $\mathbf{O}$ ssa Spongiosa superius et infcrius, in the Cavity of the Nose. Tab. XIII. Fig. 1. q.

The Comarction of the Os Maxillare Superius to the Frontal Bone, by the Transverse Sinture, Tab. III. between $e$ and $p ;$ - to the Os Unguis, by the Lacrymal Sinture, Tab. III. between $p$ and $\mathbf{G}$;-to the $\mathrm{O}_{5}$ Nasi, by the Lateral Nasal Suture, Tab. IV. behind $x$; to the Check-Bone, by the internal and external Orbitar Sutures, Tab. IV. 2.; -to the Os Planum, by the Ethmoid Suture, Tab. IV. between E and 10.;-to its fellow, by the Longitudinal Palate Suture, Tab. V1. 4. $;-$ to its fellow also, between the fore part of the Nose and Mouth, by the Mystachial Suture, Tab. HII, u.
The Substance of.this Bone is bard and dense, except at the Alveoli, where it is remarkably spongy.

The Ossa Maxillaria forin the greater part ol the Nose and Roof of the Mouth, a considerable pact of the Orbits, and contain all the Teeth which belong to the Upper Jaw.

In the Fotus, there are Six Sockets for the Teeth,ao Tuberosity, and the Maxillary Sinus is only begiuning to forin.

## Ossa Palati.

Their Situation in the back part of the Palate. Tab. VI. $f$.

The Oblong Form of the Palatc-Plate of each, which forms the back part of the Osseous Palate. Tab. VI. $f$.

Its posterior curred Edge, where it in conneeted with the Velum Palati ; also the point at the iuner extremity of the Curve, for the origin of the Musele of the Uvila. Tab. VI. $f$.
Its thick, strong Substance, where it joins its fellow. Tab. XII. Fig. \%. $n$.

Its Spinous Process at the inner edge of the PalatePlate, joining the under edge of the Voner, and contribating to the formation of the Septum Nurium. Tab. XII. Fig. 2. between $l$ and $n$.

The P'terygoid Process, of a Triungular furm, nith Fossar correcponding to the Pterygoid Plates of the Splenoid Bone. Tals. MIL. Fig. II. B.

The Nasal Plateq forming a portion of the site of the Nose, and Antrun Maxillarc. Tab. SIt. Fig. 2. 7.

A Ridge on the inside of this Plate, upon which the lack part of the inferior Spengy Bone reats. 'Iab. Xill. Fig. 2. $m$.

The Two Orbitar Processes, at the upper and back part of the Nasal Plate, coutributing a little in the furmation of the Orbit, and of the Ethanoid und Splieuoid Sinuses, being hollow within. Talo. MII. Fig. 2. $k$.

The Anterior Oibitar Process, the larger of the two, with its upper surlace appearing in the bottom of the Orbit, behind the back part of the $\mathrm{Os}_{\mathrm{s}}$ Plamun sud $\mathrm{Os}_{\mathrm{s}}$ Maxillare.
A Norch between the Orbitar Processes, forming part of the Foramen spheno-Palatinum, for the passage of the lateral Nasal Tessels and Nerves. Tab. Xill. Fig. 11. F. Fig. 2. under $k$.

The Foranten Palatinum Pasterius, vel Palato-Maxillare, at the outer ead of the Palate-Plate of this Bone, but commou to it and the Masillary Boue, for the tramsmission of the Palatine Vessels and Nerve. Tah. VI. 4.

A small Hole frequcatly ohserved behind the former-; and communicating with it, for the passage of a Brancla of the Palatiue Nerve. Tab, MII, Fig. 2. o.

The Foramen Spheno-Muxillare, Lacerwn Infivius, or Inferrior Orbitar Fïsure, at the usder and outer part of the Obbit, and common to the Cuucifonn, Maxillary, Malar, and Palate Bones, for lodging Fat belonging to the lise, and transmitting sunall Twigs of Vessels and Nerves into the Orbit.

The Palate-Plate of this Bone and its Pterygoid Proeess are fixm and stroug; but the Nasal Plate and Orbitar Process are thin and brittle.

The Connection of the $\mathbf{O s}_{\text {s }}$ Palati to the Palate-Plate of the Maxillary Bone, by the Transversr Palate Suture, Tab. VI. before $f ;$ to the Maxillary Bone, at the side of the Nose and bottom of the Orbit, by the PalatoMaxillary Suturc, Tab. XII. Fig- 2. $f$;-to the Pterygoid Process of the Sphenoid Bune, by the Sphenoid Suture; - to the Os Panum and Ethmoid Calls, by the Ethmoid Suture ; - and to its fellow, by the Lougitudinal Palate Suture. Tab. V1. at the inside of $f$.

In the Fotus, the Palate- Boue is complete, but there are ao Cells in the Orbitar Processes,

## Ossa stonglosa, vel Torbimata Inferiora.

The situation of oach in the under part of the side of the Nose. Tab. X'III. Fig. 1. between $q$ and $r$.

Its triangular form and spongy appcarance, rescmbling the $\mathrm{Os}_{\mathrm{s}}$ Spongiosum Superius. Tab, XII. Fig. 9.

Its Converity towards the Septum Nasi, and Concaurity ourwards. Tab. XIII. Fig. S. Q.

The under edge placed horizontally near the under part of the Nose, and ending in a sharp point behind.

The two Processics at the upper part of the Roue, the anterior ascending and forming part of the Lacrymal Groove, and the posterior descending in form of a Hook, to make part of the side of the Masillary Sinus. Tab. XiI. Fig. 9, B.

The Commection of this Bone to the Os Maxilkare, $\mathrm{O}_{\mathrm{s}}$ Palati, and Os Cnguis, by a distinct Suture in the young Subject; hut in the Adult, by a concretion of substance.

The Ossa Spongiosa afford a large surface for cxtending the Organ of Smell, by allowing the Membrane of the Nose to be expanded, upon which the Olfactory Nerves are dispersed.

In the Foxtus, these Bones are almost complete.
Ossa Triangularla, vel Cornua Sphenomalia.
The Situation of each triangilar Bone between the Body of the Sphencid Bone and root of ats internal Pterygoid Process, covering the under part of the Spheuoid Sinus. Tab. X. Fig. I, b.

Its Connection to the hack part of the Ethmoid Bone. Tab. X. Fig. 3. K. In an old person, it grows so firnily to the Sphenoid Bone, as to be considered by some Authors as one of its Processes.

## Vomer.

Its Situation in the under part of the Septum Nasi, where it separates the Nostrils from each other. Tah III. L.

It is frequently bent to one side, in which case the one Nostril is readered larger than tbe other.

Its Form compared to that of the Plougb-ihare, from whicb it has its name. Tab. MIII. Fig, \&. H.

The superior and posterior part, thick and strong, with a Furvoid ahove to receive the Processus Azygos of the Sphenoid Bone. Tab. XII. Fig. 13. A. Tab. XIII. Fig. 2. hehind G.

The superior part, with a Giroone to receive the N2. anl Plate of the Ethmoid Bone, and Cartilage of the Nose. Tah. XIII. Fig. 2. before G.

The inferior edge connected with the Spinous Process* es of the Palate and Maxillary Rones, by a small Ridge eorresponding with a Groove of these Bones. Tab. XIII. Fig. 2. under H .

The pasterior edge unconnected with any other Bone, and turned to the Cavity of the Fauces. Tab. XIII. Fig. 2. M. Tab. VI. g.

The Vomer has a smooth Surface, and a dense Subs stance, and cousists of two Plates in a young persan; but in an old Subject, tbe Plates are compressed together, so as to render the Bone transparent.


# (37) <br> TABLEXII. 

## Vidws of the different Bones of the Face.

FIG. 1.

## The Outer Side of the Right Os Maxiliare Superius, with a small Portion of the Os Palatt.

A, The maxillary fossa.
B, The nasal process of the maxiliary hone.
$a$, Inequalities by which it is joined to the os frontis.
$b$, The angle which is joined to the under cad of the os nasi, and to the cartilage of the nose.
C, The orbitar plate.
$c$, The edge of the orbit.
d, A groove which belongs to the infit-orhitar canal.
$e, c, f, f$, The malar process.
$\mathbf{D}, \mathbf{D}$, The alveolar process.
$\mathbf{E}$, The maxillary tuberosity of the bone.
F, A small portion of the os palati.
f, $g$, Two of many small holes which penetrate into the substance of the boue.
G, The fore part of the nostril.
$h$, The nasal spine, forming part of the partition of the nose.
i, The letter is placed upon the palat ${ }^{6}$ plate, and points to the upper end of the palate-fissure
H , The fore part of the malar process, ,
I, The foramen infra-orbitarium.
1.1. The dentes incisores.
2. The dens caninus.
3. Sic. The dentes molares.

## F IG. 2. <br> Represents the Inner Surface of the same Os Maxile lare Superius, with the Os Palati.

A, The nasal process, or upper angle.
$a_{4}$ The middle angle, at the basc oll the nasal process.
$b$, Inequalitiey, where the fore part of the os spongiosum inferius as lixed.
B, l., The palate-process.
C, C, The alveolar puocess.
$\mathrm{D}, \mathrm{D}$, The irregular suiface of the palate-process.
$c, c, c, c$, The edges of the maxillary sinus.
E, The eavity of the maxilhary sinus.
$d_{3} d_{3}$ Small celds in the upper part of this bone.
F, The lucrymal Iossa.
$e$, The palate-fiesure which assists in forming the fora men incisivum.
$f$, The suture which unites this hone to the os palati.
g, The part of this hone which forms the largest share of the nasal fossa.
$h$, The spine, which, by the union of its fellow, forms a small portion of the partition of the nose.
G, $c$, The irregular surface, by which the fore part of this bone joins ita fellow on the opposite side.
$\mathrm{H}, \mathrm{H}, \mathrm{H}$, The os palati.
$k$, The small sinus commonly found in this bone.
l, A portion of the palate-bone, forming part of the fossa nasalis, and partition of the maxillary simus.
$n$, An eminence by which this hone is conuected to the os spongiosum inferins.
n, The rough surface where the two palate-hones unite.
a, The hole proper to this bone.
$p$, The formen gustativum.
q. The pterygoid process.

1. 2. The dentes incisores,
1. The dene caninns.
2. 3. The dentes molares.

FIC. 3.
The Outer Surface of the Ossa Nass.
A, A, The upper part, which is joined to the frontal bone.
$B, B$, The lower ragged end, to which the castilage of the nose is fixed.
$A, B, A, B$, Holes penctrating the hone.
FIG. 4.
The Inner surface of the Ossa Nast.
$A, A$, The npper ragged cad.
$\mathrm{B}, \mathrm{B}$, The lower end, broader and thinner than the rest. $\mathrm{C}, \mathrm{C}$, The inner edge, thick and strong, where it joins its fellow, and sends a spine backwards, to be fixed to the partition of the nose,
$\mathrm{D}, \mathrm{D}$, 'The cavity which forms part of the arch of the nose.

FIG. 5.

## The Outer Surface of the Left Os Ungurs.

A, The lacrymal process, perforated hy numerous holes.
B, The orbitar process.
C, The ridge which separates the processes.

FIG. 6.
The Inner Surface of the Os Uwaurs, with Eninences and Cavities which belong to the Ethmodd Cells.

FIG. 7.

## The Outer Surface of the Right Os Male.

A, The superior orhitar process.
B, The inferior orbitar process.
C, The internal orbitar plate.
D, The maxillary process,
E, The zygomatic process.
F, The extermal orbitar hole.
$\mathrm{G}, \mathrm{G}$. The under and outer edge of the orbit.
If, Part of the ianer yough surface of the maxillary process.
I, The zygomatic nitch of the os malk.
FIG. 8 .

## The Inere Suaface of the samo Os Maxe.

A, B, C, D, E, As in Fig. 7.
$\mathbf{F}$, The interoal fossa, and situation of the external orbitar hole.
$\mathrm{G}, \mathrm{G}$, The rough edge whicb joins the os mala to the superior maxillary bone at the external orbitar suture.

FIG. 9.
The External Surface of the Os Spongrosun Inferms of the Right Side.

A, The suder edge of the hone tunving ontwards.
B, The upper edge, sending down a hook-like plate to cover a portion of the maxillary sinus.
C, The broad anterior extremity, where the connection is chiefly wade with the superior maxillary bone.
D, Tbe posterior extremity, narrow and irregular in its surface.
E, The external surface, with numerous small holes which mark its porosity.
F, $\mathbf{G}$, The superior edge, which joins the os unguis to form a share of the lacrymal groove.

EIG. 10.
The Internal Contex Surface of the same Os Srowarosum Inferius, which, like the Euternad Surfuce, it also of a spongy ferture.

FIG. 11.
The Posterior, and almost the whole of the Extersal Suyfuer of the Left Ob Palatt.
A, The palate-plate.
B, The pterygoid process.
C, The nasal plate.
D, The orbitar process.
E, A simall sinus, corresponding with those of the eth. moid bone.
IT. The notch which, with the body of the sphenaid boney forms the foramen apheno-palatinum.
G, A small hole which penetrates the thickness of the bone.
If, Part of the groove which helps to form the foramea gustativum.

FIG. 12.
The Anterior, and almost all the Eiternal Surface of. the same Os Palati.

A, The notch which assists in forming the formen gus. tativum.
B, The orbitar process.
C, The palate-plate.
D, The nasal plate.
E, The groove which helps to form the foramen gustativum.
F, The pterygoid process.
FIG. 13.
The Left Slick of the VoMEr.
A, The hollow surface which receives the processus 22 )gos of the sphenoid bone.
B, The anterior and upper edge, which is connected to the nasal plate of the ethmoid boes, and middle cartilage of the nose.
C, The inferior edge, which is connected to the palateplates of the superior maxillary and $\mathrm{p}^{\text {alate }}$ boncs.
D, A ridge on the side of the vomer.

## Maxilla Inferior.

The Figure of the Maxilla Inferior, or Lower Jaw, compared to that of the letter $\mathbf{U}$; or it forme half of a long oval, with the convex middle part forwards.
The Diviston, into Chin, Sides, and Prucesses.
The Chin, cxtending betweeo the holes termed Menlal Foramina at the forc part of the Jaww. Tab. IV.
The under part of the Chin more promineot than the Alveolar Process, with a triangular emioence in the middle of its outer Surface, which, with the projecting under edge, renders this part peculiar to Man. This projectiou of the Chin is less apparent in the Negro, where the Alveolar Border is so expanded as to iucrease the promineuce of the Mouth.

The Sides, reaching fiom the Mental Foramina to the back part of the Bone.

A Transecrse Ridge on the fore part of the Chin, with depressioas on cach side, for the Origin of Muselcs of the Under Lip. Tab. III. M.

Sinall Pirmininences and Depresstions on the under and back part of the Chin, for the attachment of the Framum Linguax, and of several Minscles which belong to the Throas. Tab, XXX. Fig. 13.

The Base, or louest part, forming the under boundary of the Face. Tab. IV. XIX.

The Augle of the Jaw at the back part of the Base, Tab. IV. IX.

Impressions made by the Masseter Muscle, upon the outside of the Angle, and also on the Plate which arises from it. Tab, IV. XXI.

The Plate, which rises from the Angle of the Jaw, on each side, running upwards and a bitle backwards, and terminating io two Processes, termed Condyloid and Cosonoid. 'Tab. VIT. Fig. 2. F.

The Cimdylorid or Articular Process, with an oblong rounded heail, covered with Cartilage, and placed almost transverscly upon a Cervix at the uppar and back part of the Bone ; though, with respect to each other, tbe Condyles are some what obbiguc, the exteroal extremity being directed a little forward.

At the under and fore part of the Condyle, a Cavity for the inscrtion of the Pterygoideus Externus.
The Coronoid Procese, into which the Tenuporal Muscle is inserted, sotrated a little before the Coodyloid Process, and in the natural situation of the Jaw, placed on the inner side of the 'Zygoma. Tab, XV, SYIII.

The Anterior Edgc of this Process, forming a Ridge which goes downwards aod forwards, terminating at the outside of the l'osterior Alveoli.

From the iumer side of the Coronoid Process, another Ridge yeen terminating nearly opposite tn the foriner. To these Ridges, the Membrancs of the Gums and certain Muscles bclonging to the Mouth are fixed.
The theolar Process, and theol; nearly similar to thase of the Ipper Jaw. Tab. XIV. II.


Edge of the Booe, from the Coronoid Process of one side to that of the other; and thickest behind, comesponding there with the increased thickuess of the Teeth.
The Alveolar Process, composed of two Plates, and divided by cross Partitions, which, as in the Upper Jaw, mark the differst Alveoh for the Fangs of the leeth.
The Posterior Part of the Lutemal Plate, slanting inwavde, and thinner than the exterzal, giving tbe Jaw a twisted appearance.

Opposite the Alveoli, the Extermal Plate swelling, and giving a fluted forn, which is observed in the whole extent of the Alveolar Process of the $\mathbf{1}$ pper Jaw, and in the fore part of the Lower Jaw.
At the fore part of the Jaw, the Alveoli are perpeodicular, but tum inwards bebind, where they are placed nearer the inner than the outer part of the Jaw.
The Srkets worn dowu by absorption iu old age, in consequence of which the teeth drop out, the Jaw becomes narrower, the face shorter, and, whea the Mouth is shut, the Jaw appears more prominent. Lab. XIV. Fig. 7, A.

The pasterior Maxillary Foramen at the roots of the Condyloid and Coroooid Processes, upon the inner side of the Jaw, for the passage of the Thind, or inferior Maxillary Branch of the Fifh Pair of Nerves, with the corresponding Blood-Vessels. ab. XXX. Fig. 13. 7.
A simall-pointed Process at the inner cdge of this Hole, wbere a Ligament goes off to be fixed to the Temporal Bone. Tab. XIV. Fig. 2. at the imer side of the Bone, opposite $\mathbf{E}$.

Above the Hole, the Bone marked by the passage of the Nerve and Vessels; aod below it, commonly a smald Furrow, pointing out the course of a Nerve which goes to a Muscle and Giland under the Toague.

Between the Posterior Maxillary Foramen and the angle, the Bone marked by the insertion of the Internal Pterygoid Musele. Tab. XXX, Fig. 13. 6.
The Interior Maxillary Foramen, or Mental Hole, at the side of the Chin, where the remains of the Inferior Maxiltary Nerve aud Vessels come out. Tab. IV. smvi. C.

The Inferior Marillary Canal, running in the substamee of the Boac, between the Posterior and Anterior Foramina, a little below the roots of the Feeth, and baving many perforatious, for the passage of small branches of Vessels and Nerves which supply the Jaw and Teeth.

The Tables of the Jawx, pemarkably thük, compact, and hard, and within, furnished with mumnerous Cells, which surround the Maxillary Canalls.

The . Dticulation of the Jaw by its. Coudyloid Proeess with the Glenoid Cavity of the Temporal Bone, and also with the Tubercle at the root of its $\mathrm{Z}_{\mathrm{y} \text { gomatic }}$ Process.

An intermediate moveable Cartilage, thin in the centre and thicker at the edges, placed in the Articulation of the Lower Jaw, in its gentler motion allowing the Condyle to remain in the Glenoid Cavity, but adruitting it to advance upon the Tubercle or Root of the Zygoma, when the Mouth is widely opened. Tab. XXX. Fig. 17.r.

In the Foetur, the Lower Jaw is somewhat of a gemicircular figure, and is composed of two pieces, joined together in the middle of the Clin by the intervention of a Cartilage. Tab. XXVII. This union, termed Symphysie, gradually ossifies, and leaves no mark of any former divisiou.

## TEETH.

THE Situotion of the Teeth in the Alveoli of the Jaws. Tab. III. and IV.
Their Number, sicteen in each Jaw, Tab. III.
The Base, or Body of each Tooth, appearing without the Sockets. Tab. XIV.
The Roots, or Fangs, placed in the Sockets, and of 2 conical form, Tab. XIV.

The Cervix, or Collar, between the Base and Fioots of the Teeth. Tab. SIV.
The Roots of the Teeth covered by a Vascular Membrane, reflected fiom the Gums, and serving as a Perin osterm to the Teeth, and a lining to the Alveoli.

The Corter, or Enamel, covering the Base of each Tooth, and hecoming gradually thinuer towards the Cer vix.

The Fibres of the Osseons part forming Lanelloe, which run according to the leagth af the Teeth.

A koramen at the point of the Root of each Tooth, and a Passage leading from it into a common Cavity in the Base of the Tooth, for lodging the Vascular and Nervous Subetance called Pulp of the Teeth.

Division of the Teeth into four Classes, viz. -On each side of each Jaw, -
Tuo Incisores; -One Cuspidatues, or Caninue; -Tuo Bicuspitati, or Small Molares; -and Three Large Mfolares. Tab. XIV.

The Incisores, having their Bases formed intn Hredges Aloped out behind.

The Cuspidatus, having its Base in form of a Hedse like the Incisorcs, bat pointed in the middle.

The Bicuspidati, each with double points, oue external, the other interoal, which, in the Ipper Jaw, are nearly upon a level, but, in the Under Jasw, highest onthe outside of the Teeth.

The Incisores, Cuspidus, and small Molares, with aingle Roots, excepting the small Molares of the UPper Jaw, which have frequently two Roots.

The first of the three posterior, or large Molares of the Under Jan, with five, and each of the other two with four points.

Each of these three Teeth having two, threc, or some. times four roots.

In the $U_{\text {pper }}$ Jaw, the first large Molarin having four ${ }_{\psi}$. and each of the other two only three points.

In each of these three Teeth, generally one root more in those of the Upper, than in the corresponding Teeth of the Under Jaw.

The last, or backmost Molaris, called Sapiens, smaller, and having generally fewer roots.
'The Teeth connected to the Sockets by Gomphosith and by a firm adhesion to the Gums.

At Birth, the outer Shell only of the five temporary Teeth, and of the anterior permapeut Molaris, in each side of each Jaw, is found.

These 'Teeth are situated in Capsules, within the Jaw; and under its Surface. At this period there are no roots formed.

For a fuller description of the Teeth, see Tot. II.

CiB. 13.


Fig. 3.


## TABLE XIII.

## Gives different Views of the Cavity of the Nose.

## FIG. 1.

The Left Portion of the Base of the Head divided from the Septum Narrum by a perpendicular Section, proceeding in a straight line from before backwards.
A, Part of the os frontis.
B, The posterior lamina, called Vitrea.
C, The trontal sinus.
D, Part of the transverse suture, dividing the frontal from the superior maxillary bone.
E, Part of the frontal bone, contiguous to the os etlimpides.
F, The upper part of the ethmoid bone..
G, The fore part of the ethmoid cells entire. From a little hehind G to $\mathrm{H}_{7}$, the anterior, middle, and poste. rior ethmoid eells haid open.
1, Openings of the ethmoid cells into the nose.
K , The last and uppernest passage of the nostrils.
L, The left anterior clinoid process of the sphenoid bone.
M, The posterior clinoid process.
$\mathbf{N}$, The Sella Turcica.
O, The left sphenoid sinus.
$\mathbf{P}$, The part where the sinus opens intorthe posterior and upper passage of the nostril.
$Q, R, A$ section of the back part of the sphenoid, and cuneiform process of the occipital bone.
S , The spinous process of the occipital hone.
$\mathbf{T}$, The internal pterygoid plate.
U, The uncus of the splienoid bone.
V, The fore part of the meatus auditorius.
W, The superior condyloid foramen, for the passage of the uinth pair of nerves.
X , The mastud process of the temporal bone.
Y, Part of the os occipitis.
$Z$, The inner side of the occipital bene.
$a$, The cut edge of the occipital bone.
$b$, The under and outer part of this bone.
$c$, The masal procens of the superior mavillary bone.
$d$, The inner side of this bone, which formos the middle pashage of the noutril.
c. Part of the same boue, which forms the beginning of the lower passage of the nostril.
If A section of the aveolar process.
g, A section of the osseous palate.
$h$, The ny pur part of the osocous grahate. Voz. 1.

8, The desceading, or alveolar part of the palate.
$k, l, m, n$, The os spongiosum superius. Between $l$ and $n$, the part resembling a concha.
$o, p$, The middle passage of the nostril.
$q$, The opening of the antrum mavillare. Between $q$ and $r$, the os spongiosum inferius.
$n$, A part of the interior spongy bone, opposite the opening of the lacrymal duct.
$\varepsilon, t$, The lowest passage of the nostril.
FIG. 2.

## The Lefi Surface of the Septum Narium.

A, The os firontis, with its plates and diploe.
B, The frontal sinas.
C, The crista Galli.
D, Part of the as planum of the left side, having no ethmoid cells.
E, The foramina crihrosa of the ethmoid hone.
F, The nasal plate of the ethmoid bone, which forms part of the septum nariun.
G, That part of the nasal plate of the ethmoid hone where it is joined to the vomer.
H , The vomer.
I, The cartilaginous part of the septum narium.
K, Part of the upper jaw.
$\mathbf{L}, \mathbf{L}$, The dentes incisivi of the upper jasw.
M , The posterior edge of the romes, covered with a membrane.
N, Part of the emmeiform process of the eccipital hone.
0 , The right sphenoid sinus.
P, The posterior clinoid process of the splenoid bone.
Q, The anterior clinoid process of the sphenoid bone.
R, The Sella Tureica.
$S$, A portion of the septwn, between the two sphenoid sinuses.
T, A partition hetween the sphenoid sinus and the nostrils,
FIG. 3.
The Anterior and Right Portion of the Base of the Head, faken off by a Longitudinal Section separating it from the Septum, amb by a 'Tranmerse tection separating it from the Posterin Part. The two cut Surfaces of this Preparation air represented.

A, The

A, The frontal sinus.
B, The opening of the frontal sinus unto the first ethooid cell, which is seen on each side of C.
$\mathrm{D}_{1}$. The nasal process of the superior maxillary bone.
$\mathbf{E}, \mathbf{A}$ section of the os spongiositum superius.
F , The wall, or bourdary of the middle passage of the nose, by which it is separated from the superior appendix of the thaxillary process.
$G$, Cells in the superior maxillary bone and its orbitar part, first described by Hallek. The uppermost of these opeas into the anterior ethmoid cell.
$H_{\text {, }}$ The orbitar plate of the superior maxillary bone, forming part of the bottom of the orbit, and upper part of the antrum maxillare.
I. The orbitar plate of the frontal bouc.

K , The or malæ.
$\mathrm{L}, \mathrm{M}, \mathrm{N}, \mathrm{O}, \mathrm{P}$, The sinus, or antrum maxillare $=\mathrm{O}_{1}$, The partition by which the antıum maxillare is separated from the eavity of the nostril. $P_{\text {, }}$. The forz meu by which the antrum communitates with its apgpendix.
$Q, A$ section of the os spongiosum inferius.
$\mathrm{R}_{1}$ The orifice of the lacrymal groove.
S , Part of the palate.
T, The lateral dens incisivus.
U, The dens comunus.
$V$, W, The two small molares.
v.
$\square$
-


## TABLE XIV.

## Gives different Views of the Bones of the Ear ; - of the Jaws and Tbeth; -and likewise a View of the Os Hyordes.

## FIG. 1. <br> Represents the Sockets of the Upper Jaw, and Osseous Part of the Pelate.

A, B, C, The sockets of the dentes incisores, dens caninus, and two small molares of the right side, single.
D, The sockets of the three large molares, each with three cavities.
$\mathbf{E}$, The palate-plate of the superior maxillary bone.
$F$, The palate-plate of the os palati.
$G$, The pterygoid plates of the sphenoid bone.
FIG. 2.
A View of the Sockets of the Lawer Jaw.
A, B, C, The sockets of the incisores, canini, and small molares, single.
D, The sockets of the large molares, each with two cavities.
E, E, The coronoid processes.
$\mathbf{F}, \mathbf{F}$, The condylaid processes.
FIG. 3.
A View of the Fangs of the Tecth in both Jaws, the newner of Fangs corresponding to that of the Sockets seen in Fig. 1. and 2.-The Eaternal Plate of the Alveolar Pivcess is removed

## FIG. 4. $\quad$

Viesrs of the differcat Classes of Teeth of both Jaws.
A, B, C, The posterior surface of an incisor of the upper jaw ;-A, Its body; - B , Its cervix, where the enamel ends ;-C, Its straigbt faug.
D, An incisor of the lower jaw, smaller than that of the upper one, A, B, C.
E, The posterior surface of a canine tooth, with its pointed body and large fang-
F, A suall molaris, with its straight single fang.
G, A large molaris of the under jaw, with its fangs crooked at the points.
H, A large molarie of the upper jaw, with three diverging fanga:
I, A molaris of uncomsson size, with an appearance of four fangs,

FIG. 5.
A View of the Decrduous, or Milk Teeth, is various degrees of Growth.
A, The body of an incisor, the fang not yet evolved.
E, The body of a small molaris.
C, The budy of a canine tooth.
D , The body of a lavge molaris.
E, The body and part of the fangs of a large molaris.
F, The body and part of the fangs of a large molaris, more advaneed than E.
G, A canine tooth nearly complete.
H, I, 't wo incisores nearly complete.
FIG. 6 .
A Tiew of the Disposition of the two Sets of TeETH, in botle Jaws, at the time of shedding the Milk Teeth.

1. 2. \&x. The deciduous, first set, or milk-teeth.
1. 2. \&c. The permanent, culuit, or secund set of teeth, proceeding to the edge of the alveoli.

## FIG. 7.

A Fire of the Upper and Under Jaus of an Old Person, without the Treth, and the Alveolioblitesated, wrience the Juwnare sumvorer, the Chin much more prominenty and the (avity of the Mouth diministed.

FIG. 8.
A magnified Fiew of the SNall Bones of the Ear, arn ticnlated with each other, and corered with their Pem riosteum, in which the Blood-tessels appear.
A, The incus.
B, The malleus.
C, The stapes.
D, The as orbiculare ti situ.
FIG. 9.
Ficus of the Small Bones of the Ear.
The upner set gives a view of the small bones of the eat, of their natural size, and as they are connected with each other.

The onder set shews these bones separated from each other, and somewhat magraified,
A, The incus, with its body, articular cavity, short posterion, and long inferior branch.
B, The mallews, with its head, neck, cavity of artioulation with the incus, great process or handle, middle process, and loug slender one.
C , The stapes, with its head, crura, and hase.
D, The os orbiculare.
FIG. 10.
The Temporal Bone of $a$ Young Subject, with the Small Bones of the Ear in situ,-the Membrana Tympari being remored.

FIG. 11.
The Temporal Bone, with the Menbrana Tympani in situ, the Small Bores shineing fhrvogh it.

FIG. 12.
An Evternal View of the Rigity Labyrinth, and Out. liner of the Pars Petrosa of a Yowng sirtject.

In the labyrinth are seen,
Anteriorly,-the cochlea. Posteriorly,-the semicircuiar canals. Superiorly,-the foramen ovale. Inferiorly, -the foramen rotundum.

FIG. 13.
A View of the Upper and Fore Part of the O s Hyomes.

A, The bady of the as hyoides.
B, Its cormuas:
C, Its appendices.

## Os Hyomes,

The circumstances to be attended to here are,
The Situation of that Bone, at the root of the Tongue and top of the Larynx.

The shape, compared to that of the Greek letter v. Tab. XIV. Fig. IS.

The Body of the Bone, the middle broad part conver before, and concave behind.

The concavity behind oblique, to receive the Thyroid Cartilage, when the $\mathrm{Os}_{8}$ Hyoides and Laryax are pulled towards each other.

Several Inapressions seen 00 its Body, occasioned by che numerous Muscles fixed to it.

Tbe Contua, extending backwards and upwards from each side of the Body, with their two plain Surfaces alsnting from above downwards and outwards, and giving attachment to Muscles and Ligaments of the 'Tonguc and Laryns.

Each of the Corour becoming gradually smaller is its course backwards, and cnding in a round Tubercle, which is connected to the upper Corau of the Thyroid Cartilage.

Between the Body and Comua, frequently a Furxow, pointing out the fomer separation in young Subjects.
'T'be Appendices, baving the size and lomn of a grain of decorticated Barley, placed at the upper part of the Articulation betwceu the Body and Coroua, for the attachment of Musclea.

From each Appeudix, a Ligament is sent up to the Styloid Process of the Temporal Bone, to assist in connectigg the Os Hyoides to the Cranium. Tub. XXX1. Fig. 1. 2.

The Os Hyoides is not immediately connected to any other Bone, but is kept in its place by numerous Muscles and Ligaments, to be afterwards mentioned.

The Substance of this Bone is Cellular, but covered with a firm exteraal Plate, which adds considerably to its strength.

At Birth, the greater part of the Bone is in a Cartilaginous state, and the Appendices continue so for many years after tbe other parts are completcly ossibicd.

The Os Hyoides serves as a Lever for numerons Mus, cles acting upon the Tonguc, Ladybx, and Fances.

## TRUNK.

We observe here,
The Trunk, compored of the Spine, Pelvis, and Tho Fan.

The Spine, reaching from the Condyles of the Occipital Bone, to the lower end of the Os Coccygis. Tab. U. G, P.

The Spine appearing straight, when viewed anteriorly or posteriorly. Tab, H. G, P.

The several Curvatures of the Spine, when viewed in a lateral direction; the Curvatures accommodating them-
selves to the soft parts of the Neck, Thorax, Abdomen, and Pelvis. Tab. XV, XV1.

The Spine, composed of a long upper, and a sbort under Pyramid, joined together by their Bases. Tab. II. $h$.

The Upper Pyramid, composed of true Vertebret, or Bones, whicb turn upon each other. Tab. II. G.-N.

The Under Pyramid, formed of false Vertebre, or Bones, which, at an early period of lite, resemble the true Vertebrax, but whicb afterwards grow togetber, so as not to contribute to the motions of the Trumk of the Body. Tab. II. h.-P.

## TRUE VERTEBRA;

Twenty-four in Number.

Each of the true Vertebrec composed of a Body and Processes.

The Body of a spongy mature, with upper and under Burfaces placed horizontally. Tab, XXXI, Fig. 11, a.
The anterior coavecity of the Body, and posterior concavity. Tab. SVIII. Fig. 9. 16.

Nunerous small IIoles on the antcrior and lateral parts of the Body, for the passage of Blood-vessels into the Substance of the Bone, or for the attachment of Liganentons Fibres, Tab. SVI. Fig. 8. a.

A Ring of Bone, at the upper and under edges of the Body, ol a fimmer texture than the rest of its substance, and thereby adding to the general strengtb of the Bone. Tab. XVIII. Fig. 9. b, b. Tab. XXXI. Fig. 12. r.

The Ring of Bonc forming a superficial Casity, which receives the Intervertebral Substance. Tab, XVIII. Fig. 9. $a$.

The Bodies of the Vertebrex in general smaller and more solid above; as they descead, they become larger and more spongy.

The Intervectebral Substancer, of a Cartilago-ligamenmus nature, placed betwien the Boctios of the Yertebra, for fising thein together, sand alloniog the "pine to be moved iu all dircetions. Tab. I. E. Tab. MAXI. Fita. 15.

The lutervertchral Substances, courposed of Concentric Latuclle, with their edges firmly fixed to the Bodies of the Tertebra.

The Lamellx of these Suhstances, formed of Oblique Tibrei, which decussate each othcr, and are very comnpressible.

The lentre of these Substances changes fiom Lamelle, and puts on the appearance of a Murus or Palp, which has little compressibibiy, and serves as a privoi upou whiseb tbe other parts of the Ligainent can nove, with such gradual yielding as to lessen shocks in the Spine in violent motions of the Body.
The Intervertebral Substances, like the Vertebre themselves, larger and thichere as they descend, to give mow security to the puts they support. Tab, I.

An Arch sent out from the back part of the Body of each Vertebra, whieh, together with the Eody, forms a large Hole, which is part of the Canal for the passage of the epinal Marrow. Jab. SiTIIl. Fig. 3. h.
A Notch at the upper and under culges of each side of the Areh, forming, in the contiguous Vertebra, the passage of the Spinal Nervea. Tab. XVILI. Fig. 10. $d, d$, Fig. b. $c, c$.

The Procesises of each Tertebra, seven in number, viz. two Superior Oblique, two Inferior Oblique, two Transverse, and one Spinous.

The turo Supcrior Obtique, or Articulating Processer, covered with Cartilage, placed upon the upper part of the sides of the Arch. Tab. XVIII. Fig. 3. $b, 6$.

The tuo Inferior Obligue, or Articulating Pracesses, also covered with Cartilage, and placed upon the under part of the sistes of the Arch. 'Tah, XVIII. Fig, $1, h, h_{1}$

The tuo Superion Oblique Procesues of one Vertehra, arliculated with the tuo Inferior Oblique of the Vertebra inmediately ubove it. Jib. Sillil. Fig. 5. $e$, , $u$.

Round thic edges of the Oblique Processes, rough Lines for the attachment of their articulating Ligaments.
The tuo Transeerse Processes projecting from the rides of the Arch, and betwecn the Obligue Proecsses. Tib. XV111. Fig. 10. e, e.
The Spinous Procyex, seat out from the back part of the Arelh, which, being sharp and pointed, gives name to the whole chain of Roues, Tab, S1111. Fig. 7. d, $i$.
The Edges of this Pincess, as well as of the Arch, 2rough, where Livameuts come of nlich lix the conespondiag parts of thic coutigunus Vertcbre together.

The Substrnce of the Processes stwonyer, with a thieker external Plate thau the Bodies of the Sertebre.

The Vertebree ave joined to cach other by a double Articulation; thir Bodies being conarcted by the Intervertebral Fubstances already described, and their Oblique Processes are so conncted by their Ligitnents as to allow a small degree of motion to all sides.

The uses of the true Verichrec are, to give at eveet posture to the Trunk of the Body, to allow a sufficense ind secure miotion to the Head, Aeck, and I rumk, and to support and protect the Bowels and other sote parts.

In the Foxtul, each vertebra conssts of three pieces comected by Cartiluges, viz., the body not fully ussilied, a curved 3 Bone on each side, formiug a emall share of the Fiony Arch, the Obligne P'roecuses complete, the begiwning Traueverse Processes, but no :pinal Procers.

The Vertebre, on accourt of certain peculianties, divid. ed into seven Cervicai, tuetie Dursal, and jue Lumbar.

I'he Cervical I ertebra, or Fertebra of the Nick, havmig their Bodies swaller, moore jlatiened before and betind, and more luollured abuve and Belour, than those of the other Vertebre. Tab, XV. A, A, \&ce.

The Articulating Praceses, wore oblique than the rest. Tab. NVIII. Fig. 5. $c$, m.

The Teansecrst Prucesser, perforated for the passage of the Vertcbral Blood-ressels, and hallozed ubove for the transmission of the epiual Nerves. Tub. XIIII. Fig. Y, e, e

The Spiual Piocesses, placed harizontally, shorter than the rest, and forked for the attuchment of Muscles, Tab. MVIII. Fig. 6. $r, r$.

The Cervical lertebrax adnit of free motion, in consequence of the thickness of their Cartiluges, and the n2. twre of their Proeesses, but give less proiecticen behind to the spinal Marrow than is given in other parte of the Spine.

The first Vertehra, called Allas, from its supporting the Globe of the liead, having only a emall Arch instead of a Body. Tab, XYIIL. Yig. 1, a.
The upper and under furfices of the Arcb, marked hy the Liganeents which fix it to the Head and second Vestebra. Tab. XVIII. Fig. 1, 2.
The back part of the Arch, hollow, and catered by a smooth Cartilage, where it turns upon the Processus Dian tatus of the second Vertebra. Tab, XVIII. Fig, 2, a.
The inncr parts of the sides of the Yertebra, between the superior and inferior Oblique Processes, marked by the Lateral Ligameats which go to the Processus Dentitus, and by the Transverse Ligament which pasess behind that Process. Tab, XVIII. Mig. 2. c, c. Tab, XXI. $\mathbf{F}_{\mathrm{ig}}$. $1 . ~ u, d$.
An Arch upon the bach part of the Atlas, instead of a S Pinous Proces4, tuarked by Muscles and ligaments. Tab, XVIII. Yig. 2, .

The Superiur Oblique Protesser, owal, slanting, and holluru, for receiving the Condyles of the Occipital Bone. Tab, XXI. Figi 1. D. D.

A curred Fosea under the outer and back part of each Oblique Process, for the passuge of the Vertebral Arteries into the Head, and Tenth Pair of Nerves out of it. Tab, XNI. Fig. 1. $f$.

The Transterse Piorese, longer than in any other Cervical Yertebra, for the origin of several Muscles. Tal, XVIII. Fig. 5. d, d.

The Connection of the Atlas to the Occipital Bones where
where the Head has its flexion and extension, but littlo other motiou.

The second Vertebia, called Dentatr, from the ToothHke Process on the upper part of its Body.

The Body of this lextebra larger than the rest, and of a Conical figure, Tab, XVILI. Fig. 5, k-l.

The fore part of the Processus Dentatus, conecx and coucred with Cartilage where it turns upon the Allas. It has the same appearance behind, where it moves upon the Transverse Ligument. Tah. XVIII. Fig. 5. 6.

The Sides of this lrocess, marked by the insertion of the lateral Ligaments, and its point by the insertion of the perpendicular Ligament, which is fixed to the edge of the Foramen Magaum of the Oecipital Bone. Tab. STIII. Fig. 4. a.

The Supcrior Oblique Processes placed horizoutally, and a little elevated in the middie, to be received into the hollow lulecior Oblique Processes of the Atlas, whem the Head has its principal rotatory motiou. Tab. XVIII. Fig. 3. b, b. Fig. 5. $m, m$.

Tbe Spinous Procexs, thick and strong, to give origin to the Museles which assist in the exteusion and rotatiou of the Head, and turned down to allow these motions to be readily perlormed. Tab. XVIII. Fig. 3. g, g. Tab. XXXI. lig. 5. d, e.

In the Fotus, the Vertebra Dentata consists of four pieess, three of which are common to all the Vextebree, the fourth is the Processus Dentatus, which is joined by. Cartilage to the Rody of the Bone.

The seventh Ceretcal Iertebra, approaching in form to the Dorsal Vertebræ.-The Spinal and Trans* verse Processes have no Bifureation. Tab. XXMI. Fig. 1/r.

The Dorsal Vertebra, or Vertebrae of the Back, horizontal above and below, having theip Bodies larger, sharper before, flater at the sides, and more hollow belind, than those of the Cervical Vertebiz. I ab. XVIII. Fig. 7, F. Tab. XXX1. Fig. 10.
A. Pit, lined with Cantiluge at each side of their upper and under Edges, new the Transversc Processed, for the articulation of the Heads of the Kibs. Tab. XXXI. Fig. 15. $t, t$, W.

The Intercertebral Substanecs, thin to admit only of little motion; and thannest anteriorly, to enlarge the Curvature of the Spine, and inerease the Cavity of the Thorax. Tab. XV.

The Spinal Canal is here more Cireular, but corresponding with the size of the Spinal Marrow,-is smaller than in any of the other Vertebra.

The Obliqte Proccsses, having uearly a perpendicular direction, the upher ones slanting formards, and the
under ones backwards. Tab. XXXI. Fig. ․ b. Fig. 10. $k$.

The Tranwerse Processes, long, turucd, obliquely backwards, and enlarged at their outer catrennity, where they are faced with Cartilage, to be artienlated with the 1 uhereles of the Ribs, Tab. SV1II. Fig. 7. Fig, E. $f_{9}, f$.

The spinous Processes, long, thek at the roots, bits slender near the extremities, and pointing obliquely downwards over each other, by which the Scinal Maryow in this part is well protceted. 'Tah. XVIII. Fig. $\hat{f}$. Tab. XXXI. Fig. 17.

The upper Edge of the Spinous Processes of these Vertebrax, Tonned into a Redge, which, is certain inotions of the Spine, is received by a Groove in the under. part of the Spinous Process of the Vertebra inmediately abowe it. Tab, XV111. Fig. 7, 8.

The last peculiarity of structure, with the othere already mentioned, prevent the Dorsal V crtebre from having much motion.

The first Dorsal Fertebra, having the whole of the Pit for the Head of the First Rib formed in it.

The trelfth Dorsal I ertebre receiving the wbole Head of the last Rib, and having no Cartilagiuous Surfaee on its Transverse Process.

The Lumbar Vertebuc, or thove of the Loins, havirg their bodies larger and broader than tbose of the othes two elasses. 'Tab. X VIII. Fig, Y. 10.

The Intervertebral Sirbstances, the thickest of any, and most so at their lore part, by wbich the Spiue is reudered convex there, for the support of the Abdominal Bowels, Tab, XV1.

The Obfique Processes, remarkably decp, and placed upright, the Superior Oblique Proecsses of vue feric. bra facing inwards, and receiving the Iuferior Obliquo Processes of the Vertebra above it, which are turoed in the opposite direction. 'Tab. XXXI. Fig, I?, ${ }^{2}$. Fig. 13. K.

The Transzerse Pitcessev, long, slender, ind spread out from the Bone, to give origin to large Muscles, and to admit of free motion. 'lub. I 1 I11. Fig. 9.10.

The "pinows Proceser, short, laggt, and strong, and placed horizontally, with narrow edges above and below, and broad flit sides, giving origin to Muscles of great streagth. Tab. XVIII. Fig. ... 10, Tab. XXXI. Iig. I2. 13.

The Spinal Caral, larger than in the back, for the passage of the Cords of the Epinal Marrotw, which forma the Cauda Equina, Tab, XVIII. Fig.?.

In consequence of the thickness of the lintervertebral Substances, and the situation of the Processes of the Lambar Vertebra, the motion of this part of the Spine is extensive, though not so much 50 as in the Neck,

## TABL.E XV.

## An Anterior and Lateral Vrew of the Upper Part of the Trung of the Skeleton.

A, sc. The bodies of the eervical vertebre, with their intermediate cartilages:
B, C, The transverse processes of the cervical vertebree, with a bole in each of the processes, forming a canal for the vertebral blood-vessels.
D, The processus dentatus of the second vertebra of the neck.
$E$, sc. The bodies of the dorsal vertebre, with their intermediate cartilages, forming a curve backwards.
F, \&cc. The transverse processes of the dorsal vertebre.
C, \&sc. The outer couvex surface of the ribs.
H, \&c. The cartilages of the seven upper or true ribs, by which they are joined to the stemum.
I, \&ic. Tbe cartilages of the false ribs, the three uppermost of which are joined togetber.
K, Head of the first rib, joined to the first dorsal vertebra.
$\mathbf{L}$, The tubercle of the first rib, juined to the tranaverse process of the first dorsal vertebra.
M , Head of the second sib, joined to the first and second dorsal vertebra, and its tubercle fixed to the transveme process of the latter of tbese two bones.
$O$, The upper triangular piece of the sternum. $-\mathbf{P}$, The middle or long piece. -Q , Tbe lower piece, or ensiform cartilage.
R, $\mathrm{S}, \mathrm{T}, \mathrm{D}, \mathrm{V}$, The scapula.-R, The glemoid cavity of that bone.- $S$, The acromion of the scapul2.-T, The coracoid process of the acapula. - D , The inferior costa of the scapula.
W, The clavicle joined to the sternom, and at $\mathbf{X}$, to the scapula.
$\mathbf{Y}$, The anterior convexity of the clavicle.


TiJ: K


## TABLE XVI.

An Anterior and Lateral View of the Under Part of the Thunk of the Sgcleton.

A, The body of the last dorsal vertebra.
B, scc. The anterior extremities of the four lowest rihs of the left, and two lowest of the rigbt side.
C, 8 sc . The cartilages ol the four lowest ribs of the left, and two lowest of the righit side.
D, \&c. The bodies of the lumbar vertebra, forming an arch forward.
$d$, \&c. The intervertebral cartilages,
E, \&c. F, \&c. Four lowest transverse processes on the left, and points of the three lowest on the right side.
G, \&ic. The points of the three epinous proceses.
H , The apper piece of the os sacrum, joined to the last lumbar vertebra.
I, \&tc. The fye original pieces which cormpose the os 82 crum, grov n together, but leaving traces of their former divisions, neas the parta where the letters are placed, and forming an arch back wards, whereby the carity of the pelvis is considerably enlarged.
K , \&sc. Slanting boles opposite the original interstices of the pieces of which the os sacrum is composed.
a, The brim of the pelvis.
$\mathrm{I}_{5}$, The inoer hollow side, or venter of the os ilium.
$b$, The cannection between the os sacrum and os ilium. - A little below $b$, on the right side, the passage for the principal blood-vesscls ol the bone.
$\mathrm{M}, \mathrm{N}$, The spine of the os ilium.
O, The anterior-inlerior spinous process of the os ilium.
$\mathbf{P}$, The point of union between the os ilium and os pubis.
Q, The ischiatic notch.
R, Part or the outer surface, or dorsum of the os is chium.
T, The crus of the os ischinm, joining the crus of the os pubis.
U, The tuherosity, forming the lowest part of the trunk of the skeleton.
$\nabla$, The upper part of the or pubis, where the flexor muscles and great blood-vessels of the thigh, with the anterior crural nerve, pass out of the abdidomen.
W, The crest of the ob pubis.
X , The crus of that hone.
$c$, The symphysis of the pubis.
$d$, The arch of the ossa pubis.
$\epsilon$, The foramen thysoideum.

VoL, 1. ©

## TABLE XVII.

A View of the Posterior Part of the Trunk of the Skeleton.

A, The upper part of the first cervical vertelura.
$B$, One of the ohlique, and,
C, One of the transrense processes of this hoae.
D, Museular prints on the back part of this bone.
$\mathbf{E}, \mathbf{E}$, The spinous processes of the six other cervical vertebrae, of which the four tirst are forked.
F, F, Tbe oblique processes of these vertebra.
$\mathbf{G}, \mathbf{G}$, The transverse processes.
$\mathrm{H}, \mathbf{H}$, The spinous processes of the three first vertebree of the back.
I, I, The qiinous processes of the six middle vertcbre, which are long, and sloping downwards over each other.
$\mathbf{K}$, K , The spinons processes of the three last dorsal vertebre, which are short and straight.
$\mathbf{L}$, I4, The transverse processes of all the dorsal vertchre.
$\mathbf{M}, \mathbf{M}$, The oblique processes of all these vertebre.
$\mathbf{N}, \mathbf{N}$, The spinous processes of the lumbar vertebre.
$\mathrm{O}, \mathrm{O}$, The transverse processes of these vertebre.
$\mathbf{P}, \mathbf{P}$, The oblique processes of the same vertebiz.
$\mathbf{Q}, \mathbf{Q}$, Part of the bodies of the same booes.
$\mathbf{R}, \mathbf{R}$, The arches of these bones, which foran the back past of the pizinal canal.
8 , S , The spinous processes of the os sacrum.
T , Oue of the lateral aad superior tuberosities of this bone.
$\mathbf{U}$, The superior orifice of that part of the eninal canal which helongs to this hone.

V, One of the superior oblique processes of the os 5 , 2 crum.
W, W, The holes in the back part of the os nwerum ${ }_{\mathrm{t}}$ which transmit small vessels and nerves to the parts adjacent.
$\mathbf{X}, \mathbf{X}$, The eminences and cavities at the lateral parts of this bone,
Y, One of the comme of the as sacrum.
$\mathbf{Z}$, The inferior orilice of the spinal canal.
$a_{4}$, The finst or uppermost piece of the os coccygis.
$b, b$, The posterion extrematies of the ribs.
$c, c$, The necks of the ribs,
$d, d$, The angles of the same bones.
$e, c$, The cartilages of the false ribs.
$f$, The outer suriace of the os ilium.
g, g, The posterior spinous processes in - is the o.
$h, h$, The great posterior tuberosity $(-\quad 11$ bone.
$i$, The spive of this hone.
d, A portion of thie anterion tuberosity of this bone.
l, The porterior edge of the acetabulum.
m, The ischiatic notch.
$n$, The spinous process of the os iscbium.
on, A portion of the intermal surface of the superior branch. of the os pubis.
$p$. The tuberosity of the os ischium.
$q$, The internal aurface of the branch of this bone.
$r$, The foramen ovale.

## TABLE XVILA.

This Table gives a View of the Right Side of the Spine. Here the Curvatures belonging to the Neck, Back, Lorns, and Pelvis, are very conspicuous.

A, The body of the first cervical vertebra.
B, The posterior part of the same vertebra.
C, The body of the second cervical vertebra.
D, Tbe spinous process of the same bone.
E; The last cervical vertebra.
$\mathbf{F}$, The spinous process of that bone.
$\mathbf{G}, \mathbf{G}$, The oblique processes of the cervical vertebree.
$\mathbf{H}, \mathbf{H}$, The bodies of the dorsal vertebre.
I, I, The impressions on the sides of these vertebra, which receive the heads of the ribs.
$\mathbf{K}$, $\mathbf{K}$, The notches between the same vertebra, for the passage of the spinal nerves.
$\mathbf{L}$. $\mathbf{L}$, The oblique processes of these vertelure.
M, M, The transverse processes of the same bones.
$\mathrm{V}, \mathrm{N}$, The impressions on the fore part of these proresses, for the axticulation of the aibs.

0,0 , The spinous procesises of the dorsal vertebric, varying in length and obliquity in the different parts of the back.
$\mathbf{P}, \mathbf{P}$, The bodies of the lumbar vertebre.
$\mathbf{Q}, \mathbf{Q}$, The oblique processes of these vertebre.
$\mathbf{R}, \mathbf{R}$, The transverse processes of these bones.
$\mathrm{S}, \mathrm{S}$, The latent notelies and holes of these bones.
T, $\mathbf{T}$, The epinous processes of these vertebre.
$\mathrm{U}_{7}$ The upper and fore part of the of sacrum.
V, The uader part of this bone.
II, W, The spinous processes of this boue.
$\mathbf{X}$, The ohlong surface by which the e5sacrum is united: witb the os ilium.
$\mathbf{I}$, The inregular surface by which it is joined to a conresponding one of the os ilium.
$\mathbf{Z}, \mathbf{Z}$, The pieces which compose the os coccygis.


## ( 51 ) <br> TABLE XVII.

Gives different Views of the True Vertebrae.

FIG. 1.
A Tiew of the Inforior Surface of the Athas, or First Vertebra of the Neck.
c, The anterior part of the atlas,
$b, b$, The inferior oblique processes.
c, A muscular impression on the posterior part of the bone.
$d, d$, The transverse processes, which terminate in tuberosities.
$c, e$, The inferior oritices of the oblique holes:
f. $f$, Inferior notches for the passage of the spinal nerves.
g , The large vertebral hole, which forms part of the spinal canal.

## FIG. 2

Represents the Atlas, seen from its Upper and Back Part.
a, The small articular cavity, which receives the odontoid process.
$b, b$, The superior oblique processes, which receive the occipital condyles.
$c, c$, Protuberances below the superior oblique processes, to which the transverse ligaments are fixed.
$d, d$, The posterior fosss, where the vertebral arteries are reflected in their ascent to the cranium.
e, e, The oblique holes at the roots of the transverse processes, for the passage of the vertehral acteries.
$f_{1}, f_{3}$ Extremities of the transverse processes, each in form of a tuberosity:
g, A muscular print on the posterior part of the hone.
$h$, The layge vertehral hole.

## FIG. 3.

The Vertebra Dentata, vieved superiorly, and a
litfle posferiorly.
a, The odontoid process of the second vertebra.
$b, b$, The superion ohlique processes.
$c, c$, The transverse processes.
$d_{4} d_{1}$ The superior notches of this vertebra, for the passage of the spinal nerves.
$c, e$, A portion of the inferior oblique processes.
$f, f$, The extremities of the spinous process, of a forked shape.
g. $g$, Museular priats on the two sides of the spinous process.
$h$, The large vertebral hole.
FIG. 4.

## The Anterior and Inferior Part of the Verterga Dentata.

fa, The upper part of the processus dentatus.
$b$, The anterior and middle surface of the second vertebra.
$c$, The inferior surface, somewhat convex.
$d, d$, The anterior margin of the superior oblique processes.
$c, c_{\text {, }}$ The extremities of the transverse processes.
$f_{5}, f_{5}$, The oblique holes at the roots of the transverse processes, for the passage uf the vertebral arteries.
g. $g$, The inferior notches of the vertebra for the passage of the spinal nerves-
$h, h$, The inferior oblique processes.
$i, i$, The bifurcation of the spinous process.
$k$, A furrow on the inner surface of the spinous process.
l, The large vertcbral hole.
FIG. 5.
The Commection of the two First Vertebres of the Neck writh cach offer, seen anteriorly.
$a$, The eminence, or anterior print of the atlas.
$b, b$, The two supetior fosser of the atlas.
$c, c$, The anterior edge of the superior oblique processes,
$d, d$, The extremities of the transverse processes.
$c, c$, The anterior edge of the inferion oblique processes.
$f, f$, The infcrior fossa, or hollows of the attas.
$g$. The extremity of the tooth-like process of the second vertehra.
$h$, The root of the tooth-like process.
$i$, A small emincuce on the muddle of the hody of the sccond vertebra.
$k, k$, Prints upon the lateral parts of the body of the bone.
l, The convexity of the inferior part of the body.
$m, m$, The anterior margin of the superior oblique processes.
$n, n$, The inferior obligne processes.
0,0 , The transverse processes.
$p, p$, The inferior hollows of the rertebrs.

## FIG. 6 .

The Cumuction of lhe tav Firat Verterree of the Necs, sech postertionly and supurionly.
$a, a$, Cavities of the superior oblique processes of the atlas.
$h, b$, The ligamentoms protuberances at the under and inner part of the superior oblique processes.
$r, c$, The postexior edge of the inferior oblique processes of the atlas.
$t$, $d$, The posterior fosse of the atlas, through which the vertebral arteries and tenth pair of nerves pass.
r. $c$, The holes of the transverse processes of the atlas.
fo $f$, Thecxtremiticsof the trans verac processes of theatlas,
5, The eminence of the aths, in form of a spinous process.
$h$, The superior extremity of the tooth-like process of the second vertebra,
$i, i$, Lisumentons impressious upon the superior extremity of that proces:
$k$, The aeck of the tooth-like process.
$1, l$, The posterior edge of the superior oblique processes of the secoud vertebra.
$9 n$, The middle of the large wertebral hole.
$n, \pi$, The posterior orifices of the passages at the roots of the transverse processes of the second vertebra.
$n, a$, The extremutics of the transversc processes of tbat vertcbra.
$p, p$ The posterior cdge of the infarior oblique processes of the second vertelora.
$q$, A crest projecting from the upper part of the spinous process of the secoud vertebra.
$r, r$, The extremities of the spinous process of the second vertehra, on which are nuscilua prints.

FIG. 5.
A Ticu of the E'pper and Buck Part of one of the First Dorsal Fertebte.
a, The superior surface of the body of the first dursat vertcbra, which is somewhat triangolar.
$b, b$, The superior oblique processes.
$c$, Part of the body of the bone, whicb assists in forming the vertebral hole.
$d$, The thin shary edge of the vertebral hole.
e, $e$, The posterior part of the transverse processes.
$f, f$, The under edge of the inferior olligue processes.
g. 5, The posterior fossac of this bone.
i, The ridge of the spinous process.
$i$, The small extremity of the spinous process.

FIG. 8.
A Ficu of the Uuder and Forc Part of the Vertebra represcented in the preceding Figure.
ra, The unterior pait of the body of the bone.
$b$, The inferior surface of the body.
$r, c$, The superior uotehes for the passage of the spinal nerves.
$d_{1}, d$, The inferior aotches for the passage of the spinal nerves.
$f, e_{\text {, }}$ The transverse processes.
$f, f$, The suall articular cavities, whicb reccive the the. bercles of the ribs.
$g$, $g$, The inferior oblique processes.
${ }_{i}$, The large vertebral hote.
$i$, The interior fosss, or groove of the spinous process of the first dorsal vertebra.
$k$, Tbe inferior extremity of tbe spinous process.
FIG. 9.

## The Inferior Surfuce of the Third Vertearao fhe Loins.

$a$, The middle of the inferior surface of the third lumbar vertebra.
$b, b$, The osscouts lamina, which borilers the whole circumperence of the inferior surface,
$c, c$, The inferior notehes of this vertebra.
$d, d$, The transverse processes,
$r$, $e$, The inferiac oblique processes.
$f, f$, The superior notches.
5, The large vertebral bole.
$h$, A small groove on the inner side of the spinous pron cess.
$i$, Tbe rounded extremity of the spinous process.

## FIG. 10.

The Vertebra represented in the preceding Figurc, seca fiom tts Eipper and Baek Part.
$a$, The centre of the body of the vertebra, which is very spougy.
$\ell, b$, The small osseous lamina, which sumounds the spongy surface.
$c$, A portion of the body of this vertebra, whicb forms part of the vatebral liole.
$d, d$, The superior fossaz of this vertebia.
$e, c$, The extremities of the transverse procesges.
$f, f$, The superior oblique processes.
b, 5 , The inferior fossid of this vertebra.
$h, h$, The posterior fossz.
$i, i$, The inferior oblique processes.
$k$, The large vertebruil hole.

1. The exterior ridge of the spinous process.
$n$, The rounded estremity of the spinous process.

## FALSE VERTEBRE.

The Falge Vextebric, composed of the $\mathrm{O}_{3}$ Sacrum and $\mathrm{O}_{s}$ Coecygis.

## Os Sacrum.

The tringular Fown of the Bone, with its pointed under extreuity. Tub. X1X.

The jlat coacave antervior Surface, for enlarging the Cavity of the Pelvis. 'Tab. XIX.

The under aud fore part torming a turv, called, by some, the Lesser: ingle of this Hone. Tab, with Nerves of Pelvis.

The conver irregular Surface behind, where strong Museles arise, which assist in extending the Spinc and Thigh. Tab. XXXI.

Fout tramorerse prominent Lines seen anteriorly, indicating the situation of the (urtilages which originally divided the Bone into live pieces. 'Iab, XIX.

The upper past of the Body of the first portion of the Os Sacrum, similar to that of the Vertebre of the Loias, while the firth portion correspouds wath the first piece of the $\mathrm{O}_{\mathrm{s}}$ Coceygis.

The Spinal Canal, of a triungular form, of great size above, but becoming gradually smaller in its descent; corresponding to the size of the under end of the Spinal Marrow, terned Cauda Eqzina, which goes through it. Tab, XIX. Fig. 9. Tab. XXXt, Fig. 18.

The under part of the Spinal passage, conmonly open behind; the Canal being completed, in the Subject, by the addition of a strong Ligamentous Membrane. I'ab. XV11. 'Iab. XIX.

The Arch at the sides and back part of the Spinal Canal, much thicker and stronger than in the true Vertebra. Tab. XXXI. Fig. 18.

The Oblique Proceses, excepting the two uppermost, all united together, aud confounded with the 'Iranswerse Processes.

The two superior Obligue Processes belongiog to this Bone, facing backwards, to correapond with the two inferior Processes of the last Lumbas-V ertebra. 'Tab. XIX.

A large Oblong Prucess on each sinle of the Bone, formed by the coucretion ol the onter cuds of all the origiual Transrerse P'rocesses. T3b. X1S.

The upper lateral parts of the Bone, which correspond with the three superior 'Pranswerse Processes, divideal iuto twe irregular Caritics on each side, by a perpendictur Ridge. 'Hab. XIX. Fig. 5. G, H.

The auterior of the two Cavities lined with Cartilage, which glues this Bone to the Os Ilium, and in such a manner as not to allow any motion.

The f'artilage which unites these Bones to each other is remaskably thin, bat adheres to intinatcly to the $\mathrm{O}_{A}$ Sucrum, that in separating that Bone from the Ilinm, the Cartdage comuonly comes with it, leaving the Ilium quite bare,

The proterior Cavity, ming and riregular, divided iuto two by a 'Iransverse Kidge formed by the union of their Oblique Processes; and in the recent subject, full of Ligamentous Fibres and Cellviar Substance, whicl are included in the geueral Capsular Liganent, and which also assist in fixing the two Bures to each other.

The portion of this Process lormed by the three uppermost 'Transverse Processes, remathably thick and strong, while that belouging to the two last is nuch smaller, but irregular behind, where it gires attachunent to the Ligament termed Sacru-sciatic.

The Spizous Processes: The threc uppermost commonly distinct, but remarkably short: There is a great variety, bowever, in the number and appearance ol' the Elpinous Processes in different Bones, aud coasequeutly of the length of the complete part of the Spinous Canal. Tab. XI.

The two inferior Spinous Processef commonly forked, without meeting into a Spinc, but leaving between them the opesing already meationed, for the under end of the Csuda Equina.

Four Pair of large Holes on the antevior Surface of the Booe, at the end of the lizes already described, and Grootes running out from the liloles, for the passage of the Sacral Nerves. Tab. MIX.

The Holes become smaller as the Bone descends, cora respouding with the Nerves which pass through them.

Four Pair of Holes on the pasterios Surfact, not much simaller than those seeo anteriorly; but so filled with Cellubur Substance, and covered with Meubbranes in the receut Body, as ouly to auhnit small Nerves to pass out to the Muscles on the back part of the Pelvis, and minnte Asteries to enter to the Cauda Equina. Tab. XiX.

At the root of each superior Obligue Process anterionly, an impression made where the last Lumbar Nerve passce out. 'Tab. XIM'. Fig. 2. 1.

A Nolck at the under cud of each side of the Bone, or a Hole common to it and the Os Coerygis, for the pasm sage of the last Spinal Nerve. Tab. X1X.

The Substance of the $\mathrm{O}_{\mathrm{s}}$ Saerum, like that of the other Tertebre, is rexy spongy, and covered only by a thin extemal Plate; this, however, is rendered considerably stronger by a Ligamentons Membraue uhich adheres to it. Tab. with Nerves of Pelvis.

The Contection of this Bone above to the last Lumbar Fertebra, in the same manuer as the other Fertebre are couneeted to each other, and the saue motion allowed as to these Vertebrae. - The projection formed between these two Bones anteriorly, obtains the name of Promontray or Greater Angle of the Os tacrum. Tab. XVI. XVII.

The Os Sacrum serves as the conmon Base and support of the Trunk of the Body, guards the Nerres issiing from the under end of the Spinal Mariow, defends the back part of the Pelvis, and gives oligin to Muscles ungring the Truak and Thigh.

In the Fatus, the O s Sacrum is compased of five distinct Vertebre, which have Intervertebral Substances similar to those of the True Vertebre. Tab. XXVII.

At this time, each of the Vertebre of the $\mathrm{Os}_{\mathrm{s}}$ Sacram, as well as of the True Vextebux, consists of a Body and two lateral parts, which are joued together by Cartilages.

## Os Caccygrs,

The Os Coceygis, or Rump-bone, forming an Appenduge to the under end of the Os Sacrum.

The Situation of this Bone at the under end of the Os Sacrum. Tab. XIX XX.

Its Figure, broad and flat above, and topering below, convex behind, and torming a Curve forwards, to defend it from injury when a person is in a sitting posture. Tab. SIX. 'T'ab. CEIFI. CCIV.

The four pieces of which it is composed in young Subjects. Tab. XIX.

The Bone is considered by some Authors as being formed of there pieces; and then the Os Sacrum is said to have six pieces.

The first or uppermast piece the largest, with Shoulders reaching farther than the end of the Us Sacrum. 'This is regarded by some as a proper distinction between the Os Coccygis and Os Sacrum. Tah. XIX.

From the back part of the shoulders, two Convua frequently ascend to join the forked Spinous Processer at the end of the $\mathrm{Os}_{\mathrm{s}}$ Sacrum, and form a passage for the iransmission of the last Pair of Spinal Nerves. Tab. XIX.

The three lower Bomes of the $\mathrm{O}_{\mathrm{s}}$ Coceygre becoming gradually smaller, the fourth terminatung in a rough point. Tab. NIX, XX.

Cartilage is interposed between the different pieces of this lione in young Subjects, Iab. XX : IV. joiuing thens together, after the mauner of the Vertebre; allowing motion upon cach other forwards and barkwards, but chielly between the tirst and second pieces; and greater degree of mation thure in the Female than in the Male.

In advanced life, but earlier in Men than in Wonen, the pieces grow together so as to adhuit of no motion ; but this takes place much liter between the fiust andsecoud, than between the other pieces.

The Subslance, like that of the Os Sacrum, is spongy, but this Bone differs from the sacrum in haviug wo passage for the spinal Marrow, vor Heles for spinal hertes.

The Canactions of this Bose, in young subjects, to the Os Sacmun, by Cartikage,-in old People, by an wivion of Substunce.

The Surfwe of the Bone is covered by a strong Ligament, whech adds to its otreugth; and its sides give rise to numerous. Muscular Fibres, which, while thay derive their origin from it, serve at the sane time to protect it.
The Os Coccygia sustains tbe Intestinum Rectam contracts the Inferior Opeuing of the Pelvis, and assists in supporting the Rectwin, Bladder, and I terus:

In the Fuxtus, the $\mathrm{O}_{5}$ Coccygis is alpost entizely composed of Cartilage.

## PELVIS.

Here observe,
The Pelvis, situated at the lower part of the Trunk, and formed by the $\mathrm{O}_{8}$ Sacrum, $\mathrm{O}_{\mathrm{B}}$ Coceygis, and two Ossa Innominata.

## OS INNOMKINATUM.

The Situation of the Os Inmomina tum, in the fore part and side of the Pelvis, and in the under and lateral part of the Abdomeu. Tab, XVI.

The Divirion of the Bone, in Children, into $O$ s Ilium, Os Ischium, and Os Pubris. Tab. XXXII. Fig. I5, f,g Tab, XXVII.

In the Adult, the three Bones are ossified together, but retain their original names.

## Os Itiuns.

The $\mathrm{O}_{s}$ Hium, forming the rupper part of the $\mathrm{O}_{8} \mathbf{I n}$ -
nominatum, and spreading out, to assist in supporting the contents of the Abdomen. Tab, XVI. L.

The Dorsum, or outer conurx Surface of the Bone, depreased at the fore part, raised farther back and concave behind, Tub, XVII, the whole giving origin to the Glutei Muscles, or Extensors of the Thigh.

The Sipine, or upper semicircular edge of the Bone, for the attachment of the Oblique and 'Transverse Ab dominal Muscles. Tab. XVI. M, N.

In the recent Subject, the Spine is covered with a Tendinous and Cartilaginous crust, that separates in macerating the Bone.

The anterior-stiperior Spinous Pbocess, or anterior cytremity of the S. pine, for the attachment of the Sartorics, the 'Tensor Vagine Femoris, and of Poupant's lagament, or Crural Arch. Tah. VI, N.

The anterior-inferion Spinats Process, a little below the former, for the attachment of the Rectus Fenoris. Tab. XVI. 0.

Between the two anterior Spinous Processes, a Notch for lodging the beginning of the Sartorius Musele.

The two posterior Spinows Prucesses, at the back part of the Spiue, less cousiderable than the two anterior; partly for tbe origin of Muscles of the Back, but chiefly for the attachment of Ligaments which belong to the Joint between this Bone and the $\mathrm{O}_{\mathrm{s}}$ Sacrum. Tab. XXXI. Fig. 17. $r, 2$. The outside of the posterior Spinous Processcs flat and rough, where part of the Gluteus Maximus and Pyriformis take their origin.

The Natch of the Os llium under the posterior-inferior Spinous Process, for the pascage of the Pyriform Muscle, Sciatic Nerve, and Blood-vessels. Tab. XIX.

The Irenter, or inner concave Smface of the Bone, for the attachment of one of the rlexors of the Thigh, terncd Fiacus Internus, and the support of a portion of the Intestinum Llium and Colon. 'Tab. XX. F.

A Passage in the Venter, neur the Linea Imominata, and another in the Dorsum towards its anterior part, for the principal Meduilary Vessels of the Bone. Besides these, diffcrent Foramina are seen, of less consideration, for admitting Vesscls into the Substance of the Cancelli. Tab. XVI. under $b$, right side,

A Depresbion at the inside of the anterior-inferior Spinous Process, where the Fiecor Muscles of the Thigh and the anterior Crural Vessels and Nerves pass. Tab. XVI. O, P.

The Lizen Innominata at the under part of the Venter of the Bone, forming the lateral portion of what is termed Brim of the Pelvis, and the line of division between the Pelvis and Abdonien. Tab. XVI, a.

Into the Iliac Portion of the Liuca Innominata, the Teadinous Expransion continued from the Psoas Parvas is inserted.

The inner and back part of the Bone, sough and very irregular, the postexior portion of this irregulay surface giving arigin to some of the large Muscles of the Back ; the middle bcing for the attachanent of Ligaments which go to the Os Sacrum, and the anterior for the firm comection which subsists between this Bone and tbe Cartilage which glucs it to the Os Sactum.

The circunference of this rough and irregular surface gives attachment to the Capsular Ligament of the Joint.

The wnder, fore, and outer puri of the Bone, forming the upper and back part of the Acetabulum, or Cavity for the articulation of the Thigh-bone. Tab. XVI. under R.

## Os Ischium.

The Situation of the Os Ischium in the lowest part of the Pelvis, Tab. XVI. g, U, T.

Its Figure irrgular; its sise next to that of the $\mathrm{Os}_{s}$ Ilium.

The upper thick pavt of the Bone, forming the under part of the Acetabulum. Tab. SVI. g.

The Spinous Process sent back from the upper part of
the Bone, for the attaclunent of Muscles, -and of the superior Sacro-sciatic Ligament, which completes the Notch of the $\mathrm{Os}_{\mathrm{s}}$ Ilium into an Iliac Foramen. Jab. X YI. U, right side.

The Cervix placed under the Spinous Process, and covered with Curtilage where the Tendon of the Obturitor Internus plays, in its way from the inner side of the Pelvis to the Thigh-bonc. Tab, XIX. Fig. 6. Q.

The Tuberosity, or Taber Iuchi', below the Cervix of the Bone, whicb is coverod with Cartilage that is separated by macerating the Bone. Tab. XVI. U, lelt bide. Tab. XVII. $p$.

The outer Surface of the Boae, at the Root of tho Spinous Process, hollow for the passage of the Pyriformis,

The upper part of the Tuber placed obliquels, and giving attachacnt to the Geminus luferior, to the under. Sacro-sciatic Ligament, and to the great Flesor Muscles. of the Thigh. The thinner and mare scabrous part of the Tuber, which bas a curved dinection, is what we rest upon in sitting. It gives attachment to the Crus Penis in the Male, to the Crus Clitoridis in the Female, and to part of the Adductor Muscles of the Thigh. Tab. XVI. 1.

## Os Pubis.

The Situation of this Bone at the upper and fore pare of the Pelvis. Tab. XVI. V, W, X. को

Its Size, the least of the three portions of the Os In= nominatum.

The thickest and strongest part of the Bone, forming the upper and fore side of the Acetabulum.. Tab. SVI.

The upper part of this portion of the Bone formed inta a kind of ridge by its junetion with the $\mathrm{O}_{s}$ Hium.

The upper part of the Boue becoming smaller where it is flattened above, and readered smootb by the passage of tbe Flexor Muscles of the Thigh, and of the anterior Crural Vessels and Nerves. Tab. KX. N.

The upper and inuer part of the Bone increasing in size, and forming the rough Crest or Angle, where the Rectus and Pyramidalis, and the imer cad of PouPart's Ligament, are attached. Tab. XVI. W.
A. Ridge, or spine, extended from the outer and fore part of the Crest, along the upper and inner cdge of the Hone, to form, with a similar Ridge of the Os Ilium, the Linea Ihionpectinea, Brim, or upper covering of tho Pelvis. Tab. XVI, a.

This Ridge is described by some Authors as being sometimes so sharp, as to injure the parta whick lie inmediately contiguous to it.

Another Ridge, from the Crest, or Angle, extending downwards and outwards towards the breach in the fore part of the Acetabulum. Tab. XVI. under V.

A Cavity between these Ridges, for the origin of the Pectineus. Tab. XVI. outside of $\boldsymbol{c}$.

Immeliately below the uadernost of the two Ridges, the Bone having a twisted appearance, and a Notch. which is formed into a Hole in the Subject, by the addition
ardतition of the Obturator Ligameat, for the passage of the Ohturutor Vessels and Nerwes. Tab, XVI. under V.

The tiner end of the Bone rough and unequal, but covered with a Ligamentous Cartilage, which, in fresh Bomee, joins the two Ossa Pubis so firmly together, as to preveat them fiom moving upou eack other. Tab. XVI.c.

The iuner part of the Bone is broad, and depressed before, where it gives origiu to part of the Adductor Muscles of the Thigh. Tab. XVI. between W and X.

The inner part of the Bone becoming narrower, and endiug in the crus, which goes downwards to join the Crus of the $\mathrm{Os}_{3}$ Ischium, and form, along with that Crus , one side of the Arch of the Puhis. Tab. XV1. X, d.

The Foramen Thyroideum, formed by the $\mathrm{O}_{8}$ Pabis and Os Ischium, and in the Subject, filled by a Membra. nons Ligament, excepting at the Notch above mentioucd, whicb gives rise to a large share of the Obturator Muscles. Tab. XII.e.

The Acelabulum, or Cavity, (compared to a Vinegar measure used by the Ancients), placed farther out tham the Foramen Thyroideum, and formed by the three pieces which corrpose the Os Innourinatum, in such a manner, that the $\mathrm{O}_{s}$ llium coustitutes near two-filths, the $\mathrm{O} s \mathrm{~s}$ chium more than troo-lifthy, and the Os Pubis one-fifth of that Cavity. Tal. X11.g.

The Cavity of the Acetabulum very deep, especially behind, and made still decper in the Subject, by its Brim being tipped with a C:artilaginous Ligament.

Round the outer edge of the Brim, the Bone rough, where the Capsular Ligament of the Joint is fixed. Tab. XVI.

A Breach in the inner and fore part of the Acetabulum, which, in the Subject, has a strong Ligament stretched from one end of that Notch to the other, but learing a Mole behind for coutaining part of the Substance called Gland of the Joint. Tab. XIX.

The Cavity of the Acetabulum lined with Cartilage, exeepting at its under, imner, and fore part, where there is a rough depressiou for containing the greater part of the Substance meutioned above. Tab, XIX. Fig. 6.
The Brim, Eutroitus, or upher Opening of the Cavity of the Pelvis, approaching in the Male to a circular, and iu the Female to an oval form. Tzb. XV1. XX.

The Infervior Opening is large in the Skeleton, but in the Subject in a great measure is filled up by Ligameots and Muscles, which supprort and protect the contained parts, and leave ouly the passages from the Bladder of Urine and Rectam in the Male, and, together with these, the passage from the Uterus in the Female.

In what is cousidered as a standard Fcmale Pelvis, the distance between the Os Sacruin and Os Pubis, at the Jherviktux, is lound to be sonnewhiat more than four incheeg, and that betweea the two Oisa llia live inches and a quarter. In the Exicus, or inferior opening the pro. portions are reveryed, zhe dianace hetween the Symphysis Pubis and $\mathrm{O}_{9}$ Cocurgis being longer than that between the Ossa liis. The depth of the fore part of the Pelvis, at the Symphysis of the Pubis, measures about an inch and a hall, belund it is sir inches, and at the sides three inches and a half. The Pelvis may vary froni the above dimen. sions zecording to the size and propurtions of the Bods, which may diffcr zomewhat in the different nations, yet be well formed; or it may vauy from tlisease either of the Boues or Visecra, and then it is considered as dian torted.
The Ossa Innominata, joined behind to the Os Sacrum by a thrin Certilage and by strong Ligantents, no as to have no motion; the Joint obtaining the name of Postce rior, or Sacromiliac Symphysis, Tab. XX. A.
The Coannection of these Bones to each other anterioro ly, by a Ligamentous Cartilage and Ligaments, which also prevent motion hacre. This connection is termed Symphyixi, or Anterior Symplysis Pubis. Tab. XX. B.
The Substance of the Diac part of the Os Innomina tum is cellular, with a thin exterual Table, which, in some old people, is so ruch affected by Muscular action about its mididle, os to become transparentit. The oher two portions of the Os Innominatum are cellular, $2 s$ in other flat Bones, but some parts of the extemal Table are of cousiderable thiekness and strength.

Use of the Pelvis,-It constitutes the Basis of the Trunk, and forms sockets for the 1 high-bones to more in. It contains the Bladder of Trine and the Reetum in the Male, and, together with thene, the Cterus in the Fenale. It gives origin to the Museles which eatend the Trunk, aod insertion to those which bead the Bods. It sendy of the principal part of the Muscles which more the Thigh, aod gives paysage and protection to Bloodvessels, and to some of the largest Nerves of the Body.

In the Fetus, the 5pine of the Os lliwn, and that purt of the Bone which belongs to the Acetabulum, are Cartilaginous. The Spinous Process, the Tuberosity, and Crus of the Os Ischium, the Crus of the Os Pubis, aud that portion of it which forms the Acetabulum, are aloo, at this period, in a Cartilaginous state. The shape of the Cavity of the Pelvis, at this period, is aitogether dif ferent from that in the Adult, the noder heing wider thon the upper part.

T.4B.1.
fig. 2


## TABLE XIX.

## Views of the Separate Bones of the Pelvis,

FIG. 1.

## The Interwal or Anterior Surface of the $\mathrm{Os}_{\mathrm{s}}$ Sacrum, turned a little towards the Left Side.

A, The upper part of the os sacrum, which receives the body of the last lumbar vertebra.
B, The osseous lamina which surrounds this surface.
$\mathbf{C}, \mathbf{C}$, A portion of the oblique processes.
$\mathbf{D}, \mathbf{D}$, The snperior notclies, for the passage of the twenty-fourth pair of spinal nerves.
E, E, The large lateral eminences.
F, F, The pieces of which the bone is originally composed.
$\mathbf{G}, \mathbf{G}$, The transverse lines which indicate the union of these pieces.
$\mathrm{H}, \mathrm{H}$, The oblique passages on each side, for the transmistion of the sacral nerves.
I, A portion of the surface of the os sacrum, by which it is articulated with the os ilium.
$\mathbf{K}, \mathrm{K}$, The inferior notches, where the last pair of spinal nerves pass out.
L, The point of the bone which is joined to the es coccygis.

FIG. 2.
The Postevior Surface of the Os Sacrem, turned a little towards the Left Side.

A, The upper surface of the os sacrum.
B, B, Its supcrior obliqne processes.
C, C, Its superior notches.
D , The heginning of the spinal canal of this bone.
E, E, The spinous processes.
$\mathbf{F}, \mathbf{F}$, The appendices, or cornus.
$\mathbf{G}, \mathbf{G}$, The posterior foramina.
H , The termination of the spinal canal.
I, I, The inferior notches.
K, The point of the hone which is united with the os coccygs.
L, L, Ligamentous and muscular impressions, rendering the back part of the bone very unequal.
M, A portion of the articular surface, by which this hone is united with the os ilium. VOL. I.

FIG. 3. The Interaal Surface; and, EIG. 4. The External Siurfice, of the Os Coccrers.
A, A, A, The three pieces of which the bone shewn in this ligure is composed.
B, The great notch of this bone.
C, The cornua.
D, D, The lateral notches.
E, E, The lateral processes.
F, The point, or inferioc extremity.
FIG. 5.
The Internal Surface of the Left Os Innominatum.
$A$, The cavity or venter of the os ilium.
B, The orifice of the internal iliac camal.
C, C, The spine or crest of this boue.
D, The superion-anterior spinous process.
E, The inferior-2nterior spinous process.
$\mathbf{F}, \mathbf{F}$, The posterior spinous processes.
$\mathbf{G}$, The surface by which the os iliom is articulated with the os sacrum.
H, H, An irregular surface which also belongs to this joint.
I, The anterior iliac notch.
K, The posterior iliac notch.
$\mathbf{L}_{4}$ The ischiatic, or, more properly, the great iliac notch.
M, The great simuosity, where the internal iliac muscle passes out of the abdomen.
N , The ridge of the os ilium, which forms a shase of the brim of the pelvis.
$O$, The body of the os ischium.
$\mathbf{P}$, The spinons process of this boue.
Q, Part of the tuberosity of this bone.
R, The inner part of the sinuosity which is between the spinous process and tuberosity.
S , The notch of the os ischium, which assists in forming the foramen ovale.
T, The crus of the as ischium.
U, The eminence which matks the union of the superior hranch of the os pubis with the os ilium.
$\mathbf{V}$, The spine of the os pubis.
$\mathbf{W}$, The maner surface of the crest of the os pubis.
$\mathbf{X}$, The inner surface of the supcrior hanch of the os pubis.

$\mathbf{Y}$, The

Y, The inferior notch of this brauch.
Z, The inner surface of the body of the os pubis.
$a$, The crus of this bone.
$b$, The cartilaginous surface which unites itself with the os pubis of the opposite side.
, The foramen ovale.
r, The inferin notch of the os pubis, which assists in forming the formen ovale.

FIG. 6.
The Eifernal Surface of the Ieft Os Invominatum.
1, The dorsmn of the os ifium, raised in some payte, and depressed in othera.
$\mathrm{B}, \mathrm{B}$, The crest of this bene.
(i) The superior-anterior, and,

D, The inferior-anterior spinous process.
F., F, The postevior spineus process.

F, The anterior notel.
(i) The pasterior noteh, aud,

II, The great notch of this bone.
1, Emincuces and carities at the upper: part of the acetabulum.
历, The brim of the acetabulnms tipped with cartilage.

L, The bottom of this capity encrusted with catilage.
M, A rough surface in the acetabulum, where the sub. stance termed gland of the joint is lodged.
Surrounding the acetabulum, and upon the dorsum of the os ilium, foramina appear, which are the passages of blood-vessels.
$N$, The spinous process of the os ischium.
O, The tuberosity of this bone.
P , The notch between the spinous process and tuberosity,
Q, The cervix of the bone.
$R_{1}$ The breach in the acetabulum, which, in the subject, has a strong ligament connected to it.
S , The crus of the os ischium.
T, The notch which forms the under pant of the foramen ovale.
$\mathbf{U}$, The outer end of the auperior branch of the os pubis,
$V$, The middle of this bone.
W, The crest of this bone.
X, Tbe notch at the under part of the branch of this bone.
$\mathbf{Y}$, The body of the bone.
$X$, The crus of this bone.
", The notel which assists in forming the fore part of the foramen ovale.
$b$, The part where the onc os pubis joins the other.
$c$, The foramen ovale,

Tis. 20.


## 'IABLEXX.

## A View of the Female Pelvis, from the Upper and Fore Part.

A. The connection of the os ilium with the os sacrum.

B, The symphysis pubis.
C, \&xc. The brim of the pelvis.
D, The articulation of the head of the of femoris with the acetabulum of the os innominatum.
E. The arch formed by the crura of the ossz pubis.
$\mathbf{F}$, The carity of the os itium +
G, The spine or arch of the oe ilium.
H, The superior-anterior spinous process.
I, Ligaments passing between the spine of the os ilium, to the transverse process of the last lumbar vertcbra.
K, The tuberosity of the os ischium.
L. The crus of that bone.

M, The posterior part, forming a share of the acetabulum.
$\mathrm{N}_{4}$, The back part of the os pubis, forming a portion of the acetabulum.
O, The angle, or crest.
$\mathbf{P}$, The crus of the os pubis.
$\mathbf{Q}$, The last lumbar vertebra.
$\mathrm{R}, \mathrm{R}$, The os sacrum; the transverse lines marking its original pieces, with the four pairs of holes for the transmission of nerves.
$\mathrm{S}, \mathrm{S}$, The four pieces composing the os coccygis, with a pair of holes between it and the os sacrum.
$\mathrm{T}, \mathrm{T}$, The cavity of the pelvis.
$\mathbf{U}$, The foramen thyroideum.
V, The cervix of the os femoris.
$\mathbf{W}$, The trochanter majos.

## THORAX.

The circumstances to be atteaded to in this part of the Skeleton are,
The Thorax, formed of the Sternum before, of the Ribs on each side, and of the Dorsal Vertehre behind. Tab. XV,

The general Figure of the Thorax approaching that of a Cone, bnt left open above for the passages to the Lungs and Stomach, and for the great Blood-vessels.

The Lower Part of the Thorax slanting; the fore part being considerably shorter than it is behind.

The Under Margin on each side, forming a curved line, the convex side of which is turned downwards.

The under end of the Thorax, occupied, in the Subject, by the Diaphragm, which forms a partition between it and the Abdomen. Tab. XLIIL. Fig. 2.

## Costz.

The Situation of the Coata, or Ribs, slanting downwards with respect to the Spinc. Tab, SV,

Theix Number, is the Male as well as in the Female, commonly treelue on each side, though sometimes thirteen, and at other times only eleven ; their number always corresponding with that of the Dorsal Vertebre.

Their Figure, conrex extemally, by which their strength is increased; and concave and smooth internally, with their flat sides turned towards the Isungs, which they protect.

- The Head of each Rib formed into a Ridge and two Bollono Surfoers covered with Cartilage, to be articulated with the Bodies of two Vertebre and their intemediato Cartilage, Tab. XXXI. Fig. 14. a.

Found the Head, the Bone spongy, for the attachment of the Capsular Ligroment of the Joint.

The Tabercle of the Rib, at a little distance from its Head, with a flat Cartilaginous Surface and irregular Edge, to be articulated to the Transverse Process of the undermost of the two Vertebre, to which the Head of the Rib is joined. 'Tab. XXXI. Fig. 14, b.

The Cervix of the Pib, between its Head and Tubercle, of a roundish form. Tab. XXII. Fig. 3. a.

Another small Tubercle in most of the Xibs, at the outer side of the former, for the attachment of Ligaments which fix the Ribs to each other, and to the Transverse Processes, Tab. XXXI. Fig. 14. $d_{\text {; }}$ and also for the insertion of the outer Slips of the Longissimus Dorsi.

Beyond the Tubercle, the Kib rendered flat by the Sacro-lombalis.

The Angle of the Ribe to which the Sacro-lumbalis is fixed, where the Bones are about to bend, to form the lateral part of the 'Thorax. Tab. XXXI. Fig. 14. e.

The Rib becoming broader and flatter at the lateral part of the 'Thorax, and the flat Surfiace opposed to the Lungs.

The upper Edge of the Rib, round where the Intere costales are fixed.

The under Edge, sharp where the Intercostalis Estermus is fixed.

A Fossa at the inside of the under Edge, for lodging the Intercostal Vesscls and Nerves. The upper Edge of the Fossa gives origin to the Intercostalis Internus.

The Fossa wanting towards the extremities of the Ribs ; the Veasels not being in contact with them behind, and too small to inpuess them anteriorly.

An Oval Pit in the anterior extremity of each Rib, for receiving the Cartilagc which rums from it to the Stermum. 'Tab. XXXI. Fig. 14. $h$.

The Cortilages of the Ribs, placed between them and the Sternum, or connected to each other, or lying loose among the Muscles. Tab. XV. H.

The Cartilages, like the Ribe, flat on their outer and imer Surfaces, and smooth where they are opposed to the Lungs.

The Cartilage of each Rib, forming, with the Rib isself, a Curve, the concave part upwards.

And with the Sternum, su obtuse Angle above, and an acute one below.

The Cartilages yield to the motions of the Ribs, and enable them to return to their former position, when the Muscles cense to act. The Cartilages of the Ribs, in ald people, are frequently ossified.

The Ribs are comected behind to the Vertebre by 2 double articulation, and before to the Sternum by the Cartilages, or by the Cartilages to each othex, in such a manner as to allow motion npwards and downwards, though only a small degree in any single Rib, asd that towards its middle ; but no motion in any other direction. Tab. XXXI. Fig. 17.

The first Rib the most cnonked; from this downwands the Ribs becoming gradually straighter. Tab. XV. G, G, Bce.

The uppermost Ribs approaching nearer to the horizontal situation; their obliquity, with respect to the Spine, increasing as they descend, and their interior extremities becoming more distant from each other. Tab. XV.

The Cartilages of the Ribs, like the Ribs tbemselves, becoming gradually longer from the first to the seventh, but, contrary to what happens in the Ribs, approaching ncarer to each other in their descent. Tab. XV. H, H, \&c.

The length of the Ribe, increasing from the first to the seventh, and then decreasing to the twelfth. Tab. XV.

The distarce between the Heads of the Ribs and their Augles, increasing to the ninth Ptib, corresponding with the breadth of the Sacro-lumbalis which covers them. Tab. XLII.

## The Ribs divided into True and False.

The True $R$ iths,- the seven uppermost having their Cartilages joined to the Sternom, and opposed to the Heart and Lungs, from which they are termed the Trete C'usfodes, or Guards of Life. Tab: XV.

The False Ribs, the live inferior not reaching the Stermum. Tab. XV.

The Cartilages of the False Ribs, shorter as they deseend, and more fiexible than those of the True Ribs. Tab, XV. I, I, \&e.

The posterior Extremity of the first Rih, articulated only with the first Vertebra of the Back. Tab. XV. K.

A flat Surface upon the upper part of the first Rib, where the Subclavian Fesselg pass over it to the Aım. Tab. XV. N.

The Fossa for the Iutercostal Vessels and Nerves wanting at the edge of this Rib, on aceount of their ruming at a distance from this part of the Bone.

The Cartilages of the two under True Ribe, and tbrce upper False Ribs, commonly joined to each other by cross Cartilages, or by an uniou of Substance, though sometimes this union takes place among a smaller number thas that mentioned above. Tab. XV.

The Head of the eleventh Rib, having no Tubercle for articulation, being only loosely joined to the Transverse Process.

The twelfth Rib much shorter than the rest. Its Ifead is only joined to the twelfth Vertehra of the Back. It has no Tubercle, nor articulation with the Transverse Proeess; neither has it any Fossa, at its under edge, the Vessels and Nerves running some way below it. Tab, XV.

The Anterior Extremities of the eleventh and twelfth Ribs, not joined to each other, nor to any other Rib, but lying loose among the Museles; hence these Ribs sometimes named Floating Ribs. Tab. XV.

The Substance of the Ribs, like that of the Vertebre, is Cellular, and only covered with a thin external Plate, which becomes somewhat thicker towards the Yertebre.

In the Fectus, the Heads and Tubercles of the Ribs bave Cartilages, part of which become thin Epipbyses. After Birth, the Bodies of the Ribs encroach gradually on the Cartilages ; hence the Cartilages of the Ribs are proportionally shorter in Adults than in Children.

The Ribs give form to the Thorax, cover and defend the Heart and Lunge, and assist the latter in performing respiration.

## Sternem.

The SThation of the Steraum in the fore part of the Thorax. Tab. XXIX. Fig. 10. V.

Three Piecer composing the Sternum, in a person of middle age, and these joined together by Cartilage. Tab. XV. $\mathbf{O}, \mathbf{P}, \mathrm{Q}$.

The different Pieces of this Boue are frequently found asaified together in old people.

The Sternum, thick and broad above, and thin and narrow below. Tuh. XV.

The outer Surifuce flat. Tab. XV.
The inner Surface slightly hollowed, to enlarge the Cavity of the Thorax.

Pits upon each edge of the Sicrumm, to receive the Cartilaginous ends of the seven 'I rue Ribs. 'Fab. NXI. Fig. 2, D-L. Tab. XV.

The $P$ its at a considerable distance from cach other above, hut beeoming gradually nearer is they descend. Tals. XXI.

The Cancelli of tbe Sternm, covered ouly hy a thin cxternal plate, hut this rendered strouger by a Texdinous Membrane investing it in the recent state. I'uls. LiI. Fig. 10.

The zpper piece of the Sternum, of a somen lant Iriangular figure, compared to that of a heart as painted on playing-cards, but appearing as if cut aceross below. Tab. XXI. Fig. 2.

The upper and back part hollowed, to make way for the Trachea. Tab. XXI. Fig. 2. C.

The upper Corners, thicker and stronger than the rest of the Bone, with a Cavity in each, lined with Cartilage, for receiving the ends of the Collar Boues. Tab. XXI. Fig. 2. B, B.

Under these Cavities, the Bone becoming thinuer, and having a Pit upon each side, for receiviug the Cartilage of the first Rib. 'I'ab. XXI. Fig. 2. 1, D.

Part of the $P$ it in each of the under Comers of the first Piece, for the Caxtilage of the second Rib. Tab. XXI. Fig. 2. F, F.

The sccond pzece of the Sternm, of an oblong form, but a little broader below than above, and considerably longer than the formicr. Tab. XXI. Fig. 2. E, E.

The second piece varies considerably in shape in different Subjects, being frequently as broad above as below, and sometimes considerably broader. It is nearly of the same thickness thronghout.

Complete Pits upon the edges of this piece, for the Cartilages of the third, fourth, bith, and siath pair of Ribs, and part of the Pits for those of the second and seventh. Tab. XXI. Fig. 2, F-L. Tıb. XV.

Lines cxtending across the Bone, between the Pits, denoting the original marks of division of this piece. Tab. XXI. Fig. ${ }^{4}$.

The Connection of the second piece of the Sternm to the first by Cartilage, which, in the earlier period of life, allows some yielding, but this becoming gradually less as the persou advauces in life. Tab. XXI." Fig. 2. F, F.

The third piece of the Stcrumm, cartilaginous in a young Sulject, and pointed like a broad-sword, heace termed Cartilago Enviforsuis. Tab. XV. XXX.

The Adult has this piece commonly arsified in the midule,
middie, and cortivaginoies ut the edges, Tab. XXIX. or True Ribs, on each side, and by an inter-articular Fig. 10. No. 3. 4.

The Siae of this piece much less than that of the other two: Tab. XV.

Oaly one Aalf of the Pit, for the Cartilage of the seventh Rib, formed in each side of this piece. Tab. I.

The Variations of the Cartilagh Eabiformis are considerable in different Subjects;-for, instead of the comunon form, it is sometimes narıow like the point of a small sword, oi turned obliquely to one side, or forwards, or-backwards, or forked at the point, or perforated in the middle.

The Sternum is joined by Cartilage to the seven upper Cartilage to the anterior ends of the Clavicles. Tab. XV.

In the Foctus, this Bone is composed of seven or eight pieces, but the nuraber of these varies in different Subs. jeots. By degrees the pieces wite, till at length they form the three Bones already described.

The Sternum gives origin to several Muscles, defends the Heart and Lungs, assists in the formation of the Thorax, sustains the Mediastinum, is a medium of attach. ment to the Kibs, and serves as a Iulcrum or point on which the Clavicles roll.


## T A BLE XXI.

Represents the Atlas, Sternum, First Rib, Clavicle, and Scapula.

FIG. 1.

## The Superior Surface of the Atlas, or First Verte ara.

A, The spinal hole.
B, The articular notch which ifecives the processus dentatus of the second vertebra of the neck.
$b$, The direction of the ligament which confines this process in its place.
C , The anterior part of the atles.
$\mathrm{D}, \mathrm{D}$, The supecior oblique processes.
$d, d$, Placed behind prominences, to which the lateral liganents of the head are fixed.
E, E, The transyerge processes.
$c, c$, The holes in the transverse processis for the vertebral blood-vessels.
F, The spmous process.
fi $f$, The posterior depressions, where the vertebral arteries are reflected in their way to the cranium.

FIG. 2.
The External Surface of the Stermum.
A, The upper triangular piece of the sternum.
$a, a$, Impressions made by the pectoralis major.
$\mathrm{B}, \mathrm{B}$, Notehes which receive the inner ends of the clavicles.
C, An excavation where the tracliea pasqes into the tho. rax.
D, D, The lateral parts which receive the cartilages of the first pair of ribs.
$\mathbf{E}, \mathbf{E}$, The middle and longest part of the sternum.
$c, f$, Transverse lines pointing out the union of the differcnt pieces of which this bouc is originaily composed.
I, $\mathbf{F}$, The impressions of the cartilages of the sccond pair of ribs, and the cormection between the first and second pieces of the sternom.
C., H, I, K, The lateral cavitics, or impressions of the cartulages of the third, fourth, fifth, and sisth ribs.
1., L, Iupressions of the cartilages of the serenth pairof rib4.
U. The eavilago ensiformis-

FIG. 3.
The Outer Surface of the Second True Ris of the Right Side.
A, The head.
$a$, The cervix.
B, The tubercle.
C, The angle.
D, The upper and imer edge.
FIG. 4.
A View of the Back Part, or Dorsum of the Scapula of the Right Side.
A, The spine.
B, The acromion.
C, C, The superior spinous fossa.
c, The superior angle.
$\mathrm{D}, \mathrm{D}$, The inferior spinous fossa.
E, E, The base or posterior costa.
F, The back part of the posterior costa.
G, G, The inferior costa.
H, The glenoid cavity.
$h, h, h$, The brim of the glenoid cavity.
$\mathbf{I}$, $\mathbf{I}$, The cervix of the scapula.
K, The coracoid process.
L, The inferior angle.
FIG. 5.
Suder Side of the Clavicele.
A, The middle or body of the clavicle, with a depres sion ruming along it, for lodging payt of the subelavian muscle.
B, The inner or sternal extremity.
C, The inferior angle of this extremity.
D, The supcrior anglc.
E, The part where the upper edge of the pectoralis major rises.
$F$, The spine of the clavicle.
G, The ligameatons and nuscular impressions of the exterual extremity.
II, The orifices of several passages for ressels.
1, The himenil extrenity.

## SUPERIOR EXTREMITIES.

We find here
Each Sioperior Eatremity, composcd of the Bones of the Shoulder, Arm, Fore-arm, and Hand.

The Shondder, cousisting of the Clavicle and Scapula.

## Clayicle.

The Situation of the Clavicle, between the upper part of the Sternum and top of the Scapula, and placed almost horizontally. Tab. XV. Y.
The Sternal, or internal Extremity, iriangular, and larger thaw the Body, with one of the angles elougated backwards, where it gives origin to a Ligameut extended between the two Clavicles. Tab. XXI. B, C, D. Tab. XV. W.

The Surface next the Sternum, covered with Cartilage, and irregzlarly kollowed, to corrcspond witb the inter-articular Cartilage, which, with the Capsular Ligament of this Joint, allows a small degree of motion in all directions. Tab, H. Fig. 5. B.

The Body of the Bone next the Stemum bent forwards, and that next the Scapulat furned back, the whole resembling an Italic $f$, or a key used by the Ancients; from which, or from the support, like a beam, it gives the Shoulder, its name is derived. Tab. XV.

The upper part of the Clavicle aext the Sternum, rounded, and thase next the Scapula, thin and flat wbere it lies over the Joint of the Humerus. Tab. XV.

Over the Bone in general rough marks are observed, for the attachment of Muscles and Ligaments.

The under Surface hollow, for lodging a portion of the Subclavius. Tab. XXI. Fig. 5. A.

In the under Surface, one or more small Cauals, leading obliquely outwards, for the passage of the Medullary Vessels.

The External, or Scapulary Extrewity, tipped with Cartilage, to be articulated with the Acromion of the Scapula. Tıb. XV. Fig. 10.

Near the back part of the Scapulary Extremity, a Tubercle, for the attachment of it strong Ligament, which connects this Bone to the Coracoid Process of the Scapula.

The Substance of this Bone is like that of other long yound Bones, but the external 'Table is of cousiderable thickness and strength.

The Clavicle supports the Shoulder at a proper distance from the Thorax, and thercby rendens the notions of the Arm more extensive. It gives origin to scverat Muscles, and defence to large Vessels and Nerves.

In a Foxtus, the Clavicle is completely formed.

## Scarula.

The Situation of the Scapula, upon the upper and back part of the Thorax, at some distance from the

Ribe, the interval being filled up by a cushon of Flesil Tab. SV1.

The shape of the Scapula triangular, with one of the angles placed downwards. Taל. XVI.

The Venter, or inner Surface, concave, comesponding with the convexity of the Kibs, and marked with Ridgen and Depressions by the Subscapularis. Tab. XXiliI. Fig. 1. A.

The Dorsum, or outer Surface of the Scapula, rendered contex in some parts, and comcate in others, by the action of the Muscles which cover it. Tab, XVI. Tab. XIX.

The body of the Scapula is remarkably thin, and, in an old person, transparent.

The three Edges of the Bone thick and atrong, and termed Caste.

The superior or Cervical Costa the shortest of the three, and placed nearly opposite to the second Rib. Tab. XXI. Fig. 4. F, Tab. XVI.

A Semilunar Notck, which is sometimes converted into a Foramen near the fore part of the superior Costa, for the passage of the auperior Scapulary Vessels and Nerve.

The inferior or anterior Costa, extending obliquely dowswards and backwards, between the third and eighth Ribs. Tab. II.

The inferior Costa impressed where it givas arigin to the Teres Minor, the long Head of the Triceps Extensor Cubiti, and Subscapularis.

The posterior Costa, or Base of the Bone, placed obliquely with respect to the Vertebrax, the upper end being cousiderably nearer them than the under. Tab. II.

The upper part of the Base, above the large Ridge termed Spine, running obliquely forwands to the upper angle, and giving attachment to the Levator Scapula. Tab. XXI. Fig. 4.

The portion of the Base under the Spine rotigh, for the insertion of the Rhomboides and Serratus Major Antieus,

The inforior Angle very acute, and marked behind by the passnge of the Latissimus Dorsi, and the origin of the Teres Major. Tab. XXI. Fig. 4.

The superior Angle approaching to a right Angle. Tub. XXI. Fig. 4. c.

The anterior Angle, forming the Cervix, which descends from the Semilunar Notch, und supports the Head of the Bonc, which is considered as one of its Processea. Tab. XXI. Fig. 4. I, I.

The Glenord Cavity, placed on the fore part of the Head of the Bone, and lined with Cartilage for the asticulation of the Os Humeri. Tab. XXI. Fig. 4. H.

The Cartilage lining this Cavity thick at the edges, but thin toward the centre, by which it is readernd deeper, for receiving the Ball of the Os Humeri.

The shape of that Cavity, resembling an Egg cut longitudially, with the large end undermost, but so challow as to receive only a small portion of the Ball of the

Os Humeri, the rest of the Ball being eoulaned in the Capsular Liganent. Tah, XV. R.

The Spine, or great Ridge, 'mining acrose the Dorsum of the Boue, dividing it into a small upper and large under Surface, and giving origin to put of the Npinati. Tiab. XXI. Fig. 4. A, A.

The Spine, small at its beginning, kollowed and curved laterally by the action of Museles, and becoming higher aud brouder in its course forwands. Tab. XXI. Yig. 4 .

A triangular Space, betweeu the root of the Spine and base of the Bone, where part of the Trapezius is fixed. I'ab. XXXI. Fig. 17. between W and the base of the Scapula.

At the side of the Spine near its base, a passage for the principal Vessels which supply the Substance of the Bone.
The Fussa Supia-spinata, or Cavity above the Spine, for the origin of the Supra-spinatus. Tab. S.X1. Fig. 4. C, C.

The Fossa Infra-spinata, or space under the Spine, for the origin of the lnfira-spinatus, Tab. XXI. Fig. 4. D. The under part only of this space is a real Fossa, the rest of the Bone here being somewhat convex.

The Spine beconing broad and flat, and terminating in a point at its anterior extremity, where it is termed $A$ cromion, or top of the Shoulder. Tab. XXI. Fig. 4. B.

The under Surface of the Acromion, hollow for the passage of the Spinati, whirh wus to the upper end of the $\mathrm{O}_{5}$ Huneri. Tab. 工V. S.

The Situation of the Acromion over the upper end of the Humerus, which, together with the Ligaments, contributes to the protection of the Joint. Tab. XXXI. Fig. 7. v.

The anterior edge of the Aeromion, tipped with Cartilage for its articulation with the outer end of the Clavicle. Tab. XXIV. Fig. 10. A.

The Coracoid Process, arising from the Neck of the Bone, and making a curvature forwatds, 50 as to leave a hollow at its root for the passage of the Subscapularis. Tab, XXI. Fig. 4. h. Tab. XV. T, V.

The Poist of this Process, giving origin to the Pectoralis Minor, short Head of the Biceps, the Coraco-brachialis, and to a strong Ligament which passes transverscly from its side, to be fixed to the Aeromion, for the protection of the Joint. Tab. XV.

At tbe upper part of the root of this Proeess, a small Tubercle, which gives attachment to a Ligament of the Claviele.

The Substance of the Bone is very unequal in thickness; for the Inferior Costa and Processes are thick and stroug, while the Body is so pressed by its own Muscles, especially in old people, as to become in many parts transparent.

The Scapula is joined to the Claviele by Ligaments of snch strength, as only to allow between these two Bones a small degree of motion, and that chiefly of a twisting nature; but the Scapula is so connected by Muscles to Vol. I.
the llead, Os Hyoides, Trank, and Arm, as on have notion upwards, downwards, and to either side, and, through the medium of the Clavicle, to be rolled spon the top of the Sitemum.

In the Foctus, the Base, Acromion, Coracoid Proccsu, and Head of the Sespula, are Cattilagioous. The three firet are afterwards joined as Epiphyses; while the Head, with the Glenoid Cavity, is gradually produced from the Body of the Bone.

## ARM.

The Armi consisting of a single Boue, the

## Os Humeri.

The Situation of the Os Inmeri at the side of the Thorax, and under the Scapula. Tab. I.

The Ball or Head of the Os Humeri, forming a small segment of a large Sphere, and this covered with Cartilage, and plaed at the upper, inner, and back part of the Body of the Bone, to correspond with the Glenoid Cavity of the Scapula. Tab. XXII. Fig. 1. a.

The Cervir or Neck, surrounding the edge of the Ball, and forming a superfieial Fossa, where the Cupsulas Ligament is fixed. Tab. XXII. Fig. 2. b, b. Tab. I. $c$.

Numerons Holes round the upper end of the Bone, for the insertion of the Vibres of the Capsular Ligament, and for the passage of Blood-vessels into tbe Bone. Trab. XVII. Fig. I. $f$.

A Fossa or loug Groore, lined with a Cartilaginons and Tendinous Crust, is the upper and fore part of the Bone, for lodging the Tendon of the long Head of the Biceps, which descends from the upper edge of the Glenoid C: vity of the Sicapula. Tab. XX1I. Fig. 1. e.

The smaller Tubercle, placed at the upper and inner side of the above-mentioned Groove, for the attachment of the Subseapularis. Tab. XXII. Fig. 1. d.

The larger Tubercle, opposite to the former, and on the outer side of the Groove, for the attachment of the Muscles which cover the Dorsum of the Scapula. Tab. NXII. Fig. 1. c.
A Ridge continued down from each Tubercle along the sides of the long Fossa, for the insertion of Muscles coming fiom the Trunk of tbe Body, or from the Scapula.
Tab. XXII. Fig. 1. g, $h$.
A Passage slanting downwards in the fore and inner part of the Bone, near its middle height, for the Medullary Vessels. Tab. XXII. Fig. 2. $f$.

The Bone, marked at the under end of the Groove for lodging the long Head of the Bicepss by the attachment of the Deltoides and other Muscles. Tab. XXII. Fig. 1. under $i$. Fig. 2, at the outer side of ह.
The Body of the Bone, round near' its npper end; but, as it descends, appearing fwivted, then flat, and increasing in breadth at the lower extremity. Tab. XXII. Eig. 1.2.

From the Muscular Prints on the fore part of the Body of the Hnmerus, a bftent Ridge continued to the upper part
of the Cartilaginous Surface covering the lower evd of the Bone. Tab. XXII. Fig. 1. $k_{,} k_{1} k_{\text {. }}$
The under and back part of the Bone, rendered flat and smooth, by the motion of the Triceps Extensor Cnbiti. Tab. XVII. Fig. 2.

A large Ridge at the under and outer, and a small Ridge at the under and inner edge of the Bone, for the at tachment of strong Tendinous Fascix, which give origin to part of the Muscles of the Fore-arm. Tab, XXII. Fig. I.

The Ridges ending below in two Condgles, the situathon of which, in onder to avoid confusion in the terms etterual, internal, sec, is here to be considered with a reference to the Palm of the Hand turned forvards.

The citernal Condyle, placed at the under and outer part of the Bone, for the origin of the Exteasor Muscles of the Hand and Fingers. 'Tab. NXII. Fig. 1.n.

The internal Condyle, at the under and inner part of the Bone, more pointed and prominent than the former, for the origin of the strong Flesor Muscles of the Hand and Fingers. Tab. XXIL Fig. 1. on.

The Surface at the under end of the Bone, bctween the Condyles, covered with Cartilage for the articulation with the Bones of the Fore-arm. Tab. XVII. Fig. ?. $o, p, q$,

The ahligne Siluation of the articulating, Surface, the iuner ced being lower than the outer, by which the Hand turus more readily to the Face, or the urper parts of the Body. 'Tab, XVII. Fig. 1. Tab. I.

The inzer Part of the articulating Surface, consisting of a large internal and small external Eminence, with a uiddlc Cavity, or a Trocblea, upon which the Ulma moves. Tab. SXII, Fig. I. p, p, q. Fig. 2. o, o, p.

The outer Part of the Articular Surface, upou which the Head of the Radius plays, of a round form, and conqidered by some Authors as the smooth part of the outer Condyle. Tab. XIII. Fig. 1.o.

Round the F.dge of the Articular Cavitg, the Bone marked by tbe insertion of the Cupsular Ligament of the Joint. 'Tab. XXII. Fig. I. 2.

A small Cavity at the under and fore part of the Bone, above the Trochlea, for receiving the Coronoid Process of the Uina in the fiexion of the Fore-arm. Tab. XVII. Fig. 1. 3.

A large Cowity at the under and back payt of tbe Bone, also above the Trochlea, the under part of it for receiving the Olecranon of the Ulia in the extension of the Fore-arm, and the upper part for containing the Fat of the Joint. Tab, XXII. Fig. 2. r.

Betweca these Cavities the Bone is pressed so thin as often to become transparent, ceprcially in an old person.

The Substance and inner Structure of the Os Humeri is the same as in other long round Bones. The sides are compact, but the Cancelli are so large in the middle of the Bone, as to give the appeamince of a hollow Crifinder.

The Ball of the Os Hurneri is articulated with the Glenoid Cavity of the Scapula, which, from its superbcial uature, and the long Ligaments inclosing the Joiut, allows the Arm to move in all directions; the Bonc even performing a small degree of motion round its own azis. The extent of motion of the Arm, however, is considerably increased by the rolling of the Scapula.

In the Fatus, the Extremities of the Bone are Cartilaginous; and the Bali with the Tubercles, and the Trochlea with the Condyles, form afterwards Epiphyses, prea vious to their union with the Body of the Bone.

## FORE-ARM,

Consisting of two Bones, the Ulna and Raditur, both of which are observed to be longer in the African than in the European.

## Ulana.

The Situation of the Ulna at the inner part of the Fore-arnn ; the Arm being supposed to bang by the sideof the Body, with the Palm of the Hand turned forwards. Tab. I. E.
The Olecranon, Processuts Ancomens, or Tbp of the Cubit, placed at the upper cnd of the Bone, and forming the posterior prominent part of the Elbow. Tabs XVII. Fig. 4. $, a_{2}, e_{,}, d$.

The upper end of thio Process, , ough, where the Thiceps Extensor Cubiti is fixed.

The Coronoid or sharp Rrocess, at the upper and fore part of the Bone, but considerably lower than the Olecranon, for forming a part of the Hinge of the Joint of the Elbow. Tab. XXII. Fig. 4. $b, c, c$.

The Great Sigmoid, or Semilanar Cavity, between tho Olecranon and Coronoid Process, lined with Cartilage, and divided into two slasting Surfaces by 2 middle Ridge, the Cavity being adapted to the Trochlea of the Os Humeri. Tab. XYII. Fig. 4. $d, c, e$.

Across the middle of the great Sigmoid Cavity, a little Pit, for lodging part of tho Fat of the Joint.

Round the edge of the Sigmoid Cavity, the Bone rough, for the attachment of the Capsular Ligament of the Joint.

The Simall Sigmoid, or Semilnnar Cavity, hined with Cartilage, at the outer side of the Coronoid Process, where the roumd head of the Radius plays, which is confined in its place by an Annular Ligament, fixed to the Edges of this Cavity. Tab. XXII. Fig. 4. f.
The Tubercle of the Ulna, or small rough spot under the root of the Coronoid Process, for the insertion of the Brachinlis Internus. Tab. NXII. Fig. 4. A.
At the upper and outer part of the Bone, a triangulur Surface, where the Anconcus is lodged.
The Body of the Uloa, of a triangular form, becoming gradually srualler in its descent. Tab. XXII. Fig. 4. The sharpest Angle opposed to the Radius, for the attасһмоия
taciment of the Interosseous Ligamcut. Tab. XXH. lig. 4. g, g.

The sides forming this Angle, flat, and marked by the Muscles which arise from them. Tob, XXII. Fig. 4.

A Passage slauting upasirds, about a hand-breadh helow the upper end, for the Meduilary Vessels. Tab, XXII, Fig 4. $l$.

The under cud of the Boue, forning a small round Head, which is covered with Cartilage ou that side where the Ratius moves upon it, aud also on its extremity, where it is opposed to a moveable Cartilage placed between it and the Carpus. Tah. XXII. Fig. F. $n, p$.

The Stylod Process, at the iuner side of the small round Head, from which a stroug Ligament goes off to be fixed to the Bones of the Wrist. 'Tab. XV1I. Fig. 4. o.

The Dlana is articulated at its superior extremity with the lower end of the $\mathrm{Os}_{\mathrm{s}}$ Humeri, the Joint at this part forming a couplete Hinge, which allows an extensive degree of fexion, and as uuch extension as to approach a straight line with the Upper Arm; hut little or no rotation.

## Raditus.

The Situation of the Radius at the outer part of the Fore-arm. Tab. I. P.

The upper end of the Radius, covered with Cartilage, and formed into a circular Heard, which is hollowed above, for receiviog the outcer part of the Aiticular Surface of the $\mathrm{O}_{\mathrm{s}}$ Huneri. Tab. I.
The vinser side of the Head sinooth, and also covered with Cartilage, where it plays in the small Semilunar Cavity at the outer side of the Mloa, Tah. XXII. Fig. 3.

The Cervix of the Radius smaller than the Head; in the Subject, surrounded by a circular Ligament, which keeps the Bone in its place, and allows it to roll upon the Ulaa. Tah. XXII. Fig. 3.
The Tubercle of the Radius, at the under and inner part of the Cerviv, for the insertion of the Biceps Flezor Cubiti. Tab. XXIII. Fig. 3. c.
The Borly of the Bonc larger than that of the Claa, coavex on its outer and back part, and rounded here by the Muscles which cover it.

The Siorfaces nest the Ilna flat, where Muscles of the Hand take their origin. Tab. XXII. Fig. 3.e, e.
The anterior awl posterior Surfaces, terninating next the Ulina, in a shary Ridge, to which the Interosseous Liganent of the Forc-arm is fixed. Tab. NXII. Fig. 3. $d, d$.

A Passage slauting upwards, on the fore part of the Bone, and about a band-breadth below its upper end, for the Medullary Teasels. Tab. XXII. Fig. 3. g.

A rough Siu face at the outer and middle part of the Bone, for the insertion of the Pronator Radif Teres.

The lower Ent of the Radius, becoming gradnally larger, and flat on its fore part, where it is covered by the Pronator Radii Quadratus. Tah. XXII. Fig. 3. i.
with a Fossa upon cach side of it, whare the Teudnos of the Exteasor Muscles of the Fingery pass. Tab. II.

The outer side of this extremity of the Eone, holluured by the Extensors of the TIumb. Tab. II.

A semilunar Carify at the inner side of the under end of the Radius, liucd with Cartilage, for receiving the corresponding extremity of the Lina. lah. XXII. Fig. 3. mı.

The lower End of the Bonc, formed into a Cavity of an oval or navicular shape, and lined with Cartilage, for receiving the two first Bones of the Curpus. Tab. XXII. Fig. 3. 1.

A small Transverse Ridge, frequeutly found in the middle of this Cavity, which insinuates itself between the two first Bones of the Carpus.

The under and outer part of the Radius, forming is Process somewhat similar to the Styloid Process of the Ulana. Tab. XXill. Fig. 3. k. From this Process a Ligament is semt to the Wrist.

The Head of the Radius is articulated with the outer part of the axticula. Surface of the Os Humeri; the Radius is besides joined by a double articulation to the Ulaa, for above, the Head of the Itadius is received into the small Sigmoid Cavity of the Uloa, whilc the under cud of the Ilaa is received into the sinall Siemilunar Cavity of the Radius ; in consequence of which conurection, the Radius accompanjes the Uloa in the flexion and cxtension of the Forc-arm, while the Radius moves sound its own axis above, but at the lower end, it turns upon the round head of the Nlua, carrying the Hourd with it.

The Turning of the Radius with the Iland is termed Supination and Pronation; whicn the Palm is tumed upwards, jt is in a state of supination, and in promation when in a contrary directiou.

The Structure of the Radins and Uloa is the eame as that ol other long Bones.

In the Fectus, the extremities of the Boncs of the Fore-arm are Cartilaginous; they afterwards beconc Epiphyses, before they are united to the Bodies of the Bones.

## HAND,

Composed of the Bones of the Carpus, Metacarpue, and
Fingers.
The pasterior Surface of the Hand, conver, which gives it a gieater degree of strength.
The anterior Surface of the Hand, concare, for grasping and holding Suhstances.

## Carpus.

The Carpus is composed of eight Bones, disposed in two Rows ; and each Bone being hroader on its posterior than anterior Surfice, they form an Arch convex behind, by which it gives security and strength; and concave hefore, for containing the Muscles, Vessels, and Nerves, which ron to the Fingers.

The end of the Arch on the Palm-bide of the Wrist, form projecting Points, between which the Ligamentum Garpi Ammlare is stretched, which confines the Muscles in their places. Tub. XXIV. Fig.2. Tab. XXX1, Yig.4,
The posterior or convex Surface of the Carpus marked by the numerous Ligaments attached to it.
The anterior or hollow Surface, also marked by Lizaments.
The Bones of the Caypus are articulated with each ather, or with the neighbouring Boncs, and all their articular Surfuces are corered with Cartulage, to facilitate the motion of the Joints.

> In the First Row of Carpal Bones arc,
> The Scophoides, Lunare, Cuneiforme, Pisifonme.

## In the Second Row,

The Trapezium, Trapezoides, Magnum, Uuciforme.
The Os Scarhoides, placed at the outer and upper part of the Carpus. Tab. XXIV. Fig. 1. B.
The upper Surface, consex, and arkiculated with the Radius. 'Tab. XXIII. Fig. 5. a.
The wnder and outer Sturface also conaex, to be articulated with the Traperium and Trapczoides. Tab. XXII. Fig. 5. $d$.

Between the upper and under Cartilaginous Surfaces, a rough Foass for the insertion of the Capsular Ligament. Tab, XXIV. Fig. 5. c.
The anterior and imuer Surface, having an oral Cavity, which gives name to the Bone, where it is articulated with the Os MI agnum. Tab. XXII. Fig. 5. b.
A Process upon the outer end of the Bone, for the attachnent of part of the anteripr Transverse Ligament of the Wrist. 'Iab. XXII. Fig. 1. under B.

The Os Lunare situated npon the insier side of the former Bonc. Tab. XXII. Fug. 1. C.
The upper Surfacr, conver, for its articulation with the Radiug, Tub, XXII. Fig. 1. C.
The onter Edge, in Form of a Crescent, from which the Bone is named, axticulated with the $\mathrm{O}_{\mathrm{S}}$ Scaphoides. Tab. XXII. Fig. 6. a.
The under Surface, kollow, for its articulation with the Os Maguum, Tab. XXII, Fig. 6. b.
The inner Surface of the Bone, articulated with the Os Cmeiforme. Tab. XXIV, Fig. 1 ,
The Os Cuneiforme, situated on the inner side of the former Bone. Tab, XYIV. Fig 1.
The nuterior Edge, thin, in foran of a wedgc.
The upper and outer Surforce, articulated with the $\mathrm{Os}_{s}$ Lunnre. Tab. XXIV, Fig. 1.
The upper pravt farms a slight Convesity, which is included in the Joint of the Wrist. Here the moveablc Cartilage already takeu notice of, is interposed bctwecu this Bone and the Uina.

The under and outer Sutrficer, articulated with the $\theta_{s}$ Uncitome. Tab. XXIV. Fig. 1.
The auteriur and inner Surface, forming a slight conracrity for its articulation wath the $\mathrm{Os}_{3}$ Pisiforme. Tab, XXIL Fig. 7. a.
The three first Bones of the Carpus form an oval convexity, by which they are articuluted with the lower end of the Bones of the Forearm; the Osta Scaphoides and Lumare being received io the Socket formed by the Ra. dius, while the Os Cuneiforme is opposed to the Cartila. ginous end of the Uloa. Tab. XXIV. Fig. 1.

By this kind of articulation, extensive motion ir allow. ed forwards and backwards, and to each side; and by 2 successiou of these motions, the Hand is made to move in a circle ; but no motion is performed by the Carpus round its own axis, except what it has along with the Radiur in the Supination and Prouation of the Hand.

Thic Os Pisiforme, placed upon the anterior and inner Surlace of the Os Cuneiforme, forming a Prominence which is realily felt in the Wrist, and which gives 2t. tachment to strong Tendons and Ligaments, particukriy to part of the Ligamentum Capi Annulare. Tab. XXU. Fig. 8. Tab. XXIV. Fig. 1. D.
The Os Trapzztom, named from the four unequal Edges of its posterior Surface.
Tho Sizzation of this Bone, at the Root of the Metzcarpal Bone of the Thumb, Tah, XXIV. Fig. 1. A.

The upper part of the Bone, formiog a smoorn Pit, to be articulated with the Os Scaphoides. Tab. XXIV. The inner side hollow, and articulated with the $0_{5}$ Trapezoides. Tab. XXIV.

The under Surface, forming a Pulloy, on which the Metacarpal Bone of the Thumb moves. Tah. XXXI. Fig. 4.

The anterior Surface, sending out a Proceses, which is prominent in the Paln, and marked by the Transvense Ligameut of the Wrist, by the Mexor Carpi Radialit, and Flexors of the Thumb. Tab. XXII. Fig. 9. b.

The Os Trapezomes, so named from its being somewhat like the former Bone, though considerably smaller. Tab. XXII. Fig. 10.

The Situafion of the Os Trapezzides, at the inges side of the Os Traperium. Tab. XXIV. Fig. 1. E.
The upper Surface, hollow where it joins the Os Scz. phoides. Tab, XXXI. Fig. 1, m.

The outer Surface conver, and articulated with the Trapezium. Tab. XXXI, Fig. 5. $m$.

The rimer Surface, articulated with the Os Muguum. Tab. XXIV. Fig. 1. E.

The ruder Surface, formed into a sont of Pulley, to be articulated with the Metacarpal Boas of the Forefinger. Tab. XXIV. Fig. 1. E.
The Os Manum, or Cafitatum, or largest Bone of the Caspus, placed at the inmer side of the former Bone,
and eonsisting of four oblong sides, with a round head, and triangular under end. Tab. SXIV. Fig. I. F.
The Ifead or Ball of the Bone, received into the hollow Surfaces of the Seaphoides and Lunare, like ball and soeket. Táb, XXIV, Yig. 1.
The wader part of the outer side, joined to the Os Trapezoides. Tab. NXIV.
The inner side, to the Os Uneiforme. Tab. XXIV.
The under end, opposed to the Metacarpal Boue of the Middle Finger. Tab. XXIV.

Tbe Os Cnerforme, placed in the under and inner part of the Wrist. Tab. XXIV. Fig. 1. G.
The upper and inner Suriface, artieulated with the $\mathrm{O}_{\mathrm{s}}$ Cuneiforme. Tab. XXIV.
Tbe outer Surface, articulated with the Os Magnum. Tab, XXIV.
The inferion Surface, opposed to the Metaearpal Bones of the Ring and Little Fingers. Tab. XXIV:

The anterior Sunface, sending out the Unciform Process, which gives uame to the Bone., Tab. XXIV. Fig. 1. H.
The Unciform Process, curved for the passage of the Flexar Muscles of the Fingers. Tab. XXIV.
The Articulation between the first and second Row of Carpal Bones allows motion to each side, but chiefly forwards and backwards ; the motion, however, is less extensive than between the Fore-aran and Wrist.

The Connection between the different Bones in each Row, is of sueb a nature as not to admit of any sensible motion.
The Substance of the Carpal Bones is spongy, but strong in proportion to their size.
The Caspus serves as a Base to the Fand, protects its Tendous, \&e, and affords free and extensive motion.
In the Fcotus, the Bones of the Carpus are in a Cartilaginous state.

## Metacarpus,

Consisting of foum Bones for supporting the Fingers, and one for the Thumb. Tab. XXIV. Fig. I. K, se. I.

## Metaearpal Bones of the F'ngers and Thumb.

Their Bodics long and round, behind, forming part of the convexity of the Hand; before, giving hollowness to the Paim. Tab. XXXII. Fig. 5. 4.

The extrenitics of these Bones, considerably larger than their Bodies, in consequence of whieh they leave spaces for the Interossei. Tab. XXXII.
The upper Ends or Bascs, flat, where they are articulated with the Roncs of the Curpus. Tab. XXIV.
Hound the Edges of the Cartiaginous Surfaces, at the upper ends, the Depressions where the Capsular Ligaments are fixed. 'Tab, XXIV. Fig. 1.

The sides of the upper ends flat, and drawu close to
gether, where they are artieulated with cach olher. Tab. XXIV. Fig. I.

Their liodies diverging towards their under extremities, by which they regulate the motions of the Fingers. Tab. XXXII.

A Ririge at the upper and baek part of their Bodies, with a Depression on eaeh side of it, formed by the lnterossei. Iab. XXX11. Fig. 5.
'The uuder and back part of their Bodies, made flat by the motion of the Teudons of the Extensors of the Fingers. Tab. XXXII. Fig. 5.

The auterior surfice of their Bodies concnace, and rendered flat at the sides, by the Interossei Muscles. Tab. XXIV. Fig. 1.

The lower Ends, or Heads, formed into Ballo, whicl: ane fattened upoo tbeir sides by their motions upon each other. Tab. XXIV. Fig. I.

At the fore part of each side of the Ileads, a little. Prominence, for the attachuent of the Liganents which Bx these Bones to each other. Tab, XXIV. Fig. 1.

Round the Heads, a Depressiom, for the insertion of the Capsular Ligaments. Tab. XXIV. Fig. 1.
The Metacarpal Bones are joined by their Bases to the Cappus, and to each other by uearly plain Surfaces; in consequence of which, and the strength of their conneeting Ligameots, their motions here are inconsiderable.

The Bast of the Mcfacarpal Bene of the Fore-finger; opposed to, and corresponding with, the Os Trapezoides, and partly with the Os Trapczium. Tab. XXXII. Fig. 5 .

The inuer part of the Base, forming a Ridge, which is articulated with the Os Magnuni, and with the next Metacarpal Boue. Tab, XXIV, Fig. 1.

The connection of the Base is so firm, that it bas little or no motion.

The Metacarpal Bone of the Mid-finger, commonly the second in length. Tab. XXIV. Fig. I.

The Base of the Bone generally slauting inwards and downwards, opposed to the $\mathrm{O}_{\mathrm{s}}$ Magnum, Tab. $\mathrm{X} \times \times \mathrm{XI}$. Fig. 5.

The outer and back part of the Base projecting, and forming 2 sort of Process, the external Surface of wbich is eonnected with the Ridge of tbe former Bone. Tab, XXXII. Fig. 5 .

The motion of this Bone is little more tban that of the former one.
The Metacarpal Bone of the Ring-finger, shorter than the former Boue. Tab. XXXII. Fig. 5 .
Its Base, semicincular where it is opposed to the $\mathrm{O}_{\mathrm{s}}$ Uneiforne. Tab. XXXII. Fig. 5.

The motion is something greater than that of the former Bone.

The Metacarpal Bone of the Little Finger, the smallest of the four. Tab. XXIV. Fig. I.

The Base, which slants downwards and outwards, opposed to the under and inner part of the $\mathrm{O}_{3}$ Enciforme. Tab. XXXII. Fig. 4.

The sumer purt of the Base destitute of a smooth surfiace, not being contiguons to auy other Bone.

From the nature of the Joint, the loosencss of the Ligaments, and from the existence of a proper Muscle here, this Bone possesses a larger share of motion than any of the rest.

The Metucarpal Bone of the Thumb, having the goneral resemblance of those of the Fingers, but differing Irom them in being placed obliquely with respeet to them, and in some measure opposing them. Tab. XXIV. Fig. I. I.

This Bone thicker and stronger, but shorter than those of the Fingers. Tab. XXIV. Fig. I.

The Base of this Bone articulated with the Pulley formed by the Trapezium, the Bone appearing to admit of flexion and exteasion onily; but, from the looseness of the ligaments, eajoying the same kind of motion with Joints formed after the manner of Ball and Socket. Tah. XXIV. Fig. 1.

The inferior extremity of the Bone, considerably flatter than those of the other Metacarpal Bones. Tab. XXIV.

## Bones of the Fingers and Thumes.

The Fingers, componed each of three Bones; the three Hows of Bones, taken transversely, termed Phalonges. Tab. XXIV, N, \&ce, O, \&c. P, \&ze.

The different Pbalanges, tapering a little as they descead, and, their Bases larger than tbeir inferior extremities. Tab. XXIV.

The posterior Surfaces comex, and covered chiefly by the Tendiaous Expansions of the Extensors of the Fingers. T'ab, XXXII. Fig. 5.

Their anterior Surfaces flat, and in some parts concaze, for lodging the Tendons of the Flexor Muscles. Tab. XXXII. Fig. 4.

Ridges at the sides of their anterior Surfaces, for the attachment of the retaining ligaments of the Tendons of the Flexor Muscies. Tab. XXIV. Fig. 1.

The finst Phalanx longer than the second, and the second than the third. Tab. XXIV. Fig. I.

The Bases of the first Phalanx formed into Sockets, to receive the Balls of the Metacarpal Bones, and to allow motion to all sides. Tab. XX1V. Fig. 1. $i, i$.

The lower eads of this Phalanx, consisting of lateral Prominences, and middle Cavities or Pulleys, the Cartilaginous Surfaces of which reach considerahly lanther up
im the fore than in the back pat. Tab. XXXII. Fig. 4. 5.

The Bases of the second Plalank, with Ititeral Carifics and middle Fidges, comesponding with the Pullegt of the first Pladanx, and admitting of flexion and exter. sion ouly, Tab. XXIV. Fig. 1. mt, m.

The louer ends of this Phalanx, similar to those of the first. Tab, XXIV. Fig, $1, n, n$.

Tise Rases of the third Phalanx, like those of the second, and the motions also similar. 'Tab. XXIV, Fig. I. $p, p$.

The under euds of the thivd Phalanx rough, where the Pulpy, Vascular, and Nervous Substance of the points of the Fingers is situated. Tab. XXIV. Fig. I.

The peculiarities of the Bones of the Fingers consigt only in their size.

The Bones of the Mid-finger the largest and longett. Tab. XXIV, Fig. I.

Those of the Ring-finger next in length. Tab. XXIV.
The Bones of the Fore-finger next to those of the Ring-finger in length, and of the Mid-finger in thickness, Tab. XXIV.

Those of the Fourth Finger the amallest. Tab. XXIV.
The Thumb consisting of only two Bones. Tab. XXIV, Fig, I, L, M,

The first Bone like the Bones of the first Phalanx of the Fingers, but thicker and stronger. Tab. XXIV.

The cartity at the Rase of the Bone, longer from one side to the other, and shallower thame the Cavitipa of the eorresponding Bones of the Fingers, but, like them, forming a Socket for the Metacarpal Bone. From the flatness of the Joint, however, and strength of the lateral Ligaments, the motions here are confined to flexion and extension only. Tab. XXIV.

The lower end of the first Bone of the Thumh like that of the first of the Fingers. Tah. XXIV.

The second Bome of the Thumb like the third of the Fingers, but broader. Tab. XXIV.

The Base of this Eone, like that of the secoud and third Bones of the Fingers, and like their Jointa alro, admitting of flexion and extension only.

The substance of the Bones of the Metacarpus, and of those of the Fingers, is the same with that of the Long Bones.

In the Feetus, both extremities of the Metacarpal Bones of the first and second, and upper ends of the thind Phalanx, are in a state of Cartilage.


## TABLE XXII.

## Represents the Bones of the Upper Arm, Fore Arm, and Carrus of the Left Side,

$\therefore$

FIG. 1.

## The Fore Part of the Os Humeri,

$a_{\text {s }}$, The middle of the ball of the os humeri.
$b, b$, The cervix of the os humeri.
c, Part of the large tubcrosity.
d, The small zuberosity.
$e, e$, The groove, or sinuosity which receives the long head of the biceps.
$f, f$, The orifices of several conduits, for the insertion of the fibres of the capsular ligament, and for the passage of vessels into the bone.
g, The projecting line which answers to the large tuherosity.
$h$, Another ridge which answers to the small tuberosity.
$i$, Muscular prints which give insertion to the deltoides.
$k, k$, The long line whirh occupies the whole length of the os bumeri.
1, The internal condyle.
$m$, $m$, $m$, The three facets, or muscular prints of this condyle.
$n$, Part of the external condyle.
0 , The head, or rounded eminence, which is articulated with the radius.
$p, p$, Two other articular eminences which correspond to the ulna.
9. The articular cavity, which receives the middle process of the ulna.
$r$, Another auticular cavity, which facilitates the motion of the radius.
s, The cavity which receives the coronoid process of the ulua, upon bending the fore-arm.

FIG. 2.
The Posterior Part of the same Bone.
$a$, The posterior part of the head of the os humeri.
$b, b$, The cervix of this bone.
$c, c, c$, The muscular priuts of the large tuberosity.
$d, d$, The orifices of different conduits which open into the substance of the bone.
$c, c$, The superficial triangular cavity, which gives at. tachment to muscles.
$f$, The orifice of the passage which commonicates with the imner cavity of the os hameri.
$g, g$, The projecting line which auswers to the extcrual candyle.
$l_{\text {, A }}$ A part of the posterior surface, which is bounded by the external surface.
$i_{1}$ A second postcrior surface, which also answers to the exteroal surface.
$k, k$, A third surface, which is blended superionly with the extemal surface.
1, The extemal condyle.
m, Sevcral inuscular prints on the posterior part of this condyle.
$n$, A portion of the eminence of the os humeri, which is articulated with the radius.
o, 0 , The two eminences of the os humeri, which are articulated with the ulna.
$p_{0}$ The internal condyle of the os huneri.
q. The articular cavity of the os humeri, which facilitates the motion of the ulna.
$r$, The posterior cavity, which receives the olecranon upon the extension of the fore-arm.

FIG. 3.
The Imer, and Part of the Oufer Sarface of the Radius.
$a$, The semicircular eminence of the radius, which is. lodged in the sigmoid cavity of the ulna.
$b$, The cervix of the radius.
$c$, The tuberosity of the radius.
$d, d$, The crest, or osseous line.
$e, e$, The inuer surface of the radius.
$f, f$, A portion of the anterior surface.
g , The small conduit which opens into the inner cavity of the hone.
$h$, An osseous line, or muscular print.
i, A small fossa at the inferior extrenity of the radius.
k, The styloid process.
1, The oval cuvity which receives the first of the carpal bones.
m, The semilunar cavity, which receives the articalac process of the ulna.

## FIG. 4.

The Outer and somethat Postervor Surface of the UlNa.
a, The olecranon, a little bollow in the middle.
b, The coronoid process,
c, c, e, -crcaul uiaccuiau and ligamentons impressiout. d, The middle, or articular process of the ulua.
$\ell, \ell$, The articular, or great senilunar cavity.
$f$, The small sigmoid, or semilunar eavity.
$\mathrm{k}, \mathrm{g}, \mathrm{g}$, in osscous line, extending the whole lengut of the ulna.
$\Pi$, A muscular priat below the siguoid cavity.
$i, i, i$, The inner surface of the ulina.
$h, k$, The outer surface.
$\vec{l}, \mathrm{~A}$ small conduit which communicates with the cavity of the bonc.
nv, A small fossh, or muscular print of the inferior extremity of the ulna.
$\pi_{4}$ A semicircular eminence articulated with the undcr end of the radius.
$a$, The atyloid process.
$p_{7}$ A portion of the cavity wiuch answers to the cars pus.

FIG. 5.
The Comver or External Surface of the Os Scaphoides, rictacd in a position most farourable for shewing its Nafiedlar Cavity.
a, The upper part of the os scaphoides, by which it is articulated with the os lunare.
b, The navicular cavity, which receives the head of the large carpal bone.
c, The middle rough part, to which sceveral ligaments are attached.
d, The under end, hy which it is articulated with the trapezium and trapezoides.

FIG. 6.
The Outer Surffuce of the Os Lunare, the under Part of thich chiefy is sheurn.
a, The articular facet of the os lonare, excavated in form of a crescent, by which it is joined to the of scaphoides.
$b$, The large lunar cavity, hy which this hone is articnlated with a considerable portion of the large carpul bune.
$c$, Part of the iuferior surface, by which it is joined to the os cuseiforme.

FIG. 7.

## The Iuner Surface of the Os Cunetrorme.

$a$, The small surface, which is articulated with the os pisiforme.
$h, b$, Different ligamentous impressions.

F1G 8
Os Pisffonmic.
A, The articular wwrace by which it is conavered trath the os cuneiforme.

## FIG. 9.

The Inferion Part of the Trapezitum, or firat of the Second Riange of the Carpil Bones.
$a, a$, The two small surfaces on the under part of the trapeziam.
$b_{\text {, }}$ Part of the oblique process.
$c$, Part of the sinuosity.
d, The amall nurface by which it is joined with the first netacapal bone.

FIG. 10.

## The different Surfaces of the Os Trafezomes.

$a$, Part of the external surface.
$b$, The inferior surface.
$c$, The anterior surface, hy which it is joined with the trapczium.
$d$, Part of the superior surface, by which it is joined with the scaphoides.
c, Part of the print of this hone, which is twned towards the palm.

FIC. 11.
The External and somewhat Anterior Sterface of the
Os Magaum.
a, The head of this bone incrusted with a smooth carti. lage, for facilitating the motions of ita articulation with the scaphoides and lunare.
$b$, The cervix of this hone.
$c_{1}$ The outer surface.
$d$, Part of its anterior surface.
e, Its under edge, by which it is joined with the secood metacarpal hone.

## FIG. 12.

## The Posterior Part of the Os Uncirorne.

$a$, The upper part, which answers to the os lanare.
$b$, The inner surface, where there is a sinuogy for thic passage of several tendons.
$c$, The unciform process, on which there is a sort of groove, which also facilitates the passage of tendons.
$d$, The posterior" and superior surface, by which it is joined to the os cunciforme.
$c, e$, The inferior surface, divided by a small superficial line, the larger part of which corresponds to the third. and the other to the last metacarpal bone.
T.13. 23.


## T A BLE XXIII.

## Represents the different Bones of the Extremities, excepting those of the Thumb

 and Fingers.FIG. 1.

## An Inside Irew of the Bones of the Shoulder and ARM.

A, The venter, or auterior cavity of the scapula,
$B$, The acromion.
C, The noteh of the seapula, which transmits vessels and nerves.
O, D, The inferior costa.
$\mathbf{E}, \mathbf{E}$, The base.
f , The anterior angle, which contains the glenoid cavity.
G. The coracoid process.

H, The posterior angle.
I, The inferior angle.
$\mathbf{h}$, The posterior end of the clavicle, fixed to the acromion всарulae.
1., Thesternal extremity.

M, The ball of the os humeri, articulated with the glenoid cavity of the scapula.
N , The cervix.
O, The inner, or emall tuberosity.
$\mathbf{P}$, The round body.
$Q$, The interoal condyle.
R, The trochlea.

## FIG. 2.

A View of the Anterior and Inner Surgaee of the Bones of the Fore-Arm, to shew theur Articulationt.
4. The great sigmoid cavity of the ulna, which receives the trochlea of the os humeri.
B, The olecranon of the ulna.
C, The cononoid process.
D, Its triangular body.
E. The inferior extremity, articulated with the carpus by the intersention of a cartilage.
E, The styloid piocess.
G, The head of the radius, occupying, the semitunat cavity of the ulna. Vos. I.

H, The cervix of the radins.
I, The tuberosity for the insertion of the biceps.
K , The triangular body of the radius,
$\mathbf{L}$, The interstice between the radius and ulna, fille chiefly with the interosseous ligament.
M, The inferior broad extremity of the radius, articu. lated with the carpus and ulna.
$N, N$, The anterior concave surface of the carpus, como posed of

The of scaphoides
The of lunare,
The os cunciforme
The os pisiforme,
The os trapezium,
The os trapezoides,
The os magnum, and
The os unciforme.
O, scc. The metacarpal boues of the thumb and fingers.
FIG. ड.

## The Outer and Fore Part of the Os Fenckis and <br> Patella.

A, The ball of the thigh-bone.
B, The cervix of this bone.
C, The trochanter major.
D) The trochanter minor, which ought not to be seen in this view of the bone.
$\mathrm{F}_{4}$ The curved body of the bone.
F , The external condyle.
G , The cartilaginous surface on which the tibia motes.
H , The trochlea, which receives the patella.
J, The patella.
FIG. 4.
A Ficw of the Outer and Fore Parf of the Bones of the Liec and Foot, in their connected stnte.

A, The head of the tibia.
B, The tubercle of this bone.
C. The hody of the tihia,

D, The lower extremity, at the iuner side of which is the malleolus internus.
E, The head of the fibula, joined to the outer part of the tibia.
F, The irregular surface of the body of the fibula.
G , The lower eud, or malleolus externus, joined to the outer side of the tibia and tarsiss.
H , The space between the tibiz and fibula, filled with the interosseous ligament.
I to $\mathbf{P}$, The tarsus, composed of,
I, The astragalus.
K, The os calcis.
L. The projection of this hone forming the heel.

M, The os naviculare.
N , The os cuneitorme medium, on the imner side of which is seen a small part of the os cuncifoume isternum.
O , The os cunciforme externum, and,
R, The os cuboides.
Q, \&cc. The metacarpal bones of the toes.
$\mathbf{R}$, \&ce. The first phaikanx of the boaes of the small teci.
S , \&ec. The aecond phalanx.
T, scc. The third phalanx.
D. The firat boue of the great toe.

W, The segond bone of the great toe-


## TABLE XXIV.

Represents the Bones of the Hand and Foot.

## FIG. 1.

## A Vice of the Iruer or Palm Side of the Bonces of the Left Hand.

B, The os seaphoides.
C, The os lunare.
C, $G$, The os cuneiforme.
D, The os prsiforme.
A, The os trapezium.
E, The os trapezoides, or pyramidale,
E, The os magaum.

* H , The as unciforme.

H, The unciform process.
I, The metucarpal bone of the thomb.
$a$, The base of this bone, sending inwards a coronoid process.
$b$, The inferior extremity.
K , scc. The metacarpal bones of the fingers.
$k, k$, \&c. The interstices occupied by the interosseons nansolec
$c, c$, \&ic. The upper ends irregular, where they are joined to the carpus, and to each other.
$d, d$, The under cads, in form of balls, covered with cartilage.
L, The first bone of the thumb, concave, for lodging the flexor longus.
e, The base, forming a glenoid cavity for the articulation with the metacarpal bone.
$f$, The lower end, with two lateral protuberances, and a middle cavity.
M, The second bone of the thamb.
g, The base, with two lateral cavities, and a middle protuberance comremponding to the end of the former bone.
h. The under and iner side, rough and irregular, where the soft aubstance at the end of the thamb is placed.

N, N, 8cc. The first phalanx of the bones of the fingers, flat like the surface marked $L$.
$i, i$, The base, with a cavity similar to $e$, but rounder. $l, l$, The inferior extremity, similar to $f$.
O, \&ic. The second phalanx, hollow like the first.
$m$, $n t$, The base, similar to $g$.
$n, n$, The under and inner surface, like $f$.
P, $q$, scc. like $g, h$.

## FIG.2.

## AView of the Under Side of the Bones of the Lert Foot.

A, A, The astragalus.
a, The upper and inner surface of the astragalus.
B, The body of the os calcis.
C, Tbat portion of the os calcis which forms the lower part of the heel.
$b$, That part to which the tendo Achillis is fixed.
$c$. Tho lange oinuosity of this bone, which lodges the principal museles, tendons, vessels, and nerves of the sole.
D, The os naviculare.
E, Tbe os cuneiforme internum.
F, The os cunciforme medium.
G , The os cuneiforme externum.
H, The os cuboides.
$d$, The fossa of the os cuboides, for lodging the tendon of the peroncus longus.
I, The metatarsal bone of the great toe.
K , sec. The metatarsal bones of the small toes.
$b$, \&co. Interstices occupied by the interosseous muscles.
L, The first bone of the great toe.
M, Tbe second bone of the great toe.
N, \&cc. The bones of the first phalanx of the toes.
O, scc. The bones of the second phalany of the toes.
P, sic. The bones of the third phalanx of the toes.

## INFERIOR EXTREMITIL3

Tablinve herc,
Each of the Inforior Listremitites, composed of the Thigh, Leg, and Foot.

The Thigh consisting of a single Bone, viz.

## Os Fenaris.

The Os Femoris, the longest Buse of the Body, and thickest and strongest of the Cylindrical Bones.

The Situation of the Bone, at the under and outer part of the Pelvis. Tah. XXIX.

The abligue situation of the body of the Bone; the pnder end being considerably nearer its fellow ou the other side than the upper one is, which is favourable for the passages at the bottom of the Pelvis, for the origin of Muscies, and for walking. Tab. I.

The Ball or Head of the Thigh-bone, smooth, covered with Cartilage, and forming almost twoothirds of a Spliere, which is received into the deep Socket formed by the Acetabulum of the Os Innominatum. Tab. IXV. Fig. 1. a. Tab. XX.

A rough Pit at the inner part of the Bull, for the attachnent of the Ligamentum Rotundum, which is fixed by its other ead to the hottom of the Acetahulum. Tab. SXV. Fig. 1. 6.

The Cervix or Nock, mach Innger than that of any other Bone, passing obliquely downwards and outwayds from the Ball, to allow the free motion of the Body of the Bone in different directions. Tah. XXV.

Numerous IIoles in the Cervix, for the insertion of the Fibres of the Ligaraent reflected from the Capsular one. Tab. SXV. SXIX.

The Trocheuter Major, placed at the outer part of the Neck, and upper end of the Body of the Bone, for the inscation of the Extensor, Abductor, and Hotator Muscles of the Thigh. Tab, XXV. Fig. 1, e.

Tro rough Surfaces upon the upper and fore part of the large Trochanter, for the insertion of the Glutei, Me. dius and Minimus. Tab. XXV. Fig. 1.f.

A Cavity, placed at the inner side of the Root of the large Trochanter, for the insertion of the Rotator Muscles of the Thigh.

The Trochanter Minor, at the under and inacr part of the Cervis, for the insertion of the Plexor Muscles of the Tliggh. Tab. XXV. Fig. 1. h.

The Trochater Minor is small and peinted, and in the Subjoct is so much covered by Musclen, as to be out of the reach of the Finger.

A rough Line on the fore part of the Bone, extending obliquely between the two Trochanters, for the insertion of the Capsular Ligamant. Tab. XXV. Fig. 1. 5, g.

A rough Line hetwecn the Trochaters, on the back
part of the Boue, for the insertion of the $\mathrm{C}_{4 \text { pachar }} \mathrm{L}_{\mathrm{ig}}$ meut, and of the Quadratus Femoris. Tab. MV $\mathrm{F}_{\mathrm{ig}} \mathrm{F}_{2}, h_{2} h_{\text {. }}$

The Body of the Thigh-bonc, bent forwards, and : little outnards, of a mondish form above, but some what triangular about its niddle, 'Tab. XiIII. Tab. AXV,

The fore part of the Bone, fiat, where it is covered by the Crureus. Tab. I. A.

The Sides of the Bone flattened at its middle and lower part by the two Vasti. 'Iub. XXT. Fig. 3.

The Linea Anpera, or Ragged Ridge, on the hack part of the Bone, extending from the 'Irochanters, but chielly from the large one, 10 the lower part of the Bone, and giving attachment to ummerous Muscles which pass from the Pelvis to the Thigh, or from the Thigh to the Leg. Tab. XXV.

The Linea Asperz is forked at hoth its exuremities; extending above to the Tiochunters, while below, the two lines into which it divides terminate in the Condyles. Tab. XXV.

The Conal for the Meduliary Vessels, slanting upwards, a little below the middle height of the posterior part of the Bone. Tub. XXV. Fig. 2. q.

The under and back part of the Bone flat, whese the Popliteal Vessels and Nerves are placed.

The lower End of the Bone becoming gradually ent larged, and perforated by many Holes, for the insertion of the elaprolav I icrament of the Knee, and for the payeage of the Nutritious Vessels of the Bone. Tab. XXV.

The lower End, also marked by the insertion of several Muscles. Tab. XXV.

The Cartilaginouss Trochlea at the under and fore part of the Bone, placed obliquely, with its outer Surface larger and higher than its inner one, to be adapted to the Patella, which moves upon it. Tab. XXV.

The external and internal Condyles, continued hack from the Trochlea, and adso covered with Castilage, for the motion of the Tibia. Tab, XXV.

The thternal Condyle larger and deeper than the asternal, to compensate for the obliquity of the Thigh, and to give lebs ohliquity to the Leg. 12 b . XXV. Fig. 2. $\mathrm{z}, \mathrm{v}$.

A Notch between the back part of the Condyles, for lodguig the Poplited Vessels and Nerves, Tab. XXV, Fig. 2. x, ※.

A semilunar rough Notch, deeper and lower than the former one, for the attachment of the Crucial or intermal Ligaments of the Knee. Tab. XXV. Fig. 2. y.

The Thigh-bone is articulated above with the $\mathrm{O}_{s} \mathrm{In}$ nominatum, which allows the free motion of the Body of the l'one in all directions. It is sestrained, however, in its motions outwards by the Ligamentum Rotundum, and by the high Hrim of the Acetabuhum.

The Head and Neck of the Bone can move round
their own axis, though its Body possesses little rutatory motion. In consequence of the oblique situation of the Head and Neck when the Ball rolis, the body of the Bone is only brought forwards or backwards.

In the Fretus, the difereut Processes of the Bone me Cartiaginous, and afterwards torm large Epiphyses. Tab. XXVII. Tab. XXXII. l'ig. 15.

The miner subbstance of this Bone, like that of other loug Bones, consists of a fibrous reticular substance in the middle, and lamellated Cancelli at the extremities. The body of the Bone has remarkably thick and strong solid sides, but these, towards the ends, become almost as thin as a piece of paper.

## LEG,

Composed of two Boaes, the Tibia and Fibula,-to which may be added the Patella.

## Tibta.

The Tibia, situated at the inner part of the Leg. Tab. I. C.
The upper End of the Tibia, forning a large Head, and that divided on its upper surface into twa superficial Cavities, for reeeiviog the Caxtilaginous part of the Condyles of the Thigh-Bone. Tab. XXV. Fig. 3. Tab. XXXII. Fig. 7.

A rough Protuberance projecting between the artieulating Cavities, and received in the space between the Condyles. It is pitted on its fore and back parts, for the insertion of the aoterior aud posterior Crucial Ligaments, Tab. XXXI. Fig. 17. No. 4.

The aricutating surtaces at the upper end of the Tibia, are rendered deeper in the Subject by the addition of two semilunar Cartilages placed upout their edges. Tab. XXXII. Fig. 7. c, $c$.
The circumference of the Head of the Bone, roush and porous, for the insertion of the Capsular Ligameot. Tab. NXV. Fig. 3. $h, h$.

A Trbercle at the upper and fore part of the Bone, for the insertioo of the lower Tendon or Ligament of the Patella. Tab. XXV. Fig. 3. uppermost $f$.
A Cartilaginous Surface under the outer Edge of the Head of the Bonc, for the articulation with the upper end of the Fibula. Tab. XXV. Tab, MXIII. Fig. 4. E. The Body of the Bone, of a triangular form, witb the sharpest Angle placed anteriorly. Tab, SXV. Fig. 3, a.
The anterior Angle, called Spine or Skin, a little waved, and extending from the Tubercle to the inner Ankle. Tab, SSV. Fig. 3. $b, a, b$.
The anterior and inner surface of the Bone smooth, being covered with skin only. Tab. XXV. Fig. 3. c, $c$. The anterior and outer Sirrface, hollowed by one of the Flexor Muscles of the Foot, and by the long Extenyors of the Toes. Tab. XXV. Yig. 3. $d$, $d$.

The Angle at the outer and back part of the Bone, tiving attachment to the Interosseous Ligament. Tab. LI. Fig. 1. 2.

The middle of the posterior Surface, also holloued by Muscles which assist in extending the Voot, and iu bending the Toes. 'I ab. XX_I. Fig. I7. No. 5.

A Fidge exteuding obliquely downwards from thre upper and outer part of the Boue, posterimly, to its inner Angle, and giving origin to part of the Muscles which extend the Foot aul bend the Yocs. 'I ab. X LIII. Fig. 2.

A flat Sturface above the Ridge, iudicating the situation of the Popliteus. Tab. XLIII. Fig. 2. uoder the head of the Tibia.
The Canal lor the Medullary Veswels, slantiong downwavds at the imer and back part of the Bone, a littlo above its middle height. Tab. II. above B.
The under end of the Tibia suncller than the upper one, and its interior surface hollow, and covcred with Cartilage, for the Articulation with the Astragalus. Tab. XXV. Fig. 3.

The Malleahns Internus, or inner Anlle, produced from the inoer aod fore part of the under cuel, aud covereal also with Cartilage where the Astragalus plays. Tab. XXV. Fig. 3. r, m.

A Pit in the point of the Malleolus Internus, for the attachment of the internal lateral Ligament, and a Groore behind, where the $\{$ endon of the Tibialis Posticus is placed. Tab, XXV. Yig. 3. m.
The semiciceular Cavity, at the under aod outcr kide of the Tibia, for receiving the under end of the Fibula. Tab, XXV. Fig. 3. q. Tab. XXIII. Fig. 4. G.

Round the edge of the articulating Cavity, the Bonc, marked by the insertion of the Capsular Liganent. Tab. SVII, Fig- $1 . \mathbf{p}$.

The Jlibia has a strong external Table, with a considerable quantity of spongy substance.

The Articulation of the upper cnd of the Tibia with the Os Femoris, is of such a nature as to allow flexion to 2 great degree, but the aumerous Ligaments fixed here prevent it from being cxteoded beyond a straight lioe with tbe Thigh ; and then there is no rotatioo nor lateral motion, though, when the Joint is bent, the Ligaments are so much relaxed, that the Leg may be made in in soall degree to roll, or to tum a littic to cither side.
The Extremities of the Tibia are Cartilaginous in the Fcetus, and become afterwards Epiphyses 'Iab, XXVII.

## Fibula.

The Fibula, placed at the outer side of the Tibia, and by mnch the simaller of the two Booes, being the most slender Bone, in proportion to its leogth, of any in the Bocly. 'Tab. XXIX. Fig. 10. $i$.

Tbe upper end of the Fibula, formed into a large Hearl, with a Supcrficinl smooth Cacily towards its inoer side, to be articulated with the Tibia, where it is tied by Ligaments of such strength as to allow vcry little motion. Tab. XXV. Yig. +. Tiab. XXIII. Yig. 4.
The Head of the Yibula, irregular and rougk externally, for the insertios of the Biceps Fleaor Cruxis, and
of the exteroal literal Ligancot of the Knee. Tab. XXILI. Fig. 4.
The Budy of the Bone leat a little inwards and backwards, and uneqnally trimgular, with the surlaces betreen the Angles niarked by the Muscles which arise fiom it, or ure placed upon it. 'Tah. XXV. Fig. 4. Tab. XXIII. Fig. 4 .

A lidige it the inner side of the Fibula, opposed to one at the onter part of the 'Tibia, for the ingertion of the Interosseons Liganent. Tab. XXIII. Fig. 4.
A Canal on the back prart of the Bone, slanting obliquely downwarde, a little above its middle, for the passage of the Medullary Yessels. Tab. II. above C.
The under End of the Fihula broud and flat, to be zeceired by the scmilnusr Cavity of the Tibin. Tab. XX1II. Fig, I, above G.
The wudcr eud of the Bone forming the Malleohus Erternue, or outer Ankle, which is lower and farther back thau the inner Ankle, the obliquity of the two Malleoli in some measurc corresponding with the obliquity of the Foot. Tab. II, nt.
A contex smooth Surface on the inner side of the Malleolus Externus, opposed to the outer side of the Astragalus, which moves upon it. 'Tab. XXV. Fig. 4. i.
The Coronoid Process, sent down from the Malleolus Externus, from which Ligaments go to the Bones at the outer side of the Foot.
A Furrow upon the back part of the Malleolus Externus, for lodging the Tendous of the Peronei.
The Fïbula being articulated with the Tibia at its superior extremity by almost plain surfacee, and tied to it by strong and short Ligameats, only a very little motion is allowed.
At the under end it is joined so firmly by strong Ligameats, that no sensible motion appeare in the Subject; though in this joint, 23 in several others, where the Bones are firnly fixed by short Ligmannts, there may be an elastic yielding in the living Body.

In old people, these two Bones are not unferquently joined at their under extremities by an union of Substance.
The Fibula affords attachment to Muscles ; assists in securing the Articulation of the Foot; aulds to the form and strengtb of the Leg; and, by the head of the Bone being fived to that of the Tibia, it widens the space for the Iaterosseous Ligament.
The Srestance of the Tibia and Fibula is like that in other long Bones.

Io the Fostus, the extremities of the Fibula are Cartilkginous, and afterwande hecome Epiplysees, previous to being united to the Body of the Bonc. Tab. XXVII.

## Patella or Rotula.

The Patella, placed at the fore part of the Joint of the Knee, and in some respects hearing the same relation to the Tibilis as the Olecranon does to the Ilina. Tab. I. B.

The shape of the Patella, triangular wid flat, or of the liguye of a Heart as painted upon playing-cards, aud having its point downwards. Tab. XXVI. Fig. 1 .

The anterion Sunface of the Boas, comex, and perio. rated hy numerous Holcs, for the insertion of Tendous and Liganents which cover it. Tab. XXV1. Fig. I.

The posterior Wurface, which correspaads with the Trochlea of the Os Fcmoris, smooth, covered with Castilage, and divided by a longitudual pronuinent Ridge into two unequal-sized Cavitics, of which the external is the largest, like the Truchlen, to which it is adapted. Tab. XXVI. Fig. 2.

The circumference of the articular Surface, narkied by a rough Linc, into which the Capsular Ligament-of the Joint is fixed. Tab. XXVI. Fyg. 2. $a, a$.

The Base, or upper part of the Boone, horizontal, and murked by the insertion of the Tendous of the Extensors of the Leg. Tab. XXV1. Fig. 1, a.

The back part of the Apex rough and depressed, fortbe attachment of the Ligament wbicb passes from the Patella to the Tubercle of the Tibia. Tab. XXYI. Fig. 2. $d$.

The Ligaments of the Patella allow it to be moved upwards and dowawards ; and when tbe Leg is extended, they admit of its motion to either side, or to be ralled,

When the Leg io extended, the Patelle is lodged in the Trochlea of the Os Femoris; when the Limb is bent, the Patella is pulled down by the Tibia, and lodged in a hollow at the fore part of tbe Kuee.

The Patella has a thin, though firm external Table. Its internal Substance is cellnlar, but the Cells are small, and have so muech $\mathrm{O}_{\text {sseous }}$ Matter cmployed in their formation, as to give the Bone a considerable degree of strengti.

The structure of this Bone, the tonghness of the Ligaments which cover it, and the free motion it is allowed, are found to enable it better to resist any common force applied to it , than if it had been a process continued from the Tibia, as the Olecranon is from the Vlna.

The Patella defends the fore part of the Knec, increases the Angle of insertion of the Museles fixed to it, and serves as a pulley or lever, by enabling the Mupcles to act with greater advantage in extending the Leg.

It is entirely Cartilaginous at Birth, and is laser is ossifying thas moat of the Epiphyves.

FOOT,
Composed of Tarsus, Metatarsus, and Toes.

## Thasus,

Composed of seven Bones, viz. The Astragalus, Os Celceis, Nauriculane, Cuboides, Cune forme Exicnnam, Cunciforme Medium, and Cuncifornue Internum.

The upper part of the Tarsus conzex, the under past concatr.

In the Concawity, mumerons Museles, Vessels, and Nerzes are lodged, helonging to the Sole.

The different Boncs of the Tarsus have thcir rough Surfaces joined together by strong liganents, and their parts of articulation corered with Carthiage, in such a manner as to forin part of a strong and elastic Arch, for supporting the weight of the Body, and lessening the thock it would otherwise andergo in the different motions it has to sustain.

The Astragales, placed directly under the Tihia. Tah. XXIII. Fig. 4. I.

The upper part of the Astragalus, formed into a large Head, resemhling a Pulley, which is smooth on its upper part and sides, to be articulated with the under end of the Leg-bones. Tah. XXVI. Fig. 5. $a, a, b$.
Fach of the Cartilaginous Surfaces of the Head of this Bone depressed in its middle, to correspond with the parts of the leg-bones with which it is articulated.
Round the inferior edge of the articulating Surfaces, a rough Fassa for the insertion of the Capsular Ligament; and at the sides of this Surface, the Boae marked by the lateral Ligaments. Tah. XXVI. Fig. 5. c, d, f.
The under part of the Bone, consisting of a deep Forsta, or sinnous Cavity, which divides it into an anterior and posterior artieulating Surface. Tah. XXVI. Fig. 7. d, $c$.
The Fossa in the under Surface, narrower at the imer part of the Bone, and beconing gradually wider as it goes ootwards and forwards.
The posteriar articulating Surface, large and concare for its articulation with the nupmen ond midut part of the Os Calcis. Tah. XXVI. Fig. 7. c.
The anterior articulating Surfaee, irregular and consex, where it plays upon two smooth Cavities at the imer and fore part of the $\mathrm{O}_{\mathrm{s}}$ Calcis, and upon a Cartilaginous ligament extended between the $\mathrm{Os}_{\mathrm{s}}$ Calcis and Os Naviculare. Tab. XXVI. Fig. $7 . e, f$.

A large oblong smooth Head, at the fore part of the Bone, for its articulation with the Os Naviculare. Tab. XXVI. Fig. 7. g. Fig. 5. e.

The Joint between the Astragalus and Leg-booes forms a complete. Hinge, which, together with the above-mentiooed Ligaments, allows the Foot to bend and extend upon the Leg, but admits of no lateral nor rotatory motion, except in the extended state, when there is a little of each.
In the Foetus, a considerable portion of this Bone is ossified.

The Os Cazcis, the largest of the Tarsal Bones, situated under the Astragalus, and in the back part of the Foot. Tab. XXVI, Fig. 5, B.
A harge rough Tuberosity or Kinob, projecting bechind, to form the Heel, and to make one end of the Axch of the Foot. Tab. X YIII. Fig. 4.L.
A superficial C'avity in the upper and hack part of this

Knoh, for the iasertion of the Tendo Achinllis. Tab. XXVI. lig. 5 . above i.

A smooth Convexity on the upper part of the Bone, for its articulation with the under and back part of the Astragalus. T'й. XXVI. Fig. 8. u.
A. Fossa or Sinuous Cavity at the fore part of this articulating Surlice, running forwards and outwards, and giving origin to strong Liganents which are insertod into the corresponding Fossa of the Astragalus. Tab. XXV1. Fig. 8. $c, c$.

Two Prominences at the inner and fore part of the Bone, concave, and smooth above, with a Pit between them, for the articulation with the under and fore part of the Astragalus. Tab, XXVI. Fig. 8. b, b.
From the posterior Prominence the Cartilaginous $\mathrm{Li}_{-}$ gament arises, which is fixed to the $\mathrm{Os}_{\mathrm{s}}$ Naviculare.

A large Cavily or Arch at the imner side of the Bone, between the posterior of the two la-t-meotioned Processcas and Projection of the Heel, for lodging the Tendons of the loog Flexors of the 'Toes, together with the Vessels and Nerves of the Sole. Tab. XiXVI. Fig. 5. under B.
A Depacssion in the external Surface of the Bone, near its fore part, where the Teudon of the Peroncus Longes runs in its way to the Sole. Tab. XXVI. Fig. 8. $t$.

The under and back part of the Bane, forming turo Prominences, where it gives origio to the Aponeurosil, and to several Muscles of the Sole; and before the Prominences, the Bone concate, where it lodges part of these Mnscles. Tab, XXXII. Fig. 10. a, b.
The anterior Surface comocrec, and somewhat in form of a pulley placed obliquely, for its articulation with the $\mathrm{O}_{5}$ Cuboides. Tah. XXIII. Fig. 4, before A .
The $O s$ Calcis is articulated with the Astragalus by Ligaments of such strength, that this part of the Foot, upon which the Body rests, is rendered firm and secure, but enjoys very little motion.

In the Fectus, a large proportion of this Bone is ossified, and the Projection forning the Heel is afterwards an Epiphysis.

The Os Naviculare, situated at the fore part of the Astragalus aod inner part of the Foot. Tab. XXVI. Fig. I. C.
The pasteriar Surface, forning a Cavity somew hat like that of a Boat, for receiving the Head of the Astragalus in the manner of Ball and Socket. Tall. XXVI. Fig. 6. c.

A Prominence at the inner side of the Bone, for the insertion of Tendons, Muscles, and strong Ligaments, particularly for the Liganent stretched between this Bone and the Os Calcis, for the suppost of the Astragam lus, Tab, XXVI. Fig. 5. n.
The fore part of the Bone cosser, and divided into three articular Siurfaces, for the articulation with the Ossa Cuneiformia. Tib. XXVI. Fig. 5. p, p, p.

Between the O. Naviculare and Attragahis, the Foot
has its princijal lateral and rotatory motions, though each of the other Joints of the Tarsus contributes a little.

The Os Cuboides, placed at the fore and outer part of the Tarsus. Tab. XXXII. Fig. 12. $\dot{\text { q. }}$

The postervior Surface of this Bone smooth, colners at its inner, and concare at its outer part, eorresponding with the anterior extrenity of the Os Calcis. Tab. XXV1. Fig. 12. b.
'The inner side, axticulated with the Os Naviculare and external Os Cunciforme. 'Jab. XNIII. Fig.4. K.

Its undee: Surface urregular where it gives attachment to strong Ligaments, and to the Adductor Pollieis. Tab. XXXII. Fig. 10. k.

I decp Forsa in the outer and under part of the Bone, for lodging the '1'endon of the Peroneus Longus, where it erosses the Sole. Tab. XXXII, Fig. I0. 1.

The anteriou Extremity, divided into a small inner, tnd large outer plain sw-face, to be articulated with the fourth and fiftb Metatarsal Bones. Tab. XXXII. 1"ig. I0.

The Thiee Ossa Cunetrormis, situated at the fore purt of the Tarsue, and inner side of the Or Cuboides, and applied to each other like the stones of an Arch. Tab. XXXII. Fig. $12, n, p_{1} p$.

The apper part of these Bones, flat where they are covered with Liganents. Tab. XXXII. Fig. I2.

The under purl irregular; for the attachment of Muscles and strong Ligaments lying in the Sole. Tab. SXXII. Fig. 10. $n, 0, p$.

The posterior Siterface, flat, and covered with Cartilagen to be articulated with the Os Naviculare. Tab. VXXII. Fig. 12.

The anterior \$ierfoce, also flat, for the artieulation with the Metatarsal Bones, Tab. XXXIV. Fig. 12.

The Os Crineiforme Extervum, or Medium as being of a middle size between the next two Bones, oppoosed to the Metatareal Bone of the Thind Toe.-Tle outer side of this Bone articulated with the Os Cuboides. Tab. NXVI. Fig. 9. Tab. XXXII. Fig. 19, $p$.

The Os Cunciforme Medium, or Minuman, the least of the three, and articulated at its outside with the former Lione, and anteriorly with the second Metatarsal Bone. Tab. XXYI. Kig. 10. Tab, XXXII. Fig. 12. o.

The Os Cuneiforine Internum, or Maximum, the largest of the Cunciform Bones, and placed obliquely, with its anterior Surface opposed to the Metatarsal Bonc of the Great Toc. Tab. Xivi. Fig. I1. Tab. XXXII. lig. $1 \geq$. $n$.

The slarp Edge of this Bone tarned upwarde, while that of the other two is in the opposite direction. Tab. X VXII. Fig. 12. n.

The Os Nanculare, Os Cuboiles, and Ossa Cuneiforin irr, are almost Cartilaginous at Birth.

## Metatarsus,

Composed of fie Dones, which answer to the genc-
ral characters given to the Metaearpal Bones. Tab. XXIIL Fig. 4. Q, Q, \&ic.

Their bodies long, arched upuends, and tapering towards their anterior extremities. Tab. XXXII. Fig. 12.

The cutrennities, lorge in proportion to their Bodies, and the pnsterior much larger than the anterior. Tab. XXXII. Fig. 10.

The Basen, fiat, or a very little hollowed, to be artieulated with the fore part of the Tarsal Bones. '1'ab. SXXII. Fig. 12.

From the flatness of their Bases, and the strength of the Ligaments which fix these Bones to those of tbe Tarsus, very little motion is allowed to this part of the Foot.

Round the Bases rowgh fiurfaces for the attaclument of Ligaments, 'Tab, XXIII. Fig. 4.

The sides of the Bases fut where they are articulated vith each olher. Tab. XXXII. Fig. 12.

A Ridge above, and a flat surface at each side of their bodies, for the origin of the Interossei Muscles. Tab. XXXII. Fig. I\%.

The fat surfaces turned obliquely outwards, and the obliquity inereasing the uore externally the Bones ane placed.

The anterver Erfremities forming Balls, to be articulated with the Toes;-the Balls much longer fram above dowowards, than from one side to the other. Tab. XXXII. Fig, IV.

Round the Heads distinct Impressions, whero tbe Capsular Ligaments are fixed. Tab, XXXII. Fig. 19.

The Afetatarsal Rones of the Great Toe, by much the tlitckest and stangest, but ahortest of the Nietatar. sus. Tab, XXXII. Mig. I3.

The articulating ('anity of its Base, deeper than the rest. Thab. XXXII. Fig. 12.

The auferior Entremity, bearing a greater proportion to the Base than the rest, haviug a much larger share of the weight of the Body to sustain liere, and formed into 2 middle Prominewce, with the lateral Depressimn, where the Bones terucd Orsa Scsamoidea move. Tab. XXIV. Fig. 3.

The Metatarsal Bone of the Secund Toc, the longet of the five. Tab. XXXII. Fig. I2.

The Metatarsal Bone of the Middle. Toe, the second io length, with a Base like that of the former Bone, triangalar, but a little larger, to be articulated with cle $\mathrm{O}_{5}$ Cunciforme Extemumn. Tub. XXXII. Fig. 12.

The Metutarsal Rone of the Fourth The, nearly of the same length as the former, but distinguished from it by its Base beisg thicker below, and its Cartilaginous Surface being more of a square form, corresponding with thit anterior and innes part of the Os (uboides, with which it is articulated. Enb. XXXII. Fig. 10.

The Metularsal Bone of the Little Toc, the shortest of those of the Small Toen, with flat Sinfaces faciup upwarls and downwards. Tab. XXXII. Fig. 10. 1\%.

The Baxe which rests on the Os Cuboides, projecting outarandly into a large Tuberosity, which gives onigiu to Muecles.

Museles, and forms one of the points on which the Body rests in standing. Tab. XXXII. Fig. 10.

The Bones of the Metatarsus, with those of the Tarstis, form an irregular Arch for supporting the Body, one end of the Arch being formed by the projection of the Heel, the other by the anterior extremity of the Metatarsal Bones. The different pieces composing this Arch are bound by Ligaments of such strength, as to give security to the whole.

## Toes.

The Bones of the Toes, the same in number with these of the Fingers, viz. two to the Great $\mathbf{T}^{\circ} \mathrm{oe}$, and three to each of the smaller Toes; and the different Bones here, as is the Fingers, disposed in Ranks or Phalanges. Tab. XXXII. Fig. 10. 12.

The two Bowes of the Great Toe like those of the Thumb, but stronger, and placed in the same row with the Bones of the sinaller Toes, for the purpose of walking, and assisting in supporting the Body. Tab. XXXI. Fig. 12.

The Bones of the Smaller Toes, every way less than those of the Fingers. l'ab. XXIV.

Thicir ander surface depressed, where the Teadons of their Flexor Muscles are lodged. Tab. XXXII. Fig. 10.

The Beses of the first Phalanx, as in the Firgers, forming Siockets to reeeive the Balls or Heads of the Metatarsal Bones. .Tab. XXXII. Fig. 12.

The Joints between the first and second Phalanx, and also between the second and third, as in the Fingers, forming Hinges, and the motion similars but muse vourfined. Tal. KXAII. Fig. 10.12.

Of the small Toes, the furst, or that next the Great Toe, the largest, the rest beeoming smaller, the more externally they are placed. Tah. XXXII, Fig. I0. I2.

The Bones of the Toes allow a free and easy motion in Childreit, and a considerable degree of it also in People whose Feet have not been confined in shoes. In others, capecially in advanced life, the Toes are fiequently Found squeczed together, and some of the smallest Bones ol the 'Toes, as the two last of the little one, have the pieces which originally composed them joined together by an union of Substance.

The structuse of the Bones of the Foot is nearly sindar to that of the Bones of the Mand.

In the Foctus, the Boues of the Metatarsus and Toes are in the same condition as those of the Metacarpus and Fingers.

## Ossa Sesamotdea.

Their size, situation, and number, vary in different per*005.

They are sometincs found at the roots of the Fingers and Small Toes; at the secoud Jont of the Thmnb, and at the corresponding one of the Great Toe; between the Condyles of the Os Femoris and Gastrocnemius Musele; between the Tendons of the Peronens Longus and Os Cuboides, \&e.

Those always present are placed in pairs at the soots of the 'Thumb and Great Toe, between the Tendons of their Flexor Muscles and Joints.

They are conves on their outer Surface, where they are inclosed by the Tendons and Muscles fixed to them. Tab. XXXII. Fig. 12. a.

And concave, and lined with Cartulage next the Joints, where they play upon the Bones with whieh they are articulated. Tab. XXXU. Fig. 14. a, Tab. XXVI. Fig. 3. 4.

They are considered by Anatomists as servigg the same geacral purpose with the Patella.

Vol. I.

## TABLE XXV.

Different Views of the Os Femomis, Tibla, and Fibula.

FIG. 1.

## tutertar surface of the Os Femoris of the Leet Side.

a, The head of the os femorib, covered with a smooth and polished cartilage.
b, A portion of the pit, or ligamentous impression of this head.
c. The upper part of the neck of the os femoris.
$d_{1}, d$, Vaxious openings or fissures, which give passage to vessels.
$c$, The trochanter major.
fs The blunt point of this-process.
$\mathrm{B}_{2}$ b, The ridge, or projecting line, which exteuds from the greater to the smaller truchanter.
h, The trochanter minor.
i, The npper aud muldle pant of the os femoris, somewhat flattened.
$k$, The middle part, which is conver and rounded.
1, The inferior and middle part, more of a triangular form. m,,$m$, Muscular and ligamentous inpressions upon the lateral and under parts of the bowe.
7, 4 triangular cavity, with fissures for the insertion of the capsular ligameot, and for the passage of vessels.
$u_{4}$ A cavity, or pulley, at the hotom os the os femorio, covered with cartilagc, to facilitate the motion of the patella.
$p_{9} p_{p}$, The emineaces which form the sides of the pulley.

## FIG. 2.

## The Posterior Surfacc of the same Bone.

$\mathrm{F}_{3}$ The pestcrior part of the head of the os femoris.
$b$, The eavity, or ligaucutous print of the head of the os femoris.
$c_{+} c_{1}$ The noequal cdge of the cantilgginous substance of the heark.
$d_{2}$, The upper and posterior part of the cervis femoris.
c, The under yart of the cersic.
$f$, The openings in the cervis, for the transmission of vessels, which penetrate the substance of the hone.
59 'The blunt point of the trochaniter major, on which are muscular pints.
$h$, The base of this process.
$i, i$, Opxwings in this process for the transmession at vesm sels,
$k, k$, The rugged eminence, or crest, which extends from one trochanter to the other.
l. The trochanter minor, on which, 29 well $2 s$ on the trochanter major, are a aumber of muscular prints.
$\mathrm{mH}_{4}$ The middle of the innel surface of the os femoris.
$n$, The middle of the outer surface.
o, The middle of the linca aspera, which, through its whole length, is only a continuation of muscular innpressionas.
$p, p$, The division of this line into two branches, of which one goes to the larger, and the other to the smaller: trechanter.
q, Oritive of the canal for the medullary veasels, in the middte end ismov rayt of the os femoris.
$r, r$. Division of the linea aspera into two small ndges, which eatend from the middle and muder part of the bone as far as its condylea,
s, The triangular cavity between these two branches and the condyles, forfacilitating the passage of blood-vessely.
$t_{1} t$, The lissures at the under part of this cavity, through which the vessele of the cancelli prass.
i, $x$, The condyles, encrusted with a amooth cartilage.
$x, x$, The tuherosities of the coudlyles, inte which ligaments and muscles are inserted.
$y$, A cavity between the coudyles.
$3_{3} x_{2}$, Ligamentous impressions upon the upper cige of this cavity.

## IIG. 3.

## The Anterior Surface of the Tram of the Lesw Side.

$a_{5}$ The middle of the crest of the tibia.
$A, b$, The upper and under parts of the enest or ridge.
$c, c$, The inner smonth eurface.
$d, d$, The outer surface, generally hollonv.
${ }_{5}, c_{3}$ The edge of the superior cavities of the tibia.
$f, f$, The tuberosity of this bonc divided into two purty, of whit h the upjuer gives attachment to the hgoment ol the putella, and the other insertion to the coudons of nutucles.

B, The emall articular process, which answers to the fibula.
$h, h$, Prints made by the capsular ligament on the upper part of the tibia.
$i, i, i$, Openings of the spoagy substance, which are orifices for the transmission of vessels spread over this part of the bone.
In, $\hat{h}$, A porous surface, where the tendons of muscles, with their apaneurosis, are fixed.
1, The under and middle round part of the tibia.
$m$, The malleolus internus.
$n, n$, Vestiges of the union of the inferior process to the bady of the bane.
o, The eminence which answers to the fibula.
$p, p$, The articular cavities which correspond with the astragalus.
$q$, Part of the articular cavity which receives the fibula. r, $r$, Ligamentous irapressions.

FIG. 4.
The External Surface of the Fibula of the Left Side.
$a, a, a$, The length of its external surface.
$b_{,}$Part of the posterior surface.
c, $c$, The ridge, or osseous line which separates the pos. terior from the outcr surface.
$d$, Part of the ridge which separates the outer from the inner surface.
c, The superior process of the fibula.
$f$, The articular cavity which receives the eminence of the tibia.
g, The articular process of the fibula, which corresponds to the tibia.
$h, h$, Asperities, or ligamentous and muscular prints.
$i_{i}$ The coronoid process of the malleolus cxternus.
$k, k$, The asperities, or bigamentons prints of this process.
1 , 1 , The oritices of several conduits, for the transmission of vessels.

## L. 2

# TABLE XXVI. 

Views of the Patella, Ossa Sesamoidea, and Bones of the Foot.

FIG. 1.
The External Surfacc of the Patelen of the Left Side.
$a_{9}$ A hollow in the upper part of the patella, into which the tendon of the extensor muscles of the les is fixed.
$b$, The middle of the bone, somewhat coavex.
$t, c$, The lateral parts, which are so many museulat prints.
d, Fissures on the surface of the patella, with the orificeas of the couduits by whicb the vessels penctrate into the interior of the bone.
r. The inferior extromity of the patellin into which a very strong ligament is fised.

## FIG. 2

## The Inher Surface of the same Patella.

$a_{5}, a_{4}, a_{4}$ The eircumfercnce of the patella, or margin to whicb the capsular liganent is fixed.
$b_{4}, b_{4}$. The articular eavities of the inner surface, covered with smooth cartilage.
c. The small prominent ridge, or superficial process, which separates the two cavities.
d, An irregular hollow, to which the ligament is fixed which goes to the tibia.

FIG. 3.
One of the Sesamoid Bones of the Thumb.
FIG. 4.
A Sesampoid Bone of the Great Toe,
FIG. 5.
The Inver Surface of the Left Foot, in a Postition nearly horizoutal.
A, The middle and upper part of the astragalus, where it is somewhat eoncave, and covered with eartilage.
$a, a$, The semieixcular eminences which border the upper part of this bone.
$b$, The oblong eavity of the inner surface, by winch it is joined with the malleolus internus.
c, The eervix of the astragalus.
$d$, Inequalities, or ligamentous prints on the upper and inner part.
$c$, The head of the astragalus, which is received into the cavity of the os seaphoides.
$f$, Lequalities on the inner surface, also marked with li. gamentous prints.
$g$, A small enininence on the posterior part of the astragalus, which is articulated with the os calcis.
B , The middle of the imer surface of the as calcis, ex. cavated, in form of an oblique gutter, for the passago of tendons, vessels, and merves.
$\mu_{\text {, The }}$ upper aud posterior emineace of the os calcis, by which it is artieulated with the astragalus.
$i$, The tuberosity of this bone, the upper and back part of which is impressed by the insertion of the tendo Achillis.
$k$, The inner and upper surface of the os calcis, artieulited with a small surface of the astragalus.
l.l, The sinuosity below this eminence, through which the tendon of the flexor longus pollicis passes.
m, The anterior crainence of the on calcis, by whichit is joined with the os cuboides.
C, The upper and middle part of the os naviculare, on which several ligamentous printy are seen.
$n, n$, The navicular cavity, which receives the liead of the astragahus.
o, The tuberosity of the os navieulare, to which the tendon of the tibialis posticus is fixed.
$p, p, p$, The small surfaces by which this bone is joined to each of the cuneiform bones.
D, The middle of the large cunciform bone.
q, The under end of this boue, where there is a small surface anteriorly, to which the tendon of the tibialis anticus is fixed,-aud posteriorly, a tuberosity to which the abduetor pollicis is fixed.
$r$, The upper part of the same bone, by which it is joined with the second os cunciforme.
$\mathbf{E}$, The upper part of the second cuneiform bone.

TiB. 20 .
Fig. 1.


Fig 4.
3


Fig. 7.



F, A small part of the third euneiform bone.
G, The middle and upper part of the large metatarsal bone.
s , The posterior part of this bone, where it is joined with the first os cuneiforme.
$t$, The head of the same bone, which forms an arthrodial articulation with the first phalanx of the great toe.
$v_{s}, u$, Fminences, or prints, on the lateral parts of this bone.
H, The middle aud upper part of the second metatarsal bone.
«, The posterior and upper part of this bone.
$w$, Its antcrior extremity, which terminates in a rouudish head.
1, The upper and middle part of the first bone of the great tue.
$x$, The edge of the glenoid cavity of this bone.
$1 /$ The anterior extrenity, the articulatiou of which sith the second boac is a complete ginglymus.
K, Part of the first bone of the second toe.
L, A portion of the first boue of the third toe.
M, The middle part of the sceond bone of the great toe, which is convex.
$z_{9}$, The upper and posterior part of this bone, by whieh it is joined to the first.
\& , The anterior extremity of the seeond boue, on which are asperities to support the aails, and furnish attachment to teudinous fibres.
$\mathrm{N}, \mathrm{N}$, Portions of the second bones of the second and third toes.
o, A yery small portion of the third metatarsal boue.
FIG. 6 .

## The Pasterior Surface of the $\mathrm{O}_{5}$ Scaphoides, secn a Tittle abliquely.

$a, a, a, A$ large part of the upper surface of the os seaphoides, which is very irregular, and gives attaehment to several ligaments.
$b$, A portion of the tuberosity of this boue, on which are muscular and ligamentous prints.
c, The navicular eavity which receives the hend of the astragalus.

FIG. 7.

## The Under Part of the Astragalus.

e, The outer surface of the astragalus, scen a little foreshortened.
$\delta$, Its great cavity, which corresponds to the large upper emincence of the os calcis.
c, Edge of the large fossa of the astragalus,
$d$, $d$, The bottom of this fossa, on which are several ligamentons prints.
e, A small oval surfice, which is joined with 2 part of the obloug cavity ou the emineuce of the inner surface of the os calcis.
$f$, Another small eminence, which is joined with another: part of the same cavity of the os caleis.
g , The under part of the liead of the astragalus.
FIG. 8.
Shews the Ipper Part, and Extcraal Surface of the
Os Calcis.
a, The upper eminence of the middle part of the or ealcis, which is articulsted wilh the great eavily of the astragalus.
$b, b$, Another eminenee of the inner surtace of this bone, in whieh there is an oblong cavity, which is articulated with another part of the astragalus.
$c, c$, lnvegular hollows, into which the principal ligaments which unite the astragalus widh the os calcis are inserted.
$d, d, d$, The posterior part, or edge of the large tuberosity of the os calcis.
$\epsilon$, The cdge of the large higllow of this bone.
$f$, The external sinuosity, through which the tendon of the peroneus longus passes.
g, The small tuberosity to which part of the ligameuts of the peronei are fixed.
$h$, The anterior. procese of the os ealeis, by which it is articulated with the os cuboides.
$i$, The middle external part, which is बlightl? conves.
F1G. 9.
The Ipper and Onter Surface of the Exterwal Os CeNEIFORML.
a, The upper simface, to which seteral small ligaments are fixed.
$b, 1$ portion of the anterior surface.
$\epsilon$, That part of its outer surface "hich is joined to the cuboides.
$d$, The depresbions of this surface, to whith strong ligameats are fixed.
$e$, The point of the bone which answers to the sole.
FIG. 10.
The Ipper, Posterior, and Onter Surfaces of the Middla
Os Cunetrorme.
$o$, The upper sufface, on which are aspeitities, or lighn mentons priats.
b, Part
$t_{0}$ Part of the posterior surface.
$c$, The onter surface; on which is an eminence joined to the third cuneiform bone.
d, The under part, which answers to the sole.
FIG. 11.
Parts of the Inferior and of the Anterion Surfaces of the Internal Os Cunerfoneme,
$A_{9} a_{7}$ The small surface, by which it is articulated with the second bone of the same name.
$b$, A portion of the under part of the large cuneiform bone, which terminates in a thick tuberosity, to which the tendon of the tibialis anticns is fixed.
c, The auterior surface, 2 little hollow, for the articu- $f$ lation of this with the large metatarsal bone.

FIG. 12.
The Supcrior, and somewhat Exterval Surface of the Os Cuboldes.
a, A part of the inner edge of this bone, which is joined to the third cuneiform bone.
$b$, The posterior surface, on which there is an oblique process, adapted to the os calcis, with which it is articulated,
f, The anterior surface, which receives the two last me. tatarsal bones.
$d_{+}$The upper surface, the numerous asperities of which are so many ligamentous prints.
$c$, Part of the inferior obligue process.
$f$, A portion of the simosity, through which the tendon of the peroneus longus passes.


## T A BLE XXVII.

## Represents the Skeleton of a Fetus at the Full Time.

IN this figure are seen the following, mong other peculiarities of structure; viz.
A portion of the fontanella.
A membranots substance, in form of a suture, uniting the two pieces which form the frontal hane.
A ring of bone surrounding the outer edge of the tympanum.
The symphysis of the lower jaw, formed of cartilage.
The of sacrum, composed of distinet vertebre, with intervertebral substances.
The different points of ossification upon the sternum.

The cartilaginous border of the os ilium.
The cartilaginous union of the three pieces which come pose the of indominatum.
The ends of the long bones in general of the superion extremities, in the state of epiphyses.
The bones of the carpus cartilaginous.
The ends of the long bones of the inferior extremities, in the form of epiphyses.
The patellx in a state of cartilage.
The bones of the tarsus partly cartilaginous, and partly osseous.

# PRINCIPAL DIFFERENCES BETWEEN THE MALE AND FEMALE SKELETON 

The greater Part of which may be observed in Tab. I. II. XXIX. XXXI. representing the Mate steletrn, and 'Tab. XXVIII. XXX, the Female \$keleton. See also 'Tab. XV. XVI. XVII. XX.

Tue Female Skeleton is observed, in general, to be smaller and more slender thronghout than that of the Male.

The Bone of an Adult Female, of the same size with that of a Male, is usually distiuguished by the Ridger, Depressions, rough Sinfaces, and other Inequalities, being less conspicuous in the former.

The Circamference of the Female Skull is said by Soemmering to be larger.

The Os Frontis is found to be more frequently divided by a continuation of the Sagittal suture.

The Frontal Sinuses are observed to be namower;
All the Bones of the Face nore delicate;
The Bodies of the Vertebrae longer, and the Vertebral Canal, aecording to the Author quoted above, larger;

The Intervertebral Substances deeper or thicker;
The Cartilages of the True Ribs longer in proportion to the Osseors paxt, and broader and flatter to support the Breasts ;

The Sternum more raised, and the whole Tborax shorter, deeper from hefore backwards, and more distant from the Pelvis;

The leagth of the Steraum less, and terminating below on a line nearly opposite to the Plane of the Fourth Pair of Ribs, but in the Male Skeleton terminating opposite to that of the Fifth Pair;

The Cartilago lissiformis oftener perforated in the middle, or bifurcated;

The length of the Loins greater ;
Tbe Pelvis wider in all its dimensions;
The Spines and Processes of the Ossa Intominata farther distant from each other;

The Os Sacrum broader, and turned more back watds, to enlarge the Cavity of the Pelvis ;

The $\mathrm{Os}_{\mathrm{s}}$ Coccygis more slender, tumed more backwards, and laving a greater degree of notion ;

Tbe $O$ asa llia fatter, and more reflected outwards, by which the under part of the Abdomen is rendered more sapacious, and the impregnated Uterus better supported;

The Notches of the Ossa Hia wider, and the con-
joined Surfaces of the Ossa Innominata and Os Sserum less ;
The space between the $\mathrm{O}_{5 \text { sh }}$ Pubis shorter from above downwards, but larger taken ia a transverse direction, especially in Women who have born Children; of course the Ligamontous Cartilage of the Symphysis thicker;

The Angle formod by the Crura of the Ossa Pubis with the Aymplysis Pubis much larger; that of the Male being acute, while in the Female the Angle extends to 80 or 90 degrees;

The Tuberosities of the $\mathrm{O}_{\text {asa }}$ Ischia flatter, and at a greater distance from each other,

The Brim of the Pelvis wider, and of an osal form, corresponding with the Mead of the Child, and the longest Diameter extending between the Ossa Ilia.

In the Male, the Brim of the Pelvis observed ta have more of a circular appearance, and to have the greatest extent between the Ossa Pubis and $\mathrm{O}_{s}$ Saerum.

The Opening at the under part of the Pelvis, in the Female, much wider, and of an oval form; bat the owat the reverse of that at the Brim;

The Formmins Ovalia wider.
All the Openings at the under part of the Pelvis, being wider, leave a large passage for the Birth of the Cbidd.

The Acctabula farther distant from each other, in consequence of which, Women who are very broad at thir part of the Body waggle when they walk;

The Ossa Femorum more curved; the Neck of the Thigh-bone forming a greater Angle with its Body; the Body of the Thigh-bone placed more obliquely; the in terval Condyle larger.

The Feet smaller;
The Claviclen less crooked;
The Seapula smallex, placed more backtwards, but closer to the Thorax; of course the breadth of the Shoulders less;

The Superior Fixtremities shorter;
The Hande amaller;
The $\mathbf{O}_{552}$ Carpi nampower; and,
The Fingers more tapering towards their Extremities.
T

## (89)

## TABLE XXVHI.

Represents a well-formed Young Adult Female Skeleton, the different Parts of which may be understood, by comparing it with the Skelerons already described.

## ' A BLE NXIX.

Represeuts the General Structure of the Bones, and a Front View of the Male Skeleios

FIG.
Fait of the Os Fhontis, couerrd with its Peniosteinm, the Axtentes of which are injected.
A, The hranches which come from the orhit ;-the other smail trunks of the urteries ohserved in several places are sent from the common integuments to the perios teum.

## FIG. 2.

The Parietal. Bone of a Foctus, to shem the Radiated Fibres of a Flat Bome, proceeding from the first oosified point A.

F 1 G .3.
The Thich-Bone of a Fotiks, to shew the Iongettedinal Parallel Evibres of a Cylindrical Bone.
A, The part which first ossifies.
B, B, The two extremities in a cartilaginous state.
FIG. 4.
Siefion of Part of the Os Femoris, to shew the Plates and Cancelli of Loug Bones in gencral.
$\mathrm{A}, \mathrm{A}, \mathrm{A}, \mathrm{A}$, The plates of the thigh-hone separaterl.
$B, B$, The camcelli.
F1G. 5.
Transeverse bection of a Bowe burnt, to shew the Carities for containing the Marrow and Vessels.

FIG. ©
The. Ippeurance of the Marrere, vicued with a Microscope.
FIG. ?
The Thign-Bone, longitadinally through the middle.
$\mathrm{A}, \mathrm{A}, \mathrm{A}, \mathrm{A}$, The cancelli.
B, B, The union of the bone with its extremitics, which are here in u state of epiphysis.
C, C, The reticular substance.

D, D, The sides, or talles, which are thick and atrong in the middle of the bone, and thinner towards the $e$ as treamitics.

FIG. 8.
The Os ILIUn, saned through the middele to shew the Cancelli.

F1G. 9.
The Hip-Joznt of a Child, opened to shew,
A, The head of the thigh-bone.
B, The round ligament connecting it to the aeetahulum.
C, The capsular ligament of the joint, with its areries injeeted, and,
D, The sumerous vessels of the fatty glandular-like sab. stance of the joint also injected.

FIG. 10.
A Front Fiew of the Male Skeceton.
A, The frontal hone.
d. Its superciliary hole.

A, The external orbitar process.
$\boldsymbol{\gamma}_{\text {, }}$ The internal orbitar process.
B, The parictal hone.
Between A and B, the cononal suture.
C, The temporal hone.
D, as $_{5}$ The occipital bone.
E., The bones of the nose.
$F$, The os male.
G, The superior maxillary bone.
H, The lower jaw.
1, The tecth.
K, The sevcu cervical vertebst, with their intermechat cartilages.
\}, Their transverse processes.
I. I, Skc. The twelve dorsal vertehra.

M, The five lumbay vertehre.
$\mathrm{N}_{\text {, }}$ Their intermodiate eartilages.
$x_{3}$ Their transverac processes.
O, The os saurum.
P, The os coceygis.


Q. The os cluma
$\lambda$, Its spive.
$\mu$, Its anterior-superion spinous process.
, Its inferior-anterior spinous prowess.
$\xi$ The venter of the lium.
is The brim of the pelvis.
H , The os pubis.
s , The os ischium.
${ }^{5}$, The crura of the osssa ischia.
is The foraneu thyroideum.
$p$, The acetabulum.
T, The seven true ribs.
U, The five false cibs.
$n_{4}$, , The joining of the ribs with their cartilages.
t, The cartilages of the sinth, seventh, and eighth cibs, united with each other.
$V$, The steruum.

1. Its upper piece.
2. Its niddle piece.
3. 4. Its cartilago ensiformis.

X , The clavicle.
I, The concave surface of the scapula of the right side.
$p_{7}$ The superior costa of the scapula, with its semilonar noteh.
$t$, The coracoid process of the left side.
$u$, The acromion of the left side.
क, The anterior-inferior costa of the seapula of the right side.
$\%$, The head of the os humeri under the acromion.
\$, A groove for the tendon of the biecps.
$Z$, The body of the as humeri.
$a$, The trochlea,
4 , The exteroal,
$b$, The interaal eondyle of the os humeli.
$d$, The head of the radius of the left side.
$c$, The olectanou of the ulna of the same sinde
${ }^{2}$, The ulua of the right side.
b , The radius.
c, The earpus.
d, The metacarpus.
c, The phalanges of the finger-
$f$, The right os femoris.
k, The internal,

1. The external eondyle.
g, The patella.
$h$, The tibia.
i, The fibula.
k, The tarsus.
1, The metatarsus.
m , The phalnuges of the toes.
$r$, The malleolus externus.
$t$, The mallcolus intervus.
$f$, The ball of the left thigh-bone.
$g$, The great trochanter.
$h$, The eervix.
$i$, The small trochanter.
$p$, The tubercle of the tibis.
$q$. The os calcis.

## ' $\mathbf{A}$ BLE XXX.

Represents a Front View of the Female Snlleton, with the Bones of the Head.

FIG. 1.
By comparing this Figure with Fig. 10. of the farmer Table, the diferent Proportions of the Bones of the inm Siacware heri, and the Lutters to the several Bomes of the Male Skeleton, explained in Fig. 10, may guide the Eye to the like Bones of the Female SkeLeton repressmed here.
The Letters added here to the Boares of the Head are,
$a$, The coronal suture.
$b$, The squamous suture.
$0_{\text {, }}$ The lumbdoid suture.
$c_{,}, c_{.}$The transverse suture.
d, The zygomatic suture.
r. The external orbitar suture.
$f$, The lateral nasal suture.
\%, The superciliary hole of the frontal bone.
务 The orbitar process of the frontal bose.
H , The os planum of the ethmoid bone.
$r$, The lacrymal groove of the os unguis.
$\pi$, The external orbitar hole of the maxillary bone.
§, The tuber of the maxillary bonc.

1. The clin.
2. The base of the lower jaw.
3. Its angle.
4. Its coronoid process.
5. Is condyle.
6. The weatal hole.

## Suferior Extnemittrs.

5. The right os humeri.
6. The head of the radius.
7. The olecranon.
8. Tlie ulna.
9. The under end of the radine, marked by muscles.
t, The coraceid process of the scapula of the left side.
", The acromion of the scapula.
f. The semilutire nitch on the upper elge of the scapula.
10. The coronoid procenn of the ulna.
11. The tulexele of the radins.
12. The under end of the madivs.
13. 1ta styloul process.
14. The stgloid process of the una.

## Pelvis, and Inferlox Extremity.

$\lambda$, The spine of the og ilium.
H, Its anterior-sisperior spinous process.
, lis anterior-inferior spinous procest.
R, The joining of the os ilium and os pubis.

S , The os ischium.

1. The epinous process of the as ischium.
2. The joining of the os sacrum with the os ilian
3. The symphysis pubis.
4. The pelvis.
$f$, The ball of the thigh-bone.
$g$, The trochanter major.
$h$, The cervix of the thigh-bonc.
5. The head of the fibult.
6. The spine, and,
7. The inner edge of the tibia.
8. The under eud of that bone.
$r$, The malleolus externus,
$t$, The matleolus internus.
FIG. 2.
Back Fiez of the Frontal Bonz.
7, The fiontal sinus.
$i$, The sagittal suture, continued in this figure to the root of the nose.
The other parts seen in this View have been described is Tab. VIII. Fig. 4.

FIG. 3.
The Inner Side of the Left Parietal Bone,-Siee
Tab. IN. Fig. 2.
FIG. 4.
AFore Fiew of the Ocerpital Bone.-See Tab. IX.
Fig. 4.
To which add here,
*, An os triquetrum.
\&s The extremity of the cunciform process, where it joins the sphenoid bone.
s, The exterior surface of the cunciform process.
$r, \tau$, The enadyles.
a, Part of the hole common to the occipital bone, and right temporal bone.
$A$, The hole for one of the nerves of the anth pair.
FIG. 5.
The luner Side of the Right Tempokal Bone.-See Tub. X. Fig, 6.

FIG. 6.
Iuternal View of the Sthenoid Bone,-See Tab.X. Fig. 2.

## To uthich add here,

3. A conpection which is sometimes observed between the anterior and posterior clinoid processes.



FIG. 7.
FIG. 16.
Eitcrar Fiew of the Exhmon Bone.-See Tab. X. Interior Tiew of the Right side of the Craniuxs, and Fig. 3.

FIG. 8.
Posterior Yiew of the tero Nasal Bones.-See Tab. XII. Fig. 3. 4.
FIG. 9.
The Side of the Os Ungurs neat the Nose.-See Tab. XII. Fig. 6.

FIG. 10.
Posterior I'tew of the Os Mals.-See Tab. S1I. Fig. 8. FIG. 11.
4 Tiew of the Lower Part, and Side next the Nose, of the Left Os Maxillare, with the Palate Rones, and $n_{\text {, the }}$ Os Twbinatun Inferius.-See Tab. SII. Fig.2.

FIG. 12.
The Left Palate Bene tiucerted.
4, B, C, D, The palate plate.
The other letters refer to parts belonging to the nose and orbit.-See Tab. XII. Fig. 11. 12.

FIG. 13.
A View of the Inner Surface of the Right Side of the Lower Jaw.
I. A section of the chin.
2. The base of the jawv.
3. The angle.
4. The coronoid process.
5. The condyle.
6. The rough print of the internal ptexygoid muscle.
7. The orifice of the passage for the nerve and bloodvessels.
8. The five molares.

FIG. 14.
4 Tooth cut perpendicularly, magnified.
A, The fibres of the cortical part.
B, The bony payt.
C, The entry for the vessels and nerve.
D, The cavity of the tooth.

$$
\text { FIG. } 15 .
$$

1 View of the Interior Surface of the Base of the Skull.-Sec Tab. V.

D, D, The two tables and diploe of the frontal aud oecipital bones.
a, The coronal suture.
${ }_{z}$, The serrated edges of the parietal bone, for forming: the sagittal suture.

- The lambdoid suture.
b, The squarnous suture.
$\xi$, The furrows made by the vessels of the dura mater.
n, The frontal sinus.
E, The crista Galli.
$\mathbf{F}$, The nasal lamella of the cthmoid bonc.

1. The hollow wing of the sphenoid bone.
2. The sella Turcica,
3. The splienoid sinuc.
4. The uasal platc of the sphenoid bone.
5. The spongy substance of the sphenoid and occipstal boues.
A, The bole for the passage of the niutb pair of nerre:.
c, The squamous part of the temporal bone.
$e$, The ridge of the os petrosum, with the print of a small sinus.
f , The intenzal meatus anditorius.
$\lambda$, The dentes incisores.
$\mu$, The dens caninus.
, The dentes molares.
$\pi$, The foramen incisivum of the maxillary bone.
ह, The rough spine of the superior masillary bonc.
$\phi$, The joining of it to the romer.
\&, The broad hollow base of the vomet.
$\mathbf{H}$, The posterior edge of the vomer.
G, The body of the vomer.
$\tau$, The conjunction of it with the thin plate of the sphenoid and ethmoid boues.
$x_{4}$ Its hollow anterior part, which seceives the middle cartdage of the nose.
$\mathbf{P}$, The anterior edge of the nasal bone.
FIG. 17.
The External Surface of the Base of the Cranium and Uprer Jaw.-Sce Tab. VI.
$q$, The tubercle of the root of the zygoma.
$r$, The concave moveable cartdage placed on that tuin bercle.
$t, 1$, Its ligaments.
6. The hole for the portio dura of the fith pair of nerte=,
7. The hony part of the Eustachian tube.

## TA BLE XXXI.

Fepresents the Larynh, the Bones of the Trunk of the Body, and a Posterior Viey of the Male 'Skeleton.

FIG. 1.

## futcried Jicw of the Cantilaces of the Larynx, with the Os Hyoides.

a, The anterior surface of the base of the os hyoides.
$b$, Its supecior surface.
e, A ligament connecting the os hyoides, thyroid cartilage, and epiglottis.
$d$, $d$, The two appendices of the os hyoides.
2, The ligament sent out from the appeudix of the left sade, to the styloid process of the left temporal bone.
$c$, The umion of the base with the cornu.
$f, f$, The two corma.
$g$, 5 , Tubercles at their extremilies.
$h, h_{\text {, }}$ Lidgaments going from the tubercles to the superior comua of the thyroid eartilage.
$f, k$, \&ce. The thyroid cartilage, the greater part of which is ossified in the preparation foom which this Figure is taken.
i, The anterior middle part of the thyroid eartilage.
$k$, Its right side.
$I, I$, Tiwo unessilied cartilaginous pieees on that side.
$m$, The right superior cornu.
$H_{3}$ The right inferior corzu, conmected to the cricoid eartulage.
D, A strong ligament.
$p$. The narrow anterior part of the cricoid cartilage.
If It right side.
i., The first cartilage of the trachea arteria, divided into
two at the sides. two at the sidet.
is The secoud, third, and fourth cartilages of the trachea.
FIG. 2.

## Back I'iew of the Parts represented in Tig. 1.

i, $, z_{1, f,}, h_{5}, h_{,}, H_{4}$, The same parts pointed out by these lettere in Fig. 1.
t. The epiglotis.

G, 6, The tive arytonoid cartilages.
T. The midde nuossified part of the encoid cartilage.

W, W, The bony sides of that broad posterior part.
$X$, The membranous back part of the trachea.
N. R. These two Fagueg are ar lagge as life; wherea the Figures of particular bones in this and the preceding Tablc, are represented only one half as large as uature.

FIG. 3.

## A View of the Lpper Part of the first Vertebra of the NECK.

a, The body of the hone.
The other parts are described in Tab. XVIII. Fig. 2.

$$
\text { FIG. } 4 .
$$

## The Under and Back Part of the same Veatebra.

$i$, The smooth depression for the auterior part of the touth-like process of the secoud vertebra.
For the other parts consult Tah. XVIII, Fig. 1.
FIG. 5.
A Side Vien of the Second Verteara of the Nece.
$a$, The body.
$b$ The superior oblique process.
$c$, The transverse process, and, farther hack, the inferior oblique proeess.
$d_{\text {, }}$ The plate entended to,
$e$, The spinous process.
5. The spunous hole.
h, The passage in the transwerse process.
I, The point of the taoth-like process.
ut, Its anterior smooth surface.
$\eta_{\text {, Its }}$ posterier smooth surface.
FIG. 6.
The Filst and Second V ERTとBres of the Neck, with part of the Ucenfital Bone, and the Ligamente of the ' 'оoth-Like Process.
a, Part of the occipital bonc.

$b_{9} b$, His broken extremities.

1. $c, h$, Part of the first vertebra.
2. $c$, Part of the second vertebira.
$x^{2}$, "The point of the tooth-like process.
0, Its transverse ligranent.
$p, p$, Its trvo ablique, or moderator ligaments.
2, Its perpendiculay liganemt.
Sice Tab, XVIII. Fig. 6,
FIG. 7.
Upper Part of the Fourth Sertebure of the Nech.
FIG. 8.
Uppry Part of the Seventh Vertebia of the Neck.
FIG. 9.
Kpper Part of the Secrenth Tertebra of the Back.-See Tab. SV1II. Fig. 7.

FIG. 10.
Under Part of the Sixth Fertelora of the Back.- See 'Tab. XVIII, Fig. 8.

FIG. 11.
Sile Vive of the Twelfth Tertebra of the Back.
$a$, The hody.
$c$, The transverse process.
$c$, The spinous process.
$k$, The inferior oblique process.
$t$, The depression for the head of the rib.
FIG. 12.
View of the Upper Part of the Forrth Vertebra of the Loins,-See Tab. XVIII. Fig. 10.

FIG. 13.
Under and Lateral Part of the Third Fertebra of the Loins.
a, The under part of the body,
$b$, The superior oblique process.
$c$, The transverse process.
f, The spinous process.
f, The spinal hole.
$r$, The process round the body of the boac.
F1G. 14.
The Seventh True Rer of the Lert Side.
a, Its head.
b, Its smooth surface, which was joined to the transverse process of the vertebra.
c, The depression.
d, The tubercle.
$e$, The angle.
$f$, The firrow at the miferior cdge
5, The smeoth interual side.
$h$, The anterior extranity.
FIG: 15.
The Siuth and Seventh Tertebra of the Bach, witin Patt of the Seventh Rib of the Left Side.
$a, c, e, k, t, A s$ is Fig. 11.
$u$, The eartilage between the vertebre.
$r_{4}$ The depression made by the tubercle of the sisth mols,
W, The seventh rib articulated with the vertebra.
$x$, The beginning of the furzow on the under edge.
FIG. 16.
The Sternum, with the Cartilages of the fibs, oml the Internal Mammary Anteries.

A, The first or upper boge of the sternum.
18, The second.
C. The thind, on cartilago enciformis,
$\mathbf{D}, \mathbf{D}, \mathbf{D}, \mathbf{D}$, The cartilages of the four superior ribs.
E, The conjoinet cartilages of the fitth, sixth, and seventh tibs.
$\mathbf{F}, \mathbf{F}, \mathbf{F}$, The radiated ligaments cqunecting the cartilages to the stemum.
G, The internal mammary artery.
FIG. 17.

## Posterior View of the Male Skeletox.

Head.
a. The coronal suture.
$b$, The squarnous.
$o$, The lambdoid.
$A$, The frontal bone.
$B$, The right parietal bone.
C, The right temporal bone.
D, The occipital bone.
$E$, The nasal bone.
F, The os mala.
3. The angle of the lower jaw.
4. Its right coronoid process.
5. Its right condyle.

## Trunk.

$K$, The sevca vertelore of the nech.
1., L., 'The twelve vertebre of the back.

M, The five vertebre of the loins.
$b_{7}$. The transware processes of the os sacrum.
c, I'be posterior holes of that hone.
$c_{\text {, }}$ Its spinous processes.
g, The open part of the caual for the cauda equina.
P, The on coecygis.
*, The dorsum of the os ilium.
$\theta$, Its spine.
r. The
$\gamma$, The superior-posterior spmous process.
d, The inferior-posterior spinous process.
4 , The great notch.
4, The superion-anterior spineus prncess.
, The inferion-ataterior process.
t The brim of the acetabulum.
3, The spinous process of the os ischium.
t, The tuherosity of that bone.
S, lts branch.
R, The es pubis.
$\pi$, Its crus.
\%, The great thyroid hole.

## Right Superior Extremity.

$d_{\text {, }}$ The dorsum of the scapula.
$f$ f. Its posterier costa.
5, Its superior angle.
P. The anterior or inferior costa.
$q$, The inferior augle.
$t$, The cervix of the bone.
t. The acromion, to which the outer end of the clavicle is joined.
K, The spine.
W, The Iossa above the spine.
क. The superior costa, with the semilunar notch.
$i$ The iuner end of the clavicle joined to the steraum.
$\mathbf{\Sigma}$, The hody of the clavicle.
a, The nina.
b, The radiue.
6. The head and neek of the radius.
7. The olecranon of the ulna.
9. The under cad of the radius.

## Right Ineerior Exiremity.

$f$, The ball of the os femoris.
g, The trochanter major.
$h$, The cerris of the bone.
$i$, The trachanter minor.
$k$, The upper part of the body of the bont.
$l$, Jts outer condyle.
t. The smalliolos externus of the fibula.

## Left Superior Extrenity.

$u$, The inner condyle of the os humeri.
7. The olecranon of the ulna.

## Left Lhfentor Extaemity.

1. The linea 2spera,
2. $k$, The inner condyle, and,
3. The outer condyle of the os femoris.
4. The head of the tibia.
5. The hody of the bone.
$t$, Its malleoles interaus.
6. The head of the fibula.
$r_{\text {. T T }}$ The malleolus exteruus of that hone.
7. The os calcis.

FIG. 18.

## Posterior Itice of the Bones and Liganents of the Pelvis.

c. The fifth lumbar vertehra.
$b$, Its superioz oblique process.
$d$, The bony plate extended to its spinal process e.
$c, c$, \& $c$. The posterior holes of the os sacrum.
$\xi$, The channel for the cauda equina.
$\alpha, \beta, \gamma, \lambda, 2,3, n$, As in Fig. 17.
$\Lambda$, The posterior sacro-ischiatic ligameut, extended from the tuber of the os ischium to the os ilium, os sacrum, and os coccygis.
B, The anterior sacro-ischiatic ligament, proceeding from the spinous process of the os ischium, to the os sacrum and as coccygis.
4. The notch of the os ilium, for the passage of the posterior crural vessela and nerves, and the pyrifarm muscle.
C, Passage of the ohturator internas.
D, The fibrous ligamentous substance, comeeting tho os innominatum and sacrum.
E, The eapsular ligameut of the joiut of the thigh.
g, The greater,
$i$, The lesser trochanter of the thigh-hane.

FIG. 10


## ( 97 ) <br> TABLE XXXII.

## Represents the Bones and some of the Principal Ligaments of the Extremities; including the Skeleton of Two Young Subjects.

## FIG. 1.

4 Posteriar Vieer of Part of the Sternum and Clavicles, with the Ligament connecting the Clavicles to each other.
$\sigma_{3}$ The posterion surface of the sternum.
$b, b$, The broken ends of the two clavicles.
$c, c, c, c$, The two tubercles near the extremity of each clavicle.
d, The ligament connecting the clavicies.

$$
\text { FIG. } 2 .
$$

## Ower and Fore View of the Left Scapula, and part

 of the Clavicle, with their Ligaments.$a$, The spine of the seapula.
$b$, The acromion.
$c$, The inferior angle.
d. The inferior costa.
c, The cervix.
$f$, The glenoid cavity, covered with cartilage for the articulation with the os humeri.
$g$, $g$, The cut edge of the capsular ligament of the joint of the arm.
$h$, The coracoid procese.
$i$, The point of that process.
$k$, The luroken end of the clavicle.
1, Its extremity joined to the acromion.
$m$, A ligament stretched obliquely from the clavicle to the coracoid process.
7, A liganent coming out single from the acromion, and dividing into two, which are fixed to the coracoid process.

FIG. 3.
The Joint of the Elbow of the Lieft Arm, with the Ligaments.
a, The on humeri.
b, Its internal condyle.
$c, c$, The two prominent parts of its troclilea, appearing through the capsular ligameat of the joint.
$d$, The ulna.
c, The radius.
$f_{4}$ That part of the ligament including the head of the radius. Vol, I,
g, The end of that ligament, like a ring, surrounding the neck of the radius, but convected very loosely to it.

FIG. 4.
Anterior Vifw of the Bones of the Ricat Hand.
$a$, The radius.
$c$, Its fat auterior part.
c, Its styloid process.
$b$, The ulna,
$f$, Its flattened extremity.
$d$, Its atyloid process.
g, The os scaphoides of the carpus.
$\stackrel{h}{h}$, The os lunare.
$i$, The os pisiforme.
$k$, The cuneiforme.
1, The trapezium.
$m$, The trapezoides.
m, The capitatum.
$O_{9}$ The unciforme.
$p$, Its unciform process.
$\ell, r, s, t$, The metacarpal bones of the fiugers.
$u$, Their bases.
$v$, Their heads.
na The metacarpal bone of the thumb.
$\beta$, The first boue of the thumb,
$\gamma$, The second bone.
ว, The first phalanx of the fingers.
5, Their second phalans.
${ }_{x}$, Their third phalanx.
FIG. 5.
Pasterior View of the Bones of the Lefi Hand.
The explanation of Fig. 4. will serve for this Figure, the same letters pointing to the same bones, though in a different view.
4, The ridge of the radius, vetween the grooves made by the tendous of the extensor muscles.

FIG. 6.
Tiew of the Auteriok, or Palm Side of the Right HaNd, with its Ligaments.
$i$, The pisiform bone.
$f$, The haok-like process of the unciform bone.

0 , The amular liganent, unden which the tendone of the flexor muscles pass in the cavity $x$.
$q-t$, The metacarpal bones of the fingers.
$y$, Their bases, with the ligaments connecting them to the bones, pointed out by $m_{9}, n_{3}, 0$, in Fig. 4.
$\alpha, 3, \gamma$, The metacarpal bone, and the two bones of the thumb, with the ligaments of their articulations.
$x$, The fore-finger, with the sheath for the tendons of the flexor muscles eutire.
$\lambda$, The ligament connectiog the head of its metacarpal bone to that of the middle finger.
in, The middle finger, with the sheath of the tendons cut open.
v, The ligaments on the back part of the second joint of the ring and little fingers.

## FIG. 7.

The Itpper Extremnty of the Tibia, with the Semilenar Cartilages of the Knee-Joint aul some Ligaments.
$a$, The strong ligament which connects the patella to the tuberele of the tibia.
$b, b$, The parts of the extremity of the tibia, covered with cartilage, whicb appear within the semilunar cartilages.
i, c , The sennilunar cartilages.
d, Part of the crucial ligaments.

$$
\text { FIG. } 8 .
$$

## Porterior Fiew of the Joint of the Right Knee.

a, A section of the os femoris.
$b$, Its intemal condyle.
c, Its extemal condyle, both covered with cartilage.
$d$, The cavity between the condyles.
$c, c$, The bauk part of the tibia.
$f$, The superior extremity of the fibula.
E, The edge of the internal semifunar cartilage.
$h$, Au oblique ligameot.
i, A small perpendicular ligament.
$h$, A larger perpendicular ligament.
1, The external lateral ligament, comecting the fomur and fibula.
$m_{4}$ A liganent between the tibia and fibula.
FIG. 9.
Anterior Fiew of the Jonnt of the Right Kate.
$b$, The internal condyle.
c, The exterall.
$d$, Part of the os femoris, on which the patella moves.
c, A perpeodicular ligament.
$f, f$, The crucial ligaments.
E, ${ }^{5}$, The edges of the two remilunar eartilages.
$h$, The tibia.
i) The strong ligament of the patella.
$k$, The back part of it, where some of the fat of the joiot has been dissected away.

1, The external depression.
$m$, The internal one, on the posterior surface of the parell.
$n$, A section of the tibia.
FIG. 10.

## A Vies of the Inferior Part of the Bonzs of the Rrent Foot.

$a$, The great knob of the os calcis.
$b$, A prominence on its outside.
$c$, The interion thio process, bearing the print of the tendon of the flexor pollicls loagus.
$d$, The hollow, for the tendons, merves, and blood-veasels.
$c$, The anterior extremity of the os calcis.
$f$, Part of the astragalus.
g, Its head, covered with cartilage.
$h_{\text {, }}$, The internal prominence of the os naviculare.
$i$ Its hollow in the sole of the foot.
$h$, The os cuboides.
$f$, Its hollow, for the tendon of the peroneue longas.
$m$, Its anterior extremity.
$n_{9}$, The os cunciforme interamm.
o, The medimm,
$p$, The externum.
$q, r, s, t$, The metatarsal bones of the four lesser toes.
$u$, Their bases.
2, Their heads.
$\alpha$, The metatarsal bone of the great toe.
$A$, Its first,
$\gamma$ Its second bone.
2. The depressious on the head of the metatarsal home, for the two sceamoid bones.
2, The first,
\}, Second, and,
n, Thind phalanges of the four lesser toes.

## FIG. 11.

The Inferior Surface of the Tero Large Sesamoid Bones at the First Joint of the Great Toe.

## FIG. 12.

Upper View of the Bones of the Rigat Foor.
$a$, The posterior knob of the os calcis.
$b$, Ita exterior proceas.
$k$, Its 2uterior extrenity.
$c$, The supcrior head of the astrayalus.
$d$, A depression made by the tendon of the fiexor pollicia longus.
$f$, The rough hollow part.
$g$, The anterior head.
$h$, The os naviculare.
$i$, The os cubroides.
$f$, The hollow for the peroneus longus,
$n$, The internal,
$o$, The middle,
P, The external cuneiform bones.
u, $x, x_{4}, \beta_{4}, \gamma, z_{1}$, $x_{4}$ The same as in Fig. 10.

FIG. 13.
Fice of the sole of the Foot, with its Lrcanents. a, $d$, As in Fig, 10.
c, The sheathy of the flexores longi pollicis et digitorum opened.
$f$, The strong cartilaginous ligament supporting the liead of the astragalus.
5 , $h$, Two liganents which join into one, to be fixed to the metatarsal bone of the great toe.
$i_{4} i_{5}, k, l$, m, Other ligaments.
tho, The ligauments of the joints of the five metatarsal bones.

## FIG. 14.

The Superiar Concare Surface of the Sesamotd Bones at the First Join of the Great Toe, with their LiGaNENTS.
a. Three sesamoid bones.
$b$, The ligamentous substance in which they are formed.

FIG.. 15.
Front Fiew of the Skeleton of a Boz of nine years of age.

*     * \&cc. The most remarkable epiphyses.
$f$, The joining of the ossa ilium and pubis, aud, g, Of the ossa ischium and pubis.

This Figure is executed upon a scale only half as largo as that of the Skeleton in Tab. MXIV.

F $1 \mathrm{G}, 16$.
The Skeleton of a New-Born Child, where the shades and shrivellingy in the Figure repoesent tho parts which are Cartülaginows at burth, and which aro contracted in the Skeleten.
$a$, The fontanelle.
This Figure is too small, even in promorition to Fig. 15.

# TABLE XXXIAA. 

## Respects the Structure of Bones of Chlldren.

FIG. 1.
The Enver or Postcwior Surface of the Patelti of a Nere-born Chis.

The darker part of the Figure represents the Arteries of the Periehondmum shinmg throagh the Cartilage, but without entering that aubatance. The lighter nafinished parts of the Figure shew the Tendons, Ligaments, and Membranes of the Patella, with Branches of the Articular Artenes.

FIG. 2.
The same kind of Ficw of the Patella of a Child a little older thun the former.
The Vessels appear white, being fuil of Osseous Juice, wbich penetrates the Cartilage. Where they terminate, they for tbe roost part form small Nodules. The Yessels which eontained red Blood, and whieh are bere injected with wax, shine through the Cartilage, though obscurely.

FIG. 3.
Shene the Arteries of the Pateilin full of Blood, ahd muck enlarged, while Osofication is adzancing.

FIG. 4.
1 View of the Ynner Side of the Patella of a Child, more advanced than in the Subjects of the forther Figures.

An Osseous Nucleus is observed in the middle of the Patclla.

FIC. 5.
The Intawal Surface of the Parezla of a Child still older than the furmer.
The Osseous Nucleus is now of considerable size. The $V$ Cesels transmitting Osbeous Matter are white, and
distiuct from the Aiteries. Sabguiferous Fesmen appear through the Cartilage, and some penetrate its substance.

FIG. 6.
The Internal Surface of the Patecla of a Por tarele yeary of age.

The Nucleus now occupies half of the Patella; the ressela are observed which carry the Osseous Juice; others appear, which are injected with wax.

FIG. 7.
The Parietal Bone of a Fgitus about the Fourth Month, viewed externally.

The whole is composed of Osseous Fibres, which run is a radiated manner. Iu the middle there is an Osseous Plate, which afterwards forms the cxtemal Table.

## FIG. 8.

## The Cranium of a Tietus of Six Months.

The radiated appearance of the Frontal and Parietal Bones, and which are the ouly parts of the Figure finished, is very distinct. In this the Author of the Figure points out the following Fontanella, viz.
n, Fontanella frontalis, seu anterior.
$\vec{b}$, __ oecipitalis, seu posterior.
$c_{1}$ d, mastoidea.
EIG. 9.
The Sternum of a Fextus cmme to the full time, with part of the First Pair of Rirs joined to it.

The Boue is divided into ite three constituent parts, which are joined by Ligaments. Eight Osseous Nuclei ap peac in it, of various magaitude, and are represented

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1.8. 1 Fia. 2.


Fig. 3.

Feg. 0 . 1) $\frac{x_{2}^{2}}{x_{2}^{2}} x^{2} x^{2}$

Fig 1


Fig. 5


Fígl2.


EIG. 1


$$
F e p, g
$$

$$
\begin{aligned}
& \text { FinA } \\
& \dot{1},
\end{aligned}
$$


by the dask spots. The rest of the Sternum is in a cartilaginous state. A Foramen is observed in the Ensiform Cartilage.

FIG. 10.
The Os Sacrum of $a$ Young Feetus vieved anteriorly.
The whole appears Cartilaginoue, except four Osseons Granula which are seen in the Bodies of the Supcrior Vertebra. It is one continued Cartilage, though the Bodies of the Vertebree are distinct.

FIG. 11.
The Lefi Os Femoris of various Fegtuses seen from the Fore Part.

The uppermost Figure is from a Feetus in the beginoing of the Thind Month.-In the middle, an Osseous Graqulum appears, from which the rest of the Booe after. wands' springs by Diaphysis. All the rest of the Femur is Cartilaginous.
The other Bones are fiom Foctuses more advanced. The last one is from a Foctus in the begioning of the Sixth

Month.-The Diaphysis is almost perfect. The Eri. physes are Cartilagiuous.

FIG. 12.
The Right Os Femoris of a Nev-born Caild cut longitudinally.
In the middle is the Cavity for lodging the Marrows. The rest of the body of the Bone is full of Reticular Substance. The Epiplyses are entirely in a Cartilaginons state, noc do any Blood-vcssels appear there. The upper portion only of the Figure is finishad, the rest being only in outlines.

FIG. 13.
The Upper Part of the Os Humeri of a Child, cu* longżudưnally.

The exterior parts of the Bone appear firmer and more solid than the rest, and become thinner the nearer they approach the extremity. In the Epiphysis, Osseons Nuclei appear of differeat sizes.

# TABLE XXXIIB. 

## In this Table is represented the Iuternal Substance of Bones in the Adult State.

## FIG. 1.

A Sccuirs of the Upper Part of the Crantum, to shew the Tubles and Diplac.

FIG. 2.
4 Section of the Right Half of the Lower Jaw.
In this is observed the Base and outer parte extremely compact, while the inner parts of the Bune are spongy. The internal Maxillary Canal appears throngh the great${ }^{2} \mathrm{r}$ part of the length of the Jats ; its internal Orifice is ilso seen.

FIG. 3.
1 Longitudinal Sections of one of the Vertebres of the Lonss, and of part of another.

In the Bodly and Spinous Process, many Cancelli appear. The passage for the Spinal Narrow is also evideut.

FIG. 4.
A Section of the Os Sacrum and Os Coccygis, shewing the Cancelli of the Bodies of bath, and of the Spinous Phocesses of the former.

FIG. 5.
One of the Ossa Innominata cut through the Miac and Pubul Portions, to shew the Cancelle and solid Sides of the Bone. The Acetanulun and Os Ischium are leff enture.

FIG. 6.
A Ris cut lengithucys, to shew the Outer and Inner Tubles, with the zintermediate Caneelli.

FIG. 7.
ALongitudinal. Section throught the middlle of the STERNuM.
It this is observed the thickness of the Bone; its divisiou into three parts ; the large proportion of Cancelli; and the thinness of the Tables inclosing these.

$$
\text { FIG. } 8 .
$$

The Upper Portion of the Os Humert cut longitudinally.
In this appears the connection between the Head and

Body, and the spongy texture of both. In the under part of the Figare, the Cavity is seen for containing the Marrow; the solid sides of the Bone are also evident.

FIG. 9.
The Upper End of the Os Eessoris alivided longith dinally.
In the Ball, the Reticular Substance appears, and the eonnection with the Cervix of the Bone. Farther down, the Cancelli are distinctly seen, hut become leas evident towards the middle of the Bore. The solid sides, on the contrary, appear thinner as they approach the upper extremity.

## FIG. 10.

A Transerrse Section of the $\mathbf{O}$ Fzmoris of the natural sier, to shew its form, the solid Substance of its Sides, and that it is weplete with Reticular Fork, which, in the centre, is conuposed of finer Threads, bat nearer the curcumference appears more spongy.

## FIG. II.

## The Parella cut longitudinally.

Alanst the wbole Bone is composed of Reticular Substance, the Plates and Hibres of which hecome wery minute towards the middle. 'The solid Plate surrounding it is remarkably thin.

FIG. 12.
The Upper Part of the Tisia, cut longitudinally.
At the upper part is seen the Cavity for containing the Marrow, and this inclosed by a solid Plate, whieh becomes gradually thimer towards the upper estiemity The Cancelli appear finer, but more numerous, at the end of the Bone which was formorly an Epiphysis ; the distinction of which is still disecrmible.

FIG. 13.

## The Metacarfal Bone of the Thumi, cut lengthagys.

Vere the Cellular Texture, as in the larger Rones, is abvious, and the distiuction of the Epiphysis.
T.AB.32.B.

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Fig 3.


Fig. I7.


Fig 5
Fig 5

Fiog 20.


Fig. 13.

F. 512


## PARTI.

$O E$

## THEMUSCLES.

## of the muscles in general.

THE MUSCLES serve for the motion of the different parts of the Body, and derive their general name from their power of contracting.

Of Muscles in general, the following things are to
be attended to.
The Cellular Substance, which surraunds the Muscles, and allows them to move upon each other, and upon the adjacent parts.

The Cellular Suhotasce, condensed in certain parts of the Body, and giving an appearance of Membrene, formerly called Tunica Propria Musculorwm.

The Division of a Muscle into
The Origin, or Head;-or that extremity of the Muscle which arises from the most fixed part, and towards which the contraction is made;

The Belly, or thickest part, which swells when the Muscle is in action;

The Insertion, or Termination, or that extremity which is implanted into the part to be moved, and which is commonly sanaller than the origin.

The Division of a Muscle into Fleshy and Tendinous parts.
The Fleshy part distinguished by being soft, sensible, generally of a red colour, -from the great quantity of Blood in it,-, and possessing contractility.

The Fleshy part, composed of a collection of somewhat elastic semi-pellucid Fibres, of different sizes, running frequently in a parallel direction, bat often converging towards one of the extremities of the Muscle.

The Fibres are intermixed with Blood-vessels, Lymphatics, and Nerves, with some Cellular Substance and Fat.

The sizc of the Fibres varies in different parts of the Body; they increase as a person advances towards maturity, and they become firmer and stronger by frequent exertion.
The larger Fibres may be divided into smaller, and these into still smaller, till at leagth they escape the observation of the naked eye.

The ultimate Fibres of Muscles have been considered by some as a collection of solid Conds, by many as hollow Tuhes, while several have described them as being composed of a chain of little Vesicles.

The Muscular Fibres consisst cheily of Fibrin, with a small quantity of Gelatin, Albumen, and Saline Matter.

The Division of Mascles into Rectilineal, as in the Sartorius;-Simple Penniform, as in the Peronews Longus; Complete Penniform, as in the Rectus Fe-moris;-Compound Penniform, as in the fore part of the Saleus; - Radiated, as in the Pectoralis Major ;Hallore, as iu the Heart, Intestiaes, Bladder of Crine, \&rc.

The particular Names of Muscles are taken from their shape, size, sifuttion, direction, comprosition, use, and attachment.

The Names adopted by the Author are those in common use, being in general as expressive as any yet contrived. Those of Chaussier ave added, which are taken from the attachments of the Muscles, but, in many cases, a number of principal attachments are excluded; besides, several of his names consist of so many syllables, as to become burdensome to the memory.

Muscles are supplied with Blood-vessels, which are so numerous, that when a good injection is thrown into them, they acquire the same colour with that of the injected matter.

They are also ahundantly supplied with Absorbents, which, however, are rather seen in the Cellular Texture of their Interstices, than in their Substance; the Valves preventing an injection from passing from their Trunks to their small Extremities.

The Nerves of Nuscles are also very numerous; bat although the Muscles were called by sone Authors, among athers $D_{R}$ Cullen, the moving Extremities of the Nerves, the latter bear a very small proportion to the former, and the Museles appear to be quite of a different nature from the Nerves.

The Nerves of voluntary Muscles have been described by some Writers 23 being much larger than those of the involumtary kind, as the Heart ; but this circumstance has been exaggerated.

In various parts of the Body, the Muscles receive their Nerves from different sonrces, and many antagonist Muscles receive Nerves from the same source.

The Tondon, like the ficshy part of the Muscle, is of a Fibrous nature, but is not nitevely Muscle handened by pressure, as was formerty by some Authors supposed;
for, in many instances, Tendons have a different direction from the Muscles to which they belong. Tendon is distinguished frem the Flesh by being generally snualler, fivmer, stronger; -of a white gligtening colour, having no contractility, and little or no sersibitity in the sound state. From long boiling, it is observed to afford a large portion of Jelly, or Glue.
Teadons, like Muscles, vary considerably in their form, as round, flat, annular, scc.
Tendons have very feiv Blood-wessels, and no evident Nerces.

Teadons in general conneet Muscles to Bones. In some parts they unite Cartilages or Bone to each other. In otbery, they bind down and fortify parts over which
they pass, and, by tbe amaliness of thex size compared to the Belly of the Muscle, preserve the eleganoe and symmetry of tbe parts on which they are placed.

Besides the parts of Muscles already taken notice of, they have the following Appendoges, viz.

Aponceuroset, or Fusciox, which are the Teudons expanded upon a wide Surface, serving to give insertion to Muscular Fibres, to keep them in their proper situation, and to brace them in their action.

Annular Ligaments, to keep Tendons from startiog.
Tmohlea, or Pulleys, to alter the direction of Teadons.
Bursac Mucose, placed where 'Tendons play over hard Substances, serving to contain Synovia, and prevent Abxasion.

## G1USCLES of the INTEGDMENTS of the CRANIDM, and of the EYE-LIDS.

## Occitito-Frontalis,

## Yel Ocripítalis et Frontahis, vel Epicranius, \&\&c.

Origin: Fleshy from near the middle of the upper arched Midge of the Occipital Bone, Tab. XL. Fig. 1. a ; and Tendinous from the extremity of that Ridge, wbere it joins the Temporal Bone.-It arises after the same manner on the oither sidc. From the Fleshy Origius, and also firom hetween them, a Teadinous Expansion is extended along the upper part of the Cranium, adhering firmly to the Skin, and but loosely to the Pericranium, Tab. XL, Fig. 1. b, c. Tab, XXXIV. Fig, 1, a.-At the upper part of the Forehead it becomes Fleshy, and descends with straight Fibres.

Insertion: Into the Skin and parts under it belonging to the Eye-brows, and to the Froatal Bone at the inmer part of the Orbits. Tab. XXXIV. Fig. 1. A.

Action: To move all that part of the Skin which covers it, and partioularly the Skin of the Brow and Eye-brows.
From the under and middle part of the Muscle, a Slip, lemmed by Cbaussier Fwario-hasalie, is coutinued down upon the Root of the Nose, to be conneeted with the Compressor Naris, and Levator Labii Superioris Alxque Nani. Tab. XXXIV. Fig. I, b.
This Slip may either assist the Nazal Muscles connectedl with it, or antagonize the Occipito-fiontalis.

Cogrugator Suzerciza, By Chaussier, Frontonuperciliaris.

Origin: From the internal Angular Process of the $\mathrm{O}_{\mathrm{s}}$ Fruntis, above the joining of that Bone with the $\mathrm{O}_{\mathrm{s}}$ Nasi. From thence it runsupwarls and outwards, under a taperiug form, in the direction of the Suyerciliary Hidge, and behind the inferior part of the OccipitoErontalis.

Insertion : Into the inner part of the Occipita-fironta-
lis and Orbicularis Pal pebrarum, where tbese two Muscles join each other, as far out as the middle of the Superciliary Ridge. Tab. XXXV. Fig. 1, A.

Action: To assist its fellow in drawing the Eye-broms downwards and inwards, and corrugating or wrinkling the Skin between theiu luto longitudinal folds.

## Orbicularts Ocult, vel Orb. Palfeirardm, Vel Naso-palpebralio.

Origin: From the Orbitar Process of the Saperior Maxillary Rone; from the internal Angulay Process of tbc Frontal Rone; and, hy a small round Tendoo, from the Nasal Process of the supecior Maxillary Bone.
From these Origins the Musele passes outwards, under the Skin of the Eyealids, surrounding the Orbit in a circular manner; extendiag somewhat befond it, and covering the upper part of the Cheek. Tab. XXYiV. Fig. 1. D.

The outer Surface of the Muscle arheres to the Skin of the Epe-lids; its upper and imner Edige is intimately comected with the Frontal and Corrugator Musclen.

Action: To close the Eye by brimging the Eye-lids together, to press the Ball of the Eye inywandr, and act upon the Lacrymal Organs, so as to assist them in the production and direction of the Tears.
That part of the Orbicularis Oculi which covers the Cartilages of the Eye-lids, and which is remurkably thin, is the Muscufluc Critiaris of some Authors. Tab. XX XIV. Fig. 1.c.

A F'lesky Slip frequently passes down from the under and outer past of the Orbicularis, to join the Levator Labii Superionis Aleque Nasi, Tub, XXiXIV. Fig. 1. hetween F and G. When present, it may draw a little tolsards each other those parts to which it is attached.

## Levator Palfidme Supencoris, <br> Vel Orbito-palpebratis.

Origin: From the urper zoargin of the Foramen Op-
ticum of the Sphenoid Bone. It runs forwards within the Orbit over tbe Levator Oculi, where it becomes gredually broader, itu auterier extremity passing under the Orbicularis Oculi.

Insertion: By a broad thin Tendou, into uearly the whole length of the Cartilage of the upper Eye-lid. Tab. SXXV. Fig. 1. a.

Action: To openthe Eye by raising the upper Eye-lid.
muscles common to the head and external tat.

## Atrollens Aurim,

## Vel Superiar Auris, vel Temporvaauricularis.

Origin: By a broad Tendinous Expansion, from the Tendon of the Occipito frontalis. It goes down over the Aponeurosis of thic Temporalis. In its passage, it forms a thin Ficshy Slip, which becomes gradually narmower.

Insertion : Into the upper part of the Root of the Cartilage of the Ear. Tab. XXXIV. Fig. 1. B.

Action: To give tension to the part into which it is inserted, and, in some persons, to raise the Eax.

Anterior Auris, vel $Z_{\text {yggomato-auviculanis. }}$
Origin : Whin and Membranous, near the posterior
part of the Zygoma; the niddle part being mised with Fleshy Fibres.

Insertion: By a narrow Tendou into tbe back part of the beginning of the Helis. Tab. XXXIV. Fig. 1. C.

Action: To stretelt that part of the Ear to whicb it is fixed.

## Retrahentes Aurbm,

Vel Postcriores Auris, vel Mastoido-auricularis.
Origin: By two, and sometimes by three distinet Muscles, from tbe upper and outer part of the Mastoid Process.

Insertion: Hy mnial Tandonw into the back part of the Concha. Vor. II. First Table of the Ear, Fig. 2.

Action: To stretch the Concha, and, in some persons, to draw back the Ear.

## MUSCLES of the NOSE and MOUTIL.

## Compreseor Narts, vel Super-maxillo-nasalizo,

Origin: By a narrow beginning from the Root of the Ala Nasi, where it is connected witb the Levator Labii Superioris Alaque Nasi. It spreads into a number of thin scattered Fibres, which cross the Ala Nasi, and run towards the Dorsum Nasi, where it joins itt fellow.

Luscrtion: Into the anterior extremity of the Nasal Bones, and to the Slip which descends from the Frontal Muscle. Tab. XXXIV. Fig. 1.d.

Action: To press the Ala towards the Septum, as in amelling ; or if the Fibres of the Frontal Muscle, which are connected to it, aet, they pull the Ala outwards. It also corrugates the Skin of the Nose, and assists in expressing certain passions.

## Levator Labit Supertorts Aereque Nast, Vel Super-maxillonolabialis Major et Medius.

Origin: By two thin Flesly Slips; the first from the oxtemal part of the Orbitar Process, -the second from the upper part of the Nasal Process of the Superior Maxillary Bone.

Insertion of the first part of the Muscle into the $\mathbf{U p}_{\mathrm{p}}$ per Lip, and of the second into the Upper Lip and outer part of the Wing of the Nose. Tab. XXXIV. Fig. 1. F, E.

## Vos. I.

Action: To raise the Lpper Lip in opening the Mouth, and the Ala Nasi in dilating the Nostril.

Cuder this Muscle a few scattered Fibres are noticed by Soemmerring, and termed Mrschins Aromalus Maxilla Superioris.

## Defressor Labiu Superioris Al, 年que Nast.

Origin: Tbin and Fleshy, from the Alveoli of the Dentes Incisivi and Canizus of the Upper Jaw; ronning upwards, at the side of the Furrow of the Lip.

Insertion: Into the Ipper Lip, and Root of the Ala Nasi.

Action: To drav the Tpper Lip and Ala Nasi downwards. Tab. XXXVI. Fig. I. E.

## Levator Anguli Oris,

Vel Levator Labiorzm Communis, vel Canizus, vel Su-per-nuxaillo-labiatis Minor.
Origin: Thin and Fleshy, from the superior Maxillary Bone, inumediately wider the Foramen Infra-orbitasium ;-running deeper down and father out than the Levator Labii Superioris.

Insertion: Into the Angle of the Mouth, and to the Cheek, where it joins its Antagonist. Tab. XXXV. Fig. 1. D.

Acfion: To raise the eorner of the Mouth;-as in expressing joy.

## Depressor labit Inferioris, Vel Quadratus Gura, vel Mento-labialis,

Origin: Broad and Fleslyy, from the under part of the Lower Jaw, at the side of the Chin; from thence it runs obliquely upwards and inwards, of an oblong form, till it becomes contiguous to its fellow in the middle of the Lip. Its origin is concealed by the Depressor Anguli Oris.
Ynsertion: Into one half of the Edge of the Under Lip. Tab. XXXV. Fig. I. G.

Action: To assist in opening the Mouth, by dcpressing the Lnder lip, and pulling it a little outwards.

## Levator Laitinferioris, vel Letafor Menti.

Origin: From the Roots of the Alveoli of the Dentes Incisores and Dens Caninus of the Lower Jaw.
Invertion: Into the Ender Thip, and Skin of the Chin. Tab. XXXVI. Fig. I. H.

Action: To raise the parts into which it is inserted. It may also assist in inverting the Under Lip.

## Depressor Angult $O_{\text {ris, }}$ Vel Triangularis, vel Maxillo-labialis.

Origin: Broad and Fleshy, from the under eige of the Lower Jaw, at the side of the Chin.-It rans over the Origin of the Depressor Iabii Inferioris, hecoming gradually narnower.

Insertion: lnto the Angle of the Mouth, where it intermixes with the Levator Anguli Oris. Tab. XXXIV. Eig. I. K.

Action: To depress the comer of the Mouth;-2s in experssing Anger, aud in crying.

## Zrgomaticus Maior, vel 2iygomato-labialis Megin:

Origin: Fleshy from the Os Male, oear the Zygomaiic hoture.-Descending obliquely forisards.

Invertion: Into the Angle of the Mlouth; its Fibres intermixing with thove of the Depressor Anguli Oris and Orbicularis Oris, Tab. XXXIV. Fig, 1. H.

Action: 'To raise the Angle of the Mouth, in the di* rection of its Fibres, and to make the Cheek prominent; -as in laughing.

## Zyconaticus Minor, vel $Z_{\text {ygomato-labialis Minor. }}$.

Origin: Higher on the $\mathrm{O}_{\mathrm{s}}$ Malac than the fomer

Muscle. It is situated beiore it, and takes the samp cousse, but is much anore slender.

Insertion : Into the Upper. Lip, along with the Leva tor Auguli Oris. Tab. DxXIt. Fig. 1. G.

Action: To assist the former Muscle in mising the Corner of the Mouth, and drawing it obliquely outwarda. 'This Muscle is often wanturg.
By the frequent action of the Muscles which maise the Corners of the Mouth and Upluer Lip, that Furrow is fommed which extends betwect the outer Comer of the Nose and Mouth, and which is so conspicuous in the Face of a person adranced in life.

## Buccinator,

## Vel Retractor Auguli Oris, vel Bucco-labialis.

Origin: From a Ridge exteuding between the last Dens Molaris and Coronoid Process of the Lower Jaw; and lrom the Upper Jaw, between the last Deas Molaris and Pterygoid Process of the sphenoid Bone, from the extremity of which it has also part of its origin. Tboce going forwards with straight Fibres, it coven and adheres eloscly to the Membrane which lines the Cheek.

Insertion: Huw the Cnmer of the Houth, along with the Orbicularis Oris. Tab. XXXVI. Yis 1. G.

Aetion: To draw the Angle of the Mouth backwards and outwards, and to contract its Cavity by pressing the Cheek inwarils, by which the Food is thrust between the Teeth in Manducation.-It is likeuise active in expelling Substances from the Mouth, and in blowing Wind-minstrumente, as a Trumpet; from which lest circumetance ts name is derived.

## Orbicularis Orts,

## Vel Spkincter Labiorum, vel Labialis.

This is a complete Sphincter surrounding the Mouth, and composing the principal part of the Lips, and is in a great meusure formed by the Muscles which terminate in it.-At the Coraers of the Mouth, the Fibres decusate each other, so as to make it resemble two semicirculay Muscles, from which it has been named by some Authors, Semi-arbiculavix S'uper:er, and Seunt-arbricularis Inferuer. Tab. SXXVI. Kig. 1. F.

Action: To shot the Mouth, to enable the Lips to embrace any Substance placed between them, and to counteract the different Muscles inserted into them.

Nasalin Labï Shyerior is of Albinuen-part of the former Muscle, running up to be comnected to the Septum Nasi, and serving as a Levator of the "pper Lip, or a Depressor of the uader part of the Nose. Tab. NSNIV. Fig. 1. above $L$.

## MESCLES of tae LOWER JAW.

## Aponeurosis Temtoralits.

This is a strong Tèudionns Membrane, proper to be taken notiee of before describing the 'Temporalis, It arises from the Bones which give origin to the upper semicircular part of the 'Temporal Muscle, aud, desconding over it, is lixed to the Zygoma.

Lise: To brace the whole, and to give origin to part of the Temporal Muscle. Tab. NLIV.

Temporalis, vel Temporo-maxillaris.
Orisin: Semicircular and Fleahy, from the lower half of the Parietal Bone, and Temporal Fossa of the Froutal Bone; and liom the riquamous part of the 'Temporal, and Temporal Plate of the Sphemoid Bone,-It arises likerise from the Aponeurosis coveaing it;-from these Origins the Fibres deseend like Radii, and the Muscle sends off a strong Tendou, which passes under the $\mathbf{Z y}$ goma.

Insertion: Lnta the whole of the Coronoid Process of the Lower Jaw, which it ineloses as in a Sheath, and is continued to near the last Dens Molaris, Tab. XXXV. Fig. 1. $B, b$.

Action: To pull the Lower Iaw upwands, and a little backwards afoinst the Upper Jaw.

## HASSETER, vel Zygomato-maxillarvis.

Origin: By strong Tendinons and Fleshy Fibres from the Superior Muxillary Bone, where it joins the Os Malic, aud from the whole length of the under and inner Edge of the Zygoma; -the outer part of the Musele slantius backwards, the inner part forwards, and in some measure deenssating the other. Iu its descent, it covers the Coronoid Process, and under end of the Temporal Muscle.

Insertion: Into the outer bine of the Augle of the Lower Jaw, aud from that upwards to the outside of the Coronoid Process. Tab, X XXV, Fig. 1. C,

Action: 'Jo asaist the Temporalis in the elevation of the Lower Jaw, and to pull it a little forwands or backward, according to the divection of the Fibres of the Muscle.

## Pterygotdeus Intersius,

Vet Alajor, vel Pterygomanillaris Major.

Origin: From the Fossa Pterygoiden of the Sphenoid and Palate Boncs ; passing downwards and outwards.

Insertonn: Into the iuner side of the Augle of the Lower Jaw, and continued as far as the Groove for the inferior Maxillary Nerse, 'Tab, XXXTII. Fig, 1, imer side of $G$.

Action: Toxaice the Jish, and draw it obliquely to wards the opposite side.

## Pterygopnteus Externus,

## Vel Minar, vel Pterygo-maxillaris Minक,

Origin : Fiom the outer side of the Pterygoid Procesg of the Sphenoid Bone; fiom the Tuherosity at the superior Maxillary Bone; and from the Root of the Temporal Process of the Sphenoid Bome. From these Onigius it passes almost horizontully outwards, and a little backwards.

Inserfion: Inta the Cervix and Capsular Ligameut of the Lotwer Jaw. T'ab. XXXIX. Fig. 1. $k$ :

Artion: To pull the Lower Jaw to the opposite side, and, if both Muscles act, to bring it forwards, so as co make the Fore-teeth project beyoud those of the E'ppet Jaw. The Musele, in its different inotiona, nets mbo apon the Inter-articular Cartilage.

## MLSCLES on the fORE and Literil Part of tre NECK.

## Plattsma Mroides, vel Cutaneus, vel Thoraco-facialis.

Origin: By a number of separate Fleshy Slips, from the Cellular Substance, which covers the upper parts of the Pectoral and Deltoid Museles. - In their ascent, they unite to form a thin Muscular Expansion, which runs obliquely upwards along the fore and lateral part of the Neck, zuthoring to the Skim, and is similar to the Cutanenus Muscle of Quadrupeds. I'ab. XXXIV. Fig. 1. 4, 31.

Invertion: Into the side of the Lower Jaw and the Depreqsor Anguli Oris, and into the Skis which covers
the under parts of the Masseter and Parotid Glands Tab, NXXIV. Fig. 1, i.

Action: To assist in depressing the Lower Jaw, the Corner of the Mouth, and the Skin of the Cheek;when the Jaws are shut, to raise all that part of the Skin eonnected with it under the Lower Jaw.

## Sterno-cletdo-mastoideus, vel SEerna-mastoidens.

Origin: From the top of the Stennom, and the anterior end of the Clavicle, by two distinct Heads; the finst. of which is round, tendinous, and a little fleshy; the
other
other broad and fleshy. A litule above the Clavicle, the two Heads unite to forin a strong Muscle, which runs obliquely upwards and outwards; the greater part of it being covered by the Platysina Myoides. Tab. XXXV. Fig. 1.
bisertion: By a thick strong Teudon, into the Mas-
toid Procesb, which it surzounds, and becoming thinner, the Insertion exteuds as far back as the Lambdoid Suture.

Action: To turn the Head to oue sirde, and 25sist in rolling it. When both Muscles act, they bow the Head.

## MUSCLES situated between the OS HYOIDES and TRUNK.

## Sterno-Hyoideus.

Origin: From the Edge of the upper Bone of the Sternum internally, and from the adjacent parts of the Clavicle and Cartilage of the first Hib;-ascending upon the fore part of the Trachea and following Muscle.

Insertiou: Into the Base of the Os Hyoides. Tab. KXXV. Fig. 1. I.
setion: To depress the Os Hyoides.

## Sterno-Thyrotieus.

Origint : From the upper and inner part of the Sternum, and partly from the Cartilage of the first Rib; running along the fore part and side of the Trachea and Thyroid Gland.

Insertion: Intn the under and lateral part of the Thyyoid Cartilage. Tab. XXXVL. Fig. 1. K.

Action: To depress the Larynx.

## Thyro-Hyoideus, vel $\boldsymbol{H}$ yo-thyroideus.

Origin: From the Thyroid Cartilage, where the for mer Muscle terminates, having the appearance of heing continued from it.

Insertion: Intn part of the Base, and almost all the Corou of the Os Hyoides. Tab. XLVII. Fig. 1. $k$.

Action: To depreas the Os Hyoides, or to raise the Thyroid Cartilage.

## Crico-Tery oineus.

Origin: From the side and fore pant of the Cricoid Cartilage ; running obliquely upwards and ontwards.

Insertion: By twn portions; the, one into the under part of the Wing of the T"byoid Cartilage, the other into its inferior Comu. Tab. XLVII. Fig. I. in.

Action: 'Ta depress and pull forwards the Thyroid Cartilage, or to raise and draw backwards the Cricoid Cartulage.

## Omo-Hyomezos.

Origin: From the superior Costa of the Scapula, near the Semilunar Notch. It goes obliguely upwards and forwards, and is of a very slender form. It is situated under the Sterno-rnastoideus, and there it grows Tendinons. Higher than this Muscle, it again becomes Fleahy.

Insertion: Into the Base of the Os Hyoides, at the side of the Sterno-hyoideus. Tab. XXXV. Fig. 11. $k$.

Action: To depress the Os Hyoides, and pull it to one side ; or, when both Muscles act, to draw it directly down.

## MIDSCLES situated detween the LOWER JAW and OS HYOIDES.

## Digastricus,

Vel Butsenter Mazille Informis, vel Mastoido-nuentals.
Origin. By a Fleshy Belly, from the Groove at the Root of the Mastaid Process of the Temporal Bone. It runs downwards and forwards, and forms a strong round Tendon, which passes through the Stylo-hyoideus;-it is then 6xed by a Ligament to the $\mathrm{O}_{8}$ Hyoides, and, having received :n addition of Tendinous and Musenlar Firbres, it runs obliquely upwards and forwards, forming another Fleshy Belly.

Fraertion: Intn a rough Sinnosity at the under part of the Symphysia of the Lower Jaw. Tah. XLJX. Fig. 1. $b_{4}$, .

Action: To open the Mouth by pulling the Lower

Jaw downwayds and backwards; and when the Jaws are shut, to raise the $\mathrm{O}_{8} \mathrm{H}_{\text {gnides, }}$ and of course the Throat, -as in swallowing. When the lower Jaw is fixed, this Muscle, according tn SOEMmERaing, can extend the Head, and thereby open the Mnuth, by elevating the upper Jaw. This he thinks he has observed in a child sucking.

## Myzo-Hyoideus, vel Maxillo-Hyoideus.

Origin: Fleahy, hroad, and thin, from the inside of the Lower Jaw, between the last Dens Molaris and the middle of the Chin where it joins its fellow; running downwards and forwarda behind the anterior belly of the Digastricus.

Inscrtion: Into the lower edge of the Body of the Os

Hyoides, and joined to its fellow by the intervention of a white Tendiuous Line. Tab. XEIX. Fig. 2. a.

Action: 10 pull the Os Hyoides forwards, upwards, and to a side, or when that Bome is fixed, to assist in the depression of the Jaw.

## Genio-Htaidevs.

Origin: From a Tubercle on the under and inner part of the Symphysis of the Lower Jaw, by a slender beginning, from which the Muscle goes obliquely downwards and backwards bchind the former Muscle.

Insertion: Into the Body of the Os Hyoides. Tab. XLIX. Fig. 3. $a$.

Action: To draw the Os Hyoides towards the Chin, when the Jaws are shut; or the Chin towards the Os Hyoides, when the latter is fixed by the Muscles which come from the Sternum.

## Genio-Hyo-Glossus.

Origun: From the sane Tubercle with the former Muscle; its Fibres spreading out like a Fan.

Insertion: Ioto the whole length of the Tongue, and into the Base of the $\mathbf{O s}_{\mathbf{s}} \mathbf{H}_{\text {goideo. Tab. LXVIII. No. } 57 \text {. }}$
Action: According to the direction of its Fibres,-to draw the Tongue forwards or hackwards,-to pull it downwards, and render its Dorsum concave,-and when the Jaws are shut, to make the Os Hyoides advance towards tbe Chin.

## Hyo-Glossus.

Orvigir : From one of the Cornua, and lialf of the Base of the Os Hyoides; raoning upwards and a little outwards.
Insertion: Into the side of the Tongue, near the Styloglossus. Tab. SLVII. Fig. 3.e.

Action: To depress the edge of the Tongue, and thereby render its npper Surface convex.

## Lingualig.

Origin: From the root of the Tongue, laterally. It adrances between the Genio-lyyo-glossus and Hyo-glossus, with the Fibres of both of which it intermixes.

Insertion: Into the tip of the Tongue, Tab, XLVII. Fig. 4. $k$.

Action: To raise the point of the Tongue; to contract its substance, and bring it backwarde.

## Styzo-Glossus.

Origin: From the Styloid Prucess of the Ternporal Bone, and from the Ligament which connects that Process to the Angle of the Lower Jaw. It goes dowawards and forwards, and is of a slender form.

Insertion: Into the root of the Tongue, near the Hyo-
glossus; and running along its side, it is inscosibly lost near the Apex. Tab. XLVII. Fig. 2. d.
Action: To draw the Tongue backwards, and to move it laterally.

## Stylo-Myoideus.

Origin: From the under half of the Styloid Process. It goes downwards and forwards, splitting for the passage of the Digastricus.

Insertion: Into the $\boldsymbol{O}_{s}$ Hyoides, at the junctiou of the Base and Cormu. Tab. XLIX. Fig. 1 . $d$.

Action: To pull the Os Hyoides to one side, and a little upwards.

## Stylo-Hyoideus Alter.

Wheu present, it is a more sleader Muscle than the former, but, like it, has nearly the same Origin, Insertion, and Action.

## Syyzo-Pluarygeds.

Origios: From the root of the Styloid Process,-it goes downwards and forwards.

Insertuion: Into the side of the Pharynx, along which it expands. - It is also fixed to the back part of the Thyroid Cartilage. Tab. XLVII. Fig. $8 . g, h, i, k, l$.
Action: To dilate and raise the Pharynx, and thereby prepare it to receive the Morsel from the Moath. It at the same time elevates the Thyroid Cartilage.

## Circumplexus Palati, <br> Vel Tensor Palati, vel Pterygo-palatinus.

Origin: From the Spinous Process of the Sphenoid Bone, from the Osseous and Cartilaginous parts of the Evstachian Tube, and fiom the root of the interial Pterygoid Process. It runs along the Pterygoideus Internus, passes over the Hook of the Internal Plate of the Pterygoid Process; and playing on it by a round Tendon, as on a Pulley, it spreads out into a broad Membrane.
Insertion : Into the Velun Palati, and semilunar edge of the $\mathrm{O}_{\mathrm{s}}$ Palati, extending as far as the Suture which joins the two Bones. Generally some of its posterior Fibres join the Constrictor Pharyngis Superior and Pa-lato-pharyngens. Tab. XLVII. Fig. 14. $b, c$.

Action: To depress and stretch the Velum laterally.

## Levator Palatt,

Vel Levator Palati Mollis, vel Petro-palatinus.
Origin: From the proizt of the Pars Petrosa of the Temporal Bone, and also from the Membranons Portiou of the Eustachisn Tube. From these parts it descends.

Insertion: By a broad Expantion, into the Velum Pa-

3aii, extending as far as the nont of the Crula, and uniting with its fellow. Tab. XXVIY. Fig. 14. a.

Action: To raise the Velum in the time of Swallowing, and prevent the food or drink Trom passing into the Nose, by pressing the Velurn against the back part of the Fostrils.

## Constrictor Isthal Fauciens, Vel Glosso-palatinus.

Origin: From the side of the root of the Tongue. It consists of 2 few thin Fibres which rum in the doubling of the Skin, that forms the anterior Arch of the Palate.

Insertion: Into the middle of the Velum Palati, at the root of the Ivula, where it is connected with its fellow.

Action: To draw the Palate and noot of the Tongue towards each other, and thereby to shut the Opening into the Fauees.

## Palato-Pharyngeus, vel Pharyngo-palatizus.

Origin: From the middle of the Velum Palati, at the mot of the I'vila; and from the insertion of the Constrictor Iothmi Faucimn and Circumflexus Palati. The Muscle consists of a thin Stratum of Fibres, which pioceed within the posterior Areh of the Palate, and run
to the upper and lateral part of the Pharynx, where they spread, and mix with those of the btylo-Pharyugens.

Invertion: Into the edge of the upper and back, pant of the Tlyroid Cartilage; some of its Fibres being lost between the Membrane and infecior Constrictors of the 1haryus. Tab. XLVII. Fig. 11. c, c.

Action: To drow the Velum and Uvala domuwaris; the Laynn and Phaynx being at the same time raind; ulong wwith the Constrictor Superior and Tongue, to assist in shavting the passage inio the Nostris, atrd, in swallowing, to convey the lood fiom the Eauces into the 1 haryan.

The Sinlpingo-Phatyngeus of Abainus, is composed of a small portion of the former Muscle, which quises from the liustachian Tube, and which, when acting may afiect it. Tab, XLV HI. Fig. II. c, $c$.

## Azygos Vvusem, vel Palato-uzutarris.

Origin: From the posterior extremity of the longitsdinal Palate Suture. It runs in the middie of the Velum Palati, aud goey through the whole leagth of the Evula, inclosed in the Membrane covering that Borly, and adheress in its pranmage to the Circuvilexi.

Insertion: Into the point of the Uvala. Tuh. XLVII. Fig. 10, b.
fetion: To shorten the Uvala.

## MUSCLES situated tfon the BACK PART of the PHARYNx.

## Constrictor Pharyngeus Inferior, Vel Larymgo-pharyngeus.

Origin: From the sides of the Thywoid and Cricoid Cartlages. The superior Fibres, ruaning obliquely upwards, cover the under part of the following Musele, and terminate in a point; the inferior Fibres run more transversely, and cover the beginning of the (Esophagus.

Insertion: Into its fellow, by the medium of a longitudinal Teadinous line in the middle of the back part of the Pharyax. Tab, XLVII, Fig. 6. $a, b$.

Action: To compress the lower part of the Pharynx, and to draw it and tbe Larynx a little upwards.

> Constricton Pharyngeus Medius, Vel Hyo-Pharyngeus.

Origin : From the Appendix and Cornu of the $\mathrm{O}_{5} \mathrm{Hy}$ oides, and also from the Ligament which connects the Comu to the Thyroid Cartilage. In its passage it spreads out, and temsinates in a point both above and below; the upper part covering the following Muscle.

Invin \&ion: Into the Cuneiform Process of the Oceipi-
tal Ponc, belore the Foramen Magnum, and io its fellow on the opposite side by a Tendinons Lane, in a similar ramer to the former Aluscle. Tab. SLIII. Kig. 7 . $a, b$.

Action: To compress the middle aad upper pait of the Pharyus.

## Constrictor Pharyngis Surertor, <br> Vel Cephalo-phargmgeue.

Origin: From the Cnneiform Process of the Occipital Bone, before the Foramen Maguum ; from the Pterygoid Process of the Ephenoid Bone, and fiom both Jawr near the last Dentes Molares: It is Likewise connected with the Buccinator, and with the root of the Tongue aud Palate. From these origins, it runs almost horizontally.

Insertion: Into its fellow, by the intervention of a Tendinous line, as in the former Muscle. Tab. XLVII. Fig. $8 . \varepsilon, d$.

Action: To compress the upper part of the Pharyax, and, with the assistance of the ollher Constricturs, to thrust-the food into the Essophaghe.

## MUSCLES of tie GLOTTIS.

## Crico-Arytenotagus Posticus.

Origin: Broad and Fleshy, from the hack part of the Cricoid Cartilage.

Insertion: By a narrow extremity, ioto the back part of the Base of the Arytenoid Cartilage. Tab. NLVII. Fig. I1. p.

Action: To pull back the Arytenoid Cartilage, by which the Ligament of the Glottis is made tense, and the Glottis itself longer, as in forming acute sounds.

## Crico-Arytenoideus Lateralis.

Origin: From the side of the Cricoid Cartilage, where it is covered by the Thysoid.

Insertion: Into the side of the base of the Arytenoid Cartilage. Tab. XLVII. Fig. IG. 6.

Action : To opea the Glottis, by separating the Arytenoid Cartilages, and, with them, the Ligaments of the Glottis, as in lorming grave sounds.

## Taybo-Arytenoideus.

Origin: From the under and back part of the middle of tho Thyroid Cartilage, from which it runs backwards and a little upwards, in a double order of Fibres, upon the side of the Glottis and Ventricle of the Layynx.

Insertion : Into the fore part of the Arytenoid Cartilage. Tab. SLIX. Fig. $7, k$.

Action: To pull the Arytenoid Cartilage outwards and forwardn, and thereby to widen the Glottis, and shorten and relax its Ligaments. It thetefore assists the former Buscle in forming grave sounds. It may also affect the Ventricle of the Larymx.

A small Slip, termed by Albinus Thyreo-Arytenoidews Alfer Minor, arises from the upper and back part of the middle of the Tbyroid Cartilage, and is inserted iuto the Arytenoid Cartilage, above the insertion of the Crico-Arytenoideus Laterikhs. Use : To ascist the former in shortening and relasing the Ligaments of the Glottis.

## Aryienoideus Obligues, vel Minor:

Origin: From the root of one of the Arytenoid Cartilages; crossing its fellow obliquely.

Insertion : Near the point of the other Arytenoid Cartilage. 'Tab. SLVII. Fig. II. $n$.

Action: To deaw the Arytenoid Cartilages towards each other, and ansist in closing the Aperture ol the Glottis, ant in forming acute sounds.

Frequently one of the ohlique Arytenoid Muscles is wanting:

Arytenoideus Transversus, vel Major.
Origia: From almost the whole lengts of the back part of' one of the Arytenoid Cutilages, ruming transversely.

Insertion: In a similar manner, into the other Arytenoid Cartilage. Tab. NLVII. Fig, II, o.

Action: To act with the Obliqui in closing the Glottis, by drawing together the two Aryteavid Cartilages and the Ligaments of the Glottis.

## Thyro-Epiglottideus.

Origin. By a few scattered Fibres from the Thyroid Cartilage.

Insertion: Into the side of the Epiglottis. Tab. XLVII. Fig. 16, $c, c, f$.

Action: 'To assist its fellow, in drawing the Epiglottis towarls the Glottis.

## ARyteno-Epiglottideus.

Origin. By a number of small Fibres from the Aryteooid Cartilage. It runs along the outer side of the external Opening of the Clottis.

Insertion: Into the Epiglottis, aloug with the former Muscle.

Action: To assist its fellow, in drawing the Epiglottis immediately dowu upon the Gilottis.

It is counteracted by the elasticity of the Epiglottis.
'The two last-mentioned Muscles are obscurely seen, excepting in rohust bodies.

## MUSCLES strvated on the ANTERIOR aNd LATERAL PARTS of the ABDONEN.

Previous to the description of the Abdominal Muscle:, it in proper to take notice of certain Expansious or Fascie covering the hirst of thuse.

Over the 'leuton of the Muscle called External Obtigue, there is a thin Expansion, termed Superficial Fancia, consistayg chiefly of 'Tranaverse fibres. This can alco be traced down apon the fore part of the Thigh.

It adheres to the whole length of the Crural Arch. Part of it is fixed to Ligameuts about the root of the Penis and Clitoris. It sends also a sheath along the permatic Cord as far as the ficrotum, the rest of it spreads over the Inguinal Glands, and vanibhes in the Fat of the Thigh.

The whole of this Fascia is frequently so thin, as to appear little else than Cellular Substance condewbed. In
the inflamed state, howcver, it sometimes becomes remarkably thick. It forms the Outer, or Supeticial Fascia, in Inguinal and Crural Hemiar.

Under the Superficial Fuscia, on the Thigh, there is a thick and strong Aponcurasis, which arises fiom the fore part of the Spine of the llum, from the whole under edge of the Crural Arch, and from the upper and fore part of the Os Pubis. This formes part of the Fascin Lata Fcmoris, (to be afterwards taken notice of), which incloses the Muscles upon the Thigh.

The portion arising from the Ilium and Crural Arch is termed Ihial, and that from the Pubis, Pubal portion of the Fascia Lata. The Mial and Puhal portions are united behind the upper end of the Vena Saphena Major, and form a considerable Angle at the inner side of the Femoral Vessels, and betwcen the Muscles on the fore and those ou the inser side of the Thigh.

The upper and inser part of the Ilial Portion, forms a Semilunar Edge, which is concave towards the inner part of the Thigh, and is described by Mr Burns, in the Edinburgh Medical and Surgical Journal for 1806, under the name of Falciform Process. This leaves a large Opening, where the V/ma Saphena Major, ascending upou the Pubal Portion of the Fascia Lata, terminates in the Femoral Vein.

This Process covers the great Femoral Blood-vessels, directly after their exit from the Abdomen.

At the edge of the Falciform Process, there is some Fat and Cellular Substance; here also a Gland is commonly placed, and sometimes two, through which part of tbe Superficial Lymphatics of the Thigb pass in their course towards the Abdomen. At this part of the Thigh, the portion of the Bowels passing through the Crural Ring, protrudes in Femoral Hernia.

Frequently the Semilunar Edge of the Fascia is indistinct, the Ilial and Pubal Portions being then coofusedly united by an intermisture of T'endinous and Cellular Substance.

Behind the Great Vessels of the Thigh, part of the Pubal Portion of tbe Fascia is continued down, to be fised to the Os Femoris, as far as the place where the Femoral Avtery perforates the Triceps Muscle.

## Obliguvs Descendens Externus,

## Vel Obliquus Externus Abdominis, vel Costo-Abdomi? nalis.

Origin: In a serrated manner, from the lower edge of the eight inferior Ribs, near their Cartilages. The Scrra intermix with the Indentations of the Serratus Major Anticus, and the Muscle is commonly conneeted with the Pectoralis Major, Intercostales, and Latissimus Dorei; the last of which covers the edge of a portion of it, exteading from the twelfuh Rib to the Spinc of the $\mathrm{O}_{s}$ llimm, from the anterior half of which it has also part of its origin.

From these attachments the Fibres of the Muscle twa obliquely downwards and forwards, and terminate (sometimes by distinct Indentations) in a broad Teadon, or A. poneurosis, which, near its margin, is firmly conuected with the Teadon of the two following Muscles, Tab, SXXIV. Fig. 1. G, G. where it forms a curved line, called Linea Semilumaris. From this the Tendinous Fibres are contiuned in the same direction with the Fleshy Fibres, to the middle of the Abdomen,

Insertion : Into ite fellow of the opposite side, by the medium of in Tendinous Line, Tab. XXXIV, Fig. 1. E, E. which extende from the Cantilago Enviformin to the Pubis, and is known by the name of Linca Alba.

The Linea Alba is formed by the meeting of the Ten. dons of the Oblique and Transverse Muscles of the Ab. domen, and is perfosated in the middle by the Unbilicasoriginally an passage for the Umbilical Gord, and now formed into a Cicatrix. Tab. XXXIV. Fig. 1. F.

The Teadon of this Muscle is atrungthened by other Tendons of a more delicate nature, lying upon its outer surface. These decusasate it, in a curved direction, upwards and inwards, and are intimately comected with, or take their origin from, the under end of the Tendon of the Muselo.

The under part of the 'Tenion, lathere anh strouger than the rest of it, extends from the superioz-anterior Spinous Process of the $\mathrm{O}_{4} 1 \mathrm{llimm}$, over the flexor Muscies and great Vessels and Nerves of tbe Thigh, to the upper part of the Os Pubis, to which it is fixed. Tab. SXXiV. Fig. 1. $q$.

This part of the Tendon, which was formerly knotry by the name of Pouratt's, or Fatlorive's, or Ingwinal Ligament, forms a curre behind, but more especially over the Bloud-vessels, and therefore is now known by the name of Cirmal Arch.

Somewriat higbor, and farther out, than the Sywphysis Pubis, or about an iuch and 2 balf in a full-sized $A$. dult, Pourart's Ligament divales into an ufper and under column.

The upper column is fixed to the Ligament of the Eymplyyis Pubis, and to the $\mathrm{O}_{3}$ Pubis of the apposite side. The under one is twisted or doubled in, and inserted into the upper part of the Os Pubis, and Pubal partion of the Linen Ilio-pectinea, fiom the Feuoral Vessela, zs far 4 the Crest or Tuberosity of the Bonc, and forms a firm sharp linc towards the Abdomen, which constitutes the posterior edge of the Crural Arcl, or forms the Crumbl Ring of Gimbernat, of late so fiequently mentioned by Surgeons.

The posterior edge of the Crural Arch is quite tense, when the Limb is extended; but when the Thigh is much bent, the edge of the Arch becomes quite hax, wo us to favour the return of the Bowelv in the redistion of Crupsl Ifermia.

The under column is losser and more slender in the Female than is the Male; and the space between the

Femors

Femoral Vessels and the insertion of this part of the Ligament is larger; in consequeuce of which, Protrusions of the Bowels happen here more frequently in Woinen.
Where the columns separate, a space is left, of an oval form, or rather like the barrel of a Quill cut obliquely, with the large end of the opening outermost. It is ahont an inch in length in the Male, but less in the Female, the direction running upwards and outwards, or somewhat in a line between the Pubis and Spine of the Ilium. This is the Ring of the External Oblique Mruacle, or Under Abdaminal, or Sipermatic, or Supra-pubial Ring. Tah. XXXIV. Fig. 1. 1, for the transmission of the Spermatic Cord in the Male, and the round Ligament of the $\mathbf{U}$ terus in the Female, and where the Bowels protrude in Inguinal Hernia.

Surroanding the exit of the Cord, or the round Lig2ment, from the Ring, there is a quantity of Cellular Siubstance, and some Tendinous Fibres, which asaist in filling that opening, and in preveating any communication between the outer and inner parts.
The place where the columus separate to form the Ring varies in different Subjects. In some, the separation is considerably farther out than the part, aloondy desoribed, though more geucrally the division is directly at the outcr part of the Ring. At this end of the Ring, the Columns anc joined by Tendinous Fibres, which arise from the Os llium, and frou Pourari's Ligament; and are part of the Fibres mentioned above, as decussating the Tendon of the External Oblique Muscle.
Through the Abdominal Ring, there is no direct opening into the Cavity of the Abdomen; the passage being shut by the Ohliquus Internus and Transversalis Abdominis, and by a Tendinous Expansion termed Fascias Transeersalis.
Action of the Obliquus Externus : To support and compress the Peritoneum and Bowels of the Abdomen ; to assist in the evacuation of the Freces and Urine, and in the exclusion of the Fextus; to thrust the Diaphragm npwards, and draw down the Ribs in Expiration; to bend the Body obliquely to one side when a single Muscle acts, and directly forwards when both act; and to raise the Pelvis when the Thomax is fixed.

## Obheques Ascendens Internus,

Yel Obliquurs lifernus Abdominis, vel Ilionabdominalis.
Origin: From the back part of the Os Sacrum ;fivn the : pinous Processes of the three lowest Lumbar Vertebrex, by a Tendon common to it and the Scriatus Posticus Inferior and Latissimas Dorsi ; from the whole length of the kpine of the OB llium ; -and from the inside of Poupart's Ligament, at the middle of which it sends off the Cremastcr. From these Origins the Fibses ane disposed in a radiated manner; but the greater part of thein run in a slanting dircetion upwards.

At the Linca Semilunaris, the Muscle becomes Tendinons, and adheres firmly to the Tendon of the Obliguus Externus. Heve its Teadon divides into two Laycrs: the
Vol. I.
anterior Layer, with the greater part of the inferios jortion of the ponterior Layer, joins the Teudon of the External Oblique, and goes over the Rectus, to be inserterl into the whole length of the Lines Alba. The posterior Layer joins the Tendon of the Transwersalis, and goca behind the Reetus; and this union is continued down, till it reaches about half wny betweca the Umbilicus and $\mathrm{O}_{8}$ Pubis. Lower than this, ouly a few seatered Fibres of the posterior Layer are to be foond belind the Rectus; the priucipal part of it passing before thant Musele, to be inserted into the Linea Alba.
Insertion: luto the Cartilages of all the Falve Ribs: into the Cartilago Ensifornis, and whole length of the Linea Alba. Tab. XXXV. Fig. I. Trusk, $f, i, k, l$.
Action: To assist the former Muscle. It bends the Body, however, in the same direction with the Obligqu* Esternus of the opposite side.

## Transversalis,

Vel Thansversus Abdomviris, vel Lumba-ablominalis.
Origin: Fleshy from the inner surface of the Cartilages of the six or seven Lower Ribs, where it intermixes with the Digitations of the Diaphragm, and with the Intercostal Muscles; from the Transverse Processes of the twelfth Dorsal and four superior Lunbar Vertchaz; fiom the whole inner edge of the Spine of the Os llium ; and anterior to this, it is conaected to the under edge of the Ohliquus Exteraus. At the Linea Senilunaris, the Muscle changes into Tendon, which is continued across, adhering to the Obliquas Ioternus in the manner already meationed.
Insertion: Into the Cartilago Ensiformis and Linea Alha. Tab. XXXVI. Fig. 1. Trunk, C, D, E.

Action: To support, and inmediatcly to compress, the A bdominal Bowels.
From the inside of the Crural Arch, and from the Spine of the Mium, a Tendiuous Aponeurosis, terned Ifiac Fassin, is sent off, which is reffected over the Iliaeus Interuus, and Psoas Magnus, which it braces and protecta. It desceuds afterrarards betwecn the P'soas and External Iliac Vessels, to give a lining to the Bones, Muscles, and Ligaments, at the iuner side of the Pclvis. It is firmly attached to the Linea Ilio-pectinea, and behind the Origin of the Crural Vessels, is incorporated with the Puhal part of the Fascia Lata, in sucb a manner, that the one may in a great measure be considered as a contimuation of the other.
From the Crural Arch, from the Iliac Portion of the Linea Tlio-pectinea, and reflected also from the under part of the Expansiou covering the Iliacus Internus, another Aponeurotic Expansion, of a thin and delicate nature, the Fascie Transversatis of Mr Cooper, is sens upwards, which lines the under part of the inner side of the Transversalis, lies hetwcen it and the Peritonewn, and vanishes in its ascent in the Abdomen.
The Angle of reflection between these two Expansions being formed of strong Tendinous Fibres, the AbI
domen at this place is fortified, and the Bowels are preveated from protruding between the Spine of the lhum and Hiac Blood-vessels.

Besides theso Expansions, others are mentioned by late Authors, as bcing sent down to inelose the Femoral Fessels at the upper part of the Thigh, 50 as to form what is called the Crurad Skeath.

The beginning of the Crural Sheath, or that part next the Cavity of the Pelvis, is formed anteriorly by the Fascia 'Transversalis, Crupal Arch, and Cellular Substance bleaded together, posteriorly by the conjoined Fascia Hiaca, Pubal part of the Fascia Lata, and Cellular Subntance. The anterior and postevior portions of the Fas cia uniting together at the sides of the Blood-vessels, form the literal parts of the Sheath,

Lower than the Crural Arch, and extending as far as the Perforation iu the Teudon of the Great Adductor Muscle of the Thigh, the Artery is covered before by the Isscia Lata, lochind by the deep past, or Pubal portion as that Fusci, and laterally by the two Fiscia conjoined h. Cellular Substance.

The Shath and Vessels it iucloses, at the upper part of the Thigh, with tbe Exterual Iliac Versels also at the inger pait of the Pelvis, are strengthened by some Tendinous slips, which rum between, and also at the sides of the Vessels; uniting thom togetber, to the Crural Arch before, and to the Bones behind, over which they pass.

Within the Fascix the Vessels are closely connected tngether, as the Great Vessels in the Neck are, by a Vagina of Cellular Suhstanee condensed, and which may be considered as the proper Shreath of the Great Vessels situated in the Thigh.

Between the inuer part of the Extemal Iliac Vein, and the insertion of the uuder column of Poupart's Lit gament into the Os Pubis, and having the Os Puhis behind covcred by its Ligament, a triangular space is left, at the outer part of which there is a small aperture, which forms the C'rural Foramen of Grmbernat, The triangular Cavity and Aperture are more considerable in the Fermale than in the Mule, on account of the greater width of the Pelvis. Through this Foramen the Bowels protrude in Femoral Hemia. In the Male the opening is more filled up in consequence of the greater thickness of the Flexor Muscles of the Thigh, and the breadth of the surrounding Ligaments,

The Crural Foramen is at the begiuning of the Crural Sheath, and situated within it, and is commonly oecupied by Absorbent Glands ; or sometimes by the 'Trunks of the Absorhents themsclves, coming from the Thigh; or uow and then by a cross Stratum of Ligamentous Matter; in consequence of which, when the parts are prepared, there may be eitber a Foramen, or a Cribriform appeasance, or an Impervious Septum in the Crural Hing. In this last case, the Absorbents are found to ereep along the Coats of the Blood-vesscls, in their course to the Aldomen.

Half way between the Spine of the Ilium and Symphysis Pubis, the Expansiou termed Fascin Transver-

Galis leares an openang for the passage of the fipermatic Cord, or for the round Ligament of the Uterus ; the beginning of which passage may be considered as the Internad or Superior Abdominal Ring.
The under part of this opening is formed by Pourant's Ligameut, the upper by the Transverse and Internal $\mathbf{O b}$. lique Muscle,

From this opening there is no direct passage outwards, the part being shat by the Tendon of the Obliquas Ex. temus.

The inner Ring is of the same form and size with the outer Ring, and is directed iu the same manner with it.

Between the Internal and Exteraal Ahdominal Rings, the passage is oblique, like the Rings themselves, and is ahout an inch in length. It has also a quantity of Cellu. lar Substance, which is considered by some Authors as forming a distinct Canal, under the name of Abdominal or Inguinal. The Cellular Substance surrounds the Cord, or the round Ligament, and assists these in completely filling the whole of this passage-

## Rectus, vel Pubio-sternalis, vel Sievvo-pulializ.

Origin: Tendinous siom the frye and upper part of the Symphysis P'ubis. It soon becomes Flestyy, zad runs upwards in form of a flat Band, the whole length of, and parallel to, the Linea Alba. Between its upper Extremity and the Unhilicus, it is divided into chree nearly equal portions, by as many transverse Tendinous Intersections, and there is generally a half intersection below the Umbilicus. These seldom penetrate througls the whole thickness of its Substance, They arthere firmly to the anterior part of the Sheath which ineloses the Muscle, so as to render its separation difficult, hut slightly to the posterior Layer.

Insertion: Into the Cartilages of the three iuferior True Ribs and extremity of the Stemum. It fieruently intermixes with the under edge of the Pectoridis Major. Tab. XXXV. Fig. 1. D, D.

Action: To corupress the fore part of the Abdomen; to draw down the Ribs in Expiration; and to bend the Body forwards, or to raise the Pelvis. By meaus of its Sheath and Tendinous Intersections, it is kept in its place, and allowed to act more equally.

## Prramidalis, vel Pubro-sub-uindifitcolis.

Origin: By a broad Basc, from the upper part of the Syunphysis Pubie, It russ upwards within the same Sheath with the Rectus, tapering to a point in its nscent.

Ensertion: Into the Linea Alba and inner edge of the Rectus, near lialf-way hetw een the I'ubis and Imbilicus, Tah. XXXIV. Fig. 1, p.

Action: To assist the under part of the Rectus in drawing down the Rihe, or to compress the wuder part of the Abdomen.

It is frequently wanting in both sides, and then the under end of the Rectus is lurger, thus in some measure sopplying its place.

MUSCLE:

## MUSCLES of the MaLE PARTS of GENERATION, and of tale ANLs.

## Cremaster, vel Musculus Testios.

Origin: From the uuder Edge of the Obliquas Internus Abdominis. Passing through the Ring of the Obliquus Externus, it survomeds the Spcrmatic Cord as far as the Testicle, where the Fibres separate zud expand.

Insertion : Into the Tunica Vaginalis Tcstis, and Ccllular Substance of the Scrotum. Tah. XXXIV. Fig. 1. K.

Action: To contract the Scrotum, to suspend and elcvate, and to compress and evacuate the Testicle.

## Erectior Penis,

Vel Lschio-cavernasus, vel Ischionsub-penialis.
Origin: Tendinous from the inner side of the Tubcrosity of the Os Ischium.-It zuns upwards, Fleshy, increasing in hreadth, and emhracing the whole inner part of the Crus Pcris.

Insertion. $\mathbf{B}_{\mathrm{y}}$ a thin Tendon info the elastic Membrane which covers the Corpora Cavernosa Penis, as far as the union of the Crura. Tab. XLVIII. Fig. 6. $d$.

Action: To compress the Crus Penis, hy which means the Blood is pushed from it into the fore part of the Corpora Cavernosa, and the Penis therehy more completely distended.

## Accelerator Urine,

Vel Ejaculator Seurinis, vel Bulbo-urethratis.
Origin: Fleshy from the Sphincter Ani, and Membranous part of the Urethra; and Tendinous from the Crus and begianing of the Corpus Caveraosum Penis.In its course it forms a thin Fleshy Layer, the inferion Fibres of which rum more transversely than the superior, which descend in an oblique direction; the Muscles an the opposite sides completely inclosing the Bulb of the Uretixa.

Insertion : Into its fellow by a Teadinous line running longitudinally on the middle of the Bulb. Tab. XLVIII. Fig. 6. $a$.

Action: To propel the Urine or Senen forwards, and by compressing the Bulb, to push the Blood into, and thereby distend, the Corpus Cavesnosum Urethree and Glans Penis.

## Transversus Perinet,

Vel Transversalis Urethra, vel Ischio-perinealis.
Origin: From the inside of the Tuberosity of the $O_{\mathrm{s}}$ Ischium, close to the Firector Penis; running transversely, though souetimes in an oblique direction upwards.

Insertion: Into the back part of the Accelcrator Urinx, and adjoining part of the Sphiocter Ani. Talh. XLVIII. Fig. 6.b.

Action: To dilate the Bulb of the Uretha for whe reception of the Semeu or Crine ; and to assist the Lcvator Ani in retracting the Anus, after the discharge of the Fixces.
There is frequently another Muscle, termed Transzersalis: Perinei Alter, running along with the former, and having ncarly the same Origin, Insertion, and Action, but going morc obliqucly upwards.

## Sphincter Axi.

Origin: By a Ligamentous Substance, from the extremity of the $\mathrm{O}_{\mathrm{s}}$ Coccygis, rumning forwards within the Skin and Fat which cover the verge of the Anus, and in its passage forming a broad, flat, oval Muscle, which surrounds the extrenity of the Intestinum Rectum.
Insertion: By a narrow point, into the Acceleratoces Urince and Transversi Perinei. Tab. ALIIII. Fig. S. a.
Action: To shut the Anus, and thereby retain the contents of the Rectum, and also to puil down the Bulb of the Urethra, by which it assiste in ejecting the Urinc and Semen. It is assisted by the Sphincter Interuus of some Authors, which is merely the circular Muscular Coat of the end of the Rectum.

## Levator Ani, vel Sub-pubincoccygews.

Origin: By a semicircular Edge, from the Os Pubis, within the Pelvis, at the upper edge of the Foramen Thyroideum, the fore part coming off near the under end of the Synchondrosis ; from the Aponeurosis which covers the Obturator Internus and Coccygeus; and from the Spinous Process of the Os Ischium. From these Origins it is continued down, occupying the under aod inner portion of the Pelvis. Its Fibses descend like Radii from a circumference, to meet those of its fellow, and with it to form a kind of inverted Funnel.
Insertion: Into the Sphineter Ani, Accelerator Urinx, and under and fore part of the Os Coccygis.-It surrounds the extremity of the Rectum, Neck of the Bladder, Merahrasous Portion of the Irethra, Piostate Gland, and part of the I esicula Seminales. Tab. SLVIII. Fig. 9, $b$.
Action: To support the contents of the Pelvis; to retract the cud of the Rectum, afier the evacuation of the Fieces; and to assist in the cyacuativu of the Rectum, Bladdcr, Vesicula Seninales, and Prostate Gland. -It is likewise considered by some as a principal agent in the distention of the Penis, by pressing upon its Veins.

Part of the Levator Ani, which ariees froms the Os Pubis, between the lower part of the Symphysis and the upper part of the Foramen Orale, aot assists io inclosing the Prostate Gland, is called by Soemseraring Compressor Piestate.

Between the Membranous part of the Urethra, and that portion of the Muscle which arises from the inner side of the Symphysis Pubis, there is a reddish, Cellular, and very Vascular Substance, hut apparently without any
distinct Muscular Fibres, ciosely surrouading this Cand, which has been descritad by Mr Milson, in the MedicoChirurgical Transuetions of Loudon for 1809, ws a distinct Compressor U'rethre:

## MUSCLES of THE FEMALE PARTS of GENERATION, AND of THE ANUS.

## Erector Cuitoridis, vel Ischio-sub-clitorideus.

Origin : As in the Erector Penis in the Male, hut the Muscle smaller.
Insertuinn: Into the Crus and Body of the Clitoris. Tab. CIV. N.
Action: To draw the Clitoris downwards and backwards ; and by pushing the Blood into it from its Crus, it may render the Body of the Clitoris more tense.

## Sthingerer Vagine, vel Perinea-chütoridens.

Origin: From the Sphincter Ani, and, near the Perineum, from the postcrior side of the Vagina. It passes along the outer end of the Vagina, covers the Corpus Cavernosum Vagina; going behind the Nymphar.

Insertion : Into the union of the Crura Clitoridis. Tab. CIV. M. See Lateral View of Female Parts of Gencration.
-fetion: To contract the extcrnal Orifice of the Vainn, hy compressing its Corpua Cavernosum, from which it likewise pushes the Blood into the Nymphe and Cli10ris.

## Transversus Periner.

Origin: As in the Male.
Insertion: Into the upper part of the Splincter Ani,
the adjacent parts of the Splincter Vaginex, and iuto 2 tongh white Substance in the Perineum. Tab. CIV. L.

Action: Upon the Perineum and Anus, as in the Male.
When a Transversus Pcrinei Ater is present, it hay the same relation to the former Muscle as in the Mialc.

## Sphiscter Ans.

Origin and course as in the Male.
Insertion: Into the Sphincter $V_{\text {aginas }}$, and tough white Substance in the Perineum.. Tah. CIV. K.
Action: Tu shut the Anws, and, by pulling domn the Pcrinmo. to assiss in contracting the external Orifice of the Vagina.

## Levator Any.

Origein: As in the Male. In its descent, it embraces the inferior parts of the Vagioa, Urethra, and Rectum.

Insertion: Into the Perineum, Sphincter Ani, extre. mity of the $\mathrm{V}_{\text {agina, }}$ and Rectum. Tab. CIV. H.
Action: Upon the Bladder, Urethra, and Rectum, as in the Male.-It aleo assists in supporting and contracting the Vagina, and may, by pressing upon the Veing, contribute to the distension of the Celly of the Clitoriand Corpus Cavernosum Vaginar.

## MUSCLES of the OS COCCYGIS.

## Coccygevs, vel Ischio-coccygeut.

Origin: By a narrow point, from the Spinous Piocess of the Os Isclium.- In its passage, it gracually expands, and covers the inside of the posterior Sacro-ischiatic Ligament.
Iusertion: Into the whole length of the side of the $\mathrm{O}_{\mathrm{s}}$ Coccygis. Tab. SLIHII. Fig. 3.
Action : To move the $\mathrm{O}_{\mathrm{a}}$ Coccygis forwards, by which it assists the Levator Aui in supporting or raising the end of the Rectum.

## Curvazor Cocicois, vel Sicib-courygens.

Origin: From the unden and forc part of the $\mathrm{O}_{s} \mathrm{Sis}$ crum.

Insertion : Into the fore and under part of the Os Coccygis.

Action: To 2ssist the Coccygeus in hendiug the $O$ O Coccygis.

The Curyator Coccygis was formerly considered as part of the Coccygeus.

## MUSCLES sitvated witiun the CAVITY of tae ABDOMEN.

## Diaphragma.

The Diaphragu forms a Fleshy and Tendinous Partiwion, whicl separates the Cavity of the Ahdomen from
that of the Thorax, and is perforated by several Holes, for the passage of Vessels and Nerves which go into, or come out from the Abdomen. It is concave below, and convex ahove; the middle of it reaching as high within
the Thorar as the fourth pair of Pihs. Ahove, it is covered hy the Pleuran and below, by the Peritoneunn ; and is conmouly divided into two portions, called superior or Larger, and Inferior or Smaller, Musclés of the Diaphragan.

## Superior, or Greater Muscle of the Diaphragm.

Origin: By Fleshy Indentations, from the Cartilago Ensiformis, and from the Cartilages of the seventh, and of all the infurior Ribs on both sides. Fron these difficrent Origins, the Fibres run in a radiated manner.
Insertion: Into a Cordiform Tendon, placed in the middle of the Diapluragin, in which thie Fibres of the opposite sides are interlaccd.-Towards the right side, the Teudou is perforated by a triangular Hole for the passage of the Vena Cava Infcrior; and to the upper convex part of it, the Pericardium and Mediastinun are connected.

Infikror, on Lesser Muscle, or Appendix of thio Diaphragm.
Origin; By fons pair of Heads, of which one Pair in the middle, commonly called its Long, or Tendizous Crura, is the longest. The long Crura arise from the fore part of the fourth Lurabar Vertehra, and adhere to the Bodien of all the Vertehree of the Loins above this, hy the interveation of the Ligamentom Commune Anterius covering these Bones. In their ascent, they leave an oval opening for the passage of the Aorta and Thoracic Duct. The other Heads arise from the third, and also from the second Lumbar Vertebra, and are placed farther out. From the different Heads the Muscular Fihres run upwards, and form, in the middile, two Fleshy Columns, or Crura, which decussate, and leave an opening for the passage of the Esophagus.
Insertion: By strong Fleshy Fibres, into the posterion Edge of the Cordiform, or middle Tendon. Tah. XLVIII. Fig. 2.

Action: To enlarge the Cavity of the Thorax in Inspiration, hy its Fleshy part contracting, and bringing its two sides down from a convex to a plane Surface; the Abdominal Muscles at the same time yielding, hut the Tendinous part of the Diaphragm remaining nearly in the same situation. In Expiration, the Diaphragm is replaced, chiefly by the action of the Ahdominal Muscles. It is the Antagonist of the Abdominal Muscles in Inspiration, but acte in concert with them in Dejection and in Vomiting.

Quadratus Lumborum, vel Ilio-costalies. Origin: Broad, Teadinous, and Fleshy, fiom the
posterior half of the Spine of the Os Ititum, and from a Ligament extended hetwecn it and the Transverse Process of the last Lurohar Vertelira.

Insertion: Into the Transverse Processes of all the Lunobar Vertehre ; into the last Siih, near the Spine ; and, hy a small Tendon, into the side of the last Dorsal Vertebra. Tah. XXXVII, Trunk, D.

Action: To move the Loine to one side, to pull doun the last Rilh in lahorious Eapiration, and, when both att, to hend the Loine forwards.

## Psoas Parvus, vel Prelumbo-pubialis.

Origion : Fleshy, from the side of the last Vertcira of the Back, and from that of one or two of the uppry Vertebra of the Loins. It seods off a siender Tendon, which zuns down by the inner side of the Psoas Magnus, and an Aponewosis which expands upon the aeighbouring Muscles.
Insertion: Into the Brim of the Pelnis, at the joining of the Ilium nuad Probi. Tab. XXXVII. Fig. I. C, s.
Action: To assist in bending the Spine upon the Pelvis, and, in particular positions, in raisiug the Pelvis.
This Muscle is frequently wauting.

## Psoas Magnus, vel Prelumbo-frockantineus.

Origin: From the side of the Bodies, and from the Transverse Processes of the last Dorsal, and of all the Lumbar Vertebra, by an equal number of Fieshy STips, which uniting, form a thick striong Muscle, that bounds the apper part of the side of the Pelvis; passing down over the $\mathrm{O}_{\mathrm{B}}$ Pubis, hehind Poupart's Ligainent.

Insertion: Teudinous and Fleshy, into the Trochanter Minor, and part of the Body of the Os Femoris. Tab. XXXVII. Fig. 1. A.

Action: To heud the Thigh, and turo it a little ont. wards, or, when the Inferion Extremity is fixed, to assist. in hending the Body.

## Iliacus Interaus, vel Ilio-tiochantinenos.

Origin: Fleshy, from the Transverse Process of tho hast Lumbar Vertebra; from all the inner Edge of the Spine of the Os Ilium; from the E.dge of that Bone, between its antcrior-superior Spinous Process and the A, cetabulum ; from nost of the hollow part of the Os Ihiur, and also from the $A$ poneurosis ternied Minac Fascia, which covers the Muecle. It joins the Psoas Magaus, where it begins to beconic Tendinous on the $\mathrm{Os}_{s}$ Puhis.

Insertion: Along with thic Psoas Maguas. Tuh, XXXVII. Fig. 1. B.

Action: To assist the Psors in bending the Thigh.

## MLSCLES situated urow the anterior part of yie thorax.

## Pectoralis Major, vel Pectoralis, vel SternoHumeralis.

Origin: From the Stemal half of the Clavicle; from the fore part of the Edge of almost the whole length of the upper and midile lione of the Stersum, and here the Muscle is connected with its fellow; and from the CartiIages of the fifth and sixth Ribs, where it mixes with the Obliquus Externus. The Fibres from thence converge towards the Axilln, where they decussate, and send off a flat twisted Teadon.

Insertion: Into the Ridge at the outer Edge of the Groove for lodging the Tendon of the long Head of the Biceps. Tab, XXXIV, Fig, I. A.

Action: To drave the Arm dowawards and forwards, or in a direction towards the Sternum.
Between the Portious of the Muscle arising from the Clavicle and Steroum, there is a elight moparation, in consequence of which these Portions have been considered by some Authors as two distinct Muscles.

## Pectoralis Minor,

## Vel Serratus Minor Antictus, vel Costo-coracoidalis.

Origin: Tendinous and Fleshy, in a serrated manner, from the third, fourth, and fifth Ribs, near their Cartilages. Passing obli , wely outwards, it becomes gradually narrower.

Insertions: Tendinous, into the point of the Coracoid Process of the Scapula. Tab. XXXV. Fig. 1. B.

Action: To bring the Scapula downwards and fors wards, or, in laborious Respiration, to raise the Kibs.

## Sunclavivs, vel Costo-clavicularis.

Origin: Tendinous, from the Cortilage of the first Rib. It soon becomes Flenhy, and runs out wards, under the Clavicle, increasing is breadth.

Insertion: Into the under Surface of the Clavicle, from near its Ilead, as far outwards as the Caracoid Process of the Scapula. 'Tab. XXXY. Fig. I. A.

Action: To pulil the Clavicle, and with it the Scapula, downwards and forwards.

## Serratus Magnus,

Vel Serralus Major Anticus, vel Costo-scapularis.
Origin: From the nine superior Ribe, by an equal numher of Fleshy Digitations. It runs ohliquely upwards and backwads upon the side of the Thorax, and hetween it and the Subscapularis.

Insertion: Fleshy, into the whole length of the Base of the Scapula, and in a manner folded round it, between the insertion of the R honihoideas and the origin of the Subscapularis. Tab. XXXV. Fig. 1. C, C. Tah. XH. Fig. 1. E.

Action: To move the Scapula forwards or downwards, according to the direction of its different Digitations; and when the Sicapula is forcibly raised, as in violent Inspiration, to assist in dilating the Thorzx, by elevating the Ribs.

## MUSCLES sItDATED between the RIBS, AND within the THORAX.

## Intercostales Externi.

Origin: From the under Edge of each Rib, excepting the twelfth. They run obliquely downwards and forwards from the Spine to the joining of the Ribs with their Cartilages, from which, to the Sternum, they are discontipued; that place being occupied by ao Aponeurosis.

Insertion: loto the upper Edge of each Rib, immediatcly below that from which they take their respective Origing. Tab. XXXVI. Fig. 13. B, \&e.

Portions of the Intercostales Externi, which arise from the Trunsverse Processcy of the Vertcbra, and terminate in the Ribs immediately below, are termed by Anbinus, Levatores Costarum Breviores, Tab. XLIII. Fig. I. C, C.-Other portions, which arise in the same manner, but pass over one Rib, and terminate is the next below it, are named by the same Author, Levatores Costarum longiones. 'Tab. XLIII. Fig, I. D, D.

## Intercostales Interni.

Origin: The same with utat of the Externi ; hut they begin at the Sternum, and run downwayda and backwardy, dccussating the former Muacles jike the strokes of the letter X, and continuing as far as the Angles of the Ribs, from which to the Spine they are wanting-

Insertion: In the same manacr as the Externi. Tab. NLIII. Fig. 1. $a$, \&rc.

Portions of the Intercostales Interai, near the under part of the Thorax, which pass over one Rib, and terminate in the next below it, are called, by Douglas5, Covtarim Depuessores Propari:. Tah. XILX. Fig. 8. I., L.

Action of the Intercostales Interni, as well as of the Fxterni: 'To enlarge the Cavity of the Thorax, by ele vating the Ribs is the time of Inspiration; and the obliquity of the one set balancing that of the other, allows then to he zased more immediately upwards.

From the ohliquity of their Fihres, they are found to possess a greater power in raising the Ribs, than Fibres going in a perpendicular direction. -

The Intercostales Esterni ead near the Sternum, and The Interai near the Spine, to adnuit the ready motion of the Ribs; for, had the former been continned to the Sternum, and the latter to the Spine, the parts of these Muscles supposed to be thns fixed, would of course have become Antagonists to the rest.
The Portions called Levatores and Depressores Costarum assist in raising the Ribs, is the same maner as the rest of the Intercostales,

## Sterno-Costalls, vel Triangularzis Sterui.

Origin: From the Edges of the Cartilago Easifornis, and lower half of the middle Bone of the Steraum, withe in the Thorax. It runs upwards and outwards, belind the Cartilages of the Ribs.

Insertion: Gcuerally by three Angular Termination into the Cautilages of the third, fuuth, and fitth Ribs, and sometimes also hy a fourth Termination into the corresponding part of the Cartilage of the second or sixth Rib, near the union of the Cartilaginons with the Osscons part of the Ribs. Tab. XXXIX. Fig. I. $i, i$, \&ic.

Action: To depress the Ribs into which they are fixed, and, of course, to assist in coutracting the Carity of the Thorax during Expiration.

## MUSCLES contiguous to tae ANTERIOR PART of tae VERTEBRAE of the NECK.

## Longus Colli, vel Predorso-atloideus.

Origin: Tendinons and Fleshy, from the side of the Bodies of the three superior Vertehpe of the Back, and from the Trausverse Processés of the four inferior Vertehra of the Neck.

Insertion: Into the fore part of the Bodies of all the Vertebre of the Neck, by as many small Tendons, which are covered with Flesh. Tab. XLIX. Fig. 8. D, E.
Action: To bend the Neck forwards and to one side, or, when hoth Muscles act, to hend the Neck directly forwards.

## Rectus Capitis Anterior Major, <br> Vel Rectus Anterior Longus, vel Trachelonsub-occiputalis Major.

Origin: Fyom the forc part of the Trausverse Processes of the third, fourth, ffth, and sisth Vertehra of the Neck. It runs upwards, and a little inwards, covering the onter edge of the Loagas Colli.
Insertion : Into the Cnaeitorm Procese of the Occi-
pital Bone, near its joining with the Os Sphenoides. Tab. XLIX. Fige 8. C.

Action: To bend the Head forvarls.

## Rectus Caritis Antirior Minor,

 Vel Rectus Anteriar Minor, vel Trachelo-sub-occipitulis Minor.Orgin : From the fore part of the Atlac, opposite to its superior Oblique Process. It runs obliqnely inwards behind, and a little to the outside of the forner Muscle.

Insertion: Into the Cuneiform Process of the Occipital Bone, immediately before the Condyles. Tab, ILI.. Fig. 8. b.
Action: To assist the Rectus Major.
Rectes Capitis Lateralis, vel Atloidoneshooccipitalis.
Origin: From the anterior part of the Transyerso Process of the Atlas.-It goes obliquely ontwards.

Insertion: Into the Occipital Bone, directly bebind the Jugular Fossa. Tab. SLV. Fig. 1. C.

Action: To incline the Head a little to one side.

## MUSCLES situated upon the POSTERIOR PART of the TRUNK.

## Trarezius, vel Cucullaris, vel Darso-super-acrontialis.

Origin: From the middle of the great arched Ridge of the Occipital Bone; from its fellow over the Spinous Proccoses of the Cevvical Vertebre, by the intervention of a strong Tendon, called Liganestum Nucha, vel Colli; from the Spinous Processes of the two Inferior Vertcbre of the Neck, and from all those of the Back, adhering Tendinous to its fcllow the whole length of its Origin.

Insertion: Fleshy, into the scapulary half of thic Cla.
vicle: Tcndinous and Fleshy, into the Acromion, and into the Spine of the Seapula. Tab. XL. Fig. I. I, I.
Action: To move the Clavicle and Scapula, according to the directions of its different Filbres. The superior Fibres descending saise the Shoulder ; the middle running transversely, puil it backwards; and the inferior Fibres ascondug, depress it. The whole acting together, ming it immedintely back.- When the Scapula is fixed, the Muscle assists in moving the Mead backwards.

Latisstivs.

## Latissishus Donsl, vel Lumbo-humeralisis.

Origin: By a broad Tendinous Expansion, from the posterior part of the Spine of the Os llium; from all the Spinous Processes of the Vertebre extending between the under end of the Os Sacrum and sisth Dorsal Vertebra, and, hy three or four Tendinous or Fleshy Slips, from an equal number of inferior 13ibs. The Tendon by degrees changes into 2 Muscle of great breadth, the inferior Fibres of which run upwards and outwards, and the superior transversely over the inferior Angle of the Scapula, recciving a small Slip from it in their way to the Axilla, where the Fibres of the Muscle in general are collected, twisted, and folded, like those of the Pectoralis Major.

Fusertion: By a strong thin Tendon, into the inoer Edge of the Groove Jor lodging the Tendon of the long Head of the Biceps. Tab, XL. Fig. 1. K, K.

Action: To pull the Arm downwards and hackwards, and to roll the Os Humeri inwards, by which the Palm of the Hand is made to face backwards. When the Pectoralis Major acts at the bame time with this Muscle, tho Aum is brought immediately down towards the Trunk.

The Latissimus Dorsi and Pectoralis Major form the Axills, in which the great Yessels and Nerves, and likewise the Glands, lie which helong to the Arm.

## Serratus Posticus Inferior, tel Lumbo-costalis.

Origin: By the same common Tendon with the Ia tissimus Dorsi, from the two inferior Dorsal, and from the three superior Lumbar Vertebra.

Insertion: By four Fleshy Slips, into the same numher of inferior libs, near their Cartilages. Tab. XLL. Fig. 1, Trunk, D,
fetion: To depress the Ribs into which it is jnserted, and thereby, during Expiration, to assist in coutracting the Cavity of the Thorax.

## Rhonsboldets, vel Dorso-safuprlaris.

Origin: Tendinons, from the Spinous Processes of the four or five superior Dorsal, and of the three inferior Cervical lertebrix, and from the Ligamentun Nuche; tesecuding obliyuely.

Invertion: Iate the whole length of the Base of the trapula. Tab. XL1. Fig. 1. Truak, AB.
fction : To daw the Scapula upwards and backwards.
This Muscle is frequently divided by an indistinct Line into two unequal Portious: The part Ae, arising from the Dorsal lertchra, and fixed to the Base of the Scapula under the Sipine, is coumsonly called Thombrides Major, and the other part of the Muscle, B, Rhomboides Miner.

## Vel Cervico-mastoideus et Dorsaccervicalis.

Origin: Tendinous, from the Spinous Processes of the four superior Dorsnl; and Tendinous and Fleshy, from those of the five inferior Cervical Vemelira, It adheres firmly to the Ligaunentum Nucha, and at the third Cervical Vertebra, it recedes from its fellow, so that part of the Complesus is seen.

Insertion: By as many Tendons into the five superior Trasuerse Processes of the Cervical Vertehre, and by a Tendinous and Fleshy Portion, into the posterior part of the Mestoid Process, and into the Os Occipitis, where it joins with that Process. Tab. XLI. Fig. 1. Neck, C.

Action: To antagonize the Sterno-mastoideus, by bringing the Head, and upper Cervical Vertebre, obliqnely backwards and to one side. When the Splenii act together, they draw the Head directly backwards.
This Muscle is divided by Albinus into Splenius Capitis, or that which arises from the Neck, and goes to the Head; and Spleniuss Colli, or that which arises from the lack, and is fixed to the Neck.

## Serratus Posticus Sutenor, vel Dotsomentalis.

Origin: By a broad thin Tendon, from the Ligamentum Nucha, over the Spinous Processee of the three last Cervical, and two nppermost Darsal Vertebrex going obliguely downwards.

Insertion: By four Fleshy Slips, into the secand, thin, fourth, and fifth Ribs, under the upper and back part of the Scapula. Tab. XKI. Fig. I. Trank, e.

Action: To elevate the Ribs, and thns to dilate the Thoras in violent Inspiration.

## Sacro-Lombalis, vel Sacro-costalis.

Origin: In common with the Longissimns Dorsi, Tendinons without, and Fleshy within, from the side, and all the Spinous Processes of the $\mathrm{O}_{9}$ Sacrum ; from the posterior part of the Spine of the Os Slium ; and from all the Spinous and Transverse Processes of the Lumbar Vertelra. The common Head fills up the space between the Os Ihium and Os Sacrom, and also the Hollow of the Loins. At the under part of the Thorax, the Muscle begins to send off Tendone, which lie flat nion the libes, and become gradually longer the neaser they are to the spine.

Insertion: lote the Angles of all the Ribe, by an eqıal nuus ber of 'Tendone. 'Tab. XLJI. Fig. 1. Trunk, C.
From six or eight of the lower Ribs arise an equal number of Fleshy Portions, which terminate in the iuner side of this Muscle, aud get the name of Minsculi Acressurii, vel Additumentann ad Sacro-fumbalem.

Acton: To astist in raising and keeping the Trumk of the Body ereet. It also assiste the Serratus Inferior,
and Quadratue Lumbarim, in depmesioing the Ribs during laborious Expiration.
From the upper part of this Muscle, a Fleshy Slip, called Cervicaiss Descendens, mus up to he fixed to the Transverse Processes of the fourth, fitth, and sisth Cervical Vertehra, by three distinct 'Tendous. It turns the Neck ohliquely hackwards and to one side. Tah. XLII. Fig. 1. Neck, L.

## Longrssinus Dorsi, vel Sacroospinalis.

Origin: In common with the Sacro-lumabalis. It forms a large, thick, and strong Muscle, which fills the hollow hetween the Sipine and Angles of the Ribs; hecoming gradually smaller in its ascent.

Insertion: Into the Transverse Processes of all the Dorsal Vertebra, cluefly hy small double Tendons; and, hy a Tendinous and Fleshy Slip, into the lower Edge of each of the Ribs, excepting the two inferior, near their Tuhercles, Tab. XLII, Fig, 1. Truw, B.

Action: To extend the Trunk, and keep it erect ; the outer part may assist in depressing the Ribs during lahorious Expiration.
Frou tho upprer part of this Muscle, a round Fleshy Slip rums up to join the Cervicalis Descendens.

## Spinalis Dorgr.

Origin: By five Tendinous Slips, from the Spinotis Processes of the two upper Lumbar, and the three lower Dorsiz Vertebra. In its ascent, it is incorporated with the Longissimus Dorsi.
Insertion: 1nto the Spinnus Processes of the eight or wine uppermost Dorsal Vertehrie, excepting the first, hy as many Tendons. Tah, XL1I. Fig. 1. Trunk, A.
Action: To fix the Vertebree, and to assist in extendiog the Trunk, and in keeping it erect.

## Complexus, vel Trachelo-occepitalis,

Origin: By distinct Tcadons, from the Transverse Processes of the seven auperior Dorsal, and four inferior Cervical Tertebre, and, by a Fleshy "lip, from the Spinous Process of the first Dorsal Yertebra. In its passage upvards, it is intermixed with Tendinous and Fleshy parts.
Insertion: Into a Depression, under the middle of the large arched Ridge of the Occipital Hone. Tab. XLII. Fig. 1. Neck, $c$, $d$.
Action: To draw the IIcad backwards, and to one side; and when both act, to draw tbe Head directly hackwards.
The long Portion of this Muscle, which lies next the Spinous Processes, is more loose than the rest, and has a roundish Tendon in the middle of it, with a Fleshy Belly at each end, ou which account it is called by Albinvs, Bienter Cervicis.

Vor. 1. Q

## Trachilo-Mastordeea, Vel Complexus Minor, vel Mastoideus Lateralis.

Origin: From the Transverse Processes of the three uppermost Dorsal, and five lowest Cervical Vertehre, where it is comected to the Transtersalis Cervicis, by as maxy thin Tendons, which unite into a slcuder Belly, and ron up under the splenius.

Insertion: Into the posterior margin of the Mastoid Process, hy 2 thin 'I eadon. 'Iab. XLII. Fig. 1. Neck, C.

Action: To assist the Complexus; hut pulling the Head more laterally.

## Levator Scapula,

Vel Levator Propriks, vel Musculus Patientice, vel Tracheto-scapularis.
Origin: From the Transverse Processes of the five superior Cervical Vertebra, hy the same number of distinct Heads, which soon unite to form a flat Muscle, reuning dowzwards and outwurds.

Insertion: Into the superior Augle of the Scapula. Tab, XLI. Fig. 1, A, $d$.

Action: To pull the scapala upwarde, and a little forwards, as in slrugging the Shoulder; and, when the Sca. pula is fixed, to pull the Neck a little to one side.

## Semi-Spinalis Dorsi, vel Transeerso-spinalis Dorst:

Origin: From the Transverse Processes of the seventh, eighth, nith, and tenth Dorsal Vertehrie, hy as many distinct Tendons, which soon grow Fleshy, and then again become Tendinous.

Inscrtion: Into the Spinous Processes of the six or seven uppermost Dorsal, and two lowest Cervical Yertehra, by as many Tendons. Tab. XLIII. Fig. I. $A, A$.

Action: To extend the Spine obliquely backwards.

## Multifidus Spine,

Formerly described as three distinct Muscles, viz. Trans-verso-spinalis Lumborum, Transtersospinalis Dorst, and Transuersonspinalis Colli.

Origin: From the side and Spinous Processes of the $\mathrm{O}_{5}$ Sacrum, and from that part of the OS Ilium which joins with the Sacrun ; from all the Oblique and Transverse Processes of the Lumbar Vertebrax ; from all the I'ransverse Processes of the Dorsal, and of the four $\mathrm{Y}_{\mathrm{n}}$ ferior Cervical Vertebre, by as many distinct Tendons, which soon bccome Fieshy, and run obtiquely upwards and inwards.
Insertion: By distinct Tendous, into all the Spinous Processes of the Lumarar, Dorsal, aud Cervical Verte-
bra, excepting the Atlas. Tab. MMII. Fig. 1. Trunk, B, B,

Action: To extend the Spine obliquely, and pull it to a sidc. When both Muscles act, they draw the Spine directly backwards.

## Semi-Spinalis Colli,

## Vel Transwerso-spinalis Colli.

Origin: From the Transverse Processes of the six uppermost Dorsal Tertebra, by an cqual uumber of distinct Tendons, which run obliqucly under the Complexus.
Insertion: Into the Spinous Processes of all the Cervical Vertebre, except the lirst and last. Tab, XLIII. night side of Neek, 1,1 .

Action : To catend the neck obliquely backwards, and to it side.

## Transversalis Colle.

Origin: From the Transverse Processes of the five uppermiost Dorsal Veitebre, by the came number of Teadirious and Fieshy Slips, It ruue hetween the TracheloMastoidens, Splenius Colli, and Cervicalis Descendens.

Insertion: Iuto the Transverse Processes of all the Curvical Vertebrac, exccept the first and list. Tab. XLII. Fig. I. Neck, I, I.
Action: To turn the Neck obliquely backwards, and a little to one sidc.

## Rectes Capitis Posticus Minor, Vel Rectus Minor, vel Atluido-occiputalis.

Origiz: Tendinous, close to its fellow, from a suall Protuberance which is instead of the Spinous Process of the first Ccrrical Verlebra; spreading out in its ascent.

Insertion : Fleshy, into a Depression betweeu the middle of the emaller Arch and Foramen Magnum of the Occipital Bone. Tab, XLIII. Fig. 1. A.

Action: To assist the following Muscle in drawing the Head backwards.

## Rectus Capitrs Posticus Matof, <br> Vel Rectus ALajor, vel Aroido-accipitalis.

Origin: Fleshy, from the external part of the Spinons Process of the secoud Cervical Vertebra. It becomes gradually broader, and goes obliquely upwards and outwards.

Insertion: Teadinous and Fleshy, into the Os Occipitis, at the outside of the insertion of the Rectus Minor, part of which it covers. Tab. SLIII. Fig. 1. B.

Action: To pull the Head backwards, and to assist a little in its rotation,

Obliques Capitis Ingerior, vel Aivido-atloidens.
Origin: Fleshy, from the Spinous Process of the second (cervical Vertebra, at the outside of the Rectus Major.

It forms a thick Belly, which ruas upwards and outwards.

Insertion : Into the Transiverse Process of the first Cervical Vertebra. Tab. XLIII, Fig. I. D.

Action: To moll the Head.

## Odliquus Capitis Superior, Vel Atloido-sub-mastoideug.

Origin: From the Transverse Process of the first Cervical Vertebin, passing upwards and a little inwards.

Insertion: Into the Occipital Bone, at the outcr part of the Insertion of the Rectus Major. Tab. XLIIL. Fig. 1. C.

Action: To assist in drawing the Head backward, and a little to one side.

## Scalenus Asticus, vel Costo-cervicilis Anticus.

Origin: Tendinous and Fleshy, from the upper part of the first Rib, near its Cartilage.
fives ciim ; Into the Transverse Processes of the fourth, fifth, and sisth Cervical Yertebict, by as many Tendons. Tab. XXXVI, Fig. I. L.

## Scalenus Medius, vel Costo-ccruicalis Medius.

Origin: From the upper and outer part of the first Rib, from its Root to near its Cartilage.

Insertion: Into the Transverse Processes of all the Cerrical Vertebra, by as many strong Tendons. Tab, XXXVII. Neck, M, N.

The Subclavian Artery, and the Nerves which form the Brachial Plexus, pass. betweeu this and the former Muscle.

Scalenus Posticus, vel Costo-cervicalis Posticus.
Origin: From the upper edge of the secoand Rib, near the spine.

Insertion : Into tbe Transverse Processes of the fifl and sixth Cervical Vertebsze. Tab, XLII. Neek, E.

Action of the three Scaleni: To bend the Neck to one side ; ox, when the Neck is fised, to raise the Ribe, and dilate the Thorax, as in violent Inapiration.

## Intersfinales Collf.

The spaces between the Spinous Processes of the Cervical Vertebrix, most of which are forked, are occupied by double Fleshy Portions.

Origin: From the upper part of each Spinous Process.
Insertion: Into the under part of eacli spinows Process, immediately above that fion which it takes ita origin. Tab. XLIII. Neck, G, G.

Action: To draw these Processeanearer to each other, and of course the Neck a little backwards.

## Intertraxsversales Colli.

The spaces between all the Transverse Processes of the Cerrical Vertebre, which are also forked, are filled up in like manner with double Fleshy Portions.

Action: To draw these Processes towards each other, and turu the Neck a little to one side. 'Tab. XXXVU. Neck, $f, f$.

## Interspinales et Intertransversales Dorsi.

These are rather small Tendons than Muscles, serviug to commect the Spinous and Transverse Processes. Tah. SLILI. Trunk, $c, c, d, d$.

## Intersfinales Lumborum.

They are of the same nature with the Interspinales and Intertransversales Dorsi.

## Intertransversales Lumborum.

These are five distinet Huseles, which occupy the Spaces between the 'I ranoverse Processes of the last Dorsal and of all the Lumhar Vertebrac, and serve to draw them a little towards each other. Tah. SLIII. Loins, $\mathrm{H}, \mathrm{H}$.

## MUSCLES OF THE SUPERIOR EXTREMITY.

## MUSCLES arising from the SCAPULA.

## Surra-Seinatus, Vel Super-scapulo-lrachitercus Parvus.

Origin: Fleshy, from the whole Fossa Supra-spinata, and from the Spine and Superior Costa of the Scapula; passing, under the Acromion, and adhering to the Capsular Liganent of the Joint.
Insertion: Tendinous, into the fore part of the large Tubercle on the Head of the Os Humeri. Tah. XLI. Shoulder, B.
Action: To raise the Arm, and at the same time to pull the Capsular Ligameut from between the Bones, so as to prevent it from being pinched.

## Infra-Spinatus,

## Vel Super-scapulo-froclutcreus Magmus.

Origin: Fleshy, from all that part of the Dorsum Scapula which is below its Spine; and from the Spine itself as far as the Cervix Scapula. The Fibres rum ohliquely towards a Tendon in the middle of the Muscle which goes forwards, and adheres to the Capsular Ligement.

Insertion: By a fat thick Tendon, into the upper and outer part of the large Protuberance on the Head of the Os Humeri. Tab. MLI, Shoulder, C.

Action: To roll the Os Huncri outwards; to assist in raising, and in supporting it when raised; and to pull the Ligament from hetween the Bones.

These two Muscles are covercd by an Aponeurosis, which extends hetween the Costa and edges of the Spine
of the Scapula, and gives rise to manv of the Muscular Fihres.

## Teres Minor, Vel Supcrascapudo-trochiteretts Minimus.

Origin: Fleshy, from the inferior Costa of the Scaprla. It ascends along the under edge of the Infrawspinatus, and adheres to the Capsular Ligament.

Invertion; Tendinous, into the back part of the large Protuherance on the Head of the $\mathrm{O}_{5} \mathrm{H}_{\mathrm{m}}$ meri, a little below the Infra-spinatus. Tab. NLI. Shoulder, D.

Action: To soll the Os Humeri outwards, to draw it hackwards, and to prevent the Ligament from heing pinched between the Bones.

Teres Major, vel Scapulo-iumeraliy.
Origin: Fleshy, from the Dorsal side of the inferior Angle of the Scapula, and from a small part of its inferior Costa. It is situated at the under part of the Teres Minor, and sends off a broad lat 'Tendon, wbich accorrpanies that of the Latissimus Dorsi.'
Insertion: Along with the Latissimus Dorsi, into the Ridge at the inner side of the Groove for lndging the Tendon of the Long Hend of the Biceps. Tab. XLI. Shoulder, E.
Action: To roll the Humerus invards, and to draw it backwards and dowmards.

## Déltoides, vel Sub-acrontio-Kumeralis.

Origin : Fleshy, from all the outer part of the Clavicle unoccupied
unoceupied by the Pectoralise Major, from which it is separated by a small Fissure; Tendinous and Fieshy, from the Acromion, and lower Margin of almost the whole Spine of the Scapula, opposite to the insertioo of the Trapezius.

From these origins it runs, under the appearance of three Muscles going in different directions, and separated from each other by slight Tissures; viz. from the Clavicle outward, from the Acromion downwards, and from the Spine of the Scapula formards ; and is composed of a number of Fasciculi, forming a strong Meshy Muscle, which covers the Joint of the Os Humeri.

Insertion: Below that of the Pectoralis Majer, by a short and strong Tendon, into a rough Surface, on the outer side of the Os Humeri, near its middle, where the Fibres of this Muscle intermix with part of the Brachialis Exterous. Tab, NL. Shoulder, A.
Action: To pull the Arm directly outwards and upwards, and a little forwards or backwards, according to the different directions of its Fibres.

## Coraco-Brachialis, vel Coraco-humeralis.

Origin: Tcadinous and Ficsly, from the fore part of
the Coracoid Process of the Scapela, in common with the short Head of the Biecps, to which it adheres chrough the greater part of its length.

Insertion: Tendinous and Fleshy, into the interyal part of the Os Humerin, near its middle, where it sends dorra. an Apoocurosis to the internal Condyle of that Bone. Tab. XNXVI. Arm, C.

Action: To bring the Arm obliquely upwards and, forwards.

## Subscapularis, vel Sub-scapulo-frochinells.

Origin: Fleshy, from the three Coster and whole in. ner Surfice of the Seapula. It is composed of a uumber of Tcudinous and Flchly portions, which rum in a radian ted manner, and make priuts on the Bonc; in its passage outwards, adlkering to the Capswar Ligavent. Tab. XXXYII. Shoulder, A.
Insertion: Tendinous, into the upper part of the interoal Protuberance at the Head of the $\mathbf{O s}_{s}$ Humeri.
Action: To roll the Arm inwards, to draw it to the sido of the Body, and to prevent the Capsular Ligament from being pinclied.

## MUSCLES chefly sifuated on the ARM, serving for tbe MOTION of the FORE-ABM.

Ifoneurosis of the Superior Extremity.-Tab. XXXII. Fig. 1. 2.

Tie greater part of the Superior Extremity is covered by a Tendinous Membrane or Aponeurosis, which arises from the differcat Processes of the Bones of, and the Muscles on, the Shoulder.

It covers the two Spinati Muscles on the back part of the Scapula, as aliready mentioned.

On the Humeras, it incloses the Flexor and Extensor Muscles of the Forearm, and is connected to the Ridges and Condyles at the under cnd of the Os Humeri.

At the beading of the Elbow, it is connected to the ends of the Radius and Ulna, and receives considerable additions from the Tendons of the Biceps and Triceps of the Fcre-arm, where the Fibres from the opposite sides decusazte each other.

It becomes thicker and stronger oo the Fore-arm, and forms a firm covering to the Nuscles there.

In its descent, it gives origin to many Muscular Fibres, and sends off among the Muscles, Partitions which are fixed to the Radius and Ulina. The Membrane is at length lost insensibly upon the Hand.

It is thicker and stroager on the outer than upon the inner side of the Extremity, particularly on the Forc-arm, at the under and back part of which it forms a thick and strong Band, which, running transversely, gets the nane of Ligamentum Carpi Annulare Posterìus.
'the use of this Aponeurosis, like that in other parts of
the Body, is to brace-the Muscles, by keeping them in their proper place while in action, and to give origin to many of the Iluscular Fibres which lie immediately un. der it,

## Biceps Flexor Cubiti, <br> Fel Biceps, vel Scapulo-radialis.

Origin: By two Heads: The outer one, called its Long Head, begina by a sleader 'Tendon from the upper edge of the Glenoid Cavity of the Scapula, passes over the Ball of the Os Mumeri within the Joint, and, in its descent without the Joint, is inclosed in a Groove upon the upper and fore part of the Bone, by 2 Ligument which proceeds from the Capsular Ligument and adjaceut Tendons: The inver one, ealled its short Head, arises, Tendinous and Fleshy, from the Coracoid Process of the Scapula, in common with the Coraco-brachialis. A little below the middle of the fore part of the $\mathrm{Os}_{s}$ Humeri, the truo Heads unite, aud form a thick Fleshy Belly.

Insertion: By a strong roundish Teudon, into the Tubercle at the upper and inner past of the Radius, and by a Tendinous Expansion into the Aponeurosis of the Forearm, which it likewise assists in forming. Tab. XXXV. Anv, $A$.

Action: To bend the Forc-aym, and to assist the Supinator Muscles in rolling the Radius outwards, and, of course, to turn the Palm of the Hand upwards. It also 20 sista in stretching the A poneurosis.

Brachialis.

## Brachialis Internus, vel Humeroocubitalis.

Origin: Fleshy, from the middle of the Os Humeri, at each side of the usertion of the Deltoides, coveriug all, and attached to nost, of the under and fore part of the Bone. It runs over the Joint, adhering firmiy to the Capsular Ligument.
Inserfion: By a strong short Teudon, into the Coronoid Process of the Vhas. Tab. SXXVI. Arm, D.

Action: To bend the Fore-arm, and to prevent the Liganent of the Joint from heing pinched.

## Triceps Extensor Cubiti, Vel Scapulo-hiumeroolecraneus.

Origin: By thrce Heads: The first, or long Head, broad and Tendinous, from the Lnferior Costa of the Scapula, near its Cervix : The second, or short Head, acute, Tendinous, and Fleshy, from the outer and baek part of the $\mathrm{O}_{8}$ Hurneri, a little helow its upper extrensity: The thind, formerly called Brachializs Eittrnus, arises hy an acute begioning, from the back part of the $\mathrm{O}_{\mathrm{s}} \mathrm{H}$ umeri,
near the insertion of the Teres Mijjor. The three $\mathrm{I}_{\text {eads }}$ unite about the middle of the Humerus, and corer the whole posterior part of that Bone, adhering to it in thicir descent.

Insertion: Into the upper and outer part of the Olccranon of the Ulina, and partly into the Condyles of the Os Humeri, adhering elosely to the Ligament. Tah. XLI. Arm, F, $g, h, i$.

Action: Tve estend the Fore-ams.

## Anconeus, vel Epicondilo-cubilalis.

Origin: Tendinous, from the posterior part of the external Condyle of the $\mathrm{O}_{s}$ Humeri. It deseends under is triangular form, soon hecomes Fleshy, and part of it Flesh is likewise continued fron the third Head of the Triceps.

Insertion; Fleshy and thin, into a Ridge on the outer and hack part of the Ulna, a little below the Olecranon. Tah. XLI. Fore-arm, I.

Action : To assist the Triceps in extending the Foreaทn.

## muscles on the FORE-ARM and HAND, segving for the MOTION of the HaND and FINGERS.

To prevent confusion in the applieation of the terims Outer and Inner, when the Museles are deseribed in the prove state of the IIand, -the Arm is here supposed to he placed hy the side of the Body, with the Hand in a state of supination; so that the Kadius and Thumb are upon the outer, and the Iloa and little Finger upon the inper side.

## Pazmaris Loncus, vel Epitrochlo-palmaris.

Origin. Tendinous, from the interaal Condyle of the Os Huncri ; soon becoming Fleshy, and zending off a long slender Tendon.
Insertion: Into the Ligamentum Carpi Annulare Anterius, and into the Apoaeuronis Palmaris. Tab. XXXVIIL, Fore-arm, B, $\%$.

Action: To stretch the A ponenrosis Palmaris, and aswist in bending the Hand.
This Mlascle is fregnently wanting, but the Aponen. rosis is always to be found.

## Aponeurosis Palmaris.

This Tendinous Expansion is sitnated directly puder the Jnteguments of the Palnu of the Hand. It legins at the Ligamentun Carpi Anaulare Avterius; aurd, after spreading out and corering the greater part of the Palsi, is fixed to the Roots of all the Fingers by an equal number of double Slips. Tab. L. Fig. 1. It hiads down and braees the iniseles in the Palm,
and protects the Blood-vessels and Nerves in their course to the Fingers.

## Palmaris Brevis, vel Palmaro-cufatens.

Origin: By small bundles of Fleshy Fibres, from the Ligamentum Carpi Annulare Anterius, aud Aploucurosis Palmaris, and passing across, it has its

Insertion into the Skin and Fat which cover the Asductor Minimi Digiti, and into the Os Pisiforıne. Tab. L. Fig. I. o.

Action: Tn assist in contracting the Paim of the Hand.

## Flexor Carpi Radialis,

## Vel Radialis Internus, vel Epitrochlo-metacerpens

Orign : Teadinons aud Fleshy, from the inner Condyle of the Os Humeri, and from the fore and upper part of the Ulina, between the Pronator Radii Teres and Fiexor Sublinis, to which it fimbly adheres. It forms a longe: Tendon, whieh passes down near the R.adius, goes throughi a lossa in the Os Trapezium, and becomes fiat at its inferior extremity.

Insertion: Into the fore and upper part of the aretacarpal Bone which sustains the Fore Füger. Tab. XSXVIII. Arm, $z, \ldots$

Action: To bend the Wrist, and to assist in the pronation of the Haud.

Thesoa

OF THE MUSCLES.

## Plexpr Carpi Hlearis,

Icl Ulnaris Internus, vel C'ubito-conpens.
Origin: Tendinous, frous the internal Condyle of the Os Humeri; and, by a small Nleshy beginning, from the corresponding side of the Olecranon. It passes aloug the inner side of the Uloa, from which also it derives part of its origin for a considerable way down. A number of its Theshy Fibres likewise anse from the Aponeurosis of the Forc-aris.

Insertion: By a strong Tendon, into the $O_{8}$ Pisiforme. Tab. XXXVIII. Right Arm, \&.
fection. 'To assist the former Muscle in bending the Wrist.

## Extenson Carti Radialis Longior, <br> Vel Radialis Externts Longior, vel Humerowsupormetacarpeus.

Origin: Broad, thin, and Fleshy, direetly below tbe Supinator Longas, from the lower part of the Ridge of the Us Humeri, above its external Condyle. It sends off a long flat lendon, which passes down, first upon the outer, and then upon the back part of the Radius, deseending in a Groove there, and going under the Ligamentual Carpí Anpulare Posterius.

Insertion: Into the rpper, back, and outer part of the Metacarpal Bone of the Fore Finger. 'Tab. XLV. Right Arm, $\mathbf{F}$.

Action: To extend the Wrist, and bring the Hand backwards.

## Extenson Carfi Radialis Brevior,

## Vel Radialis Esternus Brevior, vel Epicondilo-supermefacarpets.

Origin: Tendinous, in eommon with the Fxtensor Longior, but farther down; froun the external Condyle of the Os Itumeri; and from the Liganent which connects the Radius to it.-Passing down upon the back part of the Radius, its Tendon goes under the Ligamentum Annulare Posterius, in the same channel with the Tendon of the Exteasor Lougior.

Insertion: Into the upper and back part of the Metas carpul llove of the Middle Finger. Tab, XLI, Right 4an, C.

Action: To assiyt the forner Muscle in extending the Wrist; or, with it and the Flexor Cupi Radialis, to draw the Hand to the side next the Thumb.

## Extensor Cabpt Ula aris, <br> V'el Uharis Externms, sel Cubito-srper-metacerpeus.

Origin: Tendinous, from the exteraal Cundyle of the Os Humeri ; and in its progress Yleshy, from the middle of the Ilna, where it passes over that Bone. Its round

Tendon is inclosed by a Membranous Sheath, in a Groove at the back part of the extremity of the Lloa.

Insertion: Iuto the posterior and upper part of the Metacarpal Koue of the Little Finger. Tab, MLIV. Right Avin, Q.
frtron: 'To assist the two former Muscles in extending the Wrist ; or, with the assistance of the Elexor 11 naris, to draw the Hund towards the side next the Little Finger.

## Flexor Digitonun Suslimis, vel Perforatus, Vel Epitrochlo-phalangeus Communis.

Origin: Tendinous and Fleshy, from the intemal Condyle of the $\mathrm{O}_{8}$ Humeri ; Teadinous, from tbe Hoot of the Coronoid Process of the Llax; and Membrannus and Yleshy, from the midalle of the fore part of tbe Ra. dius. Its Fleshy Felly sends off four round Tendons before it passes under the Ligamentum Carpi Annulare Antcrius. In theis course, they are connected to those of the following Musele by fine Membranous Webs, and apon the Fingers are inclosed in strong Tendinous Sheaths.

Insertion: Into the anterior and upper part of the secoud Phalanx of the Fingers, being, near the noder part of the first Phalanx, split and twisted to form a pasgage, and at the same time a kind of Sheath, for the Tendons of the Flexor Profundus. Tab. XXXVILI. Left Arm, $x, A$.

Action: 'To bend the second, and then the first Phe lanx of the Fingers.

## Fleyor Digitorun Profundus, vel Perforans, Vel Cubrto-pkalangcus Communis.

Origits: Fleshy, from the external side and upper part of the Ulna, for some way down; and from a large shave of the Interosseons Ligament. It descends behind the Flexor Sublinis, and, like it, splits into four Tendons, a little before it passes under the Ligamentum Annulare, and these pass through the Slits in the Tendons of the Flexor Sublimis. Tab. NXKIX. Left Arm, V, W, X .

Insertion: Into the anterior and upper part of the thind Phalanx of the Fingers.

Action: To bend the last Joint of the Fingers.

## Lumbricales, vel Palmo-phalangetag.

These consist of four sraall Museles somewhat resembling Fath-worms, from which they derive their name.

Origin : Thin and Fleshy, from the outside of the Tendons of the Flexor Profandus, a little above the lower cdge of the Ligamentum Carpi Annulare. At the under tande of the Metacarpal Eones, each oends off a elender 'lemdon.

Irvertion: Into the outer sides of the broad Teadons
of the Interossei Muselea, about the middle of the first Phalanx. Tab. L. Fig. 3. m, \&x.

Action: To bend the lirst Phalanx, and increase the Flexion of the Fingers, while the long Flesors are in full action.

## Extensor Digitorum Combunis,

## Vel Epicondilo-super-phalangens Communis.

Origin: Tendinous and Fleshy, from the external Condyle of the Os Humeri, where it adheres to the Supinator Radii Brevis. It passes down upon the back part of the Fore-arin, and before it goes unden the Liganentum Carpi Annuhare Posterius, it splits into three or four Tendons, some of which may be divided into smaller ones. Tpon the back of the Metacarpal Bones, the Tendons become broad and flat, and near the Hearls of these Bones send Aponemotic Expansions to, each other.

Insertion: Into the posterior part of all the Bones of the four Fingers, by a Teudinous Expansion, which is thick and stroug at the sides of the Joints, but thin at their back part, to facilitate their motious. Tab. XLV. Right Arm, S, T.

Action : 'To extend all the Joints of the Fingers.
Surinator Radit Longus, vel Humervasteper-dadialis.
Origin: By an aeute Fleshy beginuing, from the Ridge of the $\mathrm{O}_{s} \mathrm{Humeri}$, above the external Condyle, nearly as high as the middle of the Bone. It forms a thick Fleshy Belly, which covers the upper part of the Extensor Carpi Radialis Longior; and about the middle of the Forearm, sends a tapering Tendon along the edge of the Radius.

Insertion: Into the outer side of the under end of the Radius. Tab. XXXVIII. Fore-arm, W.

Action. To roll the Radius outwards, and, of course, to tura the Hand into a supine situation, or with the Palm upwards.

## Supinator Radir Brevzs, vel Epicondilo-radialis.

Origin: Tendinous from the external Condyle of the Os Humeri, and Tendinous and Fleshy from the outer and upper part of the Ula, and from the Interosscous Ligainent. It passes over the caternal edge of the Ra. dius.

Insertion: Iuto the upper and fore part of the Radius. Tab. SLIV. Fore-arm, 0.

Action: To assist the Supinator Longus.
Pronator Radir Teres, vel Eputivocho-ivdialis.
Origin: Flesty from the internal Condyle of the $\mathrm{O}_{\mathrm{s}}$ Humeri, and Tendinous fiom the Coronoid Proeesg of the Ulia. It goes obliquely actoss the upper end of the Hexor Muscles of the Wrist, and is of a taperiug form.

Insertion: Thin, Tendinous, and Flesly, into the
middle of the posterior part of the Radius. Tab, XXXIV. Fore-arm, G.

Actiont : To roll the Radius inwards, by which it brings the Palm of the Hand downwards, or into a state of Pronation.

## Pronator Radir Quadratus, vel Cubitoriadialis.

Origin: Broad, Tendinous, and Fleshy, from the under and inner part of the Ulna, The Fibres running transversely, the Muscle has its

Insertion into the under and fore part of the Radius. Tab. L. Fig, 4. a.
fetion: 'lo assist the Pionator Teres.

## Flexor Longus Pollicts Manus, Tel Flexor Tertï Internodïi, vel Radio-phalangeus Pollicis.

Origiu: By an acute, Fleshy beginning, firm the for part of the Radius and Interosscous Ligament, the Origin extending from the Tubercle of the Bone, as far as the Pronator Quadratus, It has frequently another Origin, $_{4}$ by a distinet Fleshy Slip, from the iuternal Condyle of the $\mathrm{O} s \mathrm{H}$ meri.

Iusertion: Into the last Joint of the Thumb, after its Tendon has passed under the Ligamentum Carpi Aunulave Anterius. Tab. XXXIX. Left Fore-arm, $\alpha, \beta$.

Action: To bend the last Joint of the Thumb.

## Flexor Baevis Pollicis,

Vel Flexor Sccundi Intermodiz, vel Carpo-phalangezs
Pollicis.
Origin: Firom the Ossa Trapezoides, Magnum, et Uneiforme. It is divided into two Portions, which form a Groove for the Tendon of the Flexor Longus Pollicis.

Iusertion: Into the Ossa Sesamoidea, and Base of the first Bone of the Thmub. Tab. L. Fig. 2. in, r.

Action: To bend the first Joint of the Thumb.

## Grfonens Politicts,

Vel Flevor Ossis Metacarpi Pollicis, vel Flexor Prims Internodüi, vel Carpo-metacarpesis Pollicis.
Origin : Fleshy, from the Os Tiapezium and Ligamentum Carpi Annulare Anterius. It lies immediately under the Abduetor Pollicis.

Insertion: Tendinous and Fleshy, into the under and fore part of the Metacarpal Bonc of the Thumb. Tab. L. Fig. 2. $l$.

Action: To buing the Thumb inwards, so as to make it oppose the Fingers; fiom which eircumatance it lias derived its name.

## Extensor Ossis Metacarid Pollters, <br> Vel Cubita-super-metacarpcus Polliczis.

Origin: Fleshy, from the middle of the posterion
parts of the Clina, Radius, and luterosseous Ligament. It runs obliquely over the liadius, sending onc, or more frequently two 'Iendons, through an A neular Sheath.
lusention: Into the $\mathrm{O}_{\mathrm{s}}$ Irapecium, and upper and hack part of the Metacarpal Boue of the 'Thumb. Tab. XLIS, light Fore-arm, $i$.
Action: To extend the Metacarpal Bone of the Thumb, and draw it from the Fingers.

## Extensor Primi Internoda Pollicis, <br> Vel Extensar Minor, vel Crbito-super-phalangeus Primus Pollicis.

Origin: Fleshy, from the back part of the Ulna, and fiom the Interosseous Ligament, near the former Muscle, by the side of which it runs.
Insertion: Teadinous, into the posterior part of the first Bone of the Thumb. A portion of it may be traced as far as the second Bone. Tab. XLIV. Right Forcarm, $h$.
Action: To extend the first Joint of the Thumb.

## Extensor Sectind Internodit, <br> Vel Extensor. Major, vel Cubito-super-phalangeus Socundus Pollicis.

Origin: By an acute, Tendinous, and Fleshy begin. ning, from the middle of the back part of the Ulina, and from the Interosseous Ligament. Its Tendon runs througb a small Groove at the wnder, inser, and back part of the Racius.
Insertion : Into the last Bone of the Thumb. Tab. SLIV. Left Fore-arm, R.
Action: To extend the last Joint of the Thumb.

## Abductor Pollicis, Vel Carpo-super-phalangeus Pollicis.

Origin: Broad, Tendinous, and Fleshy, from the Ligamentum Cappi Annulare, and from the Os Trapezium. It lies immediately under the Skin, and over the Opponens Pollicis.
Insertion: Tendinous, into the outer side of tbe root of the first Bone of the Thumb. Tab. L. Fig. I. i.
Sction: To draw the Thumb from the Fingers.
A particular portiou on the inuer side of this Muscle is called, hy Al.bsus, Abductor Brevis Alter:

## Adductos Pollicts, vel Metacarpo-Phalangens Pollicis.

Origin: Fleshy, from almost the whole length of the Metzearpal Bone of the Mitdle Finger; going across the Metacarpal Bone of the Fore Finger, it Sibres converge and send off a sbort Tendon.

Insertion: Into the inner part of the reot of the first Bone of the Thumb. Tab, XXSIS. Fig. 1. Right Arm, $g$.

Action: To pull the Thumb towards the Fingers.

## Indicatok, <br> Vel Extensor Ludicis Proprius, vel Cibito-stuper-phalangews Primus Indicis.

Origin: By sn acute Fleshy begioning, from the middle of the posterior part of the Ulna, at the inner sidr of the Extersor secundi Iutermodii Pollicis. Its Iendon passes under the same Ligament with the Exteasor Digitorum Communis.
Insertion: Along with part of the Extensor Digitorum Communis, into the posterior part of the Fore Yinger. Tab. XLIV. Left Forkarm, T.

Action: To assist the Extensor Communis in extend ing all the joints of this kinger, as is pointing at any thing, hence called Indicator:

## Abdector indicis.

Origin : From the Os Trapezium, and from the upper part and inner side of the Metacarpal Bone of the Thumb.

Inserfion: By a short Tendon, into the outer and back part of the first Bone of the Fore Finger. Tab. L. Fig. 6. $i$.

Action: To bring the Fore Finger tuwards the Thumb.

## Flexor Parvus Minimi Diettr, Vel Carpoophalangeus Secundus.

Origis: From the Unens of the Os Unciforme, and adjacent part of the Annular Ligament. It passes obw Liquely over the under end of the following Musele.

Insertion: By 2 roundish Tendon, into the inner part of the Base of the first lione of this Finger. Tab. L. Fig. 2. $u$.

Action: To bend the Little Finger, and askist the Adductor.

## Abductor Minimi Digity,

Vel Carpo-phalangees Minimt Digiti.
Origin: Fleshy, from the $\mathbf{O s}$ Pisiformic, zand from that part of the Ligamentum Carpi Aunuiare Anterius next it ; going nearly straight down at the inner side of the Hand.
Insertion: Tendinous, into the inner side of the Bave of the first Bone of the Little Finger. Tab. L. Fig. 2, v. Action: 'Io draw the Little Finger from the rest.

## Adductor Minimi Digiti,

Vel ALetacarpeus, vel C'a po-netacaryeus Minimi Digiti.
Oritin: Theshy, from the edge of the Honk-like Process of the Os Uncifurne, and from that part of the ligamentum Carpi Anoulare acxt it.
Ineertion: Tendinous into the innes side, and anterior or under extremity, of the Metacarpual Bone of the Little Fiuger. Tab, L. Fig. 2. w.

Action: To beod the Metacarpal Bone, and bring this Finger towards the rest.

## INTEROSSET, <br> Vel Metacarpo-phalangei Laterales.

Origin: From the sides of the Metacarpal Bones. They fill up the. spaces betweea these, and are something similar to the Laniluicales, but larger.

Insertion: By gleoder Tendons, along with those of the Lambricales, into the sides of the Tendinous Expansions of the Extensor Digitorum Commumis. Tab. L. Fig. 4. e-1. Fig. 5. 6. 7.

Action: To give the Fingers their lateral motions, and to assist a little, according to their situations, in bending or exteoding the first Phalaox of the Fingers.

Of the Interossei, three, seea in the Palm of the Hand, arise with single Heads, and are called Interni; and four on the back of the hand, with double Heads, termed Erterni, or Bicipites. Part of the Externi, however, are also seen in the Palm of the Hand.

## INTEROSSEI INTERNI.

## Prior Indicis.

Origin: From the onter or Radial side of the Metacaxpal Bone of the Fore Finger.

Inertion: Into the ontside of the Tendon on the back of the Fore Finger.

Action: To draw the Finger ontwards, towards the Thwub.

## Posterior indicis.

Origin : From the imer or Ulinar side of the Metacarpal Bone of the Fore Finger.
Insertion: Into the inside of the Tendon on the back of the Fore Finger.

Action: To draw the Fore Finger inwards,

## Praor Annularzs.

Origin: From the outside of the Metacaryal Bone of the Ring Finger.
Insertion: Into the outside of the Tendou on the back of the Ring Finger.

Action: To draw the Ring Finger ontwards.

## Interosseus Auricularis.

Origin : From the outside of the Metacarpal Bone of the Little Finger.

Insertion : Into the outside of the Tendon on the bach. of the Little Finger.
Action: To draw the Little Finger outwards.

## INTEROSSEI EXTERNI.

## Prior Medi Digiti.

Origin: Frome the corseaponling sides of the Metacarpal Bones of the Fore and Middle Fingers.
Insertion : Into the ontside of the Tendon on the back of the Middle Finger.
Action : To draw the Middle Finger outwards.

## Posterios Medi Digiti.

Origin : From the correspooding sides of the Metacarpal Bones of the Middle aod Ring Fingers.

Insertion: Into the inside of the Teodoo oo the back of the Middle Finger.

Action: To draw the Middle Finger inwards.

## Pobtertor Annularis.

Origin: From the corresponding sides of the Metacarpal Bones of the Ring and Little Fingers.

Insertion : Iuto the inside of the Tendon on the back of the Riog Finger.

Action: To dravy the Ring Finger iumards.

## MUSCLES OF THE INFERIOR EXTREMTIES

muscles on the pelvis and thigh, serving for the motion of the thigh anb Leg.

## Aponeurosis of the Inferitar Extremity.

Previous to the deacription of the Muscles of the Inferior Extremity, it is proper to lake notice of the Fas-
Yol. I.
R
cia Lata, or Tendinons Expansion, which, as in the Superior Estremity, forms a general Covering to the Muscles, and sends off Partitions between then, to be connected to the Ridges and Processes of the Bones.
I.

It is taick wial strong on the our side of the Thigh and Leg, but towardy the imer side of both, partieularly on the former, it gradually turns thinner, and has rather the appearance of Cellular Membrane.

It descends firom the Pracesses and other Projections on the outside of the Bones of the Pclvis, but more especially tiom the 'I endons of the External Layers of the Muscles of the Loins and Abdormen. - See the deseription of the upper part of this Fascia in p. 112.
A little below the Trochanter Major, it is intinately connected to the Linca Aspera. At the Joint of the Knee it receives additions from the Tendons of the Extensors of the Leg, and is there connected with the outer and inner sides of the Head of the Tibia and Fihula. In the Leg, it is firmly lixed to the Spines or Ridges of the Tibia and Fihula, and at the under end, to the Bones of the Ankle, where part of it, thicker and stronger than the jest, is extended from the Malleolus internus and Os Naviculare, to the Malleolus Exteraus, and adjacent part of zbe Os Calcis, to form the Ligamentum Tarsi Annulare. It vanishes at last upon the Foot.
It serves the same general purposes with the Aponcurosis of the Supcrior Estremity.

$$
\left.\begin{array}{l}
\text { Psoas Magnus. } \\
\text { Ilacus lnternus. }
\end{array}\right\} \text { See p. } 117 .
$$

## Pectinalis, vel Pectizeus, vel Super-pubia-femoral is.

Origin: Broad and Fleshy, from the apper and fore part of the Os Pectinis ved Pubis, between the upper part of the Foramen Thyroideum and Brim of the Pelvis. It rurs downwards and ontwards at the inner side of the Psoas Magnus.
Insertion: My 2 flat and short Tendon, into the Linea Aspera of the $\mathrm{O}_{\mathrm{s}}$ Femoris, a little below the Trochanter Minor. Tab. XXXIV. Thigh, E
Action: To pull the Thigh apwards and imwards, and to give it, and of course the Foot, a degree of rotation sutwards.

## Trieers Adductor Femoris.

Under this appellation are comprehended three distinct Huscles, viz. Adductor Longǔ, Adductor Brenis, and Adductor Magmus.

## Adductor Longef, vel Pubio-femoralis.

Origin: By a strong roundish Tendon, frow the upper and fore part of the Os Pubis, and Ligament of the Sgnchondrosis, at the uner side of the Pectinalis: It runs downu ards and out wards.
Inertions: By a broad flat Tendon, into the middle of the Linea Asperz. Tab. XXXV1II. Thigh, c.

## Adductas Brevss, vel Sub-pubio-femoralis.

Drigin: Tedinous, from the O Pubis, at the side of
its Synphyyais, helow and behind the former Muscle, It runs obliquely outwards.

Insertion: By a short flat Teudon, into the inner and upper part of the Linez Aspera, firm a little below the Trochanter Minor, to the heginning of the losertion of the Adductor Longus. Izb. XXMIX. Lefe 'Ihigh, e.

## Adducter Magnus, vel Ischio-femoralis.

Origin: From the side of the Symphyais Pubin, 2 little lower than the former. The Origin is continued downwards from the Crus and Tuberosity of the Os ls. cbium. The Fibres man outwardy and downwands, apreading out wide, and forming a very large Muscle.
Insertion: Into the whole length of the Lines Appera i the under part of the Muscle extending along the Ridge which leads to the inner Condyle of the $\mathrm{O}_{3}$ Femoris. It is also fixed by a roundish Teodon, into the upper part of that Condyle, a little above which the Femoral Ar tery, in its course towards the Ham, passes between the Tendon of this Muscle and the Bone., Tab. XXXVII. Fig. 1. Tbigh, D. Fig. 9. A, B, C.
Action of the threct teductors: To bring the Thigh inwards and upwards, aiccording to tha different directious of their Fibres, and to assist a little in solling it outwards.

## Obxurator Externus, <br> Vel Sub-pubio-frochantereus Extornus.

Origin : By a semicircular Margiv, from the parts of the Ossa Pubis and Ischium, which form the anterior half of the Foramen Thyroideum, and from the Membrane which Eills up that Foranen. The Fibres are collected like rays towards a centre, and pass outwande over the back part of the Cervix of the $\mathrm{O}_{s}$ Femoris.
Insertion: By a strong round Tendon, into the Cavity at the inner and back part of the Kioot of the 'lroclianter Mijor, adhering in its course to the Capsular Ligament of the Thigh-bone. Tah. AXXV11. Fig. 1. Thigh, C.

Action: Tn roll the Thigh-liane oblignely outwands, and to prevent the Capsular Liganient from being pincti. ed.

## Guvtevs Maximus, vel Sacro-femoralis.

Origin: Flecshy, from the back part of the Spint of the $\mathrm{O}_{s}$ Nlium ; from the under and outer part of the Os Sacrum ; fiom the Os Couc ygis ; and from the posterior Sacro-sciatic Ligansents, over which part of the inferior edge hangs in a Flap. The Fibres are collected into coame Fasciculi, which run obligucly forwarde and a little downwards. The upper part of it covecs almost the whole of the Trochanter Major, and it is intimatcly connected with the broud Tendou of the Z'enoor Vagina Feman zi. This Muscle is the larget of the Body, and composes the principal part of the buttock.

Insertion.

Ynsertions: By a strong, thick, and broad Tendon, into the upper and outer part of the Linea Aspera, along which it is continued for some way dowu. Tab. ML. Pelvis and Thigh, A, A.
Action: To extend the Thigh, and pull it hackwands and a little outwards. It extends also the Pelvis on the Thigh in standing; and, assisted by the other Glutei, maintains the equilibrium of the Body on the lower Extremity, which rests on the ground, while the other is caried forwards.

## Gluteus Nedius, vel Iliontrochantereus Magnus.

Origin: Fleshy, from all that part of the Spine of the Os Ilium which is unoccupied by the Glateus Maximus; fiom the upper pant of the Dorsum of that Bouc; and fion an Aponeurosits which covers the Muscle, and joins the Fascia of the Thigh. It sends off a hroad Tendon, alich has its
Insertion into the outer and hack part of the Trochanter Major. Tab. XLI. Pelvis, A.
Action: To pull the Thigh outwards, and a little backwards. The fore part of the Musclo anoists in roll. ing it inwarde.

## Gluteus Minimus, vel Iliozfrochantercus Pareus.

Origin: Fleshy, fiom the lower half of the Dorsun of the $\mathrm{O}_{\mathrm{s}}$ Ilium. Its Origin is continued from the superioranterior Spinons Process, along a rising of the Bonc, as far as the great Sciatic Notch; and the Muscle rums in a radiated manner to a strong fat Tendon.
Insertion: Into the fore and upper part of the Trochanter Major. Tab. XLII. Pelvis, A.
Action: To assist the former in pulling the Thigh outwards, and a tittle backwards; and, along with other Muscles, in rolling it inwards.

## Pybiformis, vel Sacro-trochantervus.

Origin: Within the Pelvis, by three Tendinous and Fleshy Heads, from the second, tbird, and fourth pieces of the $\mathrm{O}_{5}$ Szerum ; and, becoming round and tapering, it passes out of the Pelvis, along with the Seiatic Nerve, ihrough the great Notch of the חliun, from which it receives the addition of a few. Fleshy Yibres.
Insertion: By a mundish Tendon, into the upper part of the Cavity at the inner side of the root of the Trochanter Major. Tah. XLI. Pelvis, B.
Action: To assist in the Abduction of the Thigh, and in its rotation outwards.

## Gemini, vel Gemelli, vel Ischio-trochanterehs.

Origin: By two distinct Heads; the supetior fiom the Spinons Puncess, and the inferior from the Tuherosity of the Os Ischium, and fron the Sacro-sciatic Liga-
ment. The two Heads are unied by a Tcudinous and Flesky Membrane, and form a sbeath for the reception of the Teadou of the Obturator Interzus.

Insertion: Tendinous and Fleshy, into the Cavity at the imer side of the root of the Itiochanter Major, ou each side of the Tendon of the Obturator Interous, to which they firmly adhere. Tab. XLI. Pelvis, C.

Action: To roll the Thigh outwards, and to prevent the Tendon of the Obturator lutcensus from starting out of its place while the Muscle is in action.

## Obturator Internus,

Tel Marsupialis, vel Sub-pubio-frochantercus Internus.
Origin: Within the Pelvis, by a semicircalar Fleshy margin, from the anterior half of the Foramen Thyroideum, and, in part, fiom the Obturator ligament. Its Fibres couverge, and send off a round Teudon, which pizses over the Os Ischium, between the Spine and Tuber of that Bone, as a rope passes over a puiley. - Where it goes over the Capsular Ligament of the Thigh-hone, it in inclosed in the Sheatb of the Gemisi.
Insertion: By a round Tendon, along with the Gemini, into lhe large Pit at the root of the Trochanter Major. Tab. XLII. Fig. 1. Pekvis and Inferior Extremity, $\mathbf{B}$.

Action : To roll the Thigh obliquely outwards.

## Quadratus Femoris, vel Lechionsubetrochantereus.

Origin: Tendinous and Fleshy, firom the outer side of the 'Inberosity of the Os Ischiwn ; rumning trausversely outwards.
Insertion: Fleshy, into a rough Ridge continued fromthe root of the great to that of the small Trochanter. Tah. XLI. Pelvis, E.

Action: To roll the Thigh outwards.
This Muscle is ocerasionally wanting.
The Pyriformis, Genini, Quadratns, and Obturztorer, which are the Rotators of the Thigh when it is in a linu with the Body, become its Abducturs when it is in the bended state.

## Tensor Vagine Fenoris, Vel Ilio-aponcurvso-fcnoris.

Origin: By a narrow, Tendiuous, and Fleshy Legin oing, from the exteraal part of the anterior-superior sipinous Process of the $\mathbf{0}$ s llium. It goes down wards, and a little backnards, forming a thick Fleshy Belly, which is iuclosed in a doubling of the Aponeurosis or Vugina of the Thigh.
Insertion : A little below the Tivechanter Major, into the inner Surface of the Aponcurosis which covers the outside of the Thigh. Tab. XXMIV: 'I high, A.

Action: 'To stretel the Aponewrosis, and to assist in the Abduction of the Thigh, and in its rotatión inwards.

## DARTOALUS, vel Miometibialia.

Origin: Teudiaous, fiom the superion-antevior Spinous Process of the $\mathrm{O}_{\mathrm{s}}$ Ilimm, at the inner side of the Tensor Vaginue Femoris. It soon becomes. Fleslisy, rums obliquely downwards over the Muscles situated upon the fore and inver side of the J'high, and is the longest Muscle of the Body.

Insertion: By a broad and thin Tendon, into the inner side of the Tibia, near the inferior part of its Tubercle. Tab. XXXVIII. Right Inferior Extremity, $g, q$.

Action: To bend the Knec, and bring one Leg oblique. ly inwards across the other, as tadors do at their work.

## Gracilis, vel Rectiks Internus, vel Siub-pubio-pretibiakis.

Origin: By a thin Tendon, from the Os Pubis, near the Symphysis; soon becoming Fleshy, and descending in a direct course by the inside of the Thigh.

Insertion: Tendinous, into the Tibia, lower than the Sartorius. Tab. XXXVI. Fig. I. Thigh, G. Fig.2. D.

Action.: To assist the Sartovius in making the full Flexiou of the Knee, after it has been bent to a certain degrec, by the Flexors on the back part of the Thigh.

## Rectus, vel Gractis Anterior, vel Ilio-rotuleus.

Origin: Fleshy, from the inferior-anterior Spinous Process of the $\mathrm{Os}_{s}$ Ilium ; and Tendivous, from the Dorsum of that Bone, a littie ahove the Acetabulun. It runs down over the anterior part of the Capsular Ligament which incloses the Cervix of the $\mathrm{O}_{6}$ Femoris, and, in its passage along the fore part of the Thigh, beeomes gradually larger as Iar as its middle, after which it decreases towards its lower extremity. In the middle of the fore part of the Muscle, there is a longitudinal Tendinous Line, from which Flesby Fibres rum off like the plumage of a feather; the Tendon itself being most conspicuous behind.

Inserfion: Tendinous, into the upper part of the Patella. Tab. IXXV. Fig. 2. A.

Action: 'To extend the Leg.
Cruralis, vel Crurcus, or Middle of the Tri-femororoftulets.
Orimin: Flesly, from between the two Trochanters of the O . Femoris, but wearer the Minor; and fion the fore part of the Thigh-bone to near its unaler extremity. Its sides arc connected to both Vasti Muscles; anterion ly, it is covened by the Rectus, the Tendon of which it joins near the lower part of the Thigh.

Insert on: Into the upper and back part of the Pitella, behind the Rectus. Tab. XXXV. Fig. 2. A.
settion: To ansist in the extension of the Leg.

## Vastus Extehnus,

Or. Outer Part of the Tri-fcomorowotuleus.
Origin: Broad, Tendinous, and Fleshy, from the
outer part of the Root of the Trochantes Major. Its Origin is continued from the Trochanter, along the whole outer side of the Linea Aspera, to near the external Condyle of the Os Femoris, by Fleshy Fibret, which form the principal part of the outer portion of the Thigh, and obliguely forwards to a middle Tendon, where they terminate.

Insertion : Into the upper and outer part of the $\mathrm{P}_{2}$ tella, at the edge of the Tenelon of the Rectus, with which it is connected. Part of it ends in an Aponeurosis, which is fixed to the Head of the Tibia, and afterwards is continned to the Leg. Tab. XXXV. Fig. 2. C.

Action : To extend the Iocg.

## Vastus Internus, <br> Or Inner Part of the Tri-femoro-rotuleus.

Origin: Tendinous and Fleshy, from hetween the fore part of the Os Femoris, and root of the Trochanter Minor. The Origin is also continued along the whole inside of the Linea Aspera, by Fibres rupning obliquely forwards and downwayds, which occupy the under and inner side of the 'Ingh.

Insertion : Ticndinous, at the side of the lirureus with which it is connected, into the upper and inner edge of the Patella, continuing Fleshy lower than the Vastns Extemus. Part of it likewise ends in an A poneurosis, which is fixed to the upper part of the Tibia, and atterwards is continued to the Leg. Tab, XXXV. Fig. 2. B.

Actiun: To assist the three former Muscles in extending the Leg; then the Patella, fixed to the Tuhercle of the Tibia by a strong Ligament, supplies the office of a Pulley.

## Semitendinosus, vel Ischio-pretibialis.

Origin: Tendinous and Fleshy, in common with the long Head of the Biceps, from the posterior part of the Tuberosity of the Os Ischimm. Its Fleshy Belly rums down the back part of the Thigh, and sends off a long rouadish Tcodon, which passing by the imer side of the Knee, afterwarle bccome's fiat.

Insertion: Into the inside of the Ridge of the Tibis, a little below the Tubercle, and cunnected to the under edge of the Gruciliti. Tiab. NLI. Thigh, I.

Action : 'Io bead the Lcg, aud, when beuded, to roll it in wards.

## Semimeminanosus, vel Ischio-popitito-sobialis.

Origin: By a broad Alat Tendon, from the uppes and back part of the Tuherosiiy of the $O_{6}$ Ischime. i hes Fibres composing the Heshy Belly, form a seminpenniform Muscle, by running iu in oblique direction towade a flat Tcridon at the inner and under pari of the Nuecle, which is situated belind the Cemite pdinusus.

Insertion: Into the imer aud back part of the Head of the Tihia. Tab, XLII. Thigh, C.

Action:

Action: To bend the Leb, and briug it direetly hackwards.

Bicers Flexor Cruais,<br>Vel Ischia-femoro-peronealis.

Origin: By two distinct Heads. The first, or Long Head, axises in common with the Semitendimosus, from the upper and back part of the Tuberosity of the Os Tschinu. The second, or Short Head, arises from the Linea Aspera, a little below the termination of the Gluteus Ilaximus, by a Fleshy acute heginning, which soon grows broader, as it descends to join the first Head $u$ little ahove the external Condyle of the $\mathrm{Os} \mathrm{Fe}-$ moris.

Insertion: By a strong Tendon, into the upper and outer part of the Head of the Fibula. Tab. XLI. Thigh, $b, c$.
Action: To hend the Leg.
The Semiteudinosus and Semimembranosus form the
inner Ham-sidring, and lite Buceps the outer Ham-string ; hetween the Ham-strings the great T cosels and Nerves are situated, which ran to the Leg.

## Pozlitevs, vel Femoro-poplitontibialis.

Origin: By a amall round Teudon, from the outer and under part of the external Condyle of the Os Fcmoris, and from the back pact of the Capsular Ligament of the Joint. Iu passuyg the Joiut, it becomes Fleshly, and spreads ont, the Filles runnug obliquely inwards and downwards, covered with a Tendmons Membrane.
Insertion: Thin and Fleshy, into a Ridge at the upper and inner part of the 'Tibia, a little below its Head. Tab. XLII. Leg, G:
Action : To assist in beoding the Leg, and, when bent. to roll it inwards. The Muscle also prevents the Capsilar Ligament fiom being pisched.

## MUSCles situated on the lieg and foot, sehving for the motion of the foot and toes.

## Gastrolnemius Externus, vel Gemellus, vel Bifemorocalcanerts.

Origin: By two distinct Heads; one from the upper and back part of the internal Condyle of the Os Femoris, and from a little above the Condyle, by two separate beginnings: The other, Tendinous from the upper and back part of the external Condyle. A little below the Joint, their Fleshy Bellies mect in a middle Tendon, the union giving the appearance of a loogitudinal Raphè. Below the middle of the Tibia, the Muscle sends off a broad thin Teudon, whieh, becoming gradually narrower, joins that of the Gastrocnemius Internus, a little above the Ankle. Tah. XL. Leg, K, K, M.

## Giastroenemius Internves,

Vel Solemó, vel Tibiocalcanelus.
Origin: By two Heads. The first from the back part of the Heark, and upper and back part of the Body of the Fibula: The other from the back part of the Tihia, rumiug inwards along the under edge of the Popliteus, towards the inner part of the Rone, from which it receives Fleshy Fibres for some way dowu. The Flesh of this Biuscle, which is of the compound Peuniform kind, cosered by the Tendon of the Castrocnemius Extervus, descends uearly as far as the extremity of the Tibia, a little dove which the Tendons of hoth Gastrocncruii unite, and form a strong roiud Cord, called Tendo Achiluis, or simply IIecl Tendon.

Insertion: Into the upper and back part of the $\mathrm{Os}_{s}$ Cakie, hy the projection of which the Tendo Achillis is
at a considerable distance from the Tibia. Tab. XLI. Leg, H, L.

Action : To extend the Foot, by raising the Heel.
By the Bellies of the two Gastrocnemii, but particularly of the Externus, the Calf of the Leg is formed.

## Plantaris, vel Femora-calcaneus Parevs.

Oritin: Thin and Fleshy, from the upper and back part of the external Condyle of the Os Fenoris, and from the Capsular Ligament of the Joint. A little below the Head of the Fibula, it sends off a slender Tendon, the longest of the Body, which descends obliquely inwards, between the inner Heads of the Gastrocnemii, and afterwards runs along the inner Edge of the Tendo Aehillis, to which it is closely connceted.

Insertion: Iato the inside of the posterior part of the $\mathrm{O}_{\mathrm{s}}$ Calcis, below the Tendo Acmilus. Tab. Xlı. Leg, I, $f$.

Action: To assist the Gastrocnemii, though in a small degree only, and to pull the Capsular Ligament of the Knee from betureen the Eones. It lihewise agitates a Fatty substance belonging to the Bursse Mucosx, at the insertion of the Tcado Achilzts.
This Muscle is sometimes, though very seldom, wanting.

## Tibmals Anticus, vel Tibio-super-tarsens.

Origin: Teudinous, from the upper and fore part of the Tibia, between its 'I ubercle and Articulation with the Fibula. It then runs donn, Fleshy, on the outside of the Tibiu, adhering to it and to the upper part of the Interosseous ligument. 'Towaids the uider part of the Leg, it scude off a strong round Tendon, which passes
under the Ligumentum Tarsi Anamaxe, near the inner Ankle, and, ruming over the Astragalus and Os Naviculare, it has its

Insertion: Tendioous, into the middle of the Os Cu neiforme luternum-and Base of the Metatarsal Bone of the Gireat Toe. Tals. XXXIV. Leg, G+ $\mathbf{r}$.

Action: To bend the Foot.

## Tipialis Postrcus, vel Tibio-sub-tarsens.

Origin: Fleshy, from the upper and fore part of the Tibia, under the Process whicli joins it to the Fibula; then, passing through a Fissure in the upper part of the Interosecous Ligament, it coutinues its Origin from the hack part of the Fibula, next the Tibia, and from near one halt of the upper part of the last-named Bone, as tho from the Interosueous Ligament; the Fibres rumming covards a middle Tendon, whicl4, in its descent, becomes round, and passes in a Groove behind the Malleolus In. trimus.

Incertion: Tendinots, chicfly into the upper and inner patt of the Os Naviculare, and partly nuto the under *urfice of the Tarsal Bones by separate Slips, the last of which goes to the root of the Metatarsal Bone of the Tfidle 'Toe, Tah. VLIII, Leg, 18.
fcfion: To extend the F'oot, and, with the assistance of the 'I'bialis Anticus, to turn the Toes inwards, and 1hic outer cdge of the Foot dowawards.

## Peronevs Longus,

## Tel Primus, sel Peroneo-sub-tarscus.

Origin: Tendinons and Fleshy, fiom the fore part of the Head of the Fibula; aud Fleshy, from the outer part of that Bose, down to within a hand-breadth of the takle. The Fibres run in a Penniform manaen towards a long Tendon, whith becomes round, and, inclosed in a Sheath, passes through a Channel behind the Malleolus Exteratus, It is then veflected to the Sinuosity of the Os Calcis, rums along a Groove iu the $\mathbf{O}_{5}$ Cuboides, and goes ohliquely serobs the Booes in the middle of the Siale.

Inserition : Tendinous, into the outside of the root of the Metatareal Bone of the Great 'iee, and partly into the Os Cunciforme Internum. Tab. XLIF. Leg, I, $b$.

Action: To extend the Foot a little, to draw it outwards, and to ture the inner edge of it downwards.

## Peroneus Brevis,

Vel Secundus, vel Paroneo-metatarseus Magnus.
Origin: Fleahy, from the onter part of the Fibula, beginnigg some way above the middle height of the Bone, and continuing its adhesion as far as the Malleolus Exteraus. The Filises run, like those of the former Musele, to an extemal Tendon, which becomes round, passee hehind the outer Ankle, where it is included in the same

Sheath with the Tendou of the preceding Musele, and there crossing behind that 'lutolon, ruas forwasd in a Sheath proper to itself.

Insertion: 'Teadinous, iuto the root and extemal part of the Metatarsal Bone of the Little 'Ioc. 'I ab. XLill. Leg, M, C, 'Tab. XLIII. Ieg, C.

Action: To assist the former Musele in pulling the Foot outwards, its outer edge upwards, and to extend it is a small degree.

## Eitensor Loncus Dicitorun, <br> Vel Peronco-super-1ihalangeus Commaris.

Origin : Tendinous and Fleshy, from the apper aud outer part of the Ilead of the I ibis, and from the Head, aud almost the whole leugth of the anterior Spine of the Fihula. It arises, also, Fleshy, from the A poneurogis which covers the spper and outer part of the Leg, aud from the Interosseous Ligameut. Under the Ligamentum Tarsi Ammlare, it splits into four vouod Tendong, whieh pass along the upper part of the Foot.

Insertion: Into the Base of the first Phalanx of the four smatt Toed, by flat Teodons, whieh ate expauded over the upper side of the 'loes as far as the root of the last Phalanx. Tah. XXXV. Leg, $k, b$.

Action: 'To extend all the Joints of the four small Toes, and to assist in the flexion of the Ankle.

## Peromeus Tertius of Albinus, <br> Vel Peroneo-metatarseus Minor, <br> Is a Portion of the former Musele.

Origin: From the middie of the Fibula, in comunon with the Extensol Longus Digitorum. It eontinues down to near the Malleolus Extexaus, and sends ita Tlealy Fibres forwards to a Tendon whieh passes unden the Ligamentum A nnulate.

Insertion: Into the root of the Metatarsal Boae of the Little 'Foe. Tab. XLVI. Left Leg, W, V,

Action: To assist in beading the Foot.

## Extensor Brevis Digitorum,

## Tel Calconstper-phalangeus Communis.

Origin: Fleshy and Teudidous, from the outer and fore part of the $\mathrm{O}_{s}$ Caleis ; soou forming a Eleshy Belly, which is divided into four Portions. These sead off an equal uumber of Tendone, which pass over the upper part of the Foot, erossing uader those of the fommer Musele.

Insertion: By four slender Tendous, into the Teudi. rious Expansion continued from the Long Extensory of all the Toes, execpting the little one. Tah. XXXVI. Foot, 0 .

Action: To pssist in the extearion of the Toes.
Aponeurgests

## Afoneurosis Plantaris.

This, like the Aponeurosis Palmaris, is a strong Tendinous Expansion, which covers the Muscles, Vessels, and Nerves of the Sole.

It arises from the Tuherosity at the under and back part of the Os Calcis, and is divided into three lortions, which run forwards, to he connected to the Heads of the Metatarsal Bones of all the Toes. 'The middle Portion is subdivided into five Slips, which split at the roots of the Toes, and embrace the Tendoos of the Flexor Muscles. Tab. L. Fig. 8. $a, b, c$.

Besides serving the geueral purpose of A poneuroses, it performs the office of a Ligament, by binding the two cuds of the arch of the Foot together.

## Flexor Bhevis Digitorum,

Yel Flexor Sublinis, vel Perforatue, vel Calco-stb-Phulangeus Communts.

Origin: Narrow and Flcshy, from the inferior-anterior part of the Tuberosity of the Oc Calciv, and from the Aponcurusis Plantaris. It forms 3 thick Fleshy Belly, which sends off four small Tendons, that split for the passage of the Tendons of the Flexor Longus.

Insertion: Into the second Phalanx of the four small Toes. Tab. L. Fig. 9. a.

Action: To bend the first and second Joints of the Toes, hut particularly the second.

The Teudon of the Little Toe is frequently wanting.

## Fuexor Longus Digitorum,

## Fel Fiexor Profiuklus, vel Perforans, vel Tibio-phalangeas Communis.

Origin: By an acute Tendon, which soon becomes Fleshy, from the back part of the Tibia, at the under edge of the Poplitens ; and this Origis is continued down the inner edge of the Rone, by short Fleshy Fibres ending in its Tendon. It arises also by Teaclinous and Flesliy Fibreir, from the outer edge of the Tibia; and hetween this deuble order of Fibres, the Tibialis Posticus ties inclosed. Having gone under two Annular Liga ments behind the inner Ankle, it passes through a simuosity at the inside of the Os C'alcis, and about the middle of the Sole, receives a Pendou fiom the Flexor Lomgus Pollicis, It theu divides iuto luur Cendons which run through the Slits of the Pertoratus.

Insertion : Into the Bare of the third Phalanx of the four smaller Toes; the T indons of this, as well $2 s$ of the Flexor Brevie, hring incloseal upun the Toes by Annular Liganentis, Tab, KLII. Leg, 1. Tah. L. Fig. 10. $\alpha, f, f$.

Action: To henil the difierent Joints of the Toes, particularly the last one.

## Flexor Dicitorum Accessorius, Vel Massa Camea Jacobr sylvir.

Origin: By two Portions; the inner Fleshy, from the Sinuosity of the $O_{\mathrm{s}}$ C'aleis; the outer Tendinous, but soon beconing Fleslay, from the fore and onter part of that Boue.

Inscrtion: Into the Teudon of the Flexor Longus Digitorim, before it divides isto smaller Tendous, Tab. 1. Fig. 10. $b, c, d$.

Artion: To assist the Flexor Longus.

## Lumbricales, vel Plonto-stub-phalangers,

Origin: By four Tendinous and Fleshy beginninga, from the 1 endon of the Flexor Proluudus, just before its division. They run forwards, under the same general appeapance with those in the Hand, but are somewhat snaller.

Insertion: By four sleuder Tendons, at the inside of the first Joint of the four sinall T'oes, into the Tendiuous Expansion sent from the Extensors to cover the upper part of the Toes. Tah L. Fig. $10 . g, h, i, k$.

Action: To increase the flexion of the Toes, and to draw them inwards.

## Extengor Peorrius Pollicis, <br> Vel Extensor Longus, vel Peroncoovuper-phalangeus Pollicis.

Origin: By an acute, Tendinous, and Fleshy heginning, from the fore part of the Fibula, some way below its Head. It continues its Origin from the same Bone to near the outer Ankle, by Fleshy Fibres which descend obliquely towards a Tendon.

Insertion: Tendinous, into the posterior part of both the Bones of the Great Toe. Tab. XXXV. Leg, $f_{5} e, f$.

Action: To extend the Great Toe, and assist in bending the Ankle.

## Flexor Longus Polzicis,

 Vel Peronteosut-phalangews Pollicis.Origin: Tendioons and Fleshy, from the back part of the Fihula, some way below its Ilead; being continued down the same Eune, alnost to its under end, by a double order of oblique Eleshy Fibres. Its Tendom passes under an Annular Ligament behiud the inner Ankle, then through a Fossa in the Astragalus.

Insertion: Into the last Joint of the Great Toe. Tab. XLII. Leg, H .

Action: To hend the Great Toe, particularly the last Joint.

## Flexor Brevis Pollicis,

Vel Tarso-sub-phalangetu Pellicis.
Origis: Tendinous, from the under and fore part of
the Os Calcis, and from the Os Cunciforme Externum. It is inseparably united with the Abductor and Adductor Pollicis.

Insertion: Into the external Os Sesamoideum, and root of the first Bone of the Great Toe, Tah. L. Fig. 11. $i, k$.

Action: To bend the first Joint of the Great Toe.
Abductor Pollicis, vel Calco-sub-phalangeus Pollicis.
Origin: Fleshy, from the anterior and inner part of the Proluberance of the $\mathrm{O}_{0}$ Calcis, and Tendinous from the same Bone, where it joins with the Os Naviculare.

Thsertion : Tendinous, into the internal Os Siesanioideum, and root of the first Bone of the Great. Toe. Tah. L. Fig. 9. c.

Acition: 'o pull the Great Toe from the rest.

## Adjuctor Pollicis,

Vel Motatareo-sub-phalangeus Pullicis.
Origin: By a long thin Tendon, from the under part of the $\mathrm{Os}_{s}$ Calcis, from the $\mathrm{Os}_{s}$ Cuboides, from the $\mathrm{Os}_{5}$ Cunciforme Exteroum, and from the root of the Metan tarssl Bone of the Sccond Toc. The Musele is divided into two Fleshy Portions.

Insertion: Into the exteraal Os Sesamoidcum, and joot of the Metatareal Bone of the Great Toe. Tab. J. Fig. II. g, $h$.

Action: To pull the great Toe towards the rest.

## Abductor Minima Digiti, Vel Calco-sult_phalangens Mizimi Digiti.

Orgin: Tendinous and Fleshy, from the edge of a Cavity on the under part of the Piotuberance of the O s Calcis, and from the root of the Metatarsal Bone of the Little Toc.

Insertion: Into the outer part of the root of the first Bone of the Little Toe. Tab. L. Fig. 9. d, e.
.Iction + To drav the Little Toe outwards.

## Fletor Brevis Minini Dicitis,

Vel Tarto-sub -phalangeus Minimi Digiti.
Origin: Tendinous, from the Os Cuhoides, near the Groove for lodging the Tendon of the Peroneus Longus; and Fleshy, from the outer and back part of the Mletatarsal Bone of the Little Toe.

Insertion: Iuto the anterior extremity of the Meta tarsal Bone, and root of the first Bone of the Little Toe, Tab. XXXV, Fig. 11. $f$ :

Iction: To hend this Toe.

## Thansveranciv,

## Vel Metatarso-sub-phalangens Transversalis Pollicis.

Origin: Tendinous, from the under and fore part of the Metatarsal Bone of the Great 'Toe, and from the interval Os Scsamoideum of the first Joint. It forms a Feshy Belly, which rums transverscly between the Metatarsal Bones and Flesor Muscles of the other Small Toes.

Insertion: Tendinous, into the under and outer pars of the anterior extremity of the Metataral Bone of the Little Toe, and Liganient of the next Toc. Tah. L. Fig. 11. 1.

Action: To oontract the Foot, by bringing the roots. of the outer and inner 'loes towards each other.

## INTEROSSEI,

## Ves Melataryo-phalangei Laterales.

The Inturoooci-mian Teadinous and Fieshy from, and fill the spaces between, the Metatarsal Bonaw Three. called Interni, arise with single Heads, and are placed in the Sole; and four, termed Eatermi, or Bicipites, arise with double Heads, and appear on both sides of the Foot.

The Insertion of all the Interessei in by slender T'endons, into the Expansion seut off from the Tendons of the Lumbricales, and of the Extensor Muscles of the Toes.

## INTEROSSEI INTERNI.

## Tab. L. Fig, 12.

## Prion, vel Abductor Medii Digili.

Origin: From the inside of the Metatarsal Bone of the Middle Toe.

Insertion: Into the inside of the root of the first Booe of the Middle Toe.

Action: To pull the Middle Toe inwards.
Prion, vel Abductor Tertii Digiti.
Origin : From the inner and under part of the Meta targal Bone of the thind of the small Toes.

Insertion: Into the inside of the root of the first Bone of the third Toe.

Action: To pull the chird Toe inwards.

## Prion, vel Adductor Minims Digài:

Origin: From the inside of the Metatarsal Bone of the Little Toe.

Insertion: Into the inside of the root of the first Booe of the Little Toe,

Action: To pull the Little Toe inwards,
INTEROSSEI EXTERNI, vel Bicipites. Tab, I. Fig. 12, Tab, XXXVII. Foot, F.

## Prior, vel Abductor Indicis.

Origin: From the contiguous sides of the Metatarsal Bones of the Great and Fore Toes.
Insertion: Into the inside of the root of the first Bone of the Fore Toe.

Action: To pull the Fore Toe inwards.
Posterior, vel Adductor Indicis.
Origin: From the contiguous sides of the Fore Toe, and second of the small Toes.

Insertion: Into the outside of the root of the Girst Bone of the Fore Toe.

Action: To pull the Fore Toe outwards.
Posterfor, vel Adductor Med Digiti.
Origin: From the contiguons sides of the Metatarsal Bores of the second and third of the small 'Tots.

Insertion: Into the outside of the root of the first Bone of the second of the smatl Toes. Action: 'To pull this Toc outwards.

## Posterion, vel Adductor Tertii Digiti.

Origin: From the coutiguous sides of the Metatarsal
Bones of the thrd and tourth of the small Toes,
lasertion: Into the outside of the root of the first Bone of the third of the surall Toes.

Action : To pull this 'loe outwards.

Vos. 1.
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# TABLE XXXIII. 

## Represents the Aponeuroses or Tendinous Membranes, which appear upon removimg the Common Integuments, and which cover the Muscles of the Extremities.

## FIG. 1.

Citres a Fien of the Aponecrosis which coners the Muscles on the Fore Pert of the Superion Exthemuty.
1, The deltoid muscle.
B, The spoucurosis sent off from the tendons of the muscles on the shoulder to cover the flexor muscles of the fore-arm.
C, Tbe apoocurosis continued from the fore-side of she arm, joioed to a thicker and stronger one sent off from the teadoo of the biceps liesor cubiti, to cover the muscles on the anterior part of the fore-arm.
1), The cootinuatioo of this aponearosis, covering the tendous of the flexor muscies of the hand and fipgers, which, on account of its thinnes", are seen shining through it.
Pr, The aponeurosis palmaris, which is connected above, chielly to the teodoo of the pahnaris loogus, and to tbe anterior transverse ligament of the wrist, and below, to the roots of the four fingers by an equal number of double slips.
F, Tbe musculus abductor pollicis.
G, The palmaria brevio.

## FIG. ?.

Shews the Aponiurosis upons the Bact Part of the Superior Extremity.
$f$, The delloid mascle,
B, An aponeurosis covering the infra-spinatus, similar to one which covera the supra-spinatus.
C. The aponeutosis which covers the back part of the arme, ,ent dowo from the tendous of the muscles on the shoulder, and with the aponeurosis on the fore-side of the arm, forming a sheath, which incloses the muscles on this part.
D , The aponearosis oo the back part of the fore-arm, continucd fiom that which covers the back part of the upper 2rm, and likewise from the tendon of the triceps extensor cubiti ; many of the filres intermixing with, and decussatiog each other, at the opposite sides of the fore-arm.
E, A thick and strong partion of the aponeurosis on the
hack part of the fore-amu, forming the ligamentuan carpi annulare posterius.
The tendiuous shicallas which cover the fingers are here hut faintly represented.

## FIG. 3.

Gives a Fiew of the Aroneurosts upon the Fore Part of the Inferion Extremity.
A, The thick and stroog aponeurosis at the fore and outer part or the thigh, arnt down from the muscles about the pelvie, and from the under end of the external ohlique muscles of the abdomen.
B, An aponeurosis covering the muscles upon the fore and inner part of the thigh, much thinner and weaker than that farther out.
C, An attachmeot of the aponeurosis of the thigh to the head of the tibia.
$\mathbf{D}$, The aponeurosis of the inside of the thigh, fixed to the corresponding side of the tibia.
E, F, The aponeurosis seut from the fascia of the thigh, and from the exteosor muscles of the legy to cover the muscles oo the fore part of the leg. This aponeurosis, like that on the thigh, is thick and strong at the outer, and becomes gradually thinner towards tbe inner past of the leg.
$\mathbf{G}, \mathbf{H}$, Parts of tbis aponeunosis thacker and stronger than the rest, formiog the superior and inferior ligaw ments of the tarsus.

FIG. 4.

## Aroneurosis on the Back Part of the Inferion <br> ExTREMITY.

A. The gluteus magnus.

B, The aponcurosis of the hack part of the thigh, arising from the teadons of the glatei, and from those of tho loins, fixed to the lioea aspera of the os femorib.
C , Continuation of this apuoeurosis covering the muscles, vessels, and nerves of the ham.
D, That portion of the apooeurosis which covers the gemelli. From this part, the aponeurosis is continued down, and lost upon the foot.

24з33
Fig. 3.


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## TABLE XXXV.

## A Viey of the Second Layer of Muscles on the Anterior Part of the Bony,

## FIG. 1.

Head and Neck.
A, The corrugater supervilii,
a, The levator palpebrte superioris.
B, The temporalis;
b, Its tendon passing under the zygoma.
C, The masseter.
D, The levator anguli oris.
E, The buccinator:
F, The orbicularis ortis.
$f$, The nasalis libii superioris, at the upper side of which is a portum of the depressor labiii supcrioris aleque n2si.
G, The depressor labii inferioris.
H, The sternoweckido-mattoideus.
I, The sterno-byoideus.
$c$, The trachea seen obscurcly.
K , Tbe omo-byoidcus.
L, The hyo-thyroideus.
$d$, The os hyoides.
M, The levator scapule.
b, The scalcnus medius.

## Thunk.

A, The subclavius.
B, The pectoralis minor.
C, C, The sermatus raguus.
5 , \&sc. Intereostales interni, the tendinous fancia being removed.
$\mathrm{D}, \mathrm{D}$, The rectus abdominis, with the tendon of the obliquus internus covering its outer edge; -on the right side it is entircly exposed.
$h_{1} h$, Tendinous intersections of the rectus abdomipis.
E, The prramidalis.
F , The obliquus internus.
$i, k$, The tendon of the obliquis intcmus, Betweea i and $h$, the teadon aplits into two layers, wbich inclose the rectus; from $k$ to the pubis, thc whole tendon goes before the rectus.
1,1, A portion of the tendon of the obliquus interaus remainng upon the outer edge ol the rectus,
G , The cremaster ithtis.

## Supehior Extremity.

4. The biceps fexor cubiti ;
a, Its short heard ;
$b$, Its long head.
$c$, A section of the ayoneurotic tendon of the biceps;
$d$, Its round teudon.
B, The coraco-brachialis.
$c_{1}$ The subscapalaris of the right side.
$f$, The teres major of the right side.
C, The pudez end of the brachialis internus.
D, The loug head of the triceps extcnsor cubiti.
g. That part of the triceps called Brachialis Rxtervus.

E, Extcusores carpi radiales, longior et brevior.
$U_{\text {pper }} \mathbf{F}$, Fistensor ossis metacarpi pollieis,-Lower $\mathbf{F}$, Extensor primi internodii.
h, Extensor secundi internodii pollicis.
G, Flexor sublimis perforatus,
See also Tab, XXXV. Fig. 2.

## Pelvis, and Infertor Extremity.

A, The under end of the iliacus interaus.
B, The under end of the psoas magnus.
C, The peetinalis.
D, The cut end of the rectus foinoris.
E, The anterior edge of the gluteus medins.

## FIG. 2.

A The cruralis, with its teudinous fascia.
B, The vastus internus.
C,
D, The cut tendon of the rectus fixed to the patcella.
E, The adductor longus femoris.
F, The gracilis.
$\mathbf{G}$, The tendons of the gracilis and senitendinosns.
H, The teudon of the biceps fiexor cruxis.
I, The peroneus longus.
$a_{9}$, The peroneus brevis.
K, The exteusor longus digitoram pedis.
$b$, The tendons of the extensor longus digitormm.
c, The peroncus tertius.
$d$, The extensor proprus pollicis.
$e$, The teudon of the exteasor proprins pollicis,
$f$, A branch of the tendon of the extensor propius pol. licis, not always found.
L, The edge of the gastrocucuins internus.
M, The edge of the flexor longus digitorum pedis.
N, The tendons of the tibialis pusticus, and flevor longus digitorum pedis.
0 , The fexor brevis digitorum pediy.

## 'A BLE XXXVI.

## A View of the Third Layer of Muscles on the Anterior Part of the Bods.

## FIG. 1.

Head and Neck.
A, The insertion of the abductor oculi.
$a$, The adductor oculi of the right side.
B , The inaertion of the levator oculi.
C, The trochlea, and part of the tendon of the obliquus superiox.
D, The obliquus inferior oculi, immediately above which is the inscrtion of the depressor oculi.
E, The depressor labii superiocis slaxque nasi.
F, The orbicularis oris.
G, The bucciantor.
H, The levator labii inferioris.
$b$, Part of the pterygoideus externus.
c, Part of the pterygoideus internus.
I, The sterno-thyroideas.
$\mathbf{K}$, The thyro-hyoideus.
$d$, The os hyoides.
$e_{5}$ The thyroid cartilage.
$f$, The cricoid cartilage, with the two crico-thyroid muscles arising from it.
g. The trachea.
hy Part of the pleura.
I4. The scalenus anticus.
$\mathrm{M}, \mathrm{N}$, The scalenus medius.
$i$, A portion of the trachelo-mastoidcus.
O, The rectus eapitis anterior major.
$k$, The longus colli.
1, The coustrictor phargnges inferior.

## Trunk.

4, A, \&cc. Anterior portions of the intercostales externi,
B, I , \&ce. Auterior part of the intercostales intemi.
C, "t he fleslyy part of the transversalis abdomiuis ;
F, Its tendous.
$\mathrm{D}, \mathrm{D}$, the cut edge of that part of the teudon of the transversalis muscle which joins the ublieju, and passes before the rectus and pyramidalis.
E, E, That part of the tendou which prases behind the rectus, and is covered by,
$\mathrm{G}, \mathrm{G}$, The posteriox layer of the tendon of the obliguus internus.
$2 n, n$, The remains of the tendons of the oblique mascles, forming the linea alha.
H, The unbilitus.
I, The spermatic vessels passing under the edge of the transverse muscle.
n, The prritoneum.
$0,0, p$, A priat of the two umbilical arteries 0,0 and of the urachus $p$, upon the peritoneum.
$y /$ The penis cut acmus, in which are seen the corpora cavernoss penis et urethra.

## Surerior Extremity.

A, The subscapularis ;
$a_{3}$ Its tendon.
B, The teres major of the right side;
$b_{\text {, }}$ Its teadon.
C, The coraco-brachialis,
D, H, The brachialis internus.
F, The brachialis extemus,
F. The extenser carpi radialis brevior.

G, The extensor carpi radialis longior.
1, The flexor digitorum prafundus.
$\mathbf{K}$, The fexor longus pollicis.
$\mathbf{I}_{4}$ 'The flexor brevis pollicis.
See also Tab. L. Fig. 3.

## Pelvis, and Interior Extremiry.

A, The gluteus minimus.
B, The liacus internus.
C, The psoas magnus.
D, The obturator extermus.
$\mathrm{F}_{4}$ The adductor brevis.
F, The adductor magaus.
G) The gracilis.

$$
\text { FIG. } 2
$$

A, The adductor brevis.
$\mathrm{B}, \mathrm{C}$, The adductor magous.
D, The gracilis.
$a$, I he semimembranosus;
$b$, Its insertion into the tibia.
E, The undes end of the hiceps fexor crurse.
$\mathbf{F}, \mathbf{F}$, the os femoris.
G, The patella.
$\mathrm{H}_{\text {, }}$, The tubrecle of the tibia.
1 , 1 , The cdges of the semilmar cartilages.
K , The peroneus lougus.
$c$, The peroueus brevis.
$\mathbf{L}_{0}$ The tihialis posticus.
$\mathbf{M r}$, The flesor longue digitorum pedis.
N , The tendou of the tibialia posticus.
$d$, The teadon of thic fleasor lougus digitorum pedia
$e$, The flexor digitorum accessorius,
0 , The extensor brevis digitorum pedis.



## T A B L E XXXVII.

A View of the Fourth Laver of Muscles situated on the Anterior Part of the Body.

FIG. I.

## Mead and Nece.

1. The levator palpebre superioris.
$a$, The levator oculi.
B, The adductor oculi.
f, The abductor oculi.
D, The depressor oculi.
E, The obliquus superiop.
F, The obliquus inferior.
G, The pterygoideus internus.
H , The obliquus superior capitis.
J, The scalenus medius.
$\mathrm{K}, b, c, d, c$, The longus cotli,
$f_{4} f_{4} f_{i}$ Intertransversales colli.

## Trung.

A, A, A, Intercostales interni.
$a_{7}, a_{3}$ Intercostales externi.
$\mathrm{B}, \mathrm{B}, b$, The convex part, or thoracic side of the diaphragm;
b, The anterior point of its middle teodon.
$c, d_{1} e_{+} f_{2} g, t$, The fleshy origins of the diaphragm, from the cartilago ensiformis, peritoneum, seveotb, eighth, ninth, tenth, aod eleventh ribs.
$i, i, i, i$, The first heads, or tendinous crura of the inferior muscle of the diaphragm;
$t_{4}$, The passage for the aorta, between these heads;
The second and third heads of the inferior muscle of the diaphragm are situated between the upper eads of the first heads and the psox muscles, but are not represented here.
4. The fourth head;
m, Another head, sometimes fouod connected with the quadratus lumborum:
$n_{n}, n_{9}$ The fleshy crura from the joining of these heads.
0, Fibres erossing each other under,
p, The passage for the eaophagus.

2, The middle tendon on the left side, with its fihres decussatigg.
$r$, Origin of the diaphragm, from the twelfth rib.
C, The psoas parvus on the right side, that on the lefe being removed.
t, The tendun of the psoas parvus passing down to be fixed to the brim of the pelvis.
D, The quadratus lumborun.
E, A sectiou of the penis.
$t$ The corpus cavernosum penis of the teft side.
$u_{4}$ The corpus cavernosum uretlire.
v, The erector penis.
$w$, The accelerator urina.
$x$, The splineter ani.
$y$, The transversalis perinci.

## Surerior Extremity.

A, The subscapularis.
B, The supinator brevis.
C, The flexor brevis pollicis.
D, The adductor pollicis.
See also Tab. L. Fig. 4,
Pelvis, and Inferion Extremity.
A, The psoas magnus.
$\approx$, Its origin, chiefly from the Inmbar vertebra.
$\delta_{1}$, Its passage out of the abdomen, along with,
B, The iliacus internus.
C, The obturator externus.
D, The upper part of the adductor maguus.
FIG. 2.
$\mathrm{A}, \mathrm{B}, \mathrm{C}$, The continuation of the adductor magrus,
$a_{9}$, The insertion of the psoas magnus aod iliacus internus.
D, The tibialis posticus, the interosseous ligameot being removed;
$b$, Its tendon.
E, The peroneus brevis.
F, The interossei eatermi,

## 'A B L EXXVII.

Mepresenta the Cominon Integuments, some of the Muscles and Glands of the Head and Neck, with the First Layer of Muscles on the Right, and Second Layer on the Left Side of the Anterio: Part of the Booy.

EIG. 1. 4 Hala, wietied with a Microscope.
t, The root.
B, The bearded body.
C, The small extremity.
FIG. 2.
The Cutiele of the Hand, with the Nails adhernigg to ut. FIG. 3.
A Tor, with the Cuticle taken off, to shew the Villous appearante of the Exterior Surface of the Skin.

FIG. 4.
A Picce of Skin, according to Ruyser, with the Papille Pyramidales, as they appear to the naked Eye.

FIG. 5.
The Picee of Skin, Fig. 4. seen with a Mierostope.
fic. 6.
Whe Corpns Reficulare of the Skin, seen with the naked Eye.

## EIG. 7.

The Corpus Reticulare, Fig. 6, viened with a Mieroseope.

## FIG. 8.

The Muscles, Glands, \&ic. of the Left Side of the Face and Neck, after the Common Integuments and Platysma Myoides have been remoted.
$a$, The frontal muscle.
$b$, The temporal muerle, on which the larger branchis of the temporal astery are meen.
$f$, $c$, The orbicularis palpebrarum.
$d$, The orbicularis oris.
c, The levator labii superioris.
$f$, The levator anguli oris.
5, The zygomaticus major.
$h$, The depressor anguli oris.
$i_{4}$ The depressor labii inferionis,
$k_{4}$ The buccinator.
l, The masseter.
m, The parotid gland;
$n$, Its duct.
a, o, The facial artery.
$p$, $p$, ' he facial vein.
q, The anterior heads of the digastrici.
$r_{4}$ The inferior mavillary gland.
\&, 'The sterno-hyoidei.
$t$, $t$, The omonhyoideus.
$u$, Continuation of the facial vein.
थ, The sterno-mastoideus.
w, The trapezius.
$x$, The levator scapule.
y/ The scalenus medins,
\%, The scalenus anticus.
$w_{4}$. One of the narves of the superior extremity.

## FIG. 9.

On the Right Side, the Muscles immediately under the Common Integuments, on the Anterior Pat of the Bont, are represented; on the Left Sidy, the Musches are seen, which come in ticw when the Exterior Set buse been renowed.

For the Explanation of these Muscles, see Tab. XXXIV. and SXIt, to whirh add here the Fist Layer of Muscles on the

## Ryght Fore-Arm and Hamd.

W, The supinator radii longus ;
X, Its tendon.
Y, The pronator radii teres.
Z, The llexor carpi radialis;
${ }_{4}$, Its tendon.
$\phi$, The palmaris longus;


\%, Its tendon.
2, 3 , Parts of the flexor digitorum sublinis.
${ }^{2}$ the tendon of the flexor carpi ulnais.
3. The flexor loogus pollicis;
of Its tendon, inserted into the last joint of the thumb.
Q, Part of the pronator radii qoadratus.
${ }_{4}$, Part of the cxtensor primi et secundi intemodii pollicis;
${ }_{4}$ Their tendons;
$\lambda$, Their annular ligament.
it The tendinous aponeurosis of the palm.
, The transverse ligament of the wrist.
The palmaris buevis.
4) Part of the flexor prini intemodii pollicis.
$\pi$, The abductor pollicis;
5) Its tendon, forming an fponewrosis with the extensors.
5) Part of the flexor secundi intemodii.
$T_{\text {. }}$ The annular sheath of the tendon of the flexor longus pollicis.
, Part of the addnctor pollicis.
Q. Tbe tendon of the adductor indicis, and first lumbricalis.
$z_{4}$ The abductor minimi digiti,
$\psi_{1}$ The flevor brevis minimi digiti.
1.2.3. The anular sheaths of the tendons of the fexors of the fore-finger. These ligaments are also represented in the other fingers.
4. The tendons of the lumbricales and interossei, which usy also be seen on the sides of the other lingers.

FIG. 10.
The Second Layer of Musicles of the Face and Nece, after the First has been venoted.
See them described Tab. SXXV.

## Left Fohearm and Hand of Fig. 9.

t, The extensor capi radialis longior:
\%, Part of the extersor carpi radialis brevior.
$v$, The supinator radn brevis.
$u$, The cut extrenity of the pronator radis teves.
$x_{3}$ Part of the flesor caupi uharis;
$3 /$, Its teudon.
$\approx$, The flesur digitorum sublimis;
A, Its tendons.
B, Part of the pronator radii quadratus.
(, Tbe extensors of the thomb.
D, The ficxor pollicis longos;
Fi, Its tendon, near its insertion.
F, The flewor ossis metacurpi pollicion
C, The flexor brevis pollicis:
H , The fleaor parvus minimi digiti.
$I_{2}$ The abductor minini digiti.
$\mathbf{K}, \mathbf{K}$, The first and second lumbricales; the thind and fourth are also in view, but unictered.
$\mathbf{I}_{4}$. The tendons of the lumbricales and interossei, which may also be sees on the sides of the other fingers.
M, The tendons of the flexor digitorum sublumis, divided near their insertion, for the passago of the tenders of the flexor profundus, makked है.

## T A BLE XXXIX.

Represents the Parts situated under those shewn in Fig. 9. Tab. XXXVIII. together wath the Exe-Lids, Lacrymal Gland and Ducts, and Muscles of the Eye.

FIG. 1.
The Muscies represented here are explained Tab. XXXVI. and XNXVII. extepting those on the right side of the Trunk, and on the under part of the Fore-arens and H.unds.

## Lett Fort-arm and Hand.

8, The extensor carpi radialis longior.
T, Part of the extensor carpi radialis brevion:
U, The supinator radii brevis.
v, The flexor digitorum profindus;
W, Its tendons ;
$\mathbf{X}, \mathbf{X}$, Their insertions into the last joint of each of the fingers.
Z. The transverse liganent of the wrist.
$y, y, y, y$, The four lumbricales.
4, The flexor longus pollicis;
今, Its teadon, inserted into the last joint of the thumb.
a, The fienor brevis pollicis.

1. The adductor ossis metacarpi minimi digiti.

ל. The os pisiforme.
Right side of the Thunk.
A, A, The iutereostales externi.
B, B, The intercostales interni.
1, The mammary artery and vein.
$i, i, i, i$, The triangularis, vel sterno-cnotalis.
$\therefore, x$, The surlice of the lungs appearing throngh the plewa.
$\lambda, \lambda, \lambda$, The peritoneum, throngh which the bowels appras obacinety.- Bectween this and the linea ulban the vestige of the epigatric artery is seen.
$\mu$, The spermatic cord, coming out hehind the peritonewn.

> Richt Fore-ayzard Hand.
$c_{\text {, }}$ The supinator radii brevis.
d, The pronator radii quadratus.
e, The flexor becris pollicis.
$f$, The seramoid boncy into which it is inserted.
g. The adductor pollicis.
$h, i, k, l$, The seven interossei.
FIG. 2.
Described Tab. LXXII. Fig. 9.
Shens the Lacrynal Canals, the Teguments and Bones being cut away.

FIG. 3.
Described Tab. LXXII. Fig. \&.
Represents the Palyebra inverted, to obtain a view of the Lacrymal Canals.

## FIG. 4.

The two Exe-Lids cut from cacto other, at the externor canthus.
A, A, The interior membrane of the eye-lids.
B, The caruncula lacrymalis.
$\mathbf{C}, \mathbf{D}$, The edges of the eye-lide, with the small orifices of the excretory ducts of the sebaceous glauds.
F, The puncta lacrymalia.
F, F, The egc-lashe.

$$
\text { FIG. 5. 6. \%. 8. and } 9 .
$$

Shew the Muscles of the Exe.
A, A, The two optic nerves before they meet;
B, These nerves conjoined.
C, The nerve of the right eye.
D, The attollens palpebrain;
$d$, Its teadon.
E , The attollens oculum.
F , The abductor:
6, The obliquus superior, vel trochifaris:
H1, 1, Its tendon.
K , The adductor.
L, The deprimens.
M, The obliquus ninor.
7., The ball of the eyc.

X, Part of the fixutal bone.
$y$, Part of the maxillary bow.




## TABLE XL.

## A View of the First Layer of Muscles on the Posterior Part of the Body, after the Integrments and Aponevioses have been removed.

FIG. 1.
Head, Neck, and Trunk.
A, The occipital part of the occipito-frontalis ;
$a$, The fieshy,
b, The tendinous part of this muscle;
c, A teadinous membrane joining its two sides;
$d$, Part of the tendinous membrane, covering the upper end of the temporal musele.
B, The attollens aurem.
C, The anterior auris.
D, A small part of the retrahentes anrem.
E, The back part of the orbicularis palpebrarum.
F, The zygomaticus major.
G, Thi masseter.
e, The pterygoideus intermus.
$f_{5}$ The platy sma myoides.
H, The sterno-cleido-mastoideus.
I, I, 1, The trapesius.
g, $h$, Its insertion into the spine of the seapula and outer end of the clavicle.
$i, i$, Its tendinous portion, in the nape of the reck, called Lifamentum Nuche.
$K, K, K$, The latissimus dorsi ;
$k, k$, Its tendon.
L, Part of the obliquus externus abdominis.
m , Part of the insertion of the rhomberides.
$n$, Part of the sacro-lumbalis.

## Suferior Extremity.

A, The deltoides;
, Its insertion into the os humeri.
B, The infru-spinatus.
C, The teres minor.
D, The teres major.
E, The triceps extensor cubiti.
a, The long,
p, The short hend of the trieeps.
q, The thind head, called Brachiahis Extermes.
$r$, The comuon tendon of these three heads.
*s, The brachialis internus.
$F$, The anconeus.
G, The supinator radii longus.
H, The extensor carpi madalis longior.
1, The extensor carpi radialis brevior.
K , The extensor digitorum communis.
I. The extensor ossis metacarpi pollicis.

M, The extensor primi iuternodii pollicis.
$\mathbf{N}$, The extensor proper to the little finger.
O, 'The extensor carpt ulnaris.
$\mathbf{P}$, The palmaris longus.
$t$, The flexor sublimis perforatus.
Q, The flexor carpi uluans.
$\mathrm{R}, \psi_{,}$, Part of the flexor profinilas perforans.
2, The ligamentum earpi annulare postcrins. See the Musclex on the Mand, 「ab. L. Fig. $\overline{\text { I }}$

## Pelvis, and Inferior Extremity.

A, The gluteus maximus.
B, Part of the glutcos medius.
C, The edge of the tensor vagina femoris.

$$
\text { FIG. } \sim
$$

A, The under pay of the glutews maximns.
B, The vastus externus.
$a$, The adductor maguus femoris.
C, C,. The gracilis.
$b$, Part of the sartorius.
$\mathbf{D}$, The long head of the biecps flexor cruns;
E, Its short head.
$c_{2}$ The insertion of the biceps into the fibula.
F, The semitendinosus.
G, H, The seminacmbranosus.
1, The edge of the vastus internus.
d, Part of the plantaris.
K, $K$, The gastrocnemius exteraus.
$\mathbf{L}, \mathrm{L}, \mathbf{L}, \mathrm{T}$ he edge of the gastrocnemius interans.
M, The tendo Achizlis.
$e$, The tendon of the plantaris.
N , The peroneus longus.
$\mathbf{O}$, The peroneus brevis.
P, The flexor lougus pollicis pedis.
Q, The tendon of the peroneus brevis.
$f$, The teudon of the peroneus longus passing into the sole.
II, The tendou of the extensor longus digitorm.
$g_{7}$ The teadon of the peroucus tertius.
\&, The abductor minimi digiti.
$h$, The ligament common to the loug and short peronei muscles.
i, The ligament propeŕ to each of these two museles.
$k$, The ligamentum tarsi aunulare.

## TABLE XLI.

## 1 View of the Second Layer of Muscles on the Posterior Part of the Body

FIG. 1.

## Head.

1, The cerporalis exposed, by removing ith teadinous aponeruosis.
$a$, The teadon of the temporalis, paesing under the $x y$ goma.
l., The pterygoideus intemus.

B, The masseter.
c, The mylo-hyoideus.

K, The extensor carpi radialis longior.
L, The extensor earpi radialis hrevior.
M, The supinator radii brevis.
N , The extensor ossis metacarpi pollieis,
O , The extensor primi internodii pollieis.
$\mathbf{P}$, The extensor secundi internodit pollicis.
$Q$, The indicator.
R , The flexor profundus.
S , The flexor carpi ulnaris.
T, A small share of the flexor suhlimis. See also Tab, L. Fig. 6.

## Neck.

1, $d_{4}$ The levator seapulas.
C, The splenios eapitis et eolli.
D, The upper end of the couplexus.

## Trunk.

1, , The rhamboides major.
$B$, The riomboides minor.
C, The scrratus posticus superior of the left side.
$D, f$, The serratus posticus inferior:- $f$, The part from which the latissinus dorsi was cut.
E, The under part of the sevintus magnus.
F, Part of the snero-lumbalis.
G , Part of the longissimus dorsi.
H , Part of the spinalis dorsi.
I, I, The broad teudon eommon to the latissimus dorsi and serratus posticus inferior.
$\mathbf{K}$, The back part of the obliquus internus abdominis.
L, L, The intercostales externi.
M, The coccygens.
N, The levator ani.
0 , The sphincter ani.

## Superioh Extremity.

B, The suptrospinatus,
C, The infira-spinatus.
D, The teres minor.
E, The teres major.
F, The triceps extensor euhiti;
E, Its long head;
$h$, Its short head.
G, $\mathbf{G}$, Part of the third head, naned Brachialis Extctnus.
$i$, The common teadon of the triceps, inserted into the olecranon.
II, Part of the braehalis internus.
J, The anconeus.

## Pelvis, and Inferior Extremity.

A, The gluteus medius.
B, The pyriformis.
C , The gemini.
$\mathbf{D}$, The tendon of the obturator internus, passing betweed the gemini.
$\mathrm{F}_{\text {, }}$ Thie quadratus femoris.
$\mathbf{F}$, The vastns exteraus.
$\mathrm{G}, \mathrm{G}$, The adductor mugrus femoris.
$\mathbf{H}$, The semitendinosus.
I, The gracilis.
FIG. 2.
$a, a$, The contimation of the adduetor maguns femoriv, and of,
$\mathrm{A}, \mathrm{A}$, The vastus exterwus.
B, 'The biceps flexor cruris;
$b$, Its long head;
$c, r$, Its slort head.
d, The common tcudon of the two heads.
C, A small pertion of the vastus internus.
D, Continuation of the garcilis, and of,
E, The semitondinosus.
F, $\boldsymbol{F}$, The semineubranosus.
$e$, e, The cut heads of the gastrocnemius externus.
G , The popliteus.
$\mathrm{H}, \mathrm{H}, \mathrm{The}$ solcus.
$\mathbf{I}_{2}, f_{7}$ The plantaris;- $f_{6}$ Its tendon.
K , The eut tendon of the gastrocuemius externns.
L, The tendo Achilits, with that of the plantaris adhering to it, lixed to the os calcis.
M , The peroneus longus passing to the sole.
N , The peroneus brevio.
O, The tendons of the extensor digitorum longus.
$\mathbf{P}$, The tendon of the peroneus brevis.
5, The tendon of the peroneus tertius,
$h$, The extensor hrevis digitorum.
$Q$, The flesor brevis digitorum.

©


## TABLE XLII.

## A View of the Third Layer of Muscees on the Posterior Part of the Body.

FIG. 1.

## Head and Neck.

A, The hack part of the huccinator.
a, The pterygoideus internus.
b, The mylo-hyoideus.
B, B, $c, d$, The complexus, $-d$, A feshy slip from the spinous process of the first dorsal vertehra.
C, The trachelo-mastoideus.
D , The scalenus medius.
E, The scalenus posticus.
F, The semi-spinalis colli.
G, G, The interspinales colli.
H , The obliquus capitis superior.
I, I, The transversalis collt.
K, The upper ead of the longissimus dorsi, joining the trachelo-mastoideus aud cervicalis descendens.
$\mathrm{I}_{4}$ The fleshy alip from the sacro-lumbalis, called Cervicalis Descondens.

## Trunk.

A, E, E., The spinalis dorsi.-Between the spinous processes of the dorsal and lumbar vertebre, the interspinales muscles appear.
$a, b$, Part of the semi-spinatis dorsi.
B , The loagissimus dorsi,
C, The teadons of the sacro-lumbalis.
$c$, A tendon covering, and partly giving origin to, the common head of the longisimus dorsi and sacro-lumhalis.
D, Part of this tendon rumning across the longissimus dorsi.
F , The transversulis abdominis.
G, The innerlayce of the aponeurosis common to the serratus posticus inferior, and obliquus intemus abdominis.
$\mathrm{H}, \mathrm{H}, \mathrm{H}$, The intercostales externi.
I, I, Portions of the intercostales externi, called by ALmixus Levatores Costarum.

## Suririor Extremity.

A, The teres major.
a, $\mathrm{P}_{4}$ 展 of the subecapularis.

B, Part of the coraco-hrachiali..
C, Part of the brachialis internus.
D, The hrachialis caterwus, or third head of the triceps. extensor cubiti.
$\mathbf{E}$, The extensor carpi radialis longior.
F, The extcusor carpi radialis brevior.
G, The Aexor profundus.
H, The supinator radii brevis.

1. Part of the fexor longus pollicis.
$\mathbf{K}$, The pronator radii quadratus. See also Tab. L. Fig. 7.

## Pelvis, and Inferiok Extrimity.

A, The glateus mininus.
B, The ohturator iuteruus.
C, The teadon of the obturator externus.
$a_{8}$ The insertion of the iliacus internus nud psoas magpus.
$\mathbf{D}$, The upper end of the gracilis.
F, The semimembranosus.
F, F, Thic adductor magans femoris,

## FIG. 2.

A, A, A continuation of the gracilis,
$\mathrm{B}, \mathrm{B}, \ldots$ of the iulductor maguus femoric, and,
C, of the semimembravosus.
D, The short head of the biceps flexor cruris. - The letter is placed over the part from which the loug head was cut.
E, E, The cut heads of the gastrocnemius catemus.
F , The origin of the plantaris.
G, The popliteus.
H , The tibialis posticus.
I, The flexor lougus digitorun pedis.
K , The flexor longus pollicis pellis.
L, The peinneus longus.
$a$, The tendon of the tibialis posticus,
$\vec{b}$, The teudon of the peroneus lougns passing to the sole.
M, The peroneus brevis.
c, The tendon of the perancus brevis.
N , The catensor brevis digitorum pedis.
O. Part of the flexor lougns digitornm pedis,

## ( 150 ) <br> TABLE XLII.

A View of the Fourth Layer of Muscles on the Posterior Part of the Body.

FIG. 1.
Hean and Neck.
A, The rectus capitis posterior minor.
B, major.
C, The obliquus capitis superior.
D ,
E. The scalenus medius.

F, The upper end of the multifidus spina.
$\mathrm{G}, \mathrm{G}$, The interspinales colli.
$\mathrm{H}, \mathrm{H}$, The intertransveruales colli posteriopes.
$\mathbf{I}, \mathbf{I}, \mathbf{I}$, The remispinalis colli.

## Trunk.

A, A, The semrepinalis dorsi.
$\mathbf{B}, \mathbf{B}$, The multililus epines.-On the left side of the neck and trunk, the semispinalis colli and seanispinaliy dorsi are raised, by which a full view of this musele is obtained.
C, C, frc. The levatores costarum breviores.
D, D, The levatores costarum longiores.
E, E, \&c. The intercostales externi.
$a, a, a$, The intercostales interni of the left side.
$b, b$, The pleurn.
$c, c, c$, The intertransversales dorsi.
$d, d$, The interspinales donsi.
F, The quadeatus lumborum.
$\mathbf{G}, \mathbf{G}$, The intertranstersales lumborum.
$\mathrm{H}, \mathrm{H}$, The interspinaled lumborum.

## Surerior Extremitr.

A, The subscapularis.
B, 'T be aupinator radii brevis.
C, The pronator radii quadedtus.

## Infeitor Extremitt.

A, The iliacus internus.
a, The psoas maguus.
$\mathrm{R}_{4}$, The obturator externus.
C, The trndon of the iliacus internus and psoas magnuo.
$\mathrm{D}, \mathrm{D}$, The adductor magous femoris.

## FIG. 2.

$\mathbf{A}, \mathbf{A}, \mathbf{A}$, The continuation of the addactor magnus femo ris.- The shaded part in the middle of the rouscle represents the impression made by the semimembminosus. B, The tibiatis posticus.
C. The peroneus brevis.




## TABLE XLIV.


#### Abstract

A View of the First Layer of Muscles on the Right, and Second Layer of Muscees on the Left Side of the Posterior Part of the Body, and of the Muscles of the External Parts of Generation.


FIG. 1.
On the Left Side of the HEad, and Right Side of the Pasterior Part of the Trons and Extremities, the Muscles immediately under the Common integumeats are shewn; on the Left Sitice of the Postering Part of the Truynk and Extremities, are secn the Muscles which come in Yiew when the Eixterior Set anas been removed.

All the Muscles represented in this Figure are explained in Tab. XL. and SLI. excepting those on the under parts of the Fore-arm, and on the Hand.

## Richt Fore-arm and Hand.

H, The supiuator radii lougus.
I, The extensor carpi radialia longior.
K, Parer.

1. Part of the anconeus.

M, Part of the flexor profundus which cones from thic ulna.
N, Part of the paimaris longus.
0 , Part of the flexor sublimis.
P. The fexar carpi ulnaris.

Q, The extensor carpi nlaris.
$\mathrm{H}_{\text {, }}$ The tendons of the extenfor digitorum communis, bclonging to the little finger.
§, The extensor digitorum communis ;
'T, Its teadous, going to the other fingers ;
$\mathbf{V}$, $\mathbf{U}$, Their joinings by cross tendons.
$V$, The tendon of the indicator, going to join with the tendon of the extensor.
W, W, The tendoos of the estensor commuuis, joined with those of the luabricales and interossei;
$\mathrm{X}, \mathbf{X}$, The extremitics of these tendons, joined to the hones of the eecond phaluin.
Y, The abductor minimimi digiti.
7. $\mathbf{Z}, \mathbf{Z}$, The interossei externi.
a, $a$, The teadons of the anterior interossei, joining with the lumbricales.
$d, b, b$, The teudons of the pastcrior interassei.
$c$, The abductor indicis.
$d_{1}$ The teudon of the extensor secundi internodii pollici,.
$f$, The annular ligaunent of the wrist.
$f$, The ligament of the extensor carpi ulyaris.
S. A ligament for the extensores ossis metacarpi, et primi internodii.pollicis.
h, The extensor prini internodii pollicis.
i, The extensor ossis metacarpi pollicis.
$k$, The tendons of the three extensors of the thanuh.
l, The adductor pollicis.
$m, m$, The teutons of the interossei and lumbricaler, after joining with the tendous of the extensor digitorum communis, and receiving additions from it, tixed to the thiver phalans.

## Left Fore-arm and Hisd.

L, $\mathrm{L}_{4}$ The extensor carpi radialis lowgior.

N ; The auconens.
O, The supinator radii brevis.
P, The extensor osmis metacarpi pollicis.
Q, ——— primi intersodii pollicis,
R, —— secandi internorini pollicis.
s, Thic coyjoined tendons of the extcusorg, fixed to the last bone of the thumb.
T, The indicator.
$\mathbf{v}$, The fexor profundus pexforaus.
$\mathbf{V}$, The flesor capi uluaris.
W, W, The tendons of the extensor commmis, eut of where they are abont to join with those of the lumbricales and interossei.
$\mathbf{X}, \mathbf{X}$, The teudons of the estensor commnnis, fixed to the second phalanx.:
$\gamma$, The alductor niumimi digiti.
Z, Z, Y, The tendons of the anterior iuterossei, joining with those of the lumbricalet.
$u_{0}$ The tendon of the first lumbricalio.

$$
b, b, b, \text { The }
$$

$b, b, b$ The tendons of the posterior interossei. $c, c, c$, The interossei.
$d$, The prior indicis.
$e$, The abductor indicis.
ff The adductor pollicis.
$\mathrm{g}, \dot{g}$, The tendons of the interossel and lumbricales, after joining with the tendons of the extensor communis, fixed to the thind phalanx.

## FIG. 2.

Muscles nbout the Root of the Penis and Under End of the Intestinum Fectum of a Child.
These Muscles are described in Tab. XLVIII. Fig. 9.

FIG. 3.
Muscles of tho Exterval Parts of Gizieration, \&c in the Female.
$a, a$, A section of the thighs.
$b$, The clitoris.
c, c, The crura clitoridis.
$d, d$, The erectores clitoridis.
$c$, $e$, The sphincter vaginse.
$f$, The sphincter ani, commected with the sphincter vaginse.
See also the Muscles in a Lateral View of the Female Paxts of Generation, Vol. II.



## TABLE XLV.

Wepresents the Second Lafer of Muscles upon the Head, Neck, and Upper Part of the Thunk; -the Third Layer of Muscles on the Right, and Fourth Laybi of Mu ciees on the Left side of the Posterior Part of the Body, with the Muscles on the Sole of the Fuot.

## FIG. I.

Muscees upon the Head and Neck, and Upper Part of the Trunk, deeper seated than those represented in Fig. 1. of the former Table.

Explained in Tab. XLI.

FIG. 2.
The Third Larer of Muscles on the Right, and Fourth Layer of Muscles on the Left Side of the Posterior. Part of the Body.
See Tah. XLII. and XIIII.-To which add here, the Muscles on the Fore-arms and Hands.

## Right Fore-arm and Hand.

F , The extensor carpi radialis longior.
G ,
H, The fiesor profundus perforans»
I, The supinator radii brevis.
K, The fexor longus pollicis.
$L_{\text {, The }}$ The pronator radii quadratus.
$\mathrm{M}, \mathrm{M}$, The tendons of the extensors cut enf
N , The fexor brevis pollicis.
0 , The adductor pollicis.
P, The prior indicis.
Q, The posterior indicis.
R , The prior medï digiti.
S, The posterior medii digiti.
' f , The prior annularis.
V , The posterior anoulaxis.
$v$, The prior auricularis.

## Left Foreatha and Hand.

B, The supinator radii brevis.
C, The pronator radii quadratus.
D, The flenor brevis pollicis.
E, E, The adductor pollicis.

## FIG. '3.

View of the Muscles upon the Ender and Back Part of the Head, and on the Back Part of the Neck.
See Tab. XL.-XLIII, where the Muscles of these parts are more properly vepresented.

## FIG. 4.

Muscles, and other Parts decply seated, as the Side and Back Part of the Head and Neck.
$a, a$, The rectus capitis postious minor, on each side.
$b$, The rectus capitis latcralis.
$f$, The ligament between the first and second cervical vertebree.
$d, d$, The interspimales colifi.
$e, e$, The intertransversales colli.
$f_{7}$ The palate, covered with its glandular menbrane.
8, The glands, appearing after the urula is cut off.
$h$, The septum narium next the fauces.
FIG. 5. 6.7.8. 9.
The Afonevrosis, and different Iasters of Muscues, with some of the Ligaments on the Sole, after te. nuoring the Common Integuments.
For the explanation of whicl, sce Tab. L. Frg. 8. 12.

## (154) <br> T A BLE XLVI.

The Muscles seated about the Throat; with a View of the First Layer of Muscles upon the Lateral Parts of the Body.

## FIG. 1. 17 .

## Explained in Tab. XLVE.

FIG. 18.
A Yicw of the First Layer of Muscles on the Lateral Parts of the Body.

## Head and Trunk.

A, The occipito-frontalis;
$B$, The aponeurosis joining the two sides of this muscle:
C, The attollens aurem.
D, The anterior auris.
E, The retrahcntes aurcm.
$a$, The helicis major.
$h_{3}$, minor.
$c_{\text {? }}$ The tragicus.
${ }^{d}$, The anti-tragicus.
F, The orbicularis palpebrarum.
$G$, The zygonaticus major.
H, The buccinator.
I, The masscter.
K , The depressor anguli oris.
I, The pterygoideus internus.
M, The platysma myoides.
N , The sterno-cleido-mastoideus.
$\mathbf{O}$, The complexus.
$\mathbf{P}$, The splenius.
Q, The scalenus medius.
$\mathbf{R}$, The levator scapula,
$\mathrm{S}, \mathrm{S}, \mathrm{T}$, The trapezius.
I , The teres miuor.
$\mathrm{W}, \ldots$ major.
$\mathbf{X}, \mathbf{X}, \mathbf{Y}$, The latisoimus dorsi.
$\chi_{2}$, The pectoralis minor.
$a, a, b$, The pectoralis major.
$f, c, c$, The serratus magnus.
$d, d, e, c$, Tbe obliquus externus abdominis ; $d$, $d$, The
fleslyy $e_{,} c$, The tendinous parts.
$f$, The cremaster testis.

## Left Superior Extremity.

A, The deltoides.
B, The biceps flexor cubiti.
*', The brachialis internus.

D, The triceps extensor cubiti.
E, The flesor carpi ulnaris-
F, The supinator radii lougus.
G, The flexor caspi radialis.
H, H, The extensor carpi radialis longior.
$\mathbf{I}$, - brevior.
$\mathbf{K}$, The extensor carpi vinaris.
I. The extensor digitorum communis ;

M, Its tendon.
$N$, The cxtensor ossis metacapi pollicis ;
0 , Its tendon.
$\mathbf{P}$, The extensor primi interaodii pollicis;
Q, Its tendon.
R, The teado secundi internodii.
S , The liganentum carpi amnulare posterius.
T, The ligament confining the tendons of the extensor ossis metacarpi, and extensor primi intemodii pollicis.
W, The adductor pollicis.
X, The opponens pollicis.

## Right Superior Extremity.

$A, B$, The triceps extensor cubiti;-A, The part called Extensor Longus $;-B$, The part called Extensor Brevis.
C, The brachialie internus.
D, The biceps flexor cubiti.
E, The supinator longus.
F, The pronator teres,
G, The flexor carpi radialis.
H, The palmaris longus.
I, The flexor sublimis perforatus.
K , The flexor carpi ulnaris.
L, The extensor carpi ulnaris.
M, The flexor brevis pollicis.
N , The tendon of the flexor longus, with its retaining ligaments.
0 , The palmaris brevis, and, on the outside of $i t$, the abductor mimiui digiti.
$\mathbf{P}$, The tendons of the extensor digitorum communis ;
Q, The aponeuroses of these tendons, stretched over the back of the four fingers.

## Jeft Inferior Extrenity.

A, The adductor longus feinoris.
B, The pectinalis and pooms mignus.

I

$\hat{1}$

1

1



C, The sartonus.
D , The tensor vagina femoris.
E, The gluteus medius.
$\mathrm{F}_{\text {, }}$ - maximus.
G, The semitendinosus.
$H$, The baceps flexor cruxis.
I, The vastus externus,
K, The rectus.
L, The vastus interuus.
M, The ligament comecting the patella to the tibia.
N , The outer head of the gastrocncuius externus.
0,0 , The gastrocnemius internus.
P, The tendo Achillis.
Q, The peroneus longus.
R, The peroneus brevis.
5 , Ligaments binding the tendons of the peronei.
T, The extensor longus digitorum, iuseparably connected with,
T, The peroneus tertius.
V , The tendon of the peroneus tertins, inserted into the metatarsal bone of the little toe.
W, The tendon of the exteusor longus, splitting into four sinaller tendons;
$\mathbf{\Sigma}, \mathbf{X}$, Their insertions into the toes.
Y, The extensor proprius pollicis ;
$\mathbf{Z}$, Its tendon.
$a$, $a$, The tihialis anticus.
$b$, The upper and under portions of the ligamentum tarsi annulare.
$c$, The extensor hrevis digitorum pedis; its tendons are inserted into all the toes, excepting the smallest,
$d, d$, Part of the interossei pedis exterai.
e, The abductor minimi digiti pedis;

## $f$, Its tendon.

g. $g$, The flexor brevis minimi digiti pedis.

## Pight lneerior lixtremity.

A, The rectus;
B , Its insertion into the patella.
C, The ligament which fixes the patclla to the tibia.
D, The vastus internus.
E, The sartorius ;
$\mathbf{F}$, its tendon, fixed to the thilia.
G, The gracsis.
H, The seminembranosus,
I, I, The semitendinosus,
$\mathbf{K}$, The gastrocnemius externus ;
$\mathbf{L}$, Its tendon.
M, The gastracnemins internus.
N, The teado Acrillis.
$O$, The tendon of the plantaris.
P, The flesor proprius pollicis pedis.
Q, The ligament binding the tendon of the fiexor longus,
R , The flexor longus digitorum pedis.
S , The tendou of the tibialis posticus.
T, The ligament covering the tendon of the flezor longus digitorum pedis, and tibialis posticus,
T , The ligament which retains the tibialis posticus.
V, The tibialis anticus;
W, Its tendou.
$\mathbf{X}, \mathbf{X}$, The upper and under portions of the ligamentum tarsi annulare.
Y, The tendon of the extensor proprius pollicis pedis;
Z. An aponeurosis joining this teudon.
$a$, The abductor pollicis pedis.
$b$, The fiexor digitorum accessorius,

## TA BLE XLVI.

## Muscles seated about the Throat.

## EIG. 1.

Presents a Lederal Tiew of the Muscles sected under the Head, and before the Vertebres of the Neck.
$a$, The pterygoideus externus.
$b$, - intemus.
$c$, The mylo-hyoideus.
$d$, The stylo-hyoidens.
$r, f$, The digastricue.
$g, h_{4}$, The hyo-glossus.
i. The os hyoides.
$k_{4}$ The thyro-hyoideus.
1, The thyroid cartilage.
in, The crico-thyroideus.
$J_{4}$. The cricoid cartilage.
$O$, A section of the esopliagus.
$\rho_{4} p_{7}$ The constrictor pharyngis inferion:


FIG. 2.
Represents the Mitscles under those shern in the prereding Figure, which together with the Right side of the Lownr Jaw, are here remourd.
$r_{4}$ The upper jaw.
$b$, A section of the lower jaw.
c, The tongue.
d, The stylo-glossus,
$r_{\text {t }}$ The hyo-glossus.
f) The genio-glossus.
g, The stylo-pharyngeus.
$h, h$, The coustricior pharyngis superion.
$i_{1}$ - medius.
$k, k$, inferior.
1, The thypoid cartilage.
$m_{3}$, The cricoid cartilage.
$i$, A section of the esophagus.
F1G. 3.
Represents the mext Order of Muscles, the outermost of those in the preceding Figure being remored.
$a_{0}$ The under half of the stylo-glossus, the upper half being removed.
b, $c$, The gevio-glossus.
$d_{f}$ The constrictor pharyngis superion.
$\mathrm{f}_{1} \longrightarrow \square$ medies.
g, The os hyoides.
K, The thyoid cartilage.
$i$, The cricoid cartilage.
$k, A$ section of the esophagus.
FIG. 4.
Represents the next Order of Muscles, after the owicrmost of Fig. 3. are remoted.
$a_{9}$ The circumflexus palati, immediately hehind which is the levator palati.
b, The stylo-pharyageus.
$c$, $c$, The palato-pharyugeus, covering a part of the membrane of the plaxynx.
$d$, The coustrictor isthai fanciun.
$f$, The tonsil.
$f_{7}$ The stylo-glossus, where it joins the tongue.
g, A scotion of the hyo-glossus.
$h$, The lingualis.
$i, k$, The genio-lhyo-glossus ;- $i$, Its origin from the lowser jaw.
7, The os byoides.
${ }^{n}$, The ligament which joins the cornu of the os byoides and thyroid cartilage.
$n$, The body of the thysoid cartilage.
0 , The cricoid cartilage.
$p$, The ligament by which the thyroid and criooid carth. lages are joined together.
I, A section of the esophagus.

## FIG. $5_{+}$

In this Figure, some of the Outer Museles shewn in the Fourth are removed, the PHARYNX is laid open lougitrdinally, and the ,Right Part of it cut off, to shew ifs Cavity, with the Root of the Tomgue and FifGLOTTIS.
a, The circumflexns palati.
$b$, The levator palati.
c, The tonsil.
${ }^{2}$, The constrictor isthmi faucium.
c, The tongue.
$f$, The under part of the lingualist
5, The genio-hyo-glossus.
$h$, The epiglottis.
$i$, the os hyoides.
$k$, The thyroid cartilage.
$l$, The cricoid cartilage.
$m$, The pharyox laid opea.
$n$, The upper part of the czophagus.

FIG.


FIG. 6.
Presents a Posterior View of the Prarynx, and the Une der Part of the Bones of the Head, to which the Pharynz is connected.
a, The upper point of the constrictor pharyogis inferior on each side.
$b$, The under end of the pharynx ;-the letter points also at the inner transverse fibres of the cesophagus, which are laid bare.
$s, c$, The outer fibres of the cosophagus descending ohliquely hackwards on each side.
$d_{3}, \boldsymbol{A}$ section of the csophagus.
$c, e$, A section of the trachea.
$f, f$, The ends of the cornua of the os hyoides.
g, $g$, The ligaments which join the upper processes of the thyroid cartilage to the ends of the coraua of the os hyoides.
$h, h$, The constrictor medius pharyugis, on each side.
$i, i$, The constrictor superior phargngis, on each side.
$k, k$, The naked menbrane of the pharynx.
1,1 , The stylo-pharyugeus oo each side.
$\mathrm{m}, \mathrm{m}$, The styloid processes of the temporal bonce.
$n_{9}, n_{,}$The pterygoid processes of the splenoid hone
0,0 , The backmost tooth of the upper and under jaws, on each side.

FIG. 7 .
Presents the next View, after the remoral of the Lower Constrictors of the Pharynx. The Bones of the Head are not added; but the Siylord Processes are lefl, to shew the Oriern of the Styio-Pharynger.
$a, b, k$, The constrictor pharyugis medius.
$c$, The upper constrictor of the plarynx, cut off from the huccinator.
$d$, The aaked membrane of the pharynx.
$c_{4}$ The etyloid process of the temporal bone, cut off at its root.
$f$, The stylo-pharyogeus, arising, tendinous, from, the styloid process.
g. The common end of the stylo-pharyngcus and palatopharyugeus.
$h$, Part of the stylo-pharyngeus aod palato-pharyngeus, fixed to the edge of the thyroid cartilage.
$i$, The naked menbrane of the lower part of the phargys, continued to the exsophagus.
7. The comu of the os hyoides.

1, The superior corno of the thyroid cartilage.
$m$, The posterior edge of the tlayroid cartilage;
$n$, Its inferion coruu.
0 , The tubercle on the outer side, at the root of the superior cornu.
$p$, The cricoid cartilage.
\%, A section of the trachen,

FIG. 8.
The wext Vicw of the Muscles, after the Middle Constaictohs of the Phahyns are remooed.
$a, c, b, d$, The constrictores pharyngis superiores.
$c$, The levator palati.
$f$, The circuunfexus palati,
5, The teudinous urigin of the stylo-pharyageus, wheie it is cut off from the styloid process.
$h$, That pait of the stylo-pharybgcus which forms two fascicult, passing separately unde: the fibres of the upper constrictor:
i, the under and langer part of the stylo-pharyugcus.
$\lambda_{\text {, }}$, Part of the common end of the stylo-pbaryngeus and palato-pharyngeus, fixed to the thyroid cartulage.
l, Part of the common end of the stylo-pharyngeus joined to its fellow on the back of the pharyun.

## FIG. 9.

Represents the next Order of Muscies, after the $\nu_{p p e r}$ Constactors of the Pharyny are remoed.
$a$, The naked membrane of the pharyon.
$b$, The small hook of the pterygoid process.
$c$, Tire palato-pharyngeus.
$d, e$, Part of the common end of the stylo-pharymgeus and palato-pharyogeus.

## FIG. 10.

Represents the luner and Fore Part of the Pharymx, the whole Posterior Part being removed.
$a$, The Eustachian tuhe;-its orifice opening laterally into the posterior foramen of the nostril.
$b$, The septum narium.
$c$, The cavity of the nostril, with the lower os spongia-. sum, covered with the mucous membrane.
$d, d$, The palatum molle.
$e$, The uvula.
$f$, The posterior areh, which descends laterally from the soft palate through the side of the pharyus.
$g$, The tonsil.
$h$, The tongue.
$i$, The epiglottis.
$h$, The membranous side of the glattis.
I, The rima, or slit of the glottis.
m, The back part of the tuhe of the larynx, projecting within the pharyns.

## FiG. 11.

Represents the Muscles lying immediately under the Membrane of the Pharynx, which, with the Cesomiagus and Trachea, are removed.
a, The levator palati.
$b$, The azygos uvelic.
c, The palato-ilaryngens;
$d$, The part which afterwards passes under the levator palati.
c, Part of the palato-pharyngeus, called hy Albines, Sal-pingo-Rharyngeiss.
$f$, Part of the common eud of the palato-pharyggens and stylo-pharyageus.
g , The posterior edge of the velum palati.
$h$, The urula.
$i_{\text {, }}$ The tonsil, projecting before the palato-pharyngeus.
$k$, The tongue.
1, The epiglotis.
m, The point of the arytenoid cartilage.
$n$, The arytenoideus obliquus.
$0,0,-$ tianssersur.
$p$, The crico-arytemoideus posticus.
$q$, The cricoid cartilage.
FIG. 12.
Represents the Muscles decper seated than thase shewn in the former Figurr.
$a$, The Eustachian tube opening laterally iuto the posterior foramen of the nostril.
$b$, The os spouginsum inferius, covered with the mucous membrane.
c. The levator palati.
$d$, The circumflexus.
c, The small hook uf the pterygoid process.
$f$, Part of the palato-pharyngeue, which passes through the soft palate, under the cud of the lerator.
g , Part of the common end of the stylo-pharyngeus and palato-pharyngeus, produced more particularly from the stylo-pharyngcus.
$h, h$, The arytemoid cartilage.
FIG. 13.
Represents the Muscles which appear upon the Removal of the Levatures Palati, the Annular and Arytenoid Cartilages, and their Appendiges.
a, The circumflexns palati.
$b$, The aponeurosis of the circumfexi.
$r$, The hook-like process of the pterygoid plate.
d, The palato-pharyngene.
c, Part of the stylo-pharyagene inserted into the thyroid cartilage.
$f$, The thyroid cartilage.
5. A promincace upon the inner side of the thyroid cartilage.
$\lambda$, The under end of the epiglottis, fixed to the thyroid cartilage.

FIG. 1 t .
Muscles of the Palate, viewd on the Under Side.
a, The levator palati.
$b, r$, The circumfexus palati $;-c$, Its tendon, passing over the hook-like process of the ptery goill plate.
$d$, The membrane of the palate.
e, The Eustachian tube.
$f, f, f$, The circuanference, from which the memhirane of the palate is cut off.

## FIG. 15.

The Mouth and Fauces open, to shea the Muscles of the Palatum lallele, ou the Ender and Fore Side; the inuesting Mlambrame being remoted.
$a$, The posterior arch, and,
$b$, The anterior arch of the palate.-Between this and the posterior arch $\theta_{4}$ is the seat of the amygdala.
$c$, The edge of the soft palate.
$d$, The uvula.
c, The tonguo.
$f, f$, The fauces.
g. The constrictor isthmi faucium,
$h$, The palato-pharyageus.
FIG. 16.
Shews the Labynx, with its Posterior Mescles, and thase at the Side of the Thiroid Cartilage, the Right Part of which is removed.
$a$, The cricn-arytenoideus posticns.
$b$, lateralis.
$c, e, f$, The thyro-epiglottidens.
$d$, $y$, The thyro-aryteloideus.
4 , The arytenoideus transversus.
$i$, epichottis. epiglottis.

## FIG. 17.

Represents the same View of the Cartilages of the Lanywx with the preceding F:gure, but uholly freed from the Muscles and Membeames.
$a, b, c$, The inside of the left half of the thyroid eartilage.
$d$, The superior coman of the thyroid eartilage.
$f$, The cricoid cautilage.
g, 'The right arytenoid cartilage.
$k$, The left arytenoid cartilage.
$i, k$, The epiglottis $;-k$, Its concave part.



## T A BLE XLVIIA.

This Pate contains the Anatomy of the Parts about the Grorn in both Sexes, or of the Parts concerned in Ingunal and Crural Hernia.-All the Figures, excepting the Third, belong to the Left Side of the Body -Fig. 2. 5. 6. are taken by the Author from Nature.-Fig. 3. 3. 4. 7. 8. are Sketches from the highly finished Work of $\mathrm{MR}_{\mathrm{R}}$ Cooper, on Hernia.

## FIG. 1.

Shews the Formation of the Abdoninal Rings in the Male, the Course of the Spermatic Cord through these, and the Form and Sitration of some of the Fascia.
a, The extemal abdominal ring.
$b$, The upper column of the tendon which assists in the formation of this ring.
c, The under column of this tendon, extending from,
d, The crural arch, or ligament of Pourart, to be fixed to the pubis.
e. The ilial, and,
$f$, The pubal portion of the fascia lata femoris.
g, The vena saphena perforating the fascia lata, to terminate in the femoral vein.
$L_{\text {, The }}$ The tendon of the external wblique muscle, cut and reflected, to shew parts deeper scated.
$i$, The lower edge of the internal oblique muscle, cut from the crural arch, and also reflected.
$k$, The trausversalis, the lower edge of which is cut and turzed up.
1, The transverse fastia, rouning up from the crural arch to line the back part of the transverse muscle and its teadon, thereby preventing crural hernia from happening between the extersal iliac blood-vessels and the superior-anterior spinous process of the os ilium.
is, The internal abdominal ring.
n, The epigastric blood-vessels, passing first at the inner side oft, and then behind the spernatic cord.
0 , The spermatie cord, descendiug through the aldominal rings, shewing at the same time the leugth of the inguinal canal, and the course the howels take in inguinal bernia.
$p$, The spermatic cord, in its descent to the testicle.
FIG. 2.
Exhibits a Portion of the Tendinous Fascia aboud the Groin, in the Female.
$a$, The superficial fascia, which covers the tendou of the
exteryal oblique muscle of the abdomea, cut from the ligament of Poupart, and turaed up.
$b$, That part of the superficial fascia, which covers the fascia lata femoris at the upper part of the thigh, cut and turned outwards.
$c$, The under end of the tendon of the extermal oblique muscle, forming the ligament of Pourast.
$d$, The round ligament of the nterus, passing through the exterual abdominal ring.
$c$, The fascia lata femoris, descending from the under edge of Pourart's ligament.
$f$, The crescentic or falcitorm edge of this fascia.
G, The vena saphzan, passing through a notch in the fascia, to terninate in the femoral vein.
$h, A$ vein descending from the integuments of the abdomen, also to terminate in this vein.
$i, i$, Some lymphatic glands situated in the notch at the side of the vena saphena, where crural hernix happen.

$$
\text { FIG. } 3 .
$$

Represcyis the External Abdominal Ring, and the Falciform Liganent, or Sconilumar Edge of the Fascia Lata Femoris, in the Female.
$a_{3}$, The symphysis of the pubis.
$b$, The exterual abdominal ring, with the upper and under columns by which it is formed.
$c$, The crurad arch.
d, $c$, The fascia lata of the thigh; $d$, The ilial, and, $\varepsilon$, the pubal portion of this fascia.
$f, f$, Tbe semilunar or falciform edge of the fascia.
$g$, The crural sheath.
$h$, The vena saphena.
$i$, The place where the bowels protrude in femoral hes nia.

$$
\text { FIG. } 4 .
$$

Shews the Insertions of the Tendon of the External Oblique Muscle winto the Os Pubis; the Miac Fascia, and the Orifice of the Crural Sikeath, in the Female.
$a$, The puhis.
$b$, The exteral abdomioal ring, with two orifices in it, which happens occasionally.
$r$, The anterior aurlace of the crural arch: above the letter is scen the direction of the fibres of the tendon nf the external oblique muscle, and curved terdinous lines decussatiug that tondon.
$d$, The third insertion of the tendon of the external obbque muscle, or that part of the tendon which is fixed to the upper part and spine of the pubis,
$c$, The ligament covering the os pubis, into which the third iosertion of this tendon is fized.
$f$, A portion of thin faccia transversalis, and tendon of the rectus, passing behind the insertion of the cxternal oblique muscle.
5. The fascia iliaca, passiug from the crural arch over the internal iliac muscle.
$h$, The orifice of the crural sheath, for the passage of the femoral blood-vessels and absorbents.

PIG. 5.
Gives a Fiew of the Inner. Side of the Crural Arch, and of the Passage of the Blood-Vessels which go under it, in the Male.
$a, a$, The abdomimal muscles reflected.
$b, c$, $d$, The posterior, or imer part of the crural arch; $d$, A portion of this arch, fnrming the third insertion of the external obbique musclc, and which is brouder than in the female.
e, The iliac fascia, covering the internal iliac muscle.
$f$; Part of the large psoas musclc.
g, The external iliac artery, sending off,
$b$, The internal circumflex al tery of the oo ilium, and,
$i$, The epigastric artery.
R, The external iliac vein, receiving the circumflex and epigatric veins. - The circumflex artery and vein are seen it the place where the iliac joins the transverse fascia.
1, The crural ring, whene femoral hernis occurs.
$m$, The spernatic blood-vessels.
$n$, The vas deferens, departing from the blood-vessels, to get into the pelvis.

## FIG. 6.

Wiew of the Inner Side of the Chural Arch in the Female, and Parts sonewhat corresponding with those seen in the former Figure.
a, The syinphysis of the puhis.
$b$, The brim of the pelvis.
$c, d$, The crural urch, or ligament of Poupart. The letter $d$ is placed on that part of the ligament that is recommended by Gimbernat to be cut in crural hernia.
$e_{\text {, }}$ The iliac fascia covering the internal iliae muscle.
$f$, The large psons muscle, with a branch of the lumbar nerves running along it to the.thigh.
$g, h, i$, The round ligament of the uterus; $h$, the place where it passes through the fascia transversalis ; is the ligament deacending towards the groin.
$k$, The external ibiac artery.
l, The epigastric artery.
$m$, The circumflex artery of the os ilium.
$n$, The obturator artery, in this subject arising from theexterpal ilize.
o, The external iliac vein, receiving branches correspond. ing with those sent off from the iliac artery.
$p$, The crural ring.
$q$, The third insertion of Pnupart's ligament.
FIG. 7.
Sketch of the Inner Side of that Part of the Parietes of the $A b d o m e n$, which separatis this Clavity from the Thigh, and of the Iliac Bloodwessels passing through the Civerad Fing, in the Female.
$a_{p}, a$, The sympbysis of the pubis.
$b$, The rectus abdnainis, inserted into the symphysis of the pubis:
$c$, The fascia iliaca.
$d, c$, The fascia transversalis; $e$, that part of it which prasses from the pubis to join the tendon of the rectus,
$f$, The round liganent of the uterns, pasaing throngh the fascia transversalis to get into the inguinal canal.
g, The iliac artery.
$h$, The beginning of the epigastric artery, with itp 2ssom ciate vein.
i, The circumfiex artery.
$k$, The iliac vein.
l, The crural space or cing, through which femoral hernix descend.

FIG. 8.
The Semicircular Insertion of Poupart's Ligament into the Pudis, forming a Portion of the Crural Ring, in the Male.
a, That part of Pourarz's ligament which forms the crural tug.
$b$, The tendon of the tramsversalis inserted into the puhis behind the exteraal abdnminal ring, and preventing that opening from being seen.
$x, c$, The fascia transversalis, which here separates, to form the internal abdominal ring.
$d$, The fascis iliaca.
$e$, The place where the two fascise meet, and shat up the under end of the abdomen.
$f$ f The exterual iliac artery.
E, The epigastric artery, with the corresponding vein.
$h$, The exterual iliac vein.
$i$, The spermatic artery and vein.
$\dot{i}$, The vas deferens.


Fig. 4


Fig. 6.



Fog. 5.


## TABLE XLVIII.

Viems of various Muscles, some of which are not sufficiently shewn in the former Figures.

## FIG. I. The Sterno-Costa7is.

See Tah. XXXIX. Right Side of the Trunk.
EIG. 9.
A Tiew of the Cavity of the Diaparagm, or of the Sikie next the Abdomen.
A, The cartilago ensiformis.
B, The cartilage of the seveath rib.
$C$. The point of the twelth rib.
D, E, F, The first, second, and third lumbar vertebra.
G, A section of the aorta.
H, The mouth of the caliac artery.
I, The superior roesenteric artery, and, on each side of it, the renal arteries.
$\mathbf{K}, \mathbf{A}$ section of the vena cava.
L. A section of the cesophagus.

M, The psoas magnus.
$\mathbf{N}$, The quadratus lumborum.
$O$, The great intercostal nerve.
$P$, The last of the dorsal nerves.
$Q, Q$. The interior arch, or fleshy bouudary of the diaphragm, to which the peritoneum adheres.
$\mathrm{R}, \mathrm{S}, \mathrm{S}$. The cordiform tendon of the diaphrage.
T, T, The fleshy parts of the diaphragin which coine from the ribs.
$\mathrm{U}, \mathrm{U}$, The fleshy pillars of the diaphragm.
$\mathbf{V}, V$, The teadinous cruru, or long heads of the diaphragm.
W, W, Fleshy colums on each side, where the osophagos passes.

## FIG. 3.

## The Fore Part of the Coccyceus.

$a$, The tendinous origin of the coccygeus, from the spinous proceas of the os ischium.
$b$, Insertion of part of the coecygeus into the os sscrum..
$c, d$, Insertion of the greater part of the coccygreus into the os coccygis.

## FIG. 4.

## A Posterior View of the Levatores, and Sphincter

 Internus Ans.$a$, The auterior portion of the levator ani, viewed on its inner side within the pelvis;
$b$, Its tendinous origin, fivon the inner side of the os pubis ;
$c$, fiom the epinous process of the as ischiom.
$d$, The posterior and outcr part of the musele.
$c_{4}$ Its iosertion into the under part of the us coceygis;
$f$, The teudioous cad mectiag its fellow below lie coccyx.
g , The muscular coat of the rectins, called by ilainus, Sphincter Internus .Ini.
$b$, The asus.

PIG. 5.
Anterior Viev of the Levatores, with the Sphincter Iyternus Ani.
$c$, The bulb of the urethra.
$d_{2}$ A section of the arethra aod corpus spongiosum.
$e$, The sphincter internus ami.
$f, f, f, f$, The place from whence a portion of the os pubis is cut out, to obtaio a vicw of the levatores which lie bchind.
g, The levator ani, arising from the innerside of the os pubis.
$\hat{h}$, Thic thin portion which comes out fron the angle where the crus peuis joins the corpus spongiosum urethro.

FIG. 6.
The Acceleqatores Urina, Transversi Pertnei, and Erectores Penis.
$a$, The accelerator uriox, investing the hulh of the urethra, $b$, The transversus perinei.
$c$, T- alter:
$d$, e, The erector peois.
$f$, The corpus cavcrmosum penis.
g, ———urethra.

$$
\text { F1G. } 7 .
$$

## The Back Part of the Sphincter Externus Amt.

$a$, The point by which it adheres to the extremity of the os coccygis.
$b$, The anls, from which to $a$ the fibres of the opposite sides meet in angles which point upwards, and become more achite as they ascend.

FIG. 8.
The Fore Part of the Sphineter Externus Ant.
$a$, The fibres which meet from each side, forming angles pointing upwards, and which, as in the former Figure, become more acnte as they ascend.
$b$, The termination of the splineter ani in the perineum,
$c$, The corpus spongiosum wethre.
$d$, The bulb of the uretira.
FIG. 9.
Muscles about the Root of the Penis, and Linder End of the Intestinuns Rectum in a Chitd.
$a, a$, The splineter ami,
$b$, The levator sui.
c, The traosvensalis perinei.
$d$, The crector penis.
$e$, The atcelerator ninas.
$f$, The corpus cavernosum penis.
$g$, The corpus spongiosum urethre.
$h$, The scrotuin turued up.
$i$, Part of the thigh.
$k_{\text {, }}$ The cut edge of the integument:

## TABLE XLIX.

Tepresents the Salivary Glands, Parts about the Throat, and certain deep-seated Moscles, in the Interior Part of the Budy, not sufficiently shewn in former Figures.

FIG. 1.

## Part of the Muscles of the Ds Hyordzs, together with the Submaxillary Gland.

a, Part of the masseter.
6, The posterior head of the digastricus;
e, Jts anterior head.
d, The stylo-hyoideus, through which the tendon of the digastricus passes.
$e, e_{\text {, }}$ The sterno-hyoidei.
$f$, The omo-hyoideus.
E, The pharyox.
$\hat{b}$, The suhmaxillary gland.
FIG. 2.
Muscles deeper seated than the former, and the Strmarillary Gland raised.
f, $a$, The mylo-byoidei.
$b$, The hyo-glossus.
$c$, The eterno-thyroidens.
d, The thyro-hyoideus.
c, The eubmaxillary gland raised from its place behind the angle of the lower jaw.
$f$, The styloglosus.
g, The stylo-pharyngeus.
$h$, The pharyns.
FIG. 3.
Muscles dieper seated than the former.
a, The genio-byoidens.
b, The genio-hyo-glossus.
c, The stylo-glossus.
d, The stylo-pharyngeus.
$e$, The suhmaxillary gland raised, hy which its duct is scen in its passage under the tongue, to its termination at the side of the frenum lingua.
$f$, The sublingual ghad.
$f_{g}$, The os hyoides.
$h$, The thyroid cartilage.
$\dot{i}$, The cricoid cartilage, with the crico-thyroidei.
k , The thyroid gland.
14 , The trachea.
m, The plaryar.

PIG. 4.

## The Infcrior Surface of the Tongue, with its Muscles

 dissected.a, $a$, The genio-hyo-glossus;
$b$, Its origin, cut from the inner part of the lower jaw.
$c, c, c$, ibe hyo-glossus.
$d$, The stylo-glossus.
$e$, The tip of the toogue pinned out, at each side of which the papille appear.
$f, f$, The hasis, or root of the tongue.
fo The membraoe, with its mucous glands, continned from the tongue to the epiglottis.

FIG. 5.
Shews the Tongue, Os Hyoidzs, and Larynz, separated from the Left Side of the HEAD, and turuel over upon the Right, - the Head being inverted.
a, The inner side of the lower jaw.
$b$, Part of the glandule palatina.
$c$, The uvula, with its musclé hanging over the openinge into the back part of the nose.
d, The right side of the pharymx remaining entire.
$t$, The tongue, at the anterior edges of which the papilla are seen.
$f$, The salivary glands of the tongue.
g, One of the anygdale.
筩, The os hyoides, with its left cornu joined to the left superior corna of the thyroid cartilage.
i, The thyroid cartilage.
$k$, The back part of the cricoid cartilage
i, 1 , The arytevoid cartilages.
$n$, The epiglottis.
3, The cartilages of the trachea.
$o$, The menahranous $p^{\text {art }}$ of the trachea.
FIG. 6.
The Bael Part of the Pharynx, and ito Comeckions with the Laryns.
A, The cartilages of the trachea.
B, The membranous back pant of the trachea.
$\mathrm{C}, \mathrm{C}$, That part of the phayyna which arises from the plesygoid processcs, levatoreq palati, and os occipitin. D, $\mathrm{D}_{1}$



D, D, Parts of the pharynx which arise from the lower jaw.
E., E, Fibres of the pharynx, from the root of the tongue;
j , $\longrightarrow$, from the os hyoides;
$\overrightarrow{\mathrm{C}}$, and,
H, , from the cricoid cautilage.
I, The os hyoides.
K, The thyroid cartilage.
$\mathbf{L}_{4} \mathbf{I}_{4}$ The styloid processes.
M, M, The ligaments from the styloid processes, fixed to the appendices of the os hyoides.
$\mathrm{N}, \mathrm{N}$, The stylo-hyoidci.
0,0 , The stylo-pharyngei.
$P$, The back part of the esophagus ;
Q, Q, Its external surface.
R., The sterno-thyroideus.

S, The thyro-hyoideus.

$$
\text { FIG. } \quad 7
$$

## A Fiew of the Right and Back Part of the Lunynx.

c, The criecid eartilage.
$b$, The epiglottis ;
c) Its root cut from the base of the tongue, where many small glands appear.
d, The tips of the arytenoid cartilage freed from their membrane.
$c_{\text {, }}$ The concave surface of the thyonid cartilage, and its superior cormua: The right half of the eartilage is turned back.
$f$, The inferior cornu of the thyroid, cut from,
$g$, Its connection to the ericoid eartilage.
$i$, The crico-arytenoideus postieus.
$i$, lateralis.
6, The thyro-arytenoideus.
f, The arytenoideus trausversus.
$m$, The trachea;
n, Its membranous part,
FIG. 8.
4. Fiew principally of the Muscles in the Interior Part of the Body, next the Spine.
A, The rectus capitis lateralis.
$\mathrm{B},-\longrightarrow$ anterior minor.
$\mathrm{C}, \mathrm{E}$, The longus eolli.

F, The sealenus anticus.
C,
H, The trachelo-mastoideus,
I, I, \&e. The intercostales externi.
$\mathrm{K}, \mathrm{K}$, \&ce. --interai.
$\mathbf{L}, \mathrm{L}$, \&cc. Portions of the intemat intercostals, calked Depressores Propu'ï Coupeniz.
M, The transversus ahdominis.
N , The quadratus lumborum.
O, The psoas paryus.
P, magous.
Q, A portion of the psoas magnus; the upper part which lay over the quadralus lumborum is eut off.
R, The iliacus interaus.
S , The proiformis.
T, The obturator externus.
U, The adductor brevis femoris.
FIG. 9.

## Explained in Tab. XXXYII.

FIG. 10.
The Abdomen opened, and its Contents removed, to shew the Diaphiagu and Muscles of the Loins.
$A, A$, The containing parts of the ahdomen cut and turned back.
B, B, The eut ends of the ribs,
C, The origin of the superior, or greater muscle of the diaphragm, from the cartilago ensiformis.
$\mathrm{D}, \mathrm{D}$, Origins from the ribs.
$\mathbf{E}, \mathbf{E}, \mathbf{E}$, The eordiform tendon of the diaphragm.
$\mathbf{F}$, The perforation in that teadon, for the passage of the vena eava inferior.
$\mathbf{G}, \mathbf{G}$, The long crura of the inferior, or lesser muscle of the diaphragm.
H , The passage of the aorta between the long erura.
$\mathbf{I}, \mathbf{I}$, shorter heads of the diapbragm.
$\mathbf{K}, \mathbf{K}$, The fleshy columus from the joining of these heads.
$\mathbf{L}_{1}$, Fibres crossing under,
M, The passage of the esophagus.
N, The quadratus tumborum.
0 , The psoas parvus.
$\mathbf{P}, \mathbf{P}$, The large psox, the right of which is turned onte wards at its lower end.

# TABLEL. 

## The differeat Orders of Muscles on the Under Part of the Fone-anm and Haxd, and on the Sole of the Foot.

FIG. 1.
The Fư'st Order of Muscles on the Under and Anterior Part of the Fore-arn and on the Palm.
a, The tendon of the supinator longus,
b, —— fiexor carpi radialis,
c,
$d_{\text {, }}$ ___ ilexor sublimis, and,
${ }_{5}$, $\overline{\text { The feror carpi duanis, }}$
$f_{2}$ The fexor lougus pollicis.
5, The ligamcut ander which the extensores ossis nela-
carpi et primi internodii pollicis pass.
k, The llevor ossis metzararpi pollicib.
$i$, The abductor pollicis.
$i_{6}$, The tendon of the extensor primi internodii pollicis.
, Part of the flexor brevis pollicis.
H, The tendon of the flexor langus pollicis sound by ligaments.
${ }^{4}$, The aponeurosis palmaris, slightly distinguished into four portions, the extremities of which afterwards become more distinct, and are atrengthened by transverse tendinous fibres.
a, The palmaris brevis.
$p$, The ahductor minimi digiti.
q. The adductor metacarpi mininí digiti.

1, The flexor parvus minimi digiti.
s, $\langle, u$, Three small annular liganeuts, which retain the tendons of the sublimis and profundus in their places on the fore-finger.
$r, v, x$, The tendou of the flexor sublimis, with the tendon of the flexor profundus passing through it.
$w$, The insertion of the tendon of the flexor profundus into the third bone of the mid-finger. The same parts with those marked $s, t, v, v, v, x$, are seen on the other fingers.

FIG. 2.
The Second Order of Muscles on the Under and Fore Part of the Fore-arm and on the Palm.
$a$, The tendon of the flexor carpi ulnaris.
$b, b$, A portion of the flexor digitorum sohlimis;
$c_{1} c, d$, The tendons of that muscle passing hehind the anterior annular ligament of the wiist.
c, The flesor pollicis longun ;
$f$, Its tendon.
$g_{2} h_{2}$, The extensor ossis metacarpi pollicis.
$i$, primi interuodii pollicis.
$k$, The liganentum carpi annulure anterius.
$l$, The fiexor ossis metacarpi pollicis.
$m, n$, The anterior and posterior portions of the fexor hresis pollicis, with the teadon of the flexor longus pollicis between them.
a, The adductor pollicis.
$p$, The abductor indicis.
$q$, q, \&e. The lumbricales
. $r$, The tendon of the flexor suhlimis, perforated by that of the liexor piofundus, and inserted into the second hone of the fore-finger.
s, The tendon of the flexor profiundus.
$t$, The insertion of the flexor profuadus into the thind bone of the fore-finger. The tendous of the flexor sublinmis and profundus are seen on the other fingers also.
is, The flexor parvus minimi digiti.
$e$, The abductor minimi digiti.
FIG. 3.
The Thitd Order of Muscless on the Under and Fore Part of the Fore-arm and on the Palm.
$a$, The flexor longus pollicis;
$b$, Its teudon.
$c, d_{,}$, The fiexor profundus.
$f$, The teadou of the flesor profundus to the fore-ingerA tendon of that muscle is also rent to each of the other fingers.
g, The ligamentum carpi annulare.
$h$, The adductor metacarpi minimi digiti.
$i, k$, The flexor brevis pollicis.
l, The adduator pollicis.
$\mathrm{m}, \mathrm{m}$, \& \& . The lumbricales.
$H_{3}$ The prior indicis.
FIG. 4.
The Fourth Order of Muscless on the Under and Fore Part of the Fone-arm and on the Palm.
$a, a$, The pronator radii quadratus,


Fi?g. $:=$

$b, c$, The fexor buevis pollicit, with the ossa sesamoidea into which it is inserted.
$d_{\text {, The adductor pollicis. }}$

Interassei interni ct externi.
fe, The prior indicis,
$f$, The posterior indicis.
g, The prior medii digiti.
$h$, The posterior medii digiti.
$i$, The prior annularis.
$k$, The posterior annularis,
$l$, The interosseus auricukaris.
FIG. 5.
The First Order of Muscles on the Under and Back Part of the Fore-arm and on the Back of the Hand.
a, The extensor ossis metacarpi pollicis.
b, primi internodii pollicis.
c, The tendon of the exteasor primi internodii pollicis.
$d$, secundi internodii pollicis.
$e$, $f$, The extensor digitorum communis,
go - carpi ulnaris.
$h_{3}$, The flexor carpi wuaris.
$i$, The ligament which confines the two first extensors of the thumb.
d ; The ligamentum carpi annulare posterius.
b, extensoris carpi ulayis.
m, The tendons of the extensor digitorum communia, divided by longitudinal fissures upon the back of the hand.
$u$, The tendon of the indicator.
o, Aponeurotic slips joining the tendons of the extensor digitorum to each other.
p, Part of the ahductor minimi digiti.
q, The adductor pollicis.
$r$, Tendinous expansions continued from the tendons of the extensor digitorum commumis, and of the interossei and lumbricales, adhering closely to the bones.
$s$, The division of these expansions continued from the tendons of the extensar digitorum comraunia, and of the interossei and lurabricales,-for the readier motion of the joints ;
1, Their termination at the last joint of the fingers.
FIG. 6.
The Second Order of Mvscles on the Under and Back Part of the Fore-arm and on the Back of the Hand.
a, The extensor ossis metacarpi pollicis.
b, primi internodii pollicis.
c, The tendon common to the two muscles.
d, The extensor secundi interwodii pollicis;
$e$, Its tendon.
$f$, The tendon of the indicator.
g, The flexor carpi ulnaris.
h, The cut tendon of the extensor digitorum comrumis. Sextions of the tendons of this muscle are also scen upon the ring and little fingers.
$i$, The abductor indicis.
$k$, The prior medii digiti.
l, The posterior medii digiti.
$n$, annulatis.
FIG. 7.
The Third Order of Muscles on the Under and Bach Part of the Eore-arm and on the Back of the Hand.
-One of the Heads of each External Interosseovs
Muscle is renourd, to obtain a lieus of the Laternal.
a, The tendon of the extensor carpi radialis longior.
$b$, , hrevior.
c, The cut tendon of the extensor digitorum commuis.
$d_{0}$, The adductor pollicin.
D, The flexor brevis pollicis.
e, The prior indicis.
$f$, The posterior indicis.
$g$, Part of the prior medii digiti.
$h$, Part of the posterior medil digiti.
$i$, The prior annularis.
$k$, Part of the posterior anaularis.
$l$, The interosseus auricularis.
FIG. 8.
Shews the Aponeurosis, and Part of the First Order of Muscles and Ligaments of the Sole, after remoring the Common Integuments.
$a, b, c$, The aponenirosis plantaris, connected behind to the os calcia, aad before to the first joint of all the toes. $-a$, The middlc part divided into five slips, which split at the zoots of thic toes, and embrace the tendons of the flezor mnscles.-b, The portion which corers the abductor minimi digiti-fe, The portion which covers a part of the abductor pollicis.
$d$, The abductor pollicis.
$c$, Part of the flexor hrevis pollicis.
$f$, The common tendinous ends of the abductor, and short flexor of the great toe.
g, Part of the transversalis pedis.
$h$, The abductor minimi digiti pedis.-A small part of the lumbricales, the abductor minimi digiti, the short flexors, the tendons of the long and short flexors, with the ligaments which confine them, are seen upon the other toes,-nearly as in the hand.

FIG. 9.
The First Order of Muscess on the Sole, after the Ayoneurosts, and most of the Ligaments sheun in the former Figurc, arc remored.
$a$, The flexor brevis "digitorum, sending tendons to the second phalanx of the four small toes.
$b$, The tendon of the fexor longus pollicis.
$c$, The ahductor pollicis.
d, $c$, The abductor minimi digiti, compnosed of two parts, and fixed by a common tendon to the first boae of the hittle toe.
$f_{4}$ The flexor brevis minimi digiti.
FIG. 10.

## The Second Order of Muscles tin the Sole.

e, The tendon of the flexor longus digitorum.
$b, c, d$, The flexor digitorum pedis accessorius ;- $b, c$, It two heads arising from the os caicis;- $d$, Its insertion into the teadon of the fexor lnngus digitorum pedis.
$e$, The connection between the tendons of the flexor longus digitorum and flexor longus pollicis.
$f, f$, The insertion of the tendous of the fexor longus digitorum into the last bone of the small toes.
q, $h, i, k$, The lumbricales.
1, The tendon of the flexor longus pollicis,
m , The iusertion of the flexor longas pollicis into the last joint of the great toe.
$n_{\text {, }}$, The insertion of the tibialis posticus.
0, Then anticus.
$p, q$, The two parts of the flexor brevis pollicis.
$r$, The insertion of the peroneus brevis.
$n$, The tendon of the peroneos longus passing to the sole.
$f, u$, The ligaments connecting the bones at this part of the sole, and giving origin to muscles.

FIG. 11.
The Third Order of Muscles in the Sole.
(1, The insertion of the peroneus brevis.
$b$, The tendon of the peroneus longus.
$c$, The insertion of the tibialis posticus.
$d, e$, A ligament binding the os cuboides to the os calcs, and giving origin to mwseles.
$f$, The flexor brevis miuini digiti.
F, $h$, The adduct or poilicis.
$\tilde{i}, k$, $m$, The flexor brevis pollicis pedis ; $-k$, Its tendinous origin from the os calcis and os cuneiforme esternum $\ddagger-i$, Its connection with the adductor pollicis; n, Its comnection with that part from which the abductor pollicis was cut.
$l$, The transversalis pedis.

FIG. 12.

## The Fourth Order of Muscles in the Sole.

$a$, The insertion of the peronets brevic.
$b$, The tendion of the peroneus longus joined to the metatarsal bone of the great toe, and sending tendons to the as cuneiforme interanm.
$e$, The insertion of the tibialis anticus.
$d-i$, The interossei.
$d$, The abductor, and,
r, The adductor indicis pedis.
$f$, The abductor and adductor medii digiti.
$g$, The abductor, and,
$h$, The adductor tertii digiti.
$i_{2} \longrightarrow$ minimi digiti.

## PARTII.

OF THE
B URSEMUCOS M

AND Of THE
LIGAMENTS
AND
OTHER PARTS OF THE JOINTS.

## of the burse mucosie in general.

THE Burse Mucose belong chiefly to the Extremities, though a few also exist in some other parts of the Body. They are found between parts exposed to friction, as between Tenalons aad Bones, where these play upon each other, as at the iuscrtiou of the Biecps Flexor Cubiti :

Or between Tendon and Cartilage, as where the Peroneus Longus crosses the Sole :

Or completely shumoumeliag the Tendons, and lining their Sheaths, as awound the 'Tendons of the Flcsores Digitorum :

Or where Tendons yub on each other, as between those of the Extensores Carpi Radiales and Extensores Pollicis:

Or between Tendons ant Exterual Parts, as over the Tendons of the Flexores Digitorum, in the Patm of the Hand :

Or between Tendons and Ligameats of the Joiuts, as between the Tendons of the Flexores Digitorum and Ligamentum Carpi Capsulare.

They are found in a fow places where Processes of Bane play upon Ligaments, as between the Acromion Scapule and Capsular Ligament of the Humerus:

Or where the Bones play on each other, as between the Clavicic and Coracoid Process of the Scapula.

Some of the Burse of contiguous Teudons communicate with each other ; as between the Fixtensor Carpi Radialis and Extensor Secundi Internodii Pollicis,

Others communicate, not only in Adults, but often also in Children, with the Cavity of the Joints; as bchind the Tendona of the Extensors of the Leg; though this is more frequently the case in advanced age.

The Burse in general are either of a roundish or oral form, from which they have been ananged under two classes, viz, the Spherical and V'aginal.

Their structure iy the same with that of the innee Layer of the Capsular Ligament of the Joints.

Like that, they are formed of a thin Pellucid Serous Menbranc, possessing little sensibility, and joined to the surroundiug parts by Cellular Substance, which, in many places, is internixed with Fat.

Like tbs Capsule of the Joint, they have commonly a thin Layer of Cartilage, or of tough Membrape, between them and the Bone.

Like it $t_{2}$ they have reddish-coloured Masses of Fat projecting into their Cavitics, from the clges of which Hringes are scat off; as behind the Ligament of the $\mathrm{Pa}_{2}$ tella, or at the ingertion of the Teado Achillis.

Like it also, the inside of the Bursae is remarkably smooth, being lubricated with the same kind of Gelatinons Fivid which is found in the Carities of the Joints, and which serves the same general purpose with that of the Joints, viz. to lessen Friction, and prevent the coasequences which would othervise result from it.

## BL'RS MUCOSA OF TIIE HEAD AND NECK.

The Eurse of the Head and Neck are small when compared with those of the Extremsities. The following have lately been deceribed by Authors, viz.

A Bursa betweeu the tendon of the Superior Oblique Muscle of the Eye und its 'Irochlea.

A Bursa belouging to the Tendon of the Digastric den Muscle, where it is fixed to the $\mathrm{Os}_{\mathrm{S}}$ Hyoides.

A Bursa belonging to the Tendon of the Circumfecue Palati, where it plays upon the inner Plate of the Pterygoid Process of the splicnoid Bone.

A Hursa under the Musseter.
A Bursia under the upper ead of the Stemo-hyoidens.

## bURSE MUCOSE OF TIIE SUPERIOR EXTREMITIES.

## Murse ahout the Joint of the Shouldzr.

A Buass under the Clavicle, where it plays upon the Coracoid Prosess of the Scupula.

A large Bursa between the Acromion Seapule and Ligainent, joiniog it to the Coracoid Process, and the Capsular Ligament of the Hunerus.
A sraill Bursa, sometimes absent, between the point of the Curacoid Process and Capoular Ligament of the Humerus.
A Bussa betwecn the Tendoo of the Subscapularis Muscle and Capsular Ligument of the Joint of the Hia merus, which fiequeutly communicates with the Cavity of the Joist.

A Burs-, not constant, between the Origin of the Co-raco-hracliustis und short Head of the Biceps Muscles, and Capsular Ligurnent of the Humerus,

A Buran hetween the Tendon of the Teres Mdjor and the $\mathrm{O}_{5}$ Hunusi, sud npper part of the Tendon of the Latissimus Dorsi.

A sinall Bursa Letween the Tendon of the Latissimus Dorsi and Os Humeri.
A Burse betwern the Tendon of the long Head of the Biceps Fluar Cabiti and Body of the Humerus.

## Buyse ahout the Joins of the Ersow.

A Binst, nith a Peloton or Mass of Fat, between the Teudou of tic Biectps and a Carrilage which incrusts the Tubercic of the Radius.

A smali llura between the Tendon conimon to the Extensor Cunf̧i Kadiulis Brevior, Extcusor Digitorum Cormamir, and round Head of the Radins.

A small Bursa, not very constant, between the Tendon of the 'I ricepa Extensor Cubiti and Olecranun.
Burser upon the 'Inder Payt of the Fore-ahm and the
Hand.
A very large Bursa sumounding the Tendon of the Flexor Pollicis Longu.

Four loing Buncz fining the Sheaths which inelose the Teadons of the Flexars upon the Fingery.

Four short Bursze ou the fore part of tbe Tendons of the Flexor Digitorum Sublimis in the Palm of the Hand.

A large Bursa between the Tendon of the Flexor Pollicis Longus, the fore part of the Radius, and Capsular Ligament of the Wrist and Os Trapezium.

A large Bursa between the Tendons of the Flexor Digitorum Profundus, and the fore part of the end of the Radius and Cupsular Ligament of the Wrist.

These ewo last-mentioned Burse are sometimes found to communicate with each other.
A Bursa between the Tendon of the Flexor Carpi $\mathrm{H}_{2}$ dialis and $\mathrm{Os}_{\mathrm{s}}$ Trapezium.

An inconstant Bursa between the Tendon of the Flesor Carpi Ulnaris and Os Pisiforme.

A Bursa between the Teadon of the Extensor Ossis Metacarpi Pollicis and Radius.
A large Bursa common to the Extensores Carpi Rz diales, where fiey crons behimd the Extensor Ossis Metacarpi Pollicis.
Another Bursa common to the Extensores Carpi Radiales, where they cross belind the Fasteusor Secuidi Interaodii Pollicis.

A third Burea at the insertion of the Tendon of the Extenaor Carpi Radializ Brevior.
A Bursa for the Tcudos of the Extensor Secundi lntemodii Pollicis, which communicates with the second Bursa coramon to the Exteusores Curpi Radiales,
Another Burfa between the Tendon of the Extensor Sceundi Internodii Pollicis and Metzearpal Bone of the Thumb.

A Burea between the Tendons of the Fxtensor of the Fore, Middle, and Ring Fingers, and ligatuent of the Wrist.

A Bursa for the Tendons of the Extensor of the Little Finger.

A Bursa between the Tendon of the Extensor Carpi Tharris and Liganeat of the Wrist.

BURS.AE

## BURSE MUCOSE OF THE INFERIOR EATREMITIES.

## Burse upon the Pelvis and Upper Part of the Tatch.

A very large Bursa between the Diacus Internus and Peoas Magnus, and Capsular Ligament of the Thighe bone. This is sometimes found communicating with the Cavity of the Joint, especially in an old person.

A Bursa between the Tendon of the Pectinalis and Thigh-bone.

A small Bursa between the Gluteus Medius and Trowhanter Major, and bcfore the insertion of the Tendon nf the Pyriformis.

A Bursa between the Tendon of the Cluteus Minimus and Trochanter Major.

A Bursa between the Gluteus Maximus and Vastus Fisternus.

A Bursa between the Glutens Medius and Pyriformis.
A Bursa between the Obturator Internus and Os Isehium.

An oblong Bursa cootinued a considerable way between the Obturatnr Internus and Gemini, and Capsular Ligament of the Thigh-bone.

A small Burse at the Head of the Semimembranosus and Biceps Flexor Cruris.

A small Bursa betwcen the Origin of the Semitendinosus and that of the two former Muscles,

A lafge Barsa between the 'Tendou of the Clnteus Maximus and root nf the Trocbanter Major.

Two small Bursa between the Teodon of the Gluteus Maximus and Thigh-bone.

## Burse about the Joint of the Knee.

A large Bursa behind the Tendon nf the Extensors of the Leg. This, in young Subjects, is separated from the Cavity of the Joint by a thin Partition, consisting of the Capsular Ligamment and the Bursa intimately connected; luit in old people, it wery frequently cmmmunicates with the Joint by a large Opening.
A Burna behind the Ligament which joins the Patella Fatty Tibia, in the upper part of the Cavity of which a Fatty Substance projects.

A large Bursa between the Tendons of the Sartorius, Gracilis, Semitendinosus, and Tibia.

A Burga between the Tendons of the Semimembrasosus and Gastrocnemius Extoruns, and Liganent of the Knee. This Bursa contains a small one within it, from which there is a passage leading into the Cavity of tlee Joint of the Knee.

A Bursa hetween the Tendon of the Sersimembranosus and the internal Lateral Ligament of the Knee, from which also there is a passage lcading into the Joint.
A Bursa under the Popliteus, likewise comarunicating with the Cavity of the Knee-joink.

## Burser about the Ansze.

A Bursa between the Tendon of the Tibialis Anticus and under part of the Tibia and Ligament of the Ankle.

A Bursa between the Tendon of the Extensor Proprius Pullicis Pedis and the Tibia and Capsular Ligament of the Ankle.

A Bursa betwreen the Tendons of the Estensor Digitonum Longus and Ligament of the Ankle.

A large Bursa cominon to the Tendons of the Peronei Muscles.

A Buras proper to the Tendon of the Peraneus Brevis.
A Bursa between the Tendo Achilzis and Os Calcis, intn the Cavity of which a Peloton of Fat projects.

A Bursa between the $\mathrm{Os}_{\mathrm{s}}$ Calcis and Flesor Pollicis Longus.

A Bursa between the Flexor Digitorum Longus and the Tibia and Os Calcis.

A Bursa between the Tendon of the Tibialis Posticus ${ }^{\circ}$ and the Tibia and Astragalus.

## Bursin in the Sole of the Foor.

A second Bursa for the Tendon of the Peroweus Lon-. gus, witb an oblong Peloton of Fat within it.

A Bursa common to the Tendon of the Flexor Pollicie Longus, and that of the Fiezor Digitorum Profundus, at tbe upper end of which a Fatty Substance projects.

A Bursa for the Tendon of the Tibialis Posticus.
A Bursa lining the Sheatb of each of the Tendons of the Ileyors upon the Toes.

## TABLELI.

## Represents the Burse Mucose of the Superior Expremities,

## The Bunsa Mvcoss of this and the succeeding Table are all represented as slit open, and severat of them inflated.

FIG. 1.

## Tho Burse Mucosse on the Fore Part of the Right Superior Extrimitt.

A, The clavicle.
B, The acromion scapula.
C, The fore part of the scapula.
D , The ligament of the semilunar notch of the scapula.
E, The coracoid process of the scapula.
F, F, Two ligamento which tie the clavicle to the coracoid process.
C , The bead of the as humeri.
H, The body of that bone.
1, A bursa under the clavicle, where it plays upon the coracoid process of the scapula.
J, A strong ligament which joins the acromion to the coracoid process.
K, A large bursa hetween the acromion and ligament $J$, and the capsular ligament of the humerus.
In A small bursa, sometimes absent, bet ween the point of the coracoid process and capsolar ligament of the humerus.
M, The tendon of the subscapularis.
N, A bursa between it and the capsular ligament of the humerus, which frequently communicates with the cavity of that joint.
0, A bursa, not constant, between the origin of the co. raco-brachialis and short head of the biceps, and capsular ligament of the humerus.
P, The teadon of the teres major tumed outwards.
Q, A bursa between the tendon of the teres major and the os humeri, and upper part of the teadon of the latissimus dorisi.
f , The tendon of the latissimus dorsi tumed outwards.
S , A small bursa between the tendon of the latissinus dorsi and os bumeri.
T, A bursa betwcen the tendon of the long head of the biceps flexor cubiti and the body of the humerus.
1 , The radius.
V , The wina.
W, The tendon of the biceps flezor cubiti tasued ir"arde.

X, A bursa, with 2 peloton of fat, betweea the tendoz of the biceps and tubercle of the radius.
Y, The origin of the extensor carpi radialis longior.
$\mathbf{Z}_{r}$ A mall bursa, between the tendon common to the extenenr carpi radialis brevior, extensor digitorum conno munis, and the mounr head of the radius.
$a$, The sheath of the flexor longus prullicis, slit open.
$b$, _mesors of tbe fore-finger, entirc.
c, The thick part of the sheath of the teadons of then flexors of the middle finger.
$d_{4}$ The sheath of the teadons of the flevors of the ringfinger, slit open.
e, The sheath of the tendons of the gesors of the litue finger, slit open, and the teadons drawn forward, to shew them fully. Each of the sheaths of the flexors of the fingers is lined with a bursa.
$f_{7}$ A very large barsa surrounding the tendon of the feror pollicis longus.
$g, h, i, k$, Four short burse on the fone part of the tendons of the flexor sublimis digitorum in the palm.
1, A probe introduced into a large bursa betwecu tire tendon of the fexor pollicis longus, and the fore par of the radius, and between the capsular ligament nit the wrist and the os trapezium.
$m$, A probe put into a large burss behind the tendons of the fiexor digitorum profundus, and on the fore parts of the end of the radius, and capsular ligament of the wrist.
th, A bursa between the temion of the flexor carpi radialis and os trapezium.
of A huren hetwecu the tendon of the fexor cariji ulnaris and as pisiforme.

FIG. 2.

## The Burse Mucosre on the Back Part of the Right Sufehior Exthemity.

A, The dorsume ecapule.
R, The cervix scapula.
C, The acromion.
$\mathbf{D}$, The cappular ligasuent of the humerus.




F. The tendon of the inframepinatus turned outwards.

F, The teadon of the teres ninnor tumed outwards.
I, The os humeri.
J, The external, and,
$\mathbf{K}$, The intermal condyle of the humerus.
L. The radius.

M , The uina.
N, The olecranon.
0 , The tendon of the tixiceps extensor cuhiti turned down.
P, A small bursa hetween it and the olecranon.
a, A bursa between the tendon of the extensor ossis metacarpi pollicis and the radius.
$\mathrm{R}, \mathrm{R}, \mathrm{A}$ large bursa common to the extensones carpi - radialen, where they erass behind the extensor ossis metacarpi pollicis.
$\mathrm{S}, \mathrm{S}$, Another bursa common to the extensores cargi ra-
diales, where they cross hehind the extensoy secundi internodii pollicis.
T, A third bursa at the insertion of the tendon of the extensor carpi radialis brevior.
U, A buraa for the teadon of the extensor secundi internodii pollicis, which communicates with the bursa S, S.
V, Another bursa between the teadon of the extensor secandi internodii pollicis and metacarpal bone of the thumb.
$\mathbf{W}$, The teadons of the extensor of the fore, mid, and ring fingers.
$\mathbf{X}, \mathbf{A}$ bursa between these tendous and the ligament of the wrist.
Y, Another burea for the extensor of the little finger.
$\mathbf{Z}$, A bursa between the tendon of the extensor cargi ith asyis and ligament of the wrist.

## TABLE L! II.

Represents the Bursee Mucoste of the Infemor Extremitass.

FIG. I.

## - The Buns.z Mugose au the Fore Part of the Right Inferior Exirqnity.

A, The spine of the of ilium.
B, The inner side of the os ilium.
C, The os pubis.
D, The neck of the thigh-bone,
F, The root of the great trochanter.
F, The thigh-bone.
G, The iliacus internus.
H, The psoas magaus.
I, The insertion of the ilizus internus and psoas magaus, into the trochanter minor.
K, A very large bursa mucosa, between these two museles and the capsular ligement of the thigh-bone.
$\mathrm{L}_{\mathrm{H}}$, The pectincus.
MI , A burse between the tendon of the pectineus aud thigh-bone.
N , The adductor brevis femoris.
0 , The gluteus minirous.
$\mathbf{P}$, The tendinous part of the gluteus medios.
Q, A suall bursa between the gluteus medius and trochauter major. Behind it the tendon of the pyriformis is inserted.
$\mathbf{R}, \mathbf{A}$ burss between the tendon of the gluteus minimus aud trochanter major.
S, Part of the glortcus maxinus, which is joined to the gluteus medius.
T, Part of the vastus externas.
U, A bursa betweeu the gluteus maximus and vastus externus.
V, The patella.
W, The cupsular bgament of the knee.
X , The tendon of the extensors of the $\mathrm{log}_{7}$ eut and turned up.
Y, A large burba behind the tendon of the extensors of the leg.
Z, A commurication frequently found hetween this buras and the cavity of the knee-joint.
$a, a$, The ligament which joins the patella to the tilia, cut and turned outwards;
$b, A$ bursa hchind it.
c, A fatty pelatosi projecoting into the cavisy of dia bursa.
$d$, The tibia.
$\nabla$, The libula.
$f$, The back part of the insertion of the eartorius, turned forwards.
g, The tendon of the gracilis.
$h_{4}$, senitendinosos.
$i$, A large bursa between the tendons of the sartorius, gracibis, sermitendinosus, and tibia.
$k$, The intermal lateral ligament of the knee.
$l$, A bursa between the tendon of the tibialis anticus, and under part of the tibia and ligament of the ankle.
on, A bursa between the tendon of the extensor proprius policicis pedis, and the tibia and capsular ligament of the ankle.
$n$, A hursa between the tendons of the extensor digitorum longus, aud ligament of the ankle.

FIG. 2.
The Bunse Mucosse on the Back Pavt of the Rifg
Inferion Extremity.
A, The dorsnm of the os ihum.
B, The os sacrum.
C. The os coccygis.

D, The tuber of the os ischium.
E, The large trochanter.
$F$, The midide of the thigh-hone.
G, The gluteus minimus.
11, The pyriformis.
I, A bursa mucosu between the glateos medius and pyriforinis.
$\mathrm{K}, \mathrm{K}$, The obturator internus cut neross.
L, L, The gemini.
M, A hursa between the olturator interaus and os ischsiun.
N, A probe put into a bursa, which is continued to a dotted line between the ohturator interrus, gemini, and capqular ligament of the thigh-bone.
0 , The quadratus femoris.
P, The origin of the semimemhratosus, and long head of the biccpa fexor cruris.
Q, A small bursa nuensa.
1H, The origin of the senilendinosus turved back.



5. A small bursa nucosa.

1, The tendon of the gluteus maximns.
II, A large bursa between the teadon of the gluteus maximus and root of the trochanter major.
V, V, Two small burse betweeu the tendon of the gluteus maximus and os femoris.
W, The back part of a large bursa, between the tendinous part of the gluteus maximus aud vastus externus.
X, The internal condyle, aud,
Y, The exteraal condyle of the thigh-boue.
Z, The tibia.
$a$, The fibula.
b, The biceps flexor cruris tumed downwards.
$d_{\text {, }}$. The inner head of the gastrocnemius externus turucd up.
$e_{9}$ The semimembranosus turned down.
$f_{1}$ A bursa between the tendons of the semimembranosus and gastrocnemius, and the ligament of the knee.
g. A probe passed into a small bursa within the bursa $f$, from which there is a passage into the cavity of the joint of the knee.
$A, A$ probe pacsed into a bursa between the tendon of the semimembranosius and the internal lateral ligament of the kntee, from wbich there is a passage communicating with the joint of the knee.
i, A small portion of the popliteus.
l, A hurse under it, comurunicating with the cavity of the joint of the knee.
$m$, The teodon of the peroneus longus,
o, , lise hrevis.
P, A large bursa common to the tendons of the peronei.
of, A bursa proper to the tendon of the peroneus brevis.
$r$, A ligament which ties the fibula to the os calcis.
$s_{4}$ The tendo Achileis turned down.
t, A bursa between the tendo Acailiss and os calcis.
u, 1 peloton, or mass of fat, which projects into the cavity of that bursa.
$v$, The tendon of the plantaris,
$u$, A bursa between the os calcis and Aexor pollicis longus.
$x$, The flexor digitorum longus.
$y$, A bursa between that flexor and the tibia and os calcis.
$\approx$, The tendon of the tibialis posticua.
A, $\boldsymbol{A}$ bursa between this tendon and the tibia and astriogalus.

FIG. 3.
A Fiew of the Burse Mucosne in the Sole of the Right Foot.
A. The of calcis.

B, The tendo Achillis.
C, C, The abductor ninimi digiti cut across.
D, The tendon of the peroneus lougus.
$\mathbf{E}, \mathbf{A}$ aecond bura for that tendon.
$\mathbf{Y}$, Arr oblong peloton of fat within this bursa.
G. The Reshy,

H, The tendinous part of the flexor longus pollicis pedis,
$\mathbf{1}_{7}$ A bursa common to this tendon, aud the tendon of the flexor digitorum profundus.
$\mathbf{K}$, A fatty peloton at the upper end of this bursa.
L, An imperfect septum between the two last-named tendons, containing some fat.
M, The tendon of tbe tibialis posticns in ita hursa
N, The place at which the flexor digitorum sublimis if cut off.
O. The massa carnea Jacobi Syivir, or flexor tertius,
$\mathbf{P}$, The ahductor pollicis pedis cut of from the os calcis
$\mathbf{Q}, \mathbf{R}, \mathrm{S}, \mathbf{T}, \mathbf{U}$, The bursar mucose of the flesor tendons slit open nearly their whole length.

## OF THE LIGAMENTS, \&C. OF THE JOINTS.

Liganents are ukite, strong, flexible sohstances, of an internediate firmness hetween Cartilage and common Membrane.

They arc composed of Fibres vayiously disposed; the greater part of them, however, running is a longitudinal direction.

The Ligamants of moveable Joints arise, for the most part, at the junction of the Bodies of the Bones with their Epiphyses, from the Cervix, and beyond the edges, of the articulating Cartilage of one Bone, and are fixed, in a similar manner, into the corresponding parts of the Bone adjoining.

The Ligaments thus fixed are called Cupsular, from their forming a Purse or Bag, which includea the Jomt.

Where tariety of notion is allowed, the Capsular Migameot is nearly of equal strengtb round the whole circumference of the Joint; hut, where the Jnint is of the nature of a Hinge, the Ligament is strongest at the sides of that Hipge, or is there strengthened by the addition of Ligamentous slips, termed Leteral Ligamentr, which atm sist in regulating the motion of the Jointst

The outer part of the Capsolar Ligmment is formed of a continoation of the Periosteuth, which is connected to the surrounding parts hy Cellular Snbstance; while the inner Layes,-remarkably thin and dense, is reflected over the Bones and Cartilages which the Ligament includes; one part of it thus forming Periostewm, and the other Perichondriven,

Iu certain parts of the Body, there are, hesides the Ligaments meotioned above, others for the firm connection of the Bones, or for confining the motion to one prar ticular side; 2s the Round Siganent of the Thigh, or Crucial, or Laferal Ligaments of the Knee, already mentioned.

Wherever the Ligaments are few, long, and weak, the motions are more extensive; and, on the contrary, where the Ligaments are namerous, short, and strong, the motions are more limited.

Ligaments have pumerons Blood-vessels, which can be readily injected.

Upon the inner Surface of the Capsular Ligamegnts, their-Irtericy secrete a liqoor which assists in the Inbri*ation of the Joints.

The Nerves of Ligamests are very minute, but in some parts can be easily traced upon their Surface,

The Siensibility of Ligarneots, in the sound state, is jaconsiderahle ; when in a state of inflammation, however, they are fouod to oceasion extreme pain.

Use: The Capsular Ligaments connect Bones together, assist in the secretion of the Symovia which they
contain, and prevent the other parts in the Jout from heing pinched.

The other Ligaments join Bones together, and preserve them in their proper situation,

In many parte, the Ligaments give attachment to TeaLoos, aod in some they supply the place of Bone, and give origin to Muscles, as in the Foramina Thyroidea of the Pelvis, and hetween the Banes of the Fore-arms and Legs,

In eome parts, they assist in connecting immoveable Bones, as at the Os Sacruan and $O_{s}$ Imwonvinatiom: In others, they form a Siocket in which moveable Bones play, as where part of the Astragalus moves on the Li. gament stretched between the Os Calcis and Os Sccphozides.

## Symovial Orgays,

## Commonly called Glands of the Joints,

These are Masses of Faf found in the greates nomber of the Joints, covered with a contintiation of the inner Layer of the Capsular Ligament, and projecting in such a manner as to he geatly pressed, but pot bruised, hy the motions of the Joint; and, in proportion as these motions are more or less frequent, the liquor which they secrete is diseharged in a greater or smaller quantity.

In some Joints, they have the same appearance with the common Fat of the Body; in others, they are of a redder colour, fiom the numerous Biood-vessels dispersod upon them.

They have been generally considered as Glayids lodged withip Masses of Fat; but, upon a minute inspection, no knotty or Glandular Borlieg are to be found in them; nor have they the appearance of Glands, farther than in being Secreting Substances; which circumstance alone assimilates them to the navure of Glands.

From the edges of these Fatty Bodies, Fintorict hang loose, and convey 2 lubricating Liquor, called Sywovia, into the Cavity of the Joints.

From the extremities of these Fringes, the liquor can be readily equeezed ont by pressure; but their Cavities and Orifices are so minute, ar are otherwise of such a nature, as to have hitherto eluded discovery,

The Fimbrix have heen generally considered an fircrefory Ducts of Glands within the Joints. Dr Monro, however, in his Work upon the Bursz Mucoser, supposes them to be of the nature of the Follicles of the Liethara, which prepare a Mueilagionus Liquor, without the assis. tance of any knatty or Glandular Organ.

The Artcries which supply these Bodies with Blood for their Secretion, and the Feins which resusp the Bloud

Blood after the Secretion has been performed, can be seadily seen; but no Nerves can be traced into them; nor does it appear that they possess a higher degree of Seasibility than the other parts of the Joints already deaoribed, although, when they inflame and suppurate, they have in some instances been observed to occasion the most excruciating pain.
The Synowia, which is a thin Mucilaginous Liquor, resembling the glair of an egg, appears to be furnighed, not only by the Substances already nocutioned, but also by the extremities of Arteries on the inner Surface of the Capsular Ligaments in general, and serves for the lubrication of the Joints; for which purpose it is well adapted, being remarkably slippery to the touch.
Syoovia is found to be composed of Water, mixed with a smalf proportion of Gelatine, Mucilage, Albunen, and common Salt.

## LIGAMENTS of the head and TRUNK.

## Lithaemis of the Lower Jaw.

The Capsular Ligament on each side, which axises from the wbole Margin of the Auticular Cavity of the Temporal Boue, and is inserted, first into the edge of the Interasticular Cartilage, formerly taken notice of, and afterwards round the Cervir of the Lower Jaw. This Liganent, like others which belong to Joints of the hiuge kind, is thickest and strongest at the sides of the Joint, to confine the lateral motion of the Jaw. Tab. LIII. Fig. I. f. Fig. 2. $d$, d.-Tab. XXX. Fig. I7. r, $t, t$.
By it the Jaw is allowed to move upwards, dowro wards, or a little forvands or backwards, or to either side, and the motions are rendered easier by the intervention of the Interarticular Cartilage, which follows the Courdyle in its different motions.
The Suspensory Ligament of the Stylo-glossus, which is attached by one cnd to the Styloid Process, and to a Ligament running from that Process to the Os Hyoides, and by the other end to the Angle of the Lower Jaw ;servisg to support the Stylo-glossus, and to give origin to part of it. Tab. LIII. Fig. 1. $k$.
The Lateral Ligament, which arises from the Margin of the Articular Cavity of the Temporal Bone, and is inserted into the inncr Surface of the Angle of the Lowver Jaw, near its posterior Foramen ;-assisting to keep the Javy in oittry and to prevent the inferior Maxillary Vessels and Nerve from being injured by the action of the. Pterygoid Muscle. Tab. LIII. Fig. 1. g.
Ligaments connecting the Head with the First and Second Vertebre of the Neck, and these tuo Verteara with eack ather.
The twe Capsular Ligaments, which arisc from the margin of the superior articulating Processes of the Atlas, and are insertcd into the Base of the Coodyles of the Occipital Bonc, where the Hcad has its flcxion and exteusien without rotation. Tab, LLII. Fig. 3. e, f.

The Circular Ligament, which arises from the edge of the Spinal Hole of the first Vertebra, is connected with the Capsular Ligaments of the superior articulating Processes of the Atlas, and is inserted isto the edge of the Foramen Magnum of the Occipital Bone. Tab. LIII. Fig. 3. d.
The two Capsular Liganzents, which fix the inferior obligue Processes of the Aclas to the superior obliquc of the Vertebra Dentata, and admit of the rotation of the Head, with a small degree of flexion to either sidc. Tab. LIII. Fig. 3. $n, n$.

The Perpenulicular Ligament, which fixes the Processus Dentatus of the second Vertebra to the edge of the anterior part of the Foramen Magnum, betweca the Condyloid Processes, aud which is twisted in the rotatios of the Head. Tab. XXXI. Fig-6.q.

The two Lateral, or Moderator Ligaments, wbicha arise each from the side of the Processus Dentatus, and rum outwaris and upwards, to be fixed to the inner part of the sisto of the Allas, and to the imner coge of the Foramen Magnum, at the fore part of the Condyles. Tab. XXXI. Fig. 6. $p, p$. They are shorts but of great strength, and prevent the Head from turning too fiar round.
The Transverse Ligament, which arises from the inuer aide of the Atlas, and, going across behind the Processus Dentatus, is fixed to the opposite side of the Atlas. Tab. XXXI. Fig. 6.0.

The edges of this Ligament extend upwardis and downwands, and form two Processes, called ito Appendices, which are fixed to the Foranen Magrum and Processug Dentatas. The middle of the Ligament is remarkably firm where that Process plays upon it. It keeps the Processus Dentatus in its place, and prevents it firom injuring the Spinal Marrow in the differeat motions of the Head.

In persons who suffer death from Suspension by the Neck, this Ligament, and some of the othcrs ncar it, are sometimes so much ruptured, as to allow a partial dislocation to take place, or the Processus Dentatus to be thrust back upon the Spinal Marnow ; but this is not a commor occurience.

## Ltcanents of the other Vertebrie.

The Anteriar Common Ligament of the Vertebre, wbich is a atrong Tendinous Baud, extending along the convex os outer past of the Vertebise, from the upper to the under region of the Spine. Tab. LIIII. Fig. 4. $a, b$. It begins at the second Cervical Ycrtebra, and dencends as far as the Os Szerum, where it spreads out, beconcs thinuer, and vanishes about the under part of this Rene.
It is much thicker upon the fore part than on the sides of the Vertchrre, by whicls the Bones are more firmily united anteriorly, and is thimest in the Neck and Loinu, where the mintions of the Spine are greatest. Internally, it is blended witb the Periostcum, and, throught its wbole course, it sends off small Proccsses to be fixed to the Bodies of the Tertebre, by which their counretion is made more secure. While it assists in binding the V'rtebre
tobrax together, it prevents the Spine from being stretchtd too much backwards.

The Crucial Intertartebral Sigaments, which are nus. merous and short, but strong, situated behind the Ligamentum Commune Interius, crosaing each other oblique1y, They join the Badies of the Vertcbize together, upon the outer edges of the Intervertebral Sulstances, to which also they firmly adhere. Tab. LIII. Fig. 5. c, d.

The Internertebral Substamces, (aiready described slong with the Bones), which join the Bodies of the Vertebree together, and allow as yielding motion in all directions.

These Substanecs are so compressible as to yield to the weight of the upper part of the Body ; so that, after faving been in an erect posture through the course of the day, the height of a person of middile stature, and in the prime of life, is diminished from half an iach to au inch in the eveaing, but, after a night's rest in the usual attitude, it is found to be restored.

The Ligameats which sun from the edge of the Bany Arch and Spinons Process of oue Vertebra to that of the next, so as to assist in filling up the Interstices, and in fixing the Vertebrat together.

A Ligantentous Cord which fixes the points of the tpinous Processes together. 'Iab. LIII. Fig. 9. $f, f$.

The Cervical Ligament, termed Ligamentum Nuchar, vel Collp, which arises from the perpendicular Spine of the Occipital Bone, and descends on the back part of the Neck, arhering to the Spinous Proecsses of the Cervieal Vertebra, and giving origin to prart of the 'Trapezius.

Ligaments between the Transverse I'rocesses of the Vertcbrac of the Back, fixing these Proctesses to each other. Tab. NLILI. $c, c$.

The Capsular Ligaments, which join the articulating Processes to each other.

The Poyferior or Internal Common Ligament of the Vertebre, somewhat similar to the anterior one. Tab. LIII. Fig. 6. 7.

It begins at the anterior edge of the Foramen Magnoun, and passes along the inner or concave part of the Bodies of the Vertcbrre, becoming broader over each of the Intervertcbral Siubstances, It adheres firmly to their upter and under edges, and terminates at the lower part of the $\mathrm{Os}_{\mathrm{s}}$ Sacrum. It prevents the Spine from being too much bent forwards.

## Ligaments of the Rias.

The Capsular Ligaments of the Heads of the Ribs, which arise from these Heads, and are fized to the Circnmference of the Pits in the sides of the Bodies of the Vertebrar and Intervertebral Cartilages. The outer part of each limament sends off, or is comected with, radiated Fibres which are spread out upan the sides of the Vertebra. Tab. LIII. Fig. 8, c, c.

The Capsular Ligaments of the Tubereles of the Ribs,
which arise round the Aricular Pits on the points of the Transverse Processes of the Vertebres of the Back, and are fixed round the Tubercles of the Ribs.

The Internal Ligaments of the back of the Ribs, called Ligamenta Transuersuria Interna, which arise from the inferior Surfaces of the Trannverse Processes, and are fixed to the superior Margins of the Necks of the nearest Ribs. Tab, LIII. Fig. 8. $d, d$.

The Enformal Ligaments of the Necks of the Ribs, calied Ligancnta Tronsersaria Exierna. They arise from the points of the Transverse Processea externally, and are fixed to the back part of the Necks of the Ribs. Tab, LII. Fig. 9. $c_{,}$c.

Ligamentas Corvicis Castorwon Eiterna, or Eileraal Ligaments of the Necks of the Ribs, which arive fiom the Fixtermal Margins of the iuferior oblique Processes, and descend obliquely outwards, to be fixed to the upper and outer part of the Neeks of all the Ribs. Tab, LilI.三"ig. 9, $c, e_{0}$

The Liganteuts at thin and of the Ribs, together with the situation of the Transverse Proecsses, atmit of their motion upwards aud downwards, but prevent them from moving in any other direction.

Shat Ligamentous Fibres, which rus from the Max. gins of the anterior extremities of the Ribs to the Margins of their corresponding Cartiliges ; the Cartilages and Hibs being joined by 2 union of substance. Tab. LIII. Fig. I3. d.

Radiafed Ligamentv, which go from the anterior Surfuces of the Capsular Ligaments over the external Surface of the Sternum. 'Tab. LII. Fig. 12. d. Fig. 13. e.

Many of the Fibres of thene Ligaments intermix with their fillows on the opposite side.

The C'apstdar Liganents of the Cartalages of the Ribs, which wise from the Margins of the Articular Cavities of the Steraum, and are fixed round the extremities of the seven True Ribs. 'Tab. LIII. Fig. 13.

Membrane proper to the Sternum, which is a firm Expansion, composed of Tendinous Fibres running in different dircetions, but chiefly in a longitudinal one, and covering the anterior and posterior Surfices of the Bonc, the Membrane itself being confounded with the Periosteum. T'ab. LIII. Fig. 12. $a, b$.

Ligaments of the Cartilago Ensiformis, Tab. LULI, Fig. 12. $g$, $g$, which are part of the proper Membrane of the Stermum, divided into strong Bands running obliquely from the under and fore part of the second Bonc of the Sicruum, and from the Cartilages of the seventh pair of Ribe, to be fixed to the Cartilago Ensiformis. - The Ligaments covering the Sternurs serve considerably to strengthen it.

I'hin Tentinous Expansions, which run over the Intercostrles at the fore part of the Thorax, and connect the Cartilages of the Ribs to each other. They are chieliy scated in the spaces innoccupied by the lntercostales Externi. Tab. LIII. Fig. I2. fof.

LIGAMENTS

## LIG.AMENTS OF THE BONES OF THE PELVIS.

The iteo Thansurse Ligaments of the Pelvis, which arise from the posterior part of the Spine of the $\mathrm{O}_{\mathrm{s}}$ Hium, and run transversely. The onc is suppcrior, and is fixed to the Transverse Process of the last Veitebra of the Loins; the other inferior, and is connected to the first Transverse Process of the Os S Sacrunn. Tab. LIII. $_{\text {S }}$. Fig. 4. $p, q$.

The Ilionsacral Ligaments, which arise from the posterior Spinous Process of the Os Ilimn, descend oblique. $1 y$, and are fixed to the first, thind, aud fourth spurious Transverse Processes of the $\mathrm{O}_{\mathrm{s}}$ Sacrum. Tah. LIII. Fig. 10. $f, g, k$.
These, with the twn Transverse Ligaments, assist in binding the Bones together to which they are connected.

The Capsutar Ligament of the Symphysis of the O. Hiums and Sacrum, which porivunds the Joint, and assists in ennmecting the two Bones to each other.
A very thin Cartilage within this Joint, which cemento the twn Bones strongly together, and which constantly atheres to the Os Sacrum, when the Joint is opened. Tah, LIII. Fig. 11. $f$.
A Ligamentows and Cellurnos Substance, containing Muces, which forms the back part of this Joint, also assisting to fix the two Bones to each other, in such a manner as to $2 l l o w n$ nn motion ; the Joint, however, along with its fellown and that between the Ossa Pubis, being useful in diminishing the effects which suight result from Concussion. Tab. LIII. Fig. I1. g.

The two Sacro-ischiatic Ligaments, sitnated in the under and back part of the Pelvis. They arise in common from the Transverse Processes of the Os Sacrum, from the under and lateral part of that Boase, and from the upper part of the Os Coceygis.
The first of these Ligaments, ealled the Large, Externul', or Posterior Sicero-sischiatic Ligament, descends abliquely to be fixed to the Tuberosity of the $\mathbf{O}_{8}$ Ischium. Tah, LIII. Fig. 10. k. The other, called the Small, Biternal, or Aaterior Sacra-zischiatic Ligament, runs transwcruely to he fixed to the Spinons Process of the Os Ischium. Tah. LIII. Fig. 10. m.

These two Ligaments assist in hinding the Bones of the Pelvis, in supporting its contents, and in giving Origis to part of its Muscles. By the Extermal, the Notch of the llium is formed into a Hole for the passage of the Pyriform Muscle, the Sciatic Nerve, and the Blood-vessels which belong to the outside of the Pelvis. Between the two Sacro-sciatic Ligaments, an Opening is left for the pastiage of the Obturator Internus.
The tro Membranous Productions which are comected with the large Sacro-ischiatic Liganuent, termed by Weitbuecet the superior and Iuferior Appendices of the large Sacro-ischiatic Ligament.

Vol. I.
Z

The Superior Appendix, which is Tendiniovs, arises from the back part of the spine of the Os llium, and is fixed along the outer edge of the Ligament, which it iscreases in breadth, Tah. L1II. Fig. 10. I.
The Infurior or Falciform -Ippendix is situated within the Cavity of the Pelvis; thic hack part of it is comected with the middle of the large External Ligament, and the remainder is extended round the Curvature of the O s Ischium. Tab. LIII. Fig. I1. $n$, $n$.
These two Productions assist the large Sacro-ischiatic Ligament in furuishing a more cornmulious stuation for, and attachment to, part of the Gluteus Maximus and Obturator Interaus Muscles.

Besides the Ilio-sacral and Sacro-ischiatic Ligaments, saveral other Slips are observed upon the back of the Os Sacruin, which descosd in an irregular mamer, and strengthen the connection between that Bone and the Osas Ihia. Tab. LIII. Fig. 10, $i, i$.

The large Holes upon the back part of the Os Sacrum are also surrounded with varions Ligamentous Expansrions projectiog from one Tubercle to another, and giving Origin to Muscnlar Fihres, and protection to small Vess sels and Nerves which creep ander them, Tab, LIII. Fig. IO.

A General Covering sent down from the Ligaments of the Os Sacrum, which spreads over and connects the different pieces of the $\mathrm{O}_{\text {s }}$ Coccygis together, allowing eonsiderabte motion, as already mentioned in the description of this Bone. Tab. LIII. Fig. 10.

Longitudinal Ligaments of the Os Cocrygit, which descend from those npon the Dorsums of the Os Sacrum, to be fixed to the hack part of the $\mathrm{O}_{\mathrm{s}}$ Coccygis. Tah. LIII. Fig. 10. n. The Ligaments of this Bone prevent it from being pulled too much forwards by the action of the Coccegeus, and they restore the Bone to itg natural situation, after that Muscle has ceased to act.

The Inguinal, or Pnulart's, or Fallontob's Ligament, or Crural Arch, which runs transerssely from the anterior-superior Spinoma Process of the $\mathrm{O}_{9}$ Ilium tn the Crest or Angle of the $\mathrm{O}_{s}$ Pubis. It has been aheady descrihed as the inferior Margin of the Tendon of the External Obique Muscle of the Abdomen. Tab, XXXIV. Truink, $q$.
A strong Ligamentous Teudon covering the upper part of the $\mathrm{Os}_{s}$ Puhis, projecting above the Linea hioopectinea, and having part of the Ligament of Pourant fised to it.
The Capsular Ligament of the Symphysis of the Ossa Pubis, which joins the twn Bones to each other externally.
The Liganenfous Cartilage, Tab. LIII. Fig. II. u, which unites the two Ossa Pubis so firmly together as
to aduit of no motion, excepting in the state of Prtguancy, whea it is frequently found to be so much thickened, as to be capable of yielding a little in the time of Delivery.

The Obturator Membranc, or Ligainent of the Fovamen Thyraideun, Tah. LIII. Fig. II. r. Tab. LHII. Fig, $1, q, r, s, i f, x$, which adheres to the Margin of the

Foramen Tlyyroideum, and filts the whole of that Opening, excepting the Oblique Notch at its upper pare for thic passage of the Obturator Vessels and Nerve. It assists in supporling the conteats of the Pelvis, and in giving origin to the Obturatores. By yielding a little in tho time of Labons, it contributes in a small degreu to an easier Delivery.

## LIGAMENTS OF THE SUPERIOR EXTREMITIES.

## Ligaments of the Clavicle.

The Radiated Ligamente, which utse from the outer Surface of the inner end of the Clavicle, and are lixed round the edge of the corresponding Articular Cavity of the Stemum. Tab. LIV. Fig. l. $f$ :

The Capsular Ligament, which lies within tbe former. Tab. LIV. Fig. 2, i.

The Intcravticular Cartalage, which divides the Joint into two distinct Cavities, and accommodates the articulating Surfaces of the Clavicle and Sternum. Tah. ILV. Fig. I. $f$.

The Interclavicular Ligament, joining the Clavieles tegether behind the top of the Sternum, and partly formed by a continuation of the Radiated Ligaments, Tab. LIV. Fig. 1. b. Tah. XXXII. Fig. 1, d.

By the Iigaments of this Joint, with the assistance of the intervening Cartilage, the Shoulder is allowed to move in different directions, as upon a centre.

The Ligamentunn Rhomboideum, which arises from the inferior rough Surface at the anterior extremity of the Clavicle, and is fixed to the Cartilage of the first Rib. Tab. LIV. Fig. I. g.

The Liganents which join the posterior extremity of the Clavicle to the Acromion, having a Capsular Ligament within, and sometimes an Interarticular Cartilage. Tah, LIII. Fig. 5. $\boldsymbol{k}$.

The Ligamentum Conovideum, which arises from the root of the Coracoid Process, and is fixed to the Tubercle at the outer ead of the Clavicle.

The Liganentum Trapezoideum, which arises from the print of the Coracoid Process, and is fixed to the under edge of the Clavicle. Tab. LIV. Fig. 5. g.

A thin Ligamentous Slip which comes from the Tendon of the Subclavius, or from the Clavielt, and joins the Trapezoid Ligaunent. 'Tab. LIV. Fig. S. o.

The Ligaments fixing the Clavicle to the Scapula are of such streogth, as to allow only a small degree of rootinn, and that chiefly of a rolling or twisting nature.

## Ligaments proper to the Scarula.

The Proper scaterior Thinsgalar. Ligament of the Scapula, which arises broad from the Exiemil Surface of the Coracoid Process, and becomes narrower where it is fixed to the posterior Margin of the Acromion. Tab. LIV. Fig. 5. f.

This Ligament forms one coutinued Surface. It is thickest, however, an each side, and these thicker parts are united by a thin intermediate Liganeentous Membranc, which, when removed, gives to the ligameat the appearance of being donble. Tub. XXXII, Fig. 2. $n$. It confines the Tendon of the Supra-spinatus, and assists in protecting the upper and inner past of the Joint of the Humerus.

The Proper Posterior Ligament of the Srapula, which is sometimes double, and is stretched across tbe Semilv. mar Notch of the Scapula, forming that Notch into one or two Holes for the passage of the superior-porterior Scapulary Vessels and N'erve. Tab. LIV. Fig. 3. g.

## Ligaments, \&c. of the Joint of the Shoulder.

The Capstular Liganient, which ayises from the Cervix of the Scapula, behind the Margio of the Glenoid Cavity, and is, fixed round the Neak of the Os Humeri, loosely inclosing the Ball of that Bone. Tab. LIV. Fig. 3. 8. Fig. 6. ${ }^{d}$.

A small Finulriated Orgas within the Capsular Ligament, for the Secretion of the Synovia. Tab. JIV. Fig. 7. c.

A Sheath sent down from the fore part of the Capselar Ligament, between the Tuberosities of the Os Hu meri, which inclosps the Tendon of the long Head of the Hiceps Flesor Cubiti, and prevents it from starting out of its place. Tab, L1V, Fig. 5. r.

Additional Ligamentous Bands of the Capsular Jiga ment, which adhere to its anterior Surface. 'Tab. IIV. Fig. 5. m. What gives most strength to this Joint, as
well as to sever.l otber Joints of the Body, is the covering frou the surrounding Muscles.

From the shallorn mess of the Gilenoid Cavity, fion the extent and boseness of the Capsular Diguaicnt, and from the tructure of the other parts of the loint, more extensivo motion is allowed to the Os Hunieri than to any other Bone of the Bods; as it can not only move freely to crery side, but also possesses a considerable degice of motion upon its own asis.

## Ligabients, \&ce. of the Jonst of the Elbow.

The Cupeular Ligament, which arises round the Mar. gin of the Articular Surface, at the lower cud of the Us Humeri, and is fixed about the edge of the Articular Surface of the Ulnn, and also to the Coromary Ligament of the Radius. Tah. LIV. Fig. 8. 1, 1. Tab. XXXII. Fig. 3.
Thic sides of the Elbow-joint are strengthened by twa Ligamicntous Brydh =hiols withere so trimy to the outer Surface of the Capsolar Ligament, that thiny appear to be part of its Substance, viz.

Thé Brachio-Ulnar, or Internal Lateral Ligament, whiclr arises from the fore part of the inner Condyle of the $\mathrm{O}_{\mathrm{s}}$ Humeri, and spreads out, in a radiated manner, to he fixed to the inside of the Coronoid Process of the thax. Tab. LIV. Fig. 8. m. And,

The Brachio-Radial, or External Lateral Liganent, which is like the former, but larger, Tah. LIV. Fig. 9 . h. It arises from the External Condyle of the Os Humeri, and is expanded upon the Coronary Ligament, into which it is inserted.

The Coronary, Annular, or Orbicular Ligament of the Radius, which approaches to the firnness of Cartilage. It arises from one side of the small Semilunar Ca vity of the Una, and, after surrounding the Neck of the Radius, is fixed to the other side of that Cavity. The upper edge of it is incorporated with, and may be considered as a pat of, the Capsular Liganent, while its under cdge is bixed round the Neck of the Radius, al. lowing that Bone to move ficely round its own axis, upon the Articular Surfice of the Os Humeri, and in the small Seruilunar Cavity of the Ulna. Tab. LIV. Fig. 8. $m$.

Besides the Ligaments already described, there are others which run in various directions upon the fore and back parts of the Joiat, contributing to its strength, and having the names of Anterior and Postrrior Accessory Ligamenta. Tab, LIV. Fig. 8. o, p. Fig. 9. I.

There are also two Tendinous Substances, termed Intermuscular Ligasents of the Os Humeri, which cxtend along the under nud lateral parts of tijis Bone, giving origin to part of the Museles eituated at this part of the Arm.
The Ligaments and Bones of the Joint of the Elbow form a complcte Hinge, which allows the Forearm to Jave free fexion and extension upon the $\mathrm{O}_{3}$ Humeri,
but uo rotation when the Arm is in the exteaded state, though a suall degree of it is perceptible when the Jomt is moderately bent, and the Ligaments thereby relaved.

Within the Capsular Ligament, and chiefly in the upper pare of the P't of the $\mathrm{O}_{\mathrm{s}}$ Ifumeri in which the Olecrauon plays, the Fatty Siubstance is lodged for the luhrication of the Joint. Tab. LI.

A similar S'ubstunce, but anuch smaller in quantity, is also found in the Depression in which the Corouoid Process of the Clona moves.

## Ligaments between the Bodice, and between the Under: Ends of the Radius and Ulea.

The Interasseous Ligament, which extends between the sharp Ridges of the Radius and Uloza, Filtug up the greater part of the space between these two Rones. It in hroadest in the middle, in cousequence of the Bones here being largest at throir estromitics, aud is composed of small Fasciculi, which rus obliquely downwards and inwards. Two or three of these Slipg, however, go in the opposite direction ; and one of them, termed Oblique Ligament, and Chorda Transuersalis C'ubiti, is stretched between the Tubercle of the $\mathrm{U} \ln 2$ and under $\mathrm{p}^{\text {art }}$ of the Tubercle of the Hadiui.

In different parts of the ln nerosseous Ligament, them are Perforations for the passage of Blood-ressels firm the fore to the hack part of the Fore-arm, and a large Opening is found at the upper edge of it, which is oceupied by Muscles. Tab. LIV. Fig. 8. r.
This Ligament assists in binding the Ulna and Radius together, prevents the Radius from rolling too much outwards, and furnishes a commodious attaohment for Muscles.
The Capsular, or Sacciform Ligament, which arises from the edges of the Semilunar Cavity at the under end of the Radius, and surrounds the Head of the lilna, allowing the Radius to turn upou the Clas, in performing the different motions of Pronation and Supination of the Hand. Tab, LIII. Fig. 10. c.

## Ligaments, \&sc. between the Fore-Akm and Whtst.

The Capsular Ligament, which arises from the Margin of the Glenoid or Navicular Cavity of the Radius, and from the edge of the moveable Cartilage at the Hearf of the पlna, and is fixed to the Cartilaginous edges of the three first Bones of the Carpus. Tah. LIV. Fig. 11, $i$.
The Interartioular Cartilage, placed between the Head of the Uha and Os Cuneiforme, and which is a contiouation of the Cartilage covering the eud of the Rz dius. It is concave above and below, and is connocted loosely to the end of the Styloid Process. Tab. LIV. Fig. 10. $c$.
The Two Laieral Ligantents, oge of which arises from
the Styloid Process at the nuder end of the Radius, and is fixed to the Os Nssiculare; and the other fiom the Styloid Process of the Ulna, and is fixed to the Cunciform and Pisiform Bones.
The Ligaments of this Joint allow extensive notion forwards and backwards, and a considerable degree of it to either side.

The Mucons Ligament, which lies within the Joint, Tab. LIV. Fig. 11. o, and extends from the Groove between the two first Bones of the Carpus, to the corresponding part of the Radius. It is supposed to regulate the Mucous Organ connected with it.

## Licaments of the Carpus.

The Anterior, Anmular, or Tranwerse Ligament, which is stretched 2 cross from the projecting Points of the Ossa Pisiforme and Unciforme, to the Sesphhoides and Trapezium, and forms an Arch which covers and preserves in their places the Tendoon of the Flexor Mnsicles of the Fingers, Tab. XXXII. Fig. 6. \&
The Capsular Ligament, which axises from the Cartilaginous Edge of the upper Row of the Carpus, and is fixed in a similar manner to that of the under Row, chiefly admitting of flexion and extension, and that in 2 smaller degree than in the former Joint. Tah. LIII. Fig. 15, $k$.

The Short Ligaments of the Bones of the Carpus, which are small Ligamentors Slips ruaning in various directions, joining the different Bones of the Carpns,--lirst of the eame Row, then of the two Rows togethex, Tab. LIV. Fig. 12. 13.14. They are termed Oblique, Trantverse, Capsular, and Proper Ligaments of the Bones of the Wrist, and admit only of a small degree of yielding hetween the different Bones in the same Row.

## Ligaments beheeon the Carfal and Metacarpal Bones.

The Articular Ligoments, which arise from the Margins of the second Row of the Carpal Bones, and are fixed to the Margins of the adjoining Bones of the Metacarpus, Tab. LIV. Fig. 12. 16. Other Ligaments run in a radiated manner from the Carpal to the Metacarpal Bones; the whole getting the names of Articular, Lateral, Straight, Perpendicular, \&c. according to their different directions.

From the flatness of the Articular Surfaces, and strength of the Connecting Ligaments, very little motion is allowed between the Carpus and Mctacarpus.

## Ligaments betueen the Extromities of the Metacarpal Bowes.

The Interossenus Ligaments at the Basses of the Metacarpal Bones, Tab. LiV. Fig. 12. 14. They are alort slipis, which run transvenely, and join these Hones to each other, obtaining the names of Dorsal, Laternl, or Pelmar, according to theis different situations.

The Inierosscorts Lagamenty at the Heade of the Metacarpal Bones, which run trassveryely in the Palon, and connect the fleads of the e Poucs to each other. 'Iah. Liv. Fig. 12. 1. Tab. XXXII. Fig. 6. $\lambda$,

## Ligaments at the Base of the Metacarfal. Bone of the Thumb, and at the First Jont of the Fingers.

These consist of the Capsular Ligaments which inclose the Joints, and the Lateral Ligaments which are situated at the sides of the Joints, adhering to and strengthening them ; the uhole admitting of flexion, extension, and in seral motion. T'ah. XXSII. Fig. 6 .

## Luteaments of the First and Sccond Jonvts of the Thomdr and Second and Third Joints of the Finesks.

The Capsular Ligaments inclosing the Joints. Tab. Liv. Fig-17. Tab. XXXII. Fig. 6.

The Lateral Legaments plucert at the sides of the Joints, and adhering to the Capsular Ligaments, confining the motion to flexion and extension. Tah. LIV. Fig. 17.

## Lugaments retuming the Tendons of the Muscles of the Hand and Fingers, in situ.

The Anterior, Transucrse, of Annular Liganewt of the Wrist,-already descrihed.
The Vaginal Ligaments of the Flexor Tendons, whicls are fine Membranous Webs connecting the 'Tendons of the Suhlimio, first to each other, then to those of the Profundas, and foxming, at the same time, Bursz Mucosse, which surround these Tendons. Tab. II. Fig. 1. $g-k$.
The Vaginal or Crucial Ligaments of the Phulanges, which arise from the Ridges on the concave side of tba Phalarges, and run over the Tendons of the Flexor Moscles of the Fingers, Tah. L. Fig. 1. $s, t, u$. Tab. LE. Fig. 1. $b, c, d$. Upon the Body of the Phalanges, they are thick and strong, to hind down the Tendons whilo their Muscles are in action; but over the Joints they are thin, and have, in some parts, a Crucial appearance, to allow the ready motion of the Joints.
The Accessory Ligaments of the Flexor Tendons of the Fingers, which are small Tendirous Rrena, axising from the first and second Phatonges of the Fingers. They run ohliquely forwards within the Vaginal Ligaments, terminate in the Tendons of the Two Flexor Muscles of tho Fingers, and assist in keeping thens in their places. Tah. LIV. Fig. 18. $f, g, i$.

The External Prantuerse, or Patierior Annular Liganuent of the IFrist, which is part of the Aponeurosis of the Fore-arm, extending zeroos the back of the Wrist, from the inner side of the extiemity of the Clna and Os Pisiforne to the outer side of the extremity of the liadius, Tab. XIXILI. Fig. 2. E. It is connected with the small Aunular Liganients which tie down the Teudons of the Extenyores Ossis Metucuspi et Primi Intemodii Pol-
fici,
licie, and the Extensor Carpi Onaris. Tab. L. Fig. 5. $i, l$.
The Vaginal Ligaments, which adhere to the former Ligaments, and serve as Sheaths and Bursa Mucosa to the Extensor Tendons of the Haud and Fiogers. Tab. LI. Fig. ?.

The Transrerse Ligaments of the Exteusor Teadons, which are Aponeurotic Slips running between the Tendons of the lixtensor Digitorum Conmminis, near the Heads of the Metacarpal Bones, and retaining the Teadons in their places. Tab. L. Fig 5. o.

## LIGAMENTS OF THE INFERIOR EXTREMITIES.

Ligaments, \&c. connecting the Os Femobis with the Os Innominatum.
The Capsular Ligament, the largest and strongest of the Articular Ligaments. It arises round the outside of the Brim of the Acetabulum, embraces the Head of the Thigh-bone, and inclosesthe whote of its cervix as far 26 the ront or outer extremity, round which it is firmly connected. Tab. XXXI. Fig. I8. E.

The outer part of the Capsular Ligament is extended Garther down than the anner, which is reflected back upon the Neck of the Bome, and in certain parts forms Retinacula. Tab. LV. Fig. 1. 2.

It is not every where of the same strength. It is thickest at its anterior and outer part ; thinner where it is covered by the lliacus Internus; and thinnest posterionly, where the adjacent Quadratue is opposed to it.

It is strengthened on its outer Surface by various $A c$ cessory or Addithonal Stips, which run down from the Fascia Lata and surrounding Museles; but the strangest of these Slips arises with diverging Fibres from the infe-rior-anterior Spinous Process of the $\mathbf{O s}_{s}$ limm. Tab. LVV. Fig. 1. $n, n, 0$.

The Capsular Ligament allons the Thigh-bone to be moved to every side; and when its Bedy is moved for"ards or backwards, a small degree of wotation is performed round the Cervix of the Bone.
The Internal, commonly called the Round Ligament, which arises by a broad flat beginning from the under and inner part of the Cavity of the Acetabulum, and is connected with the Substance termed Gland of the Joint. From this it rums backwards and a little upuards, becorning gradually narrower and rouncler, to be fised to the Pit upon the inner Surface of the Ball of the Os Femoris. Tab. LV. Fig. $2 . g-k$.
The Round Ligameut prevents the Bone from bcing dislocated upuards or inwards, and assists in agitating the Mucous Substance within the Joint.

A Cartilag inonss Ligament surrounding the Brim of the Acetabulum, and thereby incrcasing the depth of that Cavity for the reception of the Incad of the Thigh-bone, Tab, LV. Fig. z. c.

A Double Cartilaginous Liganent, Tab. LY. Fig. 3. $\partial$, stretched from one cid of the Breach in the under nuit
fore part of the Acetabulum to the other, but leaving 2 Hole belind it for containing part of the Substanee called Gland of the Joint, and for the passage of the Vessels of that Substance.

This Liganent allows the Thigh-bone to be noved inwands, and the Glandular-tooking Substanee to be agitated with safety.
The Substance ealled Gland of the Joint, covered with a Vaseular Membrame, and lodged in a Depression in the under and imer pact of the Acetabulum. Tab. LV. Fig. 2. $m$.

At the edges of this Substance Fringes ane seat out, which furnish part of the Synovia for the lubrication of the $\mathrm{Joint}^{\text {. }}$
The edges of this Substance are fixed to those of the Pit in the Acetabulum, by small Ligamentous Bridles termed Ligamenta Mucosa, vel Ligamentula Massa: A-diposo-g/andutusa.

## Ligaments, sce. of the Joint of the Knee.

The Lateral Liganients which lie at the sides of the Joint, and adhere to the outer Surface of the Capsular Ligament.

Tre Internal Lateral Ligantent, which is of considerable breadth, arising fiom the upper pat and Tubercle of the internal Condyle of the Os Femoris, and inserted into the epper and inner past of the Tibia, the Fibres passing obliquely forwayds, till they have reached a little below the Mead of the Bone. Tab. LV. Fig. 4. $k$.

The Long External Lateral Ligamient, which is uarrower, but thicker and stronger than the former, arising from the Tubercle above the extcraal Condyle of the $\mathrm{O}_{3}$ Femoris, and fixed to the Fibula, a little below its Head. Tub. IV, Fig. 5, f. Tab. MXXII. Fig. 8. 1.
Behind the long external Lateral Ligament, there is an Expansion attached neasly is the same manner as thia Ligament, which has been termed the External Short Latcral Lignment. Tab. LV. Fig. 5. g.
These Ligaments prevent the lateral and rotatory motions of the $\log$ in the extended state, but admit of a small degrec of both whes the Limb is bent.

The Pasterior Ligament of Winslow, Tab. LV. Fig. 5. $h$, formed of irregular Bands shich arise from the "ppr
upper and hack past of the external Condyle of the $\mathrm{Os}_{3}$ Fenoris, aud descend obliquely over the Capsular Ligament, to be fixed to the libia under the inaer and haek part of its Head. It prevents the Leg from being pulled farther formards than to a striagite line with the Thigh, and also furaishes a convenient situation for the beginuings of the Gastrocnemius and Plantaris Muscles.

When this Ligament is wanting, which is sometimes the case, its place is supplied by a Membranous Expansion.

The Ligament of the Patella, which arisen from a. Depression behind the Apex of that Bone, and is fixed to the Tuberosity of the upper and forc part of the Tibia. Tab, MXXIY, Leg, 6, Tab. XXXiI. Fig. 9. i. By the intervention of this Ligament, the Museles inserted into the Patclla are enabled to extend the Leg.

The Capsular Ligament, which arises from the whole Ciscumference of the under end of the Thigh-bane, some way above the Margin of the Artieulating Cartilage, and above the posterior part of the great Notch betwern the Condyles. From this it doanande tu be hxed round the Head of the Tibia, and into the whole Margin of the Articulating Surface, of the Patellh, in such a manner that the Patclla forins part of the Capsule of the Joint. Tab. LV. Fig. 6. 7.

The Cupsular Ligament is of itself remarkably thin, but so covered by the Ligaments already mentioned, by the genemal Apeneurosis of the Limb, and by the Tendons of Muscles which surround the Joint, 25 to acquire a considerable degree of strength.
The Capsular Ligament, along with the other Ligaw ments of this Joint, admits of the flexion and extension of the Leg, but of no lateral nor rotatory motion in the extended state, though of a small degree of each when the Limb is fully bent.
The Liganventunn Alare, Majus et Minuls, which are Folds of the Capsular Ligament, ruming tike Wingy at the sides of the Patells, to whieh, and to the Fatty Substanee of the Joint, they are attached. Tab. LV. Fig. 6. e, d.
The Ligamentum Mrscosum, continued from the joining of the Ligamenta Alaria to the $\mathrm{O}_{\mathrm{s}}$ Femorin, immediately above the Anterior Cracial Ligament. It preserves the Symovial Subotaoce in its proper plaee, during the various motions of the Joint. Tab. LV. Fig. 6. c.

The two Crucial of Internal Ligaments, which arise from the Semilunar Notch between the Condyles of the Os Femoris, and deenssate each other within the Cavity of the Joint. Tab. XXXII. Fig. 9. f, f.
The Anterior Crucial Ligament runs downwards and forwards, to be fixed to a Pit before the rough Protuherance in the middle of the Articulating Surface of the Head of the Tibia. Tab. LV. Fig. 8.e.

The Pusterior Crucial Liganient descends to be fixed to a Pit behind the above-mentioncd rongh Prot uherance. Tab. LV. Fig. 8. $f$. Tab, XXXII. Fig. B. $k$.

These Ligaments, in the extended state of the Lef, prevent it from going forwards beyond a straight live
with the Thigh. When the Kace is heat, they allow the Foot to be turned outwards, but not in a contrary dircetion.

The two Interarticilar Cartilages, called Semilunar, from their shape like a Criscent, placed upon the top of the ribia. Tab. LF. Fig. \%, i, d. 'lub. SlXXI. Fig. 7. $c, c$.

The outer emavex cdge of each of these Cartilagos is thick, while the inuer concave edge becouscs thin and sharp like a knife or sickle; and being concuve above, the siockets for the Condyles of the $\mathbf{O}_{s}$ Femoris are rendored decper, and this Bone and the Tibia are more accurately adspted to each other.

Each of these Cartilages is broad in the middle, their extremities becoming narrower and thinner as they approach one another. Fakh covers about two thirds of the Superficial Cavity of the top of the Tibia, lesving one thind bare in the middle. The extremities are termed Cormua, and are fixed by Ligaments to the Protuberance of the Tluis. The anterior Comus are joined to each other by a Transwerse Ligament. Tab. 1v. Fig. 9.k.

The convex edge of these Cartilages is fixed to the Capsular and other Ligaments, in such a manner as to be allowed to play a little upon the Cartilaginous Surface of the Tibio, by which the notions of that Bone upon the Condyles of the $\mathrm{O}_{3}$ Femoris are facilitated.

The Mucose or Fatty Substances of this Joint, which are the largest of any in the Body, are situated in the different interstices of the Joint, but ehiefly round the edges of the Patella. Tab. LV. Fig. 13. $b, b, b$. They are covered by a fine Membrane reflected from the inaer Surface of the Capsular Ligament.

Fimbrie project from the edges of these Fatty Substanees, which discharge Syzovia for the lubrication of the Joint. Tsb, LV. Fig. 13, c, e.

## Ligaments connecting the Fibula to the Tibia.

The Capsular Ligament of the superior extremity of the Fibula, which ties it to the outer part of the Head of the Tibia, and which is strengthened by the exteroal Laternl Ligameat of the Knee, and by the Tcndon of the Biceps which is fixed to the Fibula. Tab. LV. Fig. 7. i. Fig. 8. o.

The Interosseons Ligament, one edge of which is fixed to the Ridge or Angle at the outer and back part of the Tibin, the others to the corresponding Ridge at the inner side of the ribula. It fills the space between the Tibia and Fihula, like the Interosseous Ligancant of the Fore-axm, and is of a sinilas structure, being formed of ohlique Fibres, and perforated in various places for the passage of Vessels and Nerves.

At its upper part there is a large Opening. where the Muscles of the opposite sides auc in contact, wnd where Blood-vessels pass to the fase part of the leg.
It serves chiefly for the Origin of part of the Murles
which belong to the Foot, and thereby supplies the pince of Bone.

The Ligaments of the inferior extremity of the Fibula, which are called Anterior-superior, and Posterior-supes rior, according to their situations, arising from the edges of the Semilunar Cavity of the Tibia, and fixed to the Malleolus Externus of the Fibula. Tab. LV. Fig. 10. h. Fig. 11.e.

The Ligaments between the ends of the Tihia and Yihula join the two Bones so firmly together, as to admit of no semsible motion.
Ligaments connecting the Bones of the Tarsus arith those of the Leg.
The Anterior Ligament of the Fibula, which arises from the naterior part of the Mallcolus Fsternus, and passes obliquely forwards, to be fixed to the upper and outer part of the Astragalus. Tab. LV. Fig. 10. $k$.

The Middle, or Perpendicular Ligament of the Fihulh, which arises from the point of the Mallookess Externus, and desocuis almost perpendicularly, to be inserted into the outside of the Os Calcis. Tab. LV. Fig. 10. $i$.

The Posterior Ligament of the Fibula, which arises from the under and back prott of the Malleolus Externus, and runs backwards, to he joined to the outer and posterior part of the Astragalus. Tab. LV. Fig. 11. h.
The Ligamentum Deltoides of the Thbia, which arises from the Malleolus Internus, aud descends in a radiated form, to he attached to the Astragalus, Os Calcis, and Os Naviculare. Tab. LV. Fig. 11. f.

The Capsular Ligament, which lies within the former Ligaments, and is remarkably thin, especially before and behind, for the readier motion of the Joint. It arises from the Margin of the Artieular Cavity of the Tibia and Fibula, and is fixed round the edge of the Articular Surface of the Astrayglus.

The Ligaments and the other constituent parts of the Ankle-joint form it into a complete Hinge, which allows Alexion and extension, but no rotation nor lateral motion, in the bended state of the Foot, though a small degrec of each when it is fully extended.

## Ligaments of the Tarsus.

The Capsular Ligament, which joins the Articular Surface of the $\mathrm{O}_{\mathrm{s}}$ Calcis to that of the Astragaluw.
A number of Short Liganiento, lying in the Fossa of the Astragalus anil of the Os Calcis, and forming the Ligamentous Apparatus of the Sinuous Cavity, which asgists in fixing the two Bancs strongly togetlier. Tab. LV. Fig. $10.7, \mathrm{~m}$.
The Capsnlar, the Broad Superior, and the Internal Lateral Liganzents, connecting the Astragalus to the Os Naviculare, and admitting of the lateral ind yotatory motions of the Foot. 'Jab. LF. Fig. 10.

The Supcrior, the Lateral, and the Liferior Ligam monts, fixing the $\mathrm{Os}_{\mathrm{s}}$ Calcis to the $\mathrm{Os}_{\mathrm{s}}$ Cinhoidea, where a small dcgrec of motion is allowed to cvery side. The in ferior Ligaments consist of a Long, an Oblique, and a Rhomboid Ligament, whicls are the longest and stroogest of the Sole. Tab, LV. Fig. 12.
The Superior Superficial, the Interossenus, and the Inferior Txansverse Ligaments, which fix tho $\mathbf{O}_{s}$ Naviculare and $\mathrm{O}_{5}$ Cuboides to each othcr. Tab. LY. Fig. 10. Fig. 12.

The Sitperior Lateral, and the Plantar Ligaments, which fix the Os Naviculare to the Os Cuneiforne. Tab. LV. Fig. 10. Fig. 12.
The Superior Superficial, and the Plantar Ligancuts, which comnect the Os Cuboides to the $\mathrm{Os}_{\mathrm{s}}$ Cuneiforne Externum. Tab. LV. Fig. 10. Fig. 12.
The Dorsal and the Pluatar Ligaments, which unite the Ossa Cuneiformia to each other. Tab. LV. Fig. 10. Fig. 12.

Bovides the Capsular Ligannents of the Tarsus already mentioned, each of the other Joints of these Bones is furnished with its proper Capsular Ligament.

From the strength of the Ligaments which unite these Bones to each other, and firm the plaimness of their Articulating Surfaces, no more motion is allowed than to prevent the effects of concussion in walking, leaping, \&c.

## Ligaments bctiveen the Tarsus and Metatarsus.

The Bones of the Metatarsus are fixed to those of the Tarsus by Capsular, and numerous other l.igaments, which are called Dorsal, Plantar, Lateral, according to their situations;-and Straight, Ollique, or Transverse, according to their directions. The nature of this Joint is the same with that between the Carpus and Mctacappus. Tah, LV. Fig. 10. Fig. $1 \approx$.

## Ligaments comaecting the Metatarsar Bones to each other.

The Darsal, Plantar, and Lateral Ligaments, which connect the Bases of the Metatarsal Henes with each other. Tab. LV. Fig. 10. Fig. 12.
The Tianseerse Ligumente, which join the Heads of these Bones togethcr.

## Ligaments of the Phalawees of the Toes.

The Capstlar and Lateral Liganents;-resembling those of the Fingers.

Ligaments ami Sheaths retaining the Tendons of the Muscles of the Foot and 'i'oes, in eitn.
The Anullar Ligament of the Tarsus, which is a thickened
thickened part of the Aponeurosis of the Legy splitting ioto superior and inferiar portions, which bind down the Tendonis of the Extensors of the Toes, upon the fore part of the Ankle. Tah. XXXIV. Fig. 2. N, N.
The Taginal Ligament of the Tendons of the Perone; which, hehind the Ankle, is common to both, hut at the onter part of the Foot forms a Sheath for each Tendon, Tab. LII. Fig, 2. $p, q$; preserving it in its proper place, and forming the Bursa of that Tendon.
The Laciniated Ligament, which arises from the inuer Ankje, and spreads in a radiated manner, to be fixed partly in the Cellalar Subatance and Fat, and partly to the $\mathrm{Os}_{\mathrm{s}}$ Calcis, at the inner side of the Heel. Tab, XXXIV. Fig. 2. $k$. It incloses the Tihialis Posticus and Flexar Digitorum Langus.
The Vaginal Ligament of the Tendow of the Exiencor

Proprite Polhesis, which russ in a Crucial direction. Tab, XXXVIII. Right Foot, C.

The Vaginat Liganont of the Tendons of the Floom Longue Pollicis, which surrounds this Tondon in the hollow of the Os Calcis. Tab. LIV, Fig. 3. H.

The Vaginal and Crucial Ligaments of the Tendons af the Flesors of the Toes, which inclase these Tendons on the Surlaces of the Phalanges, and form their Burse Mucosz. Tah. LIV. Fig. 3. Q, R, S, T, U.-Tah. L. Fig. 8.

The Accessory Liganuents of the Flexor Tendors of the Toes, which, as in the Fingers, arise from the Pha. langes, and are included in the Sheathe of the Tendons in which they terminate.

The Transzerse Ligaments of the Extensor Tendons, which run between these Tepdons, and preaorve them in their places behind the roots of the Toes.


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## ' I B L. E LIII.

Ligamenys of the Bones of the Head and Trunk.

## FIG. 1.

Licaments of the Lower Jaw, and adjacent Parts, viewed on the Right Side.
$a$, The angle of the lower jaw ;
b, Its condyloid process.
$c$, The edge of the zygomatic process of the temporal bone.
d) A section of the ear.
$c$, The styloid pracess.
$f$, The capsular ligament of the lower $\mathrm{j} 2 w$.
5, The lateral ligament.
\%, The connection of the suspeusury ligaments of the os hyoides, and of the stylo-glossus, to the styloid process.
$i$, The suspensory ligament of the os hyoides.
$k_{1}$, stylo-glossuts.
4. The masseter.
${ }^{3}$, The stylo-glossus.
$n$, The stylo-hyoideus.
o, The stylo-pharyngeus, upon which
$p$, A small nerve rests in its way to the pharynx.
q, $\mathbf{A}$ section of the digastricus.
$r$, The steroo-mastoideus.
?, The lingual nerve.

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\text { FIG. } 2 .
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The Capsular Litament of the Lower Jaw, and Purt of the Temporal Lone.
a, The zygomatic process of the temporal hone.
$b$, The tibercle of that process.
$c$, The glowid or articular eavity.
$d, d$, The capsular ligament surrounding the whole mar-

- gin of the glenoid cavity.

FIG. 3.
4n - Anterine I'cu of the Convection of the OS Ucipites with the /hive and herond I ehteben.
a, A portion of the os occipitis.
$b, b$, The transverse processey of the first vertebm; fos. I.
$c, c$, Those of the second.
$d$, The capsular memhrane of the last joint of the occipital bone.
$e$, The wembrane of the right joint cut opeu, to obtaiu a view of the joint, and,
$f$, The distance of the origin of the membrane.
$g$, The membrane which fills up the anterior opening hetween the occiput and first vertebra.
$h$, A slip inserted into the middle of this membrane.
$i$, The origin of this slip in the occipital hone.
$i$, Its termination in the tubercle of the first vertehra.
4, The slip which unites the first and second vertehra.
$m$, The ligament proper to the first vertehra.
$n$, The ligament of the articulation of the first vertehra with the eecond.

FIG. 4.
Licaments on the Fore Part of the Spine, and Upper and Fore Part of the Inner Side of the Bones of the Pelvis.
$a, b$, The bodies of the dorsal vertebre.
$c, d$, lumbar vertebir.
$\epsilon, f$, A section of the ribs.
3, $h$, The anterior common ligament of the bodies of the vertebre.
$i, i$, The crura of the diaphragm.
$k, k$, Part of the longi coilli.
$l_{3} l$, Two of the transverse processes of the lumbar vertehre.
$m$, The psoas magnus.
$n$, The quadratus lumborum.
o, The os ilium.
$p$, The superior transverse ligament of the pelvis, of a triangular form.
\%. The inferior transverse ligament, of a round form,
$r$, The longiturinal liganentous filres, belonging to,
$\delta$, The symplysis of the ilium wth the as sacrum.
$t$, The intestium rectun.
$u$, The vesica urinaria.
i) A ligauent which forms a sort of sac hetween the sides of the bladder and rectum.

E1G.

FIG, 5,
The Cruchal Interyertebral Ligaments of two of the Lumbar Vertebree, seen Antcriorly.
a, The first,
$b$, The second lumbar vertebra.
$c, d$, The crncial intervertebral ligament, formed of differeut strata.

FIG. 6.
Trac Pasterior, or Internal Common Ligament of the Vertebre, seen in the Neck and beginning of the Back. The Crura of the Stinous Processes are remowed.
$a, a$, , 8 c . The transverse processes of the vertebria.
$b, b$, The vertebral arterics.
$c, c, 8 c \mathrm{c}$. Sections of the crura of the epinous procerses.
$d, d$, The whole breadth of the posterior or internal common ligament of the vertebra.

## EIG. 7.

## The Continuation of the Posterior Common LieaMENT in the Lows.

a, The first, and,
$b$, The second lumbar vertebra.
$e, c$, Vestiges of the crura of the spinous processes.
d, d, The postesior, or interaal common ligament of the vertebre.
$e, e$, Its expansion over the cartilaginous interstices.
FIG. 8.
Three of the Dorsal Vertebre, with Portions of the three corresponding Ribs and their Ligaments, secta within the Thorax.
$a, a, a$, The bodies of the three vertebre.
$b, b, b$, Portions of the three ribs.
$c, c, c$, The ligaments which fix the heads of the ribs to the bodies of the vertebre.
$d, d, d$, The internal ligraments of the cervix of the ribs, by which they are fixed to the taberosities of the next superior tranaverse processes.
$e_{2} e_{2}$ Part of the intercostal muscles.
$f$, The spinous process.
F1G. 9.
The same Parts shewn in the preceding Figure, but vicued Posteriorly.
$a, a, a$, The crura of the spinous processes.
$b, b, b$, Portions of the three ribs.
$c, c$, $c$, The external transverse ligaments.
$d, d$, The interial ligaments of the cervix of the ribs.
$c, c$, The exteroal ligaments of the cerviz of the rihs.
$f, f$, A ligamentous cord between the apices of the spinous processes.

FIG. 10.
Liganents an the Outer and Right Side of the Pelvis.
$a$, The os sacrims:
$b$, —_ coccygis.
$c_{4}$ —ilium.
$d$, The tuber of the os ischium.
c, The notch of the os ilium, which, together with the ligaments, \&cc. under it, form the foramen maguum.
$f$, The posterior long ileo-sacral ligament.
g , The posterior short ileossacral ligament.
$h$, The posterior lateral ileo-sacral ligament.
$i$, $i$, The ligamenta accessoria vagge, on the back of the os sacrum.
$k$, The large sacro-ischiatic ligament.
1, The appendir, or superior membranous production. $m$, The sioall bacro-ischiatic ligament.
$\pi$, The longitudinal ligaments of the os coccygis.
$0, p$, The origin of some of the muscles of the thigh.
FIG. 11.
Liganents seen in the Leet Cavity of the Pelvis; the Right Os In*omsanatum being removed.
a, The os sacrum.
$b$,
$c$,
d, -_ pubis.
c, ischium.
$f$, The cartinginous surface of the os saccum, for the articulation with the os ilium.
g, A protuberance covered with ligamentons villi for the articulation with the os ilium.
$h$, The linea alba, which marks the articulation of the os ilium and sacroun.
$i$, The spinous process of the os ischivm.
$k$, The small internal sacro-ischiatic ligament.
2, The remains of the coccygeus.
$n$, A portion of the large external sacro-ischiatic ligan ment.
$n, n$, The inferior falciforn production of Wrwstow.
o, The foramen maguurn, for the transmission of the pyxiformis, \&cc.
$p$, The foramea minus, for the transmision of the ohturator internus.
$q$, The superior oblique sinus of the foramen thyroideum.
$r$, The menibrena obturana.
s, The trausverse liganent of the membrana obturans.
2, The tendon of the proas magnus.
$u$, The cartilago-ligamentous substance of the os puhis.

FIG. 12.
Ligaments comnecting the Cartilages of the Ribs, and Cartilago Ensiformis, to the Body of the Sternum,
a, The upper end of the sternum,
$b$, The cartilago ensiformis.
$c$, The cartilage of the eighth rib.
${ }^{c}$, $d_{y}$, The liganents of the cartilagcs of the ribs, distributed in the form of radii,
$c, e$, The intercostal muscles.
$f, f$, The tendiuous ligaments of the cartilages of the ribs.
$g$, $g$, The ligamente of the cartilago easiformis.

## FIG. 13,

Bepresents the Connection of the Osseous Past of a RIB with its Cartilage, and of the Cartilage woith the Stefnum; the Investing Mempananes being remod. es Anteriorly.
a, The osseons,
$b_{5}$. The cartilaginous part of the cib.
$c_{4}$ A part of the sterwum.
$d_{\text {, }}$ short ligamentous fibres connecting the margin of the osscous and cartilaginous parts of the rib.
e, The capsoular ligament which joins the cartilage of the rib to the sternum; the external radiated fibres of this joint being removed.

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A Section of the Payts represented obove, to shew their Internal Structure.
$a$, The cancelli of the rib.
$b$, The cone sternum.
$c$, The connection of the imer part of the rib with its cartilage by a firm union of substance.
$d$, The cavity of the joint formed between the cartilage and steraum.

## TABLE LIV.

## Ligaments of the Left Superion Extremuty.

FIG. 1.
Ligaments of the Ipper Part of the Stennum, viewed Anteriorly.
a, $a$, Part of the clavicles.
$b$, The interclavicular liganent.
$c$, $c$, The insertions of the steroo-mastoidei into the clavicles.
$d$, $d$, The cartilages of the first ribs.
e, A section of the sternum.
$f_{i}, f$, Ligaments connecting the clavicles to the interclavicular ligaments, to the sternum, and to the cartalages of the finst ribs.
$5, g$, The ligamentum rhomh oides, on each side, connecting the clavicle to the cartilage of the first rib.

FIG. 2.

## $t$ Fied of the Articulation between the Sternum and Clavicles.

a, $A$ section of the sternum.
b. The cartilage of the first rih.
$c$, The head of the right clavicle turned hack.
$d$, The interclavicular ligament.
$r$, The articular sinus of the sternum.
$f, f$, The interarticular castilage covering the artieular sinus and head of the clavicle.
g , The part to which the head of the clavicle is fixed.
$h$, The prolongation of the interarticular cautilage.
$i$, $i$, The eapsular ligament.
ETG. 3.
An Anterior Fiew of the Ligaments betmeen the Clavicle, Scapula, and Os Humehi.
$a$, The npper part of the scapula.
$b$, The point of the acromion.
$c_{4}$ coracoid process.
d, A portion of the clavicle.
e, , os humeri.
$f$, The edge of the anterior proper liganent of the scapula.
$\mathrm{E}, \mathrm{g}$, The posterior proper liganent of the scapula.
$h_{3}$ A portion of the common conoid ligameut.
$i, i$, The capsular ligament of the head of the os humeri.
$l$, The accessory membraue of the capsular ligament.
$l, l$, The edge ol' the oval hole in the capoular imembrase, for the passage of,
$m$, The tendon of the subscapularis, which fills the hale, and mahes part of the capsole.
$n$, The outer edge of the fleshy portion of this muscle.
0 , A ligament which arises from the shcath of the suhclavius.
$p$, The remaius of the tendon of the pectoralis.
2, The teadon of the biceps.
FIG. 4.
A Posterior Fieu of the Licaments between the Ciavicle, Scafula, and Os Humeri.
a, The dorsum;
$b$, The spine;
c, The upper edge ;
$d$, The cervix, and,
$c_{5}$ The acromion of the scapula.
$f$, A section of the clavicle.
$g$, os humeri.
$h$, Ligaments connecting the clavicle with the acromion.
$i, i$, The posterior proper ligament of the scapula.
$k$, The common conoid ligament of the scapula.
1,4 , The capsular ligament inclosing the head of the os humeri.

## FIG. 5.

Ligaments befucen the Scapola, Clavicle, and $\mathrm{O}_{6}$ Humeri, viewed Anteriorly.-. Some of the Parls ane tivisted to one suide.
a, The apper edge of the scapula, twisted to one side. $b$, The point of the acromion.
$c$, coracoid process.
$d$, A section of the clavicle.
$r$, The onterion humeri.
$f$, The anterior proper triangular ligament of the scapula.
$g$, The common trapezoid ligament of the scapula.
$h$, Ligaments comnecting the clavicle with the acromion.
1, The capsular liganent of the head of the os humeri ;
$2 n$, Ita appendix.
$n_{3}$, The edge of the oval hole, for the transmission of,
$o$, The teudon of the subscapularis.
$p$, The remains of the tendon of the supre-spinatus.
$q$, The tendon of the bicops.
is Purt of the sheath of the tendon.

## FIG. 6.

Gircy a Ficw of the Glevoid Cavity of the Scapula, with the Ohigin of the Capsulat Ligament of this Jornt.
$a$, The gienoid cavity.
$b, b$, Thc cartilaginuns hrim of the cavity.


TH13.5.

$c$, The origin of the long head of the hiceps.
$\boldsymbol{d}$, $\boldsymbol{d}$, The inner surface of tbe capsular ligament.
e, The edge of the oval hole.
FIG. 7 .
The Head of the Os Humeri, with a Portion of the Carsular Ligament which incloses it.
$a$, The head of the os humeri.
$b$, The tendon of the long head of the hiceps continued through its sheath.
$c$, The retinaculum in the heginning of the sheath of the tendon of the hiceps.
$d, d$, The inner surface of the eapsular ligament.
e, A fimbriated organ for the secretion of synovia, situated iumediately under the ball of the os humeri, within the capsular ligament.

FIG. 8.
The Connection of the Os Humeri and Bones of the Foremak, and of the latter with each other; viewed Anteriorly.
as, A portion of the as humeri.
$b$, The inner,
c. The outer round process of articulation.
$d$, The inner acute prominent process of articulation hetween the os humeri and hones of the fore-arm.
$e$, The ulna.
$f$, The olecranon of the uina.
g, The coronoid process.
$h$, The inferior head of the ulna.
$i$, The radius.
$k$, The inferior extremity of the radius.
l, 7 , The capsular ligament.
$m$, The internal lateral ligament.
$n$, The cononary, annular, or orhicular ligament of the radius.
o, The accessory ring.
$p$, The posterior accessory ligament.
f. The chorda transversalis cubiti.
$r, r$, The interosseous wembrane or ligament of the forearm.
s, An opening left by this memhrane, and filled with muscles.

FIG. 9.
The Connection of the Os Humeri with the Bones of the Fore-arm, vicued Posteriarly.
a, A portion of the os humeri ;
b, Its external condyle.
$c$, The outer round process of articulation.
$d$, A portion of the ulna.
$e$, The olecranon.
$f$, The lateral surface of the olecranon, covered by the ancuncus.

5, A portion of the radius.
$h$, The external lateral ligament.
$i$, The orbicular ligament of the radius.
$k$, The accessory ring.
$l$, The pesterior accessory ligament.
FIG. 10.
The Connection of the Under End of the Riadius eurfir that of the ELNA.
$a$, The extremity of the radius.
$\boldsymbol{b}, \boldsymbol{b}$, The double gleuoid cavity of the radius.
$\boldsymbol{c}$, The intermediate triaugular cartilage belween the ulna and os cuaciforne.
$d$, The extrenity of the nina.
$e$, The ligament called Sacciforn Capsular Membrane.
$f, f$, The cut edge of the capsular ligarueut between the fore-arm and wrist.
g, The mucous liganent within the joint.
FIG. 11.
A Fiew of the Cavity of the Joint between the Forearm and Wrist; the Cafsular Ligament being eut Posteriarly, and the Bones of the Carpus turned bach.
$a$, The extremity of the radius.
$b$,
c, Part of the glenoid cavity of the radius, recciving,
$d$, The first houe of the carpus.
$c$, The other portion of the gleuoid eavity of the radius, and,
$f$, The internediate triangular cartilage, receiving,
$g$, The second, and,
$h$, The third boue of the caspus.
$i$, The capsular liganeat between the bones of the forea arm and wrist.
$k$, The paluar slip intermixed with this membrane.
1 , The palmar accessory ligament from the radius.
$m$, That fiom the fourth, and,
$n$, That from the third bone of the carjus.
0 , The mucous ligament.
$p$, The liganemt by which the first and second boue of the earpus are attached.

FIG. 12.
Shews certain Ligaments on the Palm-Side of the Hand, affer the Integunents and Tendons of the Extensons hate been remoted.
$a$, The extromity of the radius.
$b$,
$c$, The os pisifonue, with the teudon of the flexor carpi ulnaris fixed to it.
$d$, The na traperium, placed at the root of the thumb.
$c$, The shurp process of the twaiform bonc.
$f$, The metacaupal bone of the thumb.
e. g, The
$\mathrm{g}, \mathrm{g}$, The metacarpal bones of the fingers.
$h$, $h$, The firat pbelanx of the fingers.
$t$, The teodoo of the flexor carpi radialis.
$\vec{k}$, The tendoo of one of the extensors of the thumb.
$l, l, l$, The internal interosseous muscles.
$m$, The ligaments between the ulos and os pisiforme.
$n, \delta, p, q$, The capsular ligament investing the extremitiea of the booes of the fore-aron rud bones of the wrist, intermixed with numerons accessory slips.
$r$, $d$, Ligaments between the carpal and inetacarpal bones.
$t$, Ligaments joining the bases of the metacarpal bones to each other.
*, $1 t, u$, Kigaments connecting the heads of the metacarpal bones to each other.

## F1G. 13.

4 View of the Ligandentous Bands which assist in forming the Cafsular Ligament on the Bock Part of the Wrist.
a, The extremity of the radias.
$b$, ulna.
c, The first,
$d$, The third, and,
c, The fifth bone of the carpus.
$f$, The tuber of the seveoth carpal booe.
g, The two teodons of the extensores carpi radialea.
$h$, The tendoo of the extensor carpi ulnaris.
i, The ligamentum rhomboides.
$k$, A ligamentous cord, which extends from the styloid process of the ulna to the third bone of the carpus.
1, The common oblique slip.
$m$, The ligament between the third and eighth carpal bones.
$\pi$, A section of the metacarpal bones.

## FIG. 14.

The Anterior Ligaments which bind the Bones of the Foremam to the Bones of the Carpus, these to each other, and aloo to the Bones of the Metacarfus.
$a$, The extremity of the malius.
$b, \longrightarrow$ ulna.
$c, c_{y}$ The booes of the carpus,
$d, d, d, d$, The booes of the metacarpus.
$r$, The cspsular ligament of the wrist, with its accessory slips.
$f$, The anterior amular ligament of the carpus. Beaides the amonlar ligament, numerous ligamentous slips are seen rumning in varions directioos, which unite the bones of the carpus to cach other, and likewise to those of the metacarpus.
g7 $h$, Two of the interosseous ligameota, which connect the bases of the last-mentioned bones.

FIG. 15.
The Cavity of the Joint in the middle of the Carpus; the Capsular Ligamemt being diaided in the Back
of the Hand, and the tho Rowd of Carpal Bonis separated from each other.
$a, b, c, d$, The first row, and,
$e, f, g, h_{3}$ The second row of the carpal bones.
$i$, The inside of the palmer part of the capsular liga. ment.
k. The inside of the dorsal part of that ligament.
f, A ligament jouning the first sod second carpal bones together, where they are articulated with the end of the radius.
2n, A ligament connecting the third and seventh carpal bones to each other.
$n$, The ligamentum mucosum connected with the second carpal bone.
0, A small frocnum of the capsular ligament.

## FIG. 16.

Ligaments betabeen the Inferior Row of the Carpal Bones and thase of the Metacarrus, on the Back of the Hand.
$o, b, c, d$, The four bones of the second row of the carpus.
$c$, The metacarpal bone of the thumb.
$f, f$, The metacarpal bones of the fingers.
The ligaments which unite these bones are seen running in varioua directioos.

## FIG. 17.

## The Ligaments of the Jonns of one of the Fingers.

$a$, The metacarpal bone,
$b, c, d$, The first, second, and third bones of the fingers.
$c, c, c$, The lateral ligaments of the joints of the fingers. $f$, Part of the capsular ligament.

FIG. 18.
The Middle Finger, with the Accessory Ligaments which bind the Tendons of the Perforans and PerForatus.
a, A section of the vaginal ligamente.
$b$, The tendon of the perforatus.
$c$, The end of this tendon inserted into the second bone of the finger.
$d$, Decussating branches of the teudon of the perforatus.
$c$, The tendon of the perforans.
$f_{1}$ The short accessory ligament of the perforaut.
$6, h$, Long accessory ligaments of the tendon of the perforans.
The tension of the perforatios has accessory ligaments similai to those of the perfomans, hut they could not bo represented in this view.
$1$


## TABLE LV.

## Ligaments of the Left Inferior Extremity.

## FIG. 1.

## A. Fiew of the Capsular Ligament of the Head of the Os Femoris, and of the Ligaments filling the Foramen Thyroideum.

$a$, The spine of the right os ilium ;
$b$, Its inferior spinous process.
c, The os pubis.
c, The trochanter major.
$f$, minor.
g, The place of the insertion of the pectineus.
$h, i$, The seat of the under end of the iliseus internus.
$k$, The seat of the gluteus minimus.
l, The upper end of the rectus femoris cut and turned back.
The space between $m$ and $k$ is occupied by the capsular ligament, which arises from the acetabulum.
$m, n, a$, The accessory slips of the capsular ligament, placed between the surrounding muscles, and strengthening the general capsule.
$p$, The oblique termination of the capsular ligament between the two trochanters.
$q, r, s, u, x$, The membrane whicb sbuts up the foramen tbyroideum.
$r, r$, The external and internal ligamentous slips of this membrage, which forn sulci.
t, The place where the obturator externus adheres to the capsular ligament.
$u$, An opening in the upper part of the obturator ligament, for the passage of the obturator vessels and nerve.

## FIG. 2.

The Head of the Os Femoris taken out of the Acetasulum, and still adhering by means of the Ligamentum Rotindum.
a, The ball of the os femoris.
$b$, The cavity of the acetabulum.
$c$, $c$, The cartiliaginous brim of the acetabulum.
$d, d, d, d$, The capsular ligament cut and turned back, to shew,
$c, e$, Its deusity and thickness.
$f$, Retinucula reflected about the cervix of the os femoris.
$g, h, i, k$, The ligamentum sotundum.
$i, l$, Small ligaments which bind the fatty glandular mass $m$ to the bottom of the acetabulura.

F1G. 3.
Gives a View of the Acetabulush, with its Ligancints.
$a$, The bottom of the acetabulum, with its cartilaginous surface.
$b$, The sinus for the synovial fat.
$c, c, c$, The cartilaginous brim of the acetabulum.
$d, d$, The external transverse ligament.
FIG. 4.
A Side-Vicw of the Knex, shewing Ihe Interyal Lateral Ligament.
a, The os femoris.
b, The patella.
$c$, The anner side of the bead of the tibia.
$d$, A portion of the vastus intermus.
c, Aponeurosis of the vastus interaus.
$f$, The remains of tbe inner tendon of the gastrocncmius.
g, The tendon of the seminembranosus,
$h$, The tendons of the gracilis and semitendiposus, turned back.
$t$, The popliteus.
$k$, $k$, The broad internal lateral ligament, enlarged by, $t$, An accessory branch.
m, A circular ligamentous margin adhering to the internal semilunar castilage.

F1G. 5.
A Posterior View of the Liganents of the Knee.
$a$, The os femoris.
$b$, The external condyle.
c, The internal condyle.
$d_{0}$ The tibia.
$c$, The fibula.
$f$, The long external lateral ligament.
$g$, The short exteraal lateral ligament.
$h$, The ligamentum posticum WinsLonis.
$i$, The tendoa of the semimembranosus.
$k$, Irregular meubranous expanaions.

## FIG. 6.

An Anterior Viere of the Jornt of the Knee, the Capsivfar Licament being opencd, and turned doum along with the Patella.
$a, a$, The condyles of the os femoriscovered with cartilage, $b$, Tbe

6, The patell.s, with the capsular ligament at the sides of it, cut hom the os femoris, and tumed down.
c, The ligamentun inucosum, supporting the fat at the under edge of the putella.
$d, t$, Folds of the inner side of the capsular ligament, calied by Weitheechi, Ligamenfum Alare externum minute, and Ligamentum Alare intormum majus.
$f, g$, The anterior elges of the semilunar cartilages.
$h$, Part of the posterior crucial ligament.
FIG. 7.
A Wiew of the Cruclal Ligaments, as seen in the Back Part of the Joint of the Knee; the Carsular LigaMEMI being laid open.
$a$, The os femoris.
$b, c$, Its condyles; above which is seen the cut edge of the capsular ligament.
d, The tibis.
c, The fibula.
f. The posterior erncial liganent.
\%, 'Ihe insertion of the anterior crusial ligament into the os femoris.
$h$, The edge of the external semilunar cartilage.
$i_{i}$ Ligamentous fibree strengthening the joint at the head of the fibula.

FIG. 8.

## Anterior Fien of the Crucial Ligaments.

$a, b$, The condyles of the os femoris.
$c$, The tibia.
d, The fibula.
$c$, The anterior crucial ligament.
$f_{9} f$, The insertion of the posterior crucial ligament into the os femoris.
g , The ligament of the postcrior cornu of the external semilunar cartilage, connected with the pesterior crucial ligament, and with it fixed to the os fomeris.
$h$, The ligament of the interior coinu of the external semilumar cartilage.
i, The ligament of the anterior cornu of the internal se. milunar cartilage.
$k$, The trunsyerse ligament connecting the auterior cornua of the semilunsr cartilages to each other.
$\boldsymbol{l}, A$ slip fized to the transverse ligament, and connected with the mucous ligament.
$m$, The external lateral ligament of the knee.
m, The issertion of the hieeps muscle of the thigh.
$n$, The anterior ligament of the fibula.
FIG. 9.

## A View of the Cpper Surface of the Tibla and Semiluyar Cartilages.

$a, b$, The glenoid cavities for lodging the condyles of the on femoris.
$c$, The exterval, and,
d, The internal semilunar cartiages.
$c$, The adhesion of the anterior cornu of the extermal semilunar cartilage to the fore part of the tubcosity on the top of the tibis.
$f$, The superior ligament of the poaterior corau of this cartilage, connected with the posterior cracial ligament.
$g$, The inferior acthesion of the posterior coms of the exterual semilunar cartilage.
$\hbar$, The adhesion of the anterior corvua of the internal semilunar cartilage to the fore part of the margin of the head of the tihia.
$i$, The adhesion of the posterior cornu to the back part of the tuberosity of the bead of the tibis.
$k, k$, The common transverse ligament of the semilunar cartilages.
I, A slip fixing the troosverse ligament, and intermixing with the mucous ligament.
$m$, The posterior crucial ligament.

## FIG. 10.

An Onter and Fore Fiew of the Licam ruws mnmerting the Bones of the Tarsus to those of the Metatarsus and Leg.
$a$, The extremity of the tibia.
$b$, The malleolus extervus of the fihula.
$c$, The astragalus.
d, The of naviculare.
$c$, cuboides.
$f$, cunciforme interoum.
$g$, The metatarsal bone of the great toe, and, farther out, thase of the other toes.
$h$, The anterior superior ligaments of the malleolua exteruus.
$i$, The middle perpendicular ligament of the malleolus externus.
$k$, The anterior ligament between the fihnla and astragalus,
$l$, $n$, Irregular ligaments forning the liganentous appariotus of the sinuous cavity of the astragalus and on calcis.
$n$, The superior ligament connecting the astragalus and os naviculare.
$o, p, q$, Numerous ligaments joining the bones of the tarsus to cach other, and likewise to those of the metatarsus, and obtaining the names of Perpendicular, Ob lique, Lateril, Dorsal, \&cc. according to their different directions and situations.
$r, s, t, u$, Liganents which connect the hases of the metatarsal bones to each other.

FIG. 11 .
Ligaments between the Uader and Rack Part of the Bones of the Leg, and thuse of the Foot.
$\pi$, A portion of the tibia.
$b$,
ct The os calcis.
$d$, The upper part of the astragalus, upon which the tibia moves.
c, The posterior-superior ligament of the malleolus exteraus.
$f_{2}$ A portion of the deltoid ligament.
g7 The inferior-posterior ligament of the malleolus cxternus.
$h$, A fihrous ligament hetween the fibula and astragalus.
$i$, A ligamentous slip proper to the astragalus.
$k$, A fihrons slip connected with the capsular ligament.
1, The frazalun of the capsular membrane, between the astragalus and os calcis.
$m$, The middle perpeodicular ligament of the malleolus extermus.
$n$, The insertion of the tendo Achulis, with its frannulum.
FIG. 12.
Ligaments in the Soze of the Foot.
$a_{\text {, }}$ The os calcis.
b, naviculare.
$c$, cunciforme magaum.
$d_{,} d, A$ section of the metatarsal hones.
$e_{1}, f_{\text {, The }}$ Thements hetween the os calcis and naviculare.
$g$, The ohlique, and,
$h$, The long ligament of great streogth, which connects the os calcis to the os cuhoides.
$i$, The transverse liganent between the cuboid and exterual coneiform bones.
$k$, The ligaments between the navicular and internal cuneiform bones.
$l q$, The ligaments connecting the bones of the tarsus to each other, and those again to the metatarsus.
$r, s, t$, The ligaments connecting the hases of the metatarsal bones.

FIG. 13.
The Masses of Fat, with theiv. Fimbrife, which are sivuated round the Edges of the Patella,
$a$, The inner side of the patella.
$b, b, b$, The masses of fat.
$c, c, c$, The fimbrix which project from the edges of these fatty suhstances.

## END OF TOLUME FIRST.

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