

**A system of the anatomy of the human body. Illustrated by upwards of two hundred and fifty tables, taken partly from the most celebrated authors, and partly from nature / By Andrew Fyfe.**

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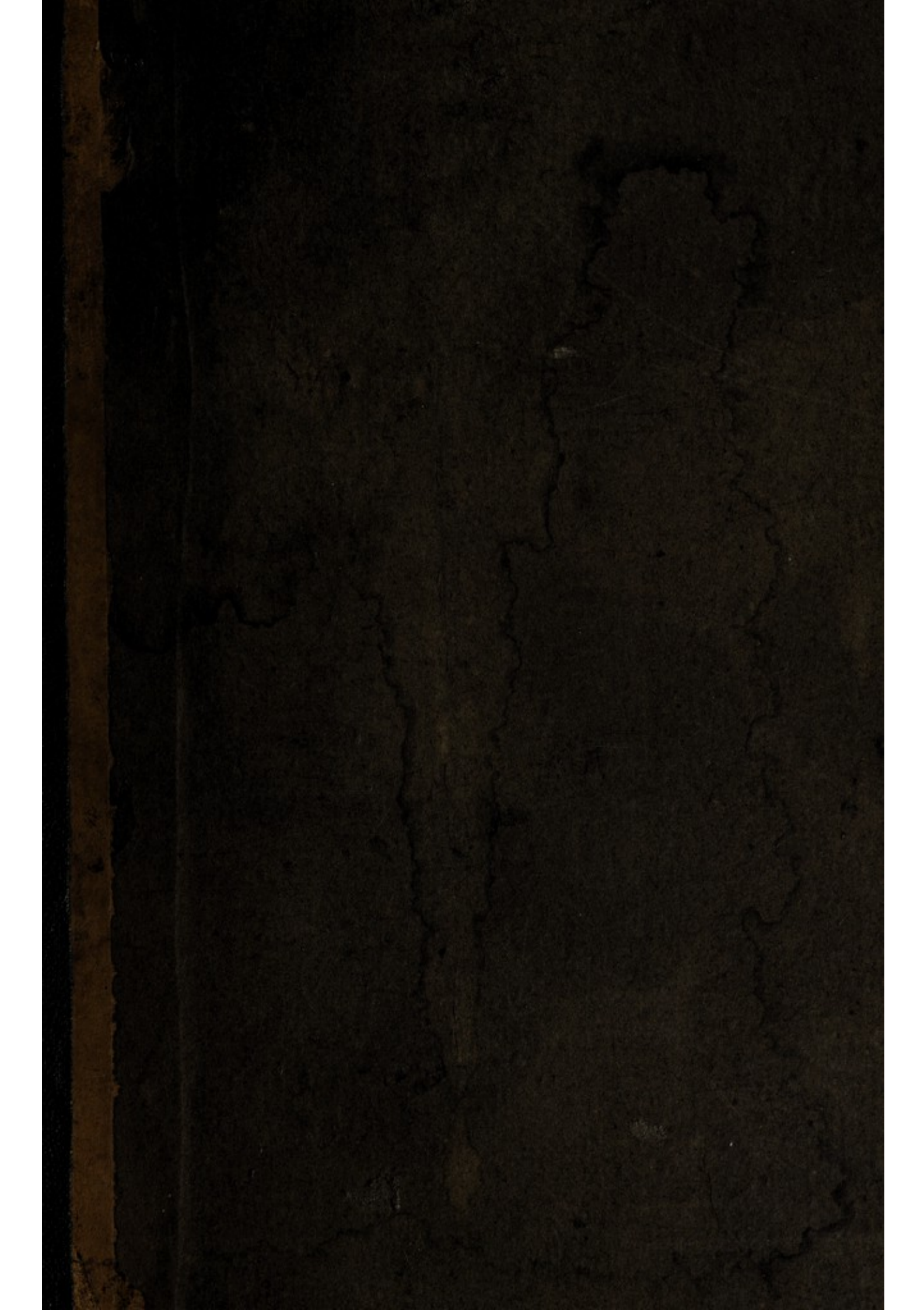
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THE  
HUMAN BODY







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PARTLY FROM NATURE.

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By ANDREW FYFE,  
TEACHER OF ANATOMY, FELLOW OF THE ROYAL COLLEGE OF SURGEONS, MEMBER OF THE ROYAL MEDICAL AND ROYAL  
PHYSICAL SOCIETIES, &c. MANY YEARS ASSISTANT TO THE PROFESSOR OF ANATOMY, AND STILL  
CONSERVATOR OF THE ANATOMICAL MUSEUM OF THE UNIVERSITY, EDINBURGH.

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

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VOL. I.

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EDINBURGH:

PRINTED BY JOHN PILLANS.

SOLD BY ADAM BLACK, EDINBURGH; T. & G. UNDERWOOD, J. CALLOW, J. ANDERSON,  
AND BURGESS & HILL, LONDON; AND J. CUMMING,  
DUBLIN.

1820.



SYSTEM

OF THE

ANATOMY

OF THE

HUMAN BODY;



PARTLY FROM NATURE.

BY ANDREW TYLE,

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DUBLIN.

1830.

TO THE  
**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.

EDINBURGH, }  
1st November 1820. }



# 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 FIFE

Edinburgh,  
14 November 1820.



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## PART I.

OF

# THE BONES.



PART I.

OF

THE BONES.

## OF THE BONES IN GENERAL.

## OF THE COMPOSITION OF THE BONES.

**T**HE Bones are the most hard, compact, and inflexible parts of the Body.

They are numerous, and nicely adjusted to each other, to allow free motion in all directions.

They are made of a firm Substance externally, to support and give attachment to the softer parts.

They are hollow, to contain the Marrow, to render them lighter and stronger, and to extend their Surface for affording attachment to the Muscles.

## COLOUR OF THE BONES.

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 being found in the former, and more blood in the latter.

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

## LAMELLÆ, OR PLATES OF THE BONES.

Bones are composed of *Lamellæ*, or *Plates*, which are formed of Fibres running longitudinally, or in a radiated manner, according to the natural figure of the Bone.

The lamellated structure may be seen, by exposing them to the heat of a strong fire; or to the weather; or by boiling them under an increased pressure; or by observing their exfoliations when in a diseased state.

SCARPA, in a late publication, denies the lamellated structure of the Bones, and endeavours to prove, that they have every where a Cellular texture.

The *Plates* of Bones are originally formed by the Vessels of the Periosteum Externum and Membrana Medullaris, and not, as has been supposed by some Authors, from Layers detached from the external Periosteum.

The *Plates* are connected by *Fibres*, which some have considered as *Claviculi* or *Nails*, and called *Per-*

*pendicular, Oblique, &c.* according to their different directions.

The *outer Plates* of Bones are firmly compacted, so as to appear like one solid substance.

## CANCELLI OF THE BONES.

The *Inner Parts* of Bones in general, whether long, round, or flat, have their *Plates* and *Threads* running in various directions, intersecting each other, and forming the *Cancelli*, *Lattice-work*, or *Spongy Substance* of the Bones; the *Cancelli* communicating every where with each other.

The *Cancelli*, in the middle of long Bones, are Fibrous, and form the *Reticular Substance* which divides the Bone into large Cells.

Towards the extremities of long Bones, the *Cancelli* are lamellated, and much more numerous than in their middle.

*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.

In some of the broad Bones, however, as the *Scapula*, the solid parts are so much compressed, as to leave little or no room for *Cancelli*.

On the contrary, in the middle of the long Bones, as the *Os Humeri*, the *Cavities* are so large as to give to the Bone the appearance of a *hollow Cylinder*.

In some of the largest of the long Bones, as the *Os 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 *Cancelli* are so numerous as to occupy the whole space between their sides.

The *Cancelli* of Bones are formed by the internal *Plates* passing inwards, and decussating each other; and in the long Bones, their sides, in consequence of sending off the *Cancelli*, become gradually thinner towards their extremities, while the *Cancelli* in proportion become more numerous.

The thinness of the *Tables* of the Bones near their extremities is not in proportion to the increase of diameter, but to the quantity of Cellular Matter sent inwards.

That the *Tables* at the middle of the long Bones form



form not only the Tables at the extremities, but also the Cancelli; and that the same quantity of Osseous Matter exists at the middle as at the ends of these Bones, is proved by sawing a Bone across into portions of equal lengths, when it is found that the weight of each of the pieces is nearly the same.

The Cancelli, though extremely minute, can be seen even in the most solid parts of Bones. Some run in a longitudinal, and others in a transverse direction communicating with the longitudinal, and becoming gradually smaller in their passage from the internal Cavity towards the outer Table of the Bones.—This may be observed by exposure to heat, or in Bones enlarged by disease. These Cells are distinguishable from the Canals for containing the Vessels, the former being irregular, and the latter cylindrical.

The Cancelli support the Membranes containing the Marrow, as 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 dispersion of the Arteries which secrete the Marrow.

#### BLOOD-VESSELS OF THE BONES.

Upon the surface of Bones there are numerous *Fissures*, for the more intimate connexion of the Periosteum with the Bone, and for lodgement to Blood-vessels which pass into its substance.

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

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

Numerous Orifices, some of them very considerable in size, are observed at the *extremities of long Bones*. Some serve for the transmission of Blood-vessels, and others for giving attachment to the Fibres of the Ligaments of the Joints.

The principal Vessels pass into the Cancelli, internal Membranes, and Marrow, and return to the solid substance of the Bone, where they meet those sent inwards from the Periosteum.

Some *flat Bones*, as those of the *Cranium*, are entirely supplied from the Vessels of the surrounding Membranes, and the Vascularity there is uniform.

In the Subject, the *Arteries* of the Bones, and sometimes the *Veins*, can be shewn by a successful Injection 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 across, their Vascularity appears from the Blood which oozes from their divided extremities.

The Vascularity of Bone is also shewn, by feeding an Animal for some time on the Rubia Tinctorum or Madder-root, after which the Bones are observed to be

completely tinged with the colouring matter of the Madder.

As a Person advances in life, the Blood-vessels of the Bones contract in their diameters, as appears from the Bones of old people having less Blood in them than 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.

#### COMPARATIVE VIEW OF THE BONES.

From comparing the Bones of people of different ages, it is found, that there is a constant waste and renewal of their substance; that the Bones increase in weight as a person advances to maturity; that they continue nearly of the same weight till old age begins, and then become lighter; that the specific gravity of their solid sides, on the contrary, increases by age; for then they become harder and more compact, but thinner, and have larger Cavities than the Bones of young persons.

#### LYMPHATICS OF THE BONES.

Bones, like other parts, have their *Lymphatics*, as appears by the absorption of Madder 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 a diseased state; by the absorption of Bone as a person advances in life; and even by Injection.

#### NERVES OF THE BONES.

The *Nerves* of the Bones are small, but may be observed in certain parts of them, accompanying the principal Arteries; and it is presumed they exist in all.

From the minuteness of the Nerves, and rigidity of the parts on which they are dispersed, Bones are not sensible in the sound state; and even in the diseased, the pain felt may be owing to the Membranes within them.

#### CHEMICAL ANALYSIS OF BONES.

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

The Earthy Matter is obtained by Calcination, or by maceration in a diluted acid, and afterwards precipitating it, when it is found to consist chiefly of Lime in union



union with Phosphoric Acid. In either of these Processes, the Bone retains its shape; but in the former it is brittle, and of a pure white colour, while in the latter it is flexible, consisting principally of Cartilaginous Matter.

By boiling in Water for a sufficient length of time, and especially if under an increased pressure, as in PAPPIN'S Digester, the Fat and Gelatin of Bones are dissolved and separated, and the Bone retaining its Earthy Matter, preserves also its white colour.

#### USE OF THE BONES.

The general Use of the Bones is,—to give firmness and support to the soft parts,—to defend them from external injury,—to determine their shape, size, and situation, and regulate their different motions and attitudes.

They furnish an essential part of the Organs of Locomotion, by giving attachment to the Muscles and their Tendons, and serving as Levers for these to act on.

They form in some parts Columns, which can be moved in different directions.

The extremities of the Bones give form to the Joints, and by their magnitude they render these more secure, and increase the force of the Muscles which belong to them.

The Bellies of the Muscles being generally placed upon the middle of the Bones, and the Tendons fixed to their extremities, the symmetry of the Limbs is also thereby preserved.

#### PERIOSTEUM.

The *Periosteum* derives its name from its furnishing a general Covering to the Bones.

In certain parts, however, it is perforated by Muscles, 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 Ligaments.

It is formed of many Fibres, which, in certain parts, can be divided into Layers.

The outer Surface of this Membrane is connected to the surrounding parts by Cellular Substance.

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

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

The *Periosteum*, as well as other Membranes, must be supplied with Nerves; but these are too minute to be readily traced.

The Sensibility of the *Periosteum*, like that of other

Membranes, is by no means acute. In the inflamed state, its sensibility is very considerable.

The principal Uses of this Membrane are,—to transmit the Vessels which are spread out upon its surface into the substance of the Bones;—to give attachment to Muscles;—to prevent the effects of Friction between them and the Bones;—to assist in binding the latter together;—to assist in setting limits to the increase, and to check the overgrowth of Bones;—and, in young persons, to strengthen the junction of the Bones with their Epiphyses, Cartilages, and Ligaments.

#### MEMBRANA MEDULLARIS.

This, improperly called *Periosteum Internum*, is an extremely fine Membrane, which lines the inside of the Bones in general, sends Processes into the solid sides of these, and is divided into numberless small parts, which also line the different Cancelli. It forms so many irregular Bags, communicating with each other, and affording a large surface for the dispersion of the secretory Vessels of the Marrow.

#### MARROW.

The Marrow may be considered as an Appendage to the general Corpus Adiposum, and is somewhat of the nature of Butter. It is found to be a species of fixed oil possessing peculiar properties, and is deposited by the Arteries in the Cavities of the Bones, at the same time that the rest of the Body is supplied with Fat.

The Blood-vessels of the Marrow, surrounded by the *Periosteum*, enter the Bones by oblique Canals, which have already been taken notice of in the description of the Bones in general.

When the Arteries have entered the Cavities of the Bones, they divide into Branches, which are spread out upon the Cancelli, *Membrana Medullaris*, and Marrow; from these many minute Branches are reflected outwards to the Tables of the Bones, which communicate with those sent from the inner surface of the *Periosteum*.

The Veins which return the Blood from the Marrow and substance of the Bones, are collected into small Trunks, which pass out where the Arteries penetrated the Bones, and discharge their contents into the neighbouring Veins.

The greater degree of Vascularity of the solids in Children than in Adults is no where more conspicuous than here; for Injections which pass readily in these Vessels in Children, cannot 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.

The Marrow, like the Fat, when viewed through a Microscope, resembles a cluster of pearls;—or it is contained



contained in Spherical Sacs, upon which vessels are minutely dispersed, but from which 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 Authors as belonging rather to its Membranes than to the Marrow itself.

Nerves cannot be detected in the Marrow; but that this part of the Body is not without Nerves, seems 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 within the Bones.

Marrow, according to the Experiments of BERZELIUS, consists of pure Marrow, with a very small proportion of Skins of Blood-vessels, Albumen, Gelatin, Extractive Peculiar Matter, and Water.

The Marrow answers the several purposes to the Bones which the Fat does to the other Organs. According to SOEMMERRING, the use of the Marrow is to render the Bones comparatively lighter; but the real use of this Substance is probably not yet sufficiently known.

#### CARTILAGES.

*Cartilages* are of a *white colour*, of an *elastic nature*, and much softer than Bones, in consequence of the smaller quantity of *Earth* entering their composition.

Their *Structure* is not so evidently Fibrous as that of Bones, yet by long Maceration, or by tearing them asunder, a Fibrous disposition is perceptible.

Their *Vessels* are extremely small, though they can be readily injected in Cartilages where Bone is beginning to form. The Vessels of the Cartilages of the Joints seem entirely to exclude the red Blood. No Anatomist has been able to inject them; and Maddar, mixed with the food of Animals, does not change their colour as it does that of Bones.

The existence of *Lymphatic Vessels* in them, is proved by their being absorbed during the Process of Ossification, or in certain diseases.

No *Nerves* can be traced to them; nor do they possess any sensibility in the sound state. Yet the Granulations which rise on the surface of Cartilages, after Amputation at the Joints, are very sensible.

Upon their surface there is a thin Membrane, termed *Perichondrium*, from its covering the Cartilages, 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 continuation of the *Periosteum*, and serves the same general purposes to Cartilage as the *Periosteum* does to Bone.

The *Perichondrium* of Cartilages which supply the place of Bone, or by their flexibility possess a degree of motion, has Blood-vessels, which, like those of the *Periosteum*, can be injected. But the Vessels of this

Membrane belonging to other Cartilages, particularly that covering the Articular ones, cannot be injected.

Upon the surface of Articular Cartilages, the *Perichondrium* 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 Cartilage itself.

They have no internal Cavity, nor Cancelli, nor internal Membrane, for lodging Marrow; their weight is nearly a third less than that of Bone. Their Texture is less changed by acids; but a much greater proportion of them than of Bones is destroyed by the action of fire. They are softened by Maceration in water; and the Articular 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 Lime.

One set of Cartilages supply the place of Bone;—or by their flexibility, admit of a certain degree of motion, while their elasticity recovers their natural position;—as in the *Nose, Larynx, Cartilages of the Ribs, Cartilages supplying Brims to Cavities, &c.*

Another set, in Children, supply the place of Bone, until Bone is formed, and afford a 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 Bones to move readily, without any abrasion;—as in the *Abducent or Articular Cartilages.* By their elastic nature, they render the motions easier, and lessen the concussion in the more violent motions of the Body, as running, jumping, &c. They also prevent the inordinate growth of Bones at their articulating surfaces, and the coalescence of the Fibres of adjoining Bones.

A fourth set supply the office both of Cartilage and Ligament, giving the elasticity of the former, and flexibility of the latter; uniting some immoveably together, and allowing to others a small degree of motion; as in the *Cartilages of the Bones of the Pelvis and Spine.*

Cartilages are divided by some Anatomists into two Sets, viz. *Temporary* and *Permanent.* The first includes those in which Bone is formed in the Child; the other consists of those of the External Ear, of the Eye-lids, Nose, Larynx, and Trachea, and of the Articular, Inter-articular, and Intervertebral Cartilages.

#### OF THE ORIGINAL FORMATION OF BONE.

The generality of Bones are originally formed, either between Membranes, or in the Substance of Cartilages; the *Teeth* are formed in distinct Bags.

The Ossification of *broad Bones* begins, in some, as in those of the Cranium, between Membranes only, and in others, as in the *Ossa Ilia*, in Cartilage, and the Ossification appears in each Bone in one or more places: There the Osseous particles are so joined together, as to have a Fibrous appearance.

The



The Fibrous Structure is most distinctly seen in the Bones of the Cranium of a Fœtus about three months after Conception, where the beginning of the Ossification in each Bone is like a fine irregular Net-work, in the middle of which the Fibres are more closely connected than in the circumference.

In viewing the flat Bones of a Fœtus a little more advanced, the bony particles are observed to be so disposed, as to have a distinct radiated appearance.

The vacancies between the Fibres, which occasion the radiated appearance, are found by Injection to be chiefly passages for Blood-vessels.

As the Fœtus becomes larger, the Osseous Fibres increase in number, but become less apparent, the Interstices being now filled with Osseous matter, which increases in quantity till a Lamina is produced; and as the Bone continues to grow, more Laminae 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 Outer, and none of them are found to have the solidity they acquire in the Adult state, till they have arrived at their full growth.

The Ossification of *long Bones* begins between the Periosteum and Membrana Medullaris, in a Jelly which afterwards hardens into Cartilage, and forms a *Central Ring*, from which the Fibres extend towards the ends of the Bone.

The Interior Lamellæ, forming the solid sides of the long Bones, are considerably shorter than the Exterior, because they pass gradually inwards to form the Cancelli, while the exterior parts are continued to the extremities of the Bones.

The Ossification of spherical-shaped Bones, as in the Wrist, begins by one Nucleus, and that of irregular-formed Bones, as in the Vertebrae, by different Nuclei; and both of these sets of Bones have their origin in Cartilage.

In proportion as Osseous matter is deposited, the Cartilage is absorbed, leaving behind it the different Cavities and Cancelli.

All the parts termed Epiphyses, likewise, have their original formation in Cartilage.

The Ossification which begins in Cartilage is considerably later than that which has its origin between Membranes, and this is at very different times in different parts of the Body; the processes being soonest completed in those Bones which cover the Organs most essential to life.

When Ossification is about to begin in a particular part, the Arteries, which were formerly of the Serous kind, become dilated, in consequence of a greater determination of Blood to them, and receive now the red Blood from which the Osseous matter is secreted. This matter retains, for some time, the form of the Vessels which give it origin, till, more Arteries being by degrees dilated, and more Osseous matter deposited, the Bone at length attains its complete form.

Some Bones are completely formed at the time of Birth, as the *small Bones of the Ear*.

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

In Children, the greater number of parts in Bones are *Epiphyses* or *Appendices*; these, in Adults, become *Apo-physes* or *Processes* which spring directly from the body of the Bone.

The *Epiphyses* begin to appear after the Body of the Bone is ossified, and are themselves ossified at seven or eight years of age, though their external surface is still somewhat Cartilaginous.

In the early period of life, the Body and Ends of long Bones make *three distinct parts*, each of which has its centre of Ossification, and the parts can readily be separated by boiling, or by maceration in water.

The Epiphyses are joined to the Body of the Bone by Cartilages, which are thick in Children, but gradually become thinner, in consequence of absorption, as Ossification advances, till at last, in the Adult, the external marks of division are not to be seen; though frequently some mark of distinction may be observed in the Cancelli.

The Epiphyses belong chiefly to such Bones as are destined for much motion, and have larger diameters than the Bones to which they are fixed; in consequence of this they form a firmer Articulation, and give a more commodious attachment to the Muscles.

#### CLASSES OF BONES.

Bones are either Broad and Flat, Long and Round, or Spherical and Irregular.

Broad Bones have thin sides, and their Cancelli are smaller and more equal in size than in the long ones. They defend the parts which they inclose, and give origin to many Muscles.

The long Bones have thick strong Walls at their middle, but become remarkably thin towards their extremities; on the contrary, the Cancelli are few in number, but large in the middle of the Bone, while, near the ends, the Cells are numerous and small.

The long Bones, by their roundness and thickness, at their middle, are better enabled to resist the violent pressure and injuries to which they are frequently exposed, while their extremities being large, though the quantity of matter is the same, they are less easily broken in a transverse direction. This increase of size allows also a broader Basis for the Body to rest upon, and affords more space for the attachment of Muscles and other soft parts.

The spherical irregular Bones admit of a diversity of motions, and lessen the shocks that the Joints to which they belong would otherwise frequently sustain.

#### PROMINENCES



## PROMINENCES OF BONES.

The greater number of Bones have Prominences, termed *Processes*, projecting from them, which, when of a roundish form, is termed *Caput*, or Head. If the Head be flattened, it has the name of *Condyle*. A rough unequal Protuberance is styled *Tuberosity*. When a Process comes off from a Bone narrow, and is afterwards enlarged, the contracted part of it is called *Cervix*, or Neck.

A long Ridge upon a Bone is termed *Spine*. A Process terminating in a sharp point is named *Coronoid*.

Some Processes derive their names from the Substances they are supposed to resemble,—as *Coracoid*, like a Crow's Beak,—*Styloid*, like a Pen or Pencil,—*Mastoid*, like a Nipple,—or *Anconoid*, from belonging to the Elbow,—or *Spinous*, from being sharp like a Thorn.

The rising Edges or Brims of Cavities are known by the name of *Supercilia*.

The use of the Processes is to give a more advantageous attachment to Muscles, and form Surfaces of Articulations.

## CAVITIES OF BONES.

Many of the Bones have also *Cavities* or *Depressions*, which have likewise got particular names.

Deep Cavities, with large Brims, are termed *Cotyloid*, from resemblance to an ancient measure. They are called *Glenoid*, when of a superficial nature.

Small Cavities are named *Pits*, when of a roundish form, and sunk perpendicularly into the Bone; *Furrows*, when long and narrow; *Nitches*, or *Notches*, when forming breaches in the Bone; *Sinuosities*, when broad, superficial, and destitute of Brims; and *Fossæ*, when large and deep, with unequal Brims.

In the Interior parts of the Bones, when there are large Cavities with small openings, they are termed *Sinuses*;—when the openings go quite through the substance of the Bone, they are called *Foramina*, and the passage between the openings, *Canals*.

The Cavities allow the ends of Bones to move in them, lodge and protect other parts, and afford a reception or a passage to Muscles, Tendons, Vessels, Nerves, &c.

## DIF-



## DIFFERENT KINDS

OF

## CONNEXION OF BONES.

SYNARTHROSIS, Or Connexion without intermediate Substance.	Suture, Like a Seam.	{ The Bones of the Cranium, and greater part of those of the Upper Jaw with each other.
	Gomphosis, Like a Nail in a Board.	{ The Teeth in the Alveoli.
	Schindelysis, Or Furrowing.	{ Bones of the Septum Narium to each other.
SYMPHYSIS, Or Connexion by intermediate Substance.	Synchondrosis, Or Connexion by Cartilage.	{ The Bodies of the Vertebrae to each other: The Ribs to the Sternum: The Ossa Innominata to the Os Sacrum, or to each other.
	Syndesmosis, Or Connexion by Ligament.	{ The Lower Jaw and Os Hyoides to the Head: The Ribs to the Spine: The Processes of the Vertebrae, and also the Bones of the Extremities, to each other.

## DIFFERENT KINDS OF MOTION.

<p><i>ARTHRODIA;</i> Where the flat ends of Bones are opposed to each other with little motion.</p>	<p>Between the Clavicle and Scapula. The Bones in the second row of the Carpus. The Carpus and Metacarpus. The Tibia and Fibula. The greater number of Bones in the Tarsus. The Tarsus and Metatarsus.</p>						
<p><i>GINGLIMUS;</i> The Bones mutually receiving each other, and the Ligaments admitting of a hinge-like motion.</p>	<table> <tr> <td> <p><i>Angular,</i> One Bone, in moving, forming an angle with another.</p> </td> <td> <p>The Lower Jaw and Head. The Joint of the Elbow. The first and second Joints of the Thumb, and second and third of the Fingers. The Joint of the Knee. The Ankle. The two last Joints of the Toes.</p> </td> </tr> <tr> <td> <p><i>Lateral or Circular.</i></p> </td> <td> <p>Between the first Vertebra and Processus Dentatus of the second. Between the Radius and Ulna.</p> </td> </tr> <tr> <td> <p><i>Compound.</i></p> </td> <td> <p>Between the Occipital Bone and Atlas. Between the different Vertebrae. And between the Ribs and Vertebrae.</p> </td> </tr> </table>	<p><i>Angular,</i> One Bone, in moving, forming an angle with another.</p>	<p>The Lower Jaw and Head. The Joint of the Elbow. The first and second Joints of the Thumb, and second and third of the Fingers. The Joint of the Knee. The Ankle. The two last Joints of the Toes.</p>	<p><i>Lateral or Circular.</i></p>	<p>Between the first Vertebra and Processus Dentatus of the second. Between the Radius and Ulna.</p>	<p><i>Compound.</i></p>	<p>Between the Occipital Bone and Atlas. Between the different Vertebrae. And between the Ribs and Vertebrae.</p>
<p><i>Angular,</i> One Bone, in moving, forming an angle with another.</p>	<p>The Lower Jaw and Head. The Joint of the Elbow. The first and second Joints of the Thumb, and second and third of the Fingers. The Joint of the Knee. The Ankle. The two last Joints of the Toes.</p>						
<p><i>Lateral or Circular.</i></p>	<p>Between the first Vertebra and Processus Dentatus of the second. Between the Radius and Ulna.</p>						
<p><i>Compound.</i></p>	<p>Between the Occipital Bone and Atlas. Between the different Vertebrae. And between the Ribs and Vertebrae.</p>						
<p><i>ENARTHROSIS,</i> Or Ball and Socket, the Ligaments allowing motion in all directions.</p>	<p>Inner end of the Clavicle. Head of the Os Humeri. Between the Fore-arm and 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.</p>						



## OF THE SKELETON.

THOUGH the term *Skeleton* be applied to a variety of Substances, yet, in Anatomy, it is always understood to signify the Bones of Animals, connected together in their natural situation, after the soft parts of the Body in general are removed.

It is termed a *Natural Skeleton*, when the Bones are joined by their own Ligaments;

And an *Artificial Skeleton*, when joined by Wire, &c.

Small Subjects, and the Bones of those which are not fully ossified, are most conveniently prepared in the first way; while the Bones of large Adult Animals are more readily cleaned when single, and are easily restored to their proper places.

In viewing the Bones in their natural situation in the

Skeleton, scarcely any of them are observed to be placed in a perpendicular direction to another; yet in an erect posture, a perpendicular line from their common centre of gravity falls in the middle of their common base. On this account, the Body is found to be as firmly supported, as if the axis of all the Bones had been a straight line, perpendicular to the horizon, and much greater quickness, ease, and strength, are given to the Body, in several of its most necessary motions.

The Bones are in general similar to each other in the opposite sides of the Skeleton, though in many instances there is some variation.

The Human Skeleton is generally divided into *Head*, *Trunk*, *Superior* and *Inferior Extremities*.

## OF THE HEAD OR SKULL IN GENERAL.

By the Head is meant all that part of the Skeleton which is placed above the first Bone of the Neck. It therefore comprehends the Cranium and Bones of the Face.

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

The variety in shape exists not only in different Persons, but in the opposite sides of the same Skull, scarcely any one being found perfectly similar there, when 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 management of the Head at an early period of infancy, since its characteristic marks are found to remain nearly the same, however much the customs in dress and general management may vary.

The Cranium forms a vaulted 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. XIII. 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 External Auditory Passages, about five inches.

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

The flatness of this part of the Head is found to in-

crease the sphere of vision, and to give a more advantageous 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 Cranium is smooth, where it is little affected by Muscles, and is covered by the Periosteum common to all the Bones, but in the Skull termed Pericranium.

The *under* and *outer Surface* of the Cranium is *irregular* where it gives attachment to Muscles, &c. and passage to Vessels and Nerves. Tab. VI.

The *anterior* and *under* portion of the Cranium is *hollow*, to make part of the Orbits. Tab. III.

The *posterior Surface* of the Cranium is *marked* by the insertion of Muscles arising from the back part of the Trunk. Tab. VI.

The *upper* and *inner Surface* of the Cranium is *hollow*, for lodging the Brain. Tab. XII. Fig. 2.

The *under* and *inner Surface* of the Cranium has many *unequal Cavities*, for lodging the Lobes and Appendages of the Brain and Cerebellum, and for allowing passage to the Vessels and Nerves of the Encephalon in general. Tab. V.

Upon the fore part of the base of the Cranium the Anterior Lobes of the Brain rest; in the middle of the base are two deep Fossæ, for lodging the Lateral Lobes, while the Posterior Lobes and the Cerebellum occupy a still deeper Cavity behind. Tab. V.

Along the inner side of the Cranium are many Furrows, formed by, and for the reception of the Blood-vessels of the Dura Mater. Tab. XII. Fig. 2. Tab. XIII. Fig. 2.

Upon the inner Surface of certain Crania, Sinuosities are



are observed, for lodging luxuriances of the Brain; and here the Cranium is sometimes so thin, as to be rendered transparent; the two Tables being then closely compacted, without any Cancelli.

In some Crania, Pits are seen of different Figures and sizes, for lodging *Granulous Bodies* on the Dura Mater, termed *Glands of PACCHIONI*; or sometimes they are occupied by the meeting of large Veins of the Dura Mater. Here also there is often a want of Cancelli. Tab. XII. Fig. 2.

The Bones of the Cranium are composed of two Tables, which at the upper part are nearly parallel to each other. Tab. XII. Fig. 2. f, f.

The two Tables have intermediate Cancelli, termed here *Diploe*, though nearly of the same nature with the Cancelli in other flat Bones. Tab. XIII. Fig. 1.

The *External Table* of the Cranium is somewhat thicker than the *Internal*, which, from its thinness and consequent brittleness, is called *Vitrea*. Tab. V.

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

The thickness of the Bones varies much in different parts of the Cranium; in a transverse section about its middle height, the Bones are about one-fifth of an 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, and in the latter, part of them having been absorbed.

In the Skulls of old Subjects, the *Diploe* are often so obliterated, that scarcely any vestige of them can be seen.

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

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

The *six* proper to the Cranium are,

The *Os Frontis*, placed in the fore part of the Cranium. Tab. III. A.

The *two Ossa Parietalia*, placed in the upper and lateral parts of the Cranium. Tab. IV. B.

The *two Ossa Tempora*, placed in the under and lateral parts. Tab. IV. D.

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

The *two Bones* common to the Cranium and Face are,

The *Os Ethmoides*, placed in the fore part of the Base of the Cranium. Tab. V. C, C.

The *Os Sphenoides*, situated in the middle of the Base. Tab. V.

## SUTURES.

The Bones of the Cranium have *Seams* or *Sutures* between them, which are five in number. Of these *three* are termed *True*, from having serrated appearances; and *two* are called *False* or *Squamous Sutures*, from the Bones which form them overlapping each other, as the Scales of Fishes do.

The *three True Sutures* are,

The *Coronal Suture*, placed between the Frontal and Parietal Bones, and getting its name from this being the part where the Ancients wore their *Coronæ* or Garlands. About an inch of each of its extremities wants the serrated appearance. Tab. IV. m.

The *Lambdoid Suture*, situated where the Occipital joins the Parietal and Temporal Bones. It begins some way below the Vertex, or Crown of the Head, from which its two Legs extend obliquely downwards and to each side, in form of the Greek  $\Lambda$ . Tab. II. b. Tab. VII.

The parts of the *Lambdoid Suture*, placed between the Occipital and Temporal Bones, have little of the serrated appearance, and are called *Additamenta Suture Lambdoidalis*.

The *Sagittal Suture*, situated between the Parietal Bones, and named from being extended between the middle of the Coronal and beginning of the *Lambdoid Sutures*, as an Arrow is between the String and Bow. Tab. XII. Fig. 1.

The *Sagittal Suture* is sometimes continued through the middle of the Frontal Bone to the Nose. This is said to be more frequent in the Female than in the Male. Upon examining a great number of Crania, the Author found it taking place in one out of nine or ten.

The *serrated appearance* of the *True Sutures* is seen distinctly on the outside of the Cranium only; on the inside, the Bones appear almost to be joined in straight lines. Tab. XII. Fig. 1. 2.

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

As a person advances in life, the *True Sutures* begin 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 seen.

The *two False*, called also *Temporal Sutures*, placed a little above the Ear, between the upper edge of the Temporal and under edge of the Parietal Bones. Tab. IV. o.

Each of the Portions of the *False Sutures*, situated between the under and back part of the Parietal, and the upper and back part of the Temporal Bones, is called by some *Additamentum Suture Squamosæ*, and has in that part the true serrated appearance. Tab. IV.

Besides the *Squamous Sutures* here taken notice of, it is to be observed, that the term *Squamous* is also applied



plied to all the Sutures on which the Temporal Muscle is placed; it therefore includes part of the Coronal and Sphenoid Sutures.

Sometimes, though rarely, there is a double Squamous Suture, dividing the scaly part of the Bone into two unequal portions. Tab. VII. Fig. 3.

In the Sutures of the Cranium there are often Additional Bones, called *Ossa Triquetra*, from their being of a triangular form, and *Ossa Wormiana*, from Wormius, who, though not the discoverer, gave a description of them.

The *Ossa Wormiana* vary much in figure, size, and number, and are occasionally found in the different Sutures, though most frequently in the middle of the Lambdoid. Tab. VII. Fig. 1. g. Fig. 2. 3.

Wherever they occur, the Sutures surrounding them are observed to be similar to the neighbouring Sutures; of course they are equally with them distinguished from Fractures of the Skull.

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

Between the Bones of the Cranium and those of the Face, five Sutures are also found, and they are said to be common to these two sets of Bones. Parts, how-

ever, of these Sutures, lie only between the Bones of the Cranium. The Sutures here are,

The *Ethmoid Suture*, which surrounds the Ethmoid Bone. Tab. V. C, C.

The *Sphenoid Suture*, which surrounds the Sphenoid Bone. Tab. V. f, g, O.

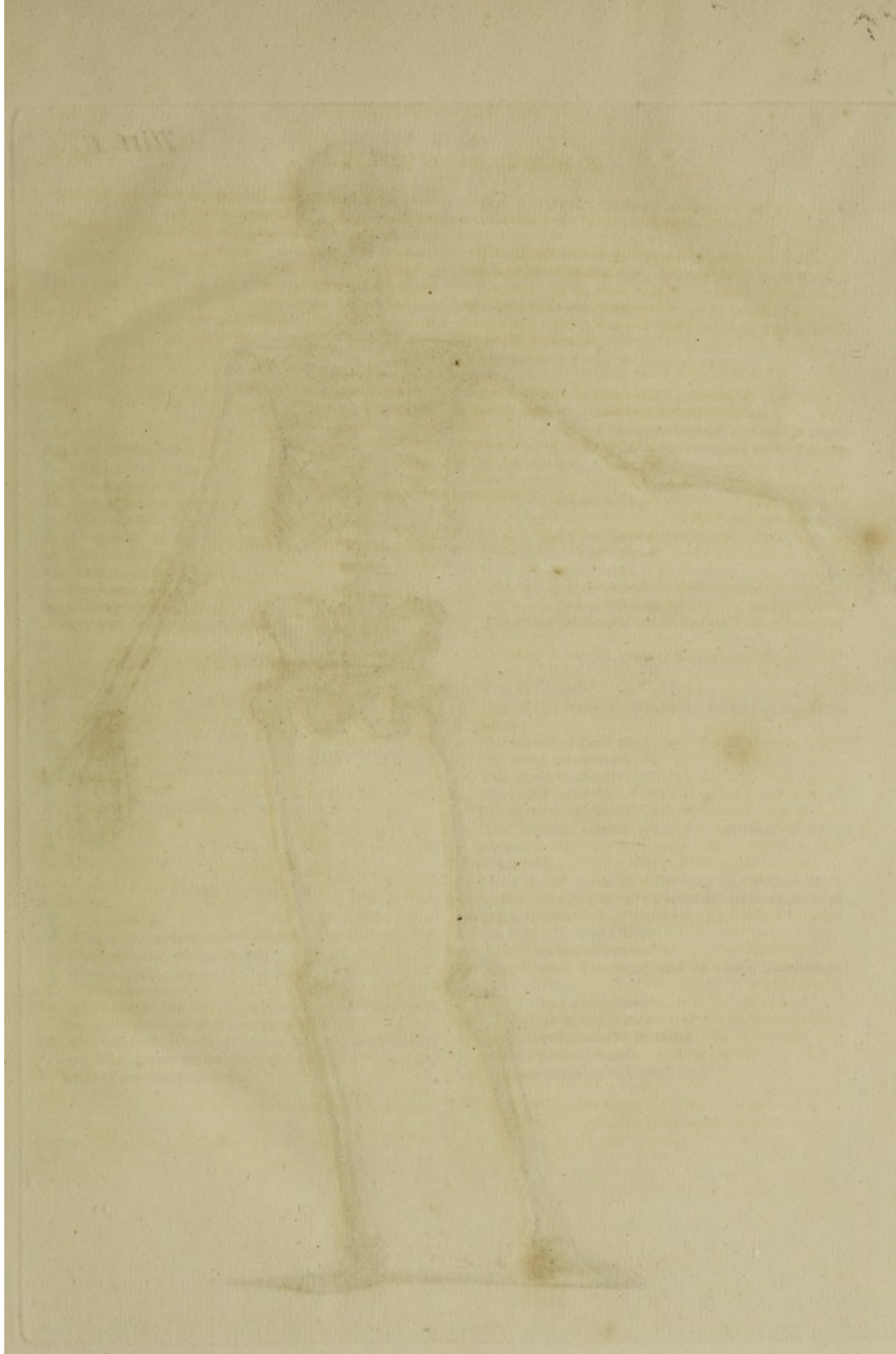
The Ethmoid and Sphenoid Sutures in some parts assist in forming other Sutures, especially the Squamous and Transverse; and in other parts, there is but one Suture common to these two Bones.

The *Transverse Suture*, which runs across the Orbits and root of the Nose, between the Frontal, Malar, Sphenoid, Ethmoid, Superior Maxillary, and Nasal Bones. Tab. III. q, e, f.

The *Zygomatic Sutures*, placed between the Zygomatic parts of the Temporal and Cheek Bones, and slanting obliquely downwards and backwards. Tab. IV. t.

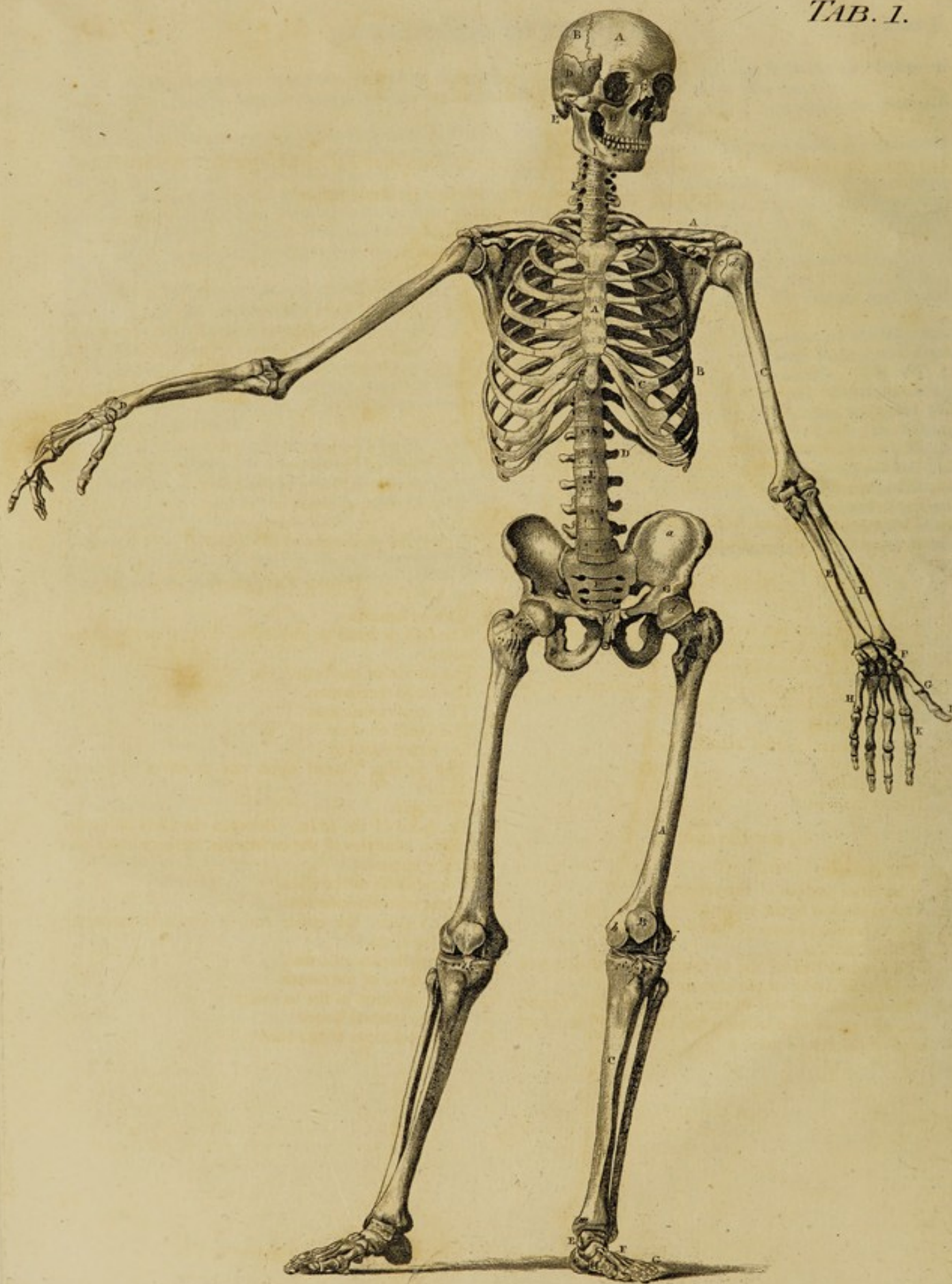
The advantages derived from the Cranium being formed of different Bones and Sutures are, that the Spheroidal figure is sooner completed;—that the Bones, which are at some distance from each other at Birth, yield, and conduce to an easier Delivery;—that the Dura Mater, by the Sutures, has a firmer adhesion;—and that Fractures are frequently prevented from extending so far as they would do in one continued bony Substance; which last circumstance takes place in extreme old age.

## TABLE





TAB. 1.





# TABLE I.

REPRESENTS a Front View of the MALE SKELETON, with some of the CARTILAGES and LIGAMENTS which connect the BONES 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.
- E, The mastoid process of that bone.
- F, The malar, or cheek bone.
- G, The nasal bone; behind which is the nasal process of,
- H, The superior maxillary bone.
- I, The lower jaw.
- K, The cervical vertebræ, 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 vertebræ, with their intervertebral cartilages and transverse processes.
- F, The os sacrum.
- G, The os innominatum, composed of,
  - a, The os ilium,
  - b, The os pubis,
  - c, The os ischium.

## UPPER EXTREMITY.

- A, The clavicle.
- B, The inner surface of the scapula.
- a, The acromion of the scapula.
- b, The coracoid process of that bone.
- 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 tendon of the long head of the biceps muscle.

- e, The inner, and,
- f, The outer condyle of the os humeri. Between e and f, The hollow for lodging the coronoid process of the ulna in the flexion of the fore-arm.
- D, The radius.
- g, The head of the radius.
- E, The ulna.
- h, The coronoid process of the ulna.
- F, The bones of the carpus.
- G, The metacarpal bone of the thumb.
- H, The metacarpal bones of the fingers.
- I, The two bones of the thumb.
- K, The three phalanges of the fingers.

## UNDER EXTREMITY.

- A, The os femoris.
- d, The ball or head of this bone, lodged in the acetabulum.
- e, 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 os femoris, the semilunar cartilages appear.
- l, The tubercle of the tibia.
- m, The malleolus internus.
- D, The fibula; the upper end of which is connected with the tibia.
- n, The malleolus externus.
- E, The bones of the tarsus.
- o, The projection of the os calcis.
- F, The metatarsal bones.
- G, The phalanges of the toes.



## T A B L E II.

REPRESENTS a Back View of the MALE SKELETON, with some of the CARTILAGES and LIGAMENTS which connect the BONES to each other.

## HEAD AND TRUNK.

- A, The parietal bone.  
*a*, The sagittal suture, and parietal hole.  
 B, The occipital bone.  
*b, b*, The lambdoid suture.  
 C, The joining of the temporal and parietal bones.  
 D, The cheek-bone.  
 E, F, The inner or back part of the jaws, with the teeth.  
 G, The first cervical vertebra.  
 H, The second cervical vertebra.  
 I, The seventh cervical vertebra.  
*c*, The spinous processes of the cervical vertebræ.  
 K, The first dorsal vertebra.  
 L, The twelfth dorsal vertebra.  
*d*, The spinous processes of the dorsal vertebræ.  
*e*, Their transverse processes.  
 M, The first lumbar vertebra.  
 N, The fifth lumbar vertebra.  
*f*, Their spinous, and,  
*g*, Their transverse processes.  
 O, The os sacrum.  
*h*, The uppermost spinous process. Farther out are seen the superior oblique processes of this bone, joined 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 O, the posterior foramina of the os sacrum.  
*k*, An opening in the under and back part of this bone, covered in the subject by a ligamentous membrane.  
 P, The os coccygis, joined by its shoulders to the os sacrum, at the lower part of the opening *k*.  
 Q, The os ilium.  
 R, The os pubis.  
 S, The os ischium.  
 T, U, The seven true ribs.  
 V, V, The five false ribs.

## SUPERIOR EXTREMITY.

- A, The clavicle.  
 B, The dorsum scapulæ.  
*a*, The spine of the scapula.  
*b*, The acromion of the scapula.  
*c*, A fossa for lodging the supra-spinatus muscle.

- d*, An irregular surface, occupied by the infra-spinatus muscle.  
 C, The os humeri.  
*e*, The ball of the os humeri.  
*f*, The external tubercle of the bone.  
*g*, The external condyle.  
*h*, The internal condyle.  
*i*, The cavity for lodging the olecranon of the ulna.  
 D, The radius.  
*k*, The head of the radius articulated with the trochlea of the os humeri.  
*l*, The under end of the radius, grooved by the tendons of muscles.  
 E, The ulna.  
*m*, The olecranon of the ulna.  
*n*, The under end of the ulna, with the styloid process.  
 F, The bones of the carpus.  
 G, The metacarpal bone of the thumb.  
 H, The metacarpal bones of the fingers.  
 I, The two bones of the thumb.  
 K, The three phalanges of the fingers.

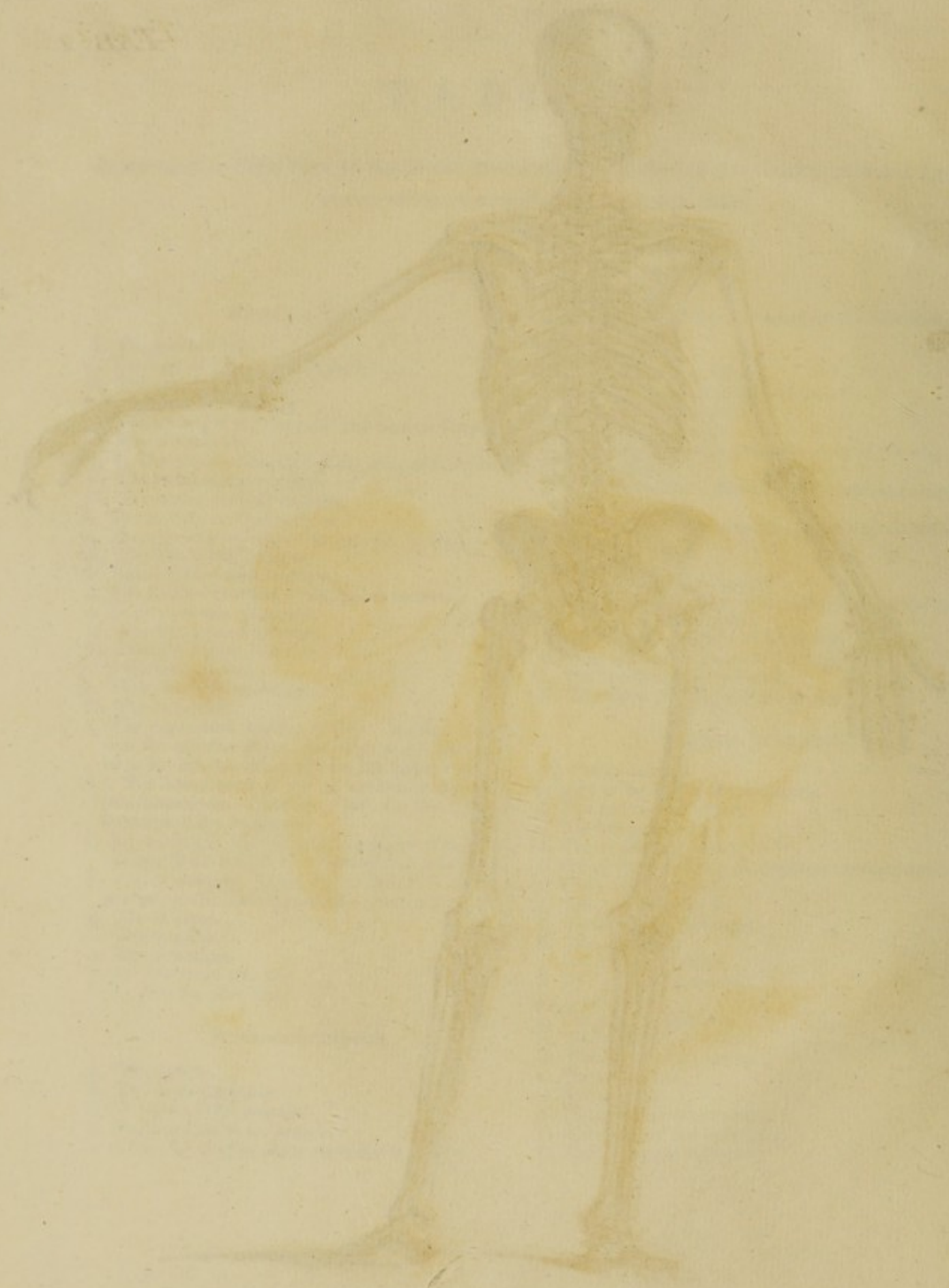
## INFERIOR EXTREMITY.

- A, The os femoris.  
*a*, Part of the ball of the os femoris.  
*b*, The cervix of the bone.  
*c*, The trochanter major.  
*d*, The trochanter minor.  
*e*, The cavity for lodging the popliteal vessels and nerves.  
*f*, The external condyle.  
*g*, The internal condyle.  
*h*, The semilunar cartilages.  
 B, The tibia.  
*i*, The head of the tibia.  
*k*, The malleolus internus.  
 C, The fibula.  
*l*, The head of the fibula.  
*m*, The malleolus externus.  
 D, The bones of the tarsus.  
*n*, The astragalus.  
*o*, The os calcis.  
*p*, The fore part of the tarsus.  
 E, The bones of the metatarsus.  
 F, The phalanges of the toes.





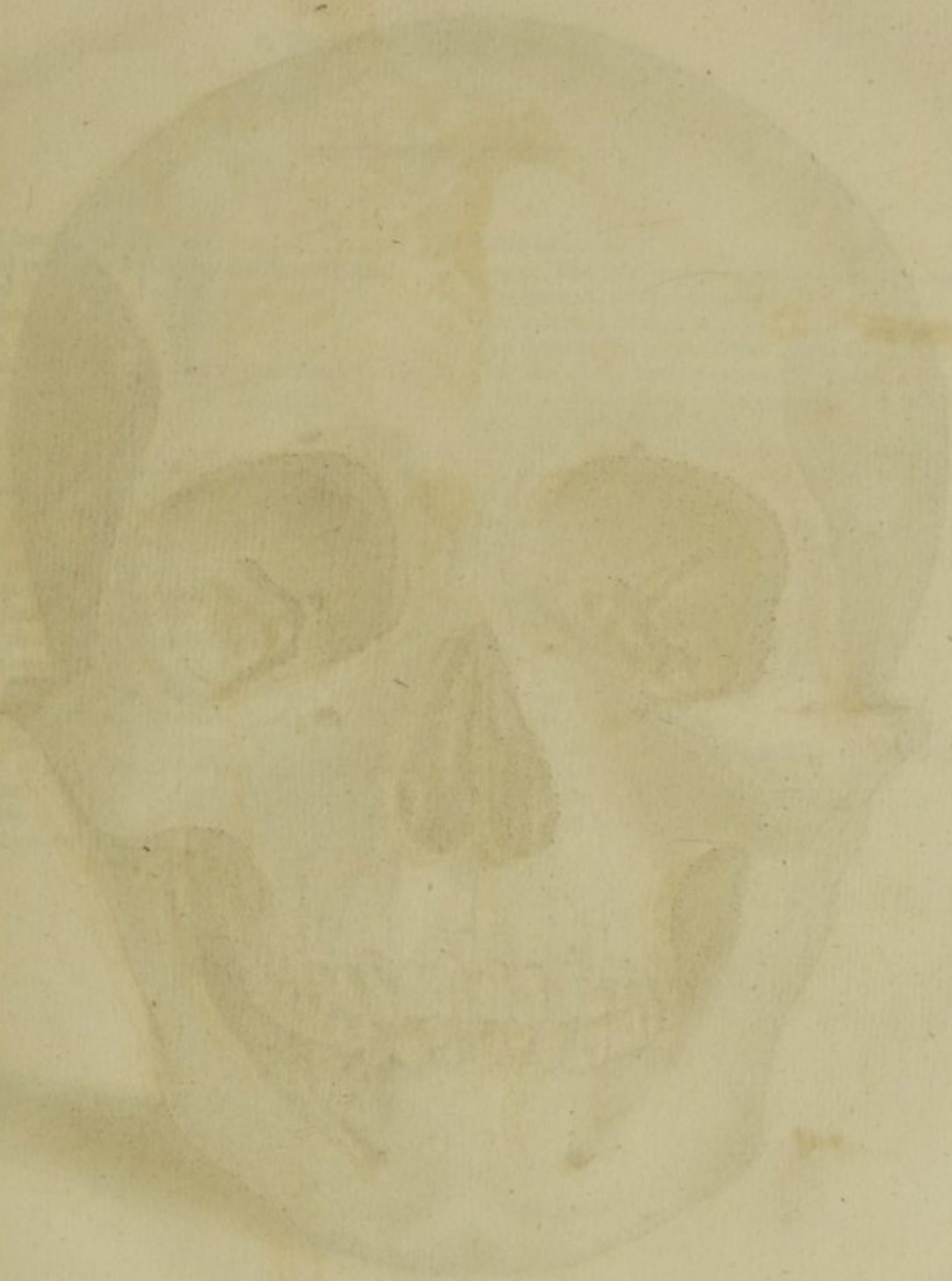






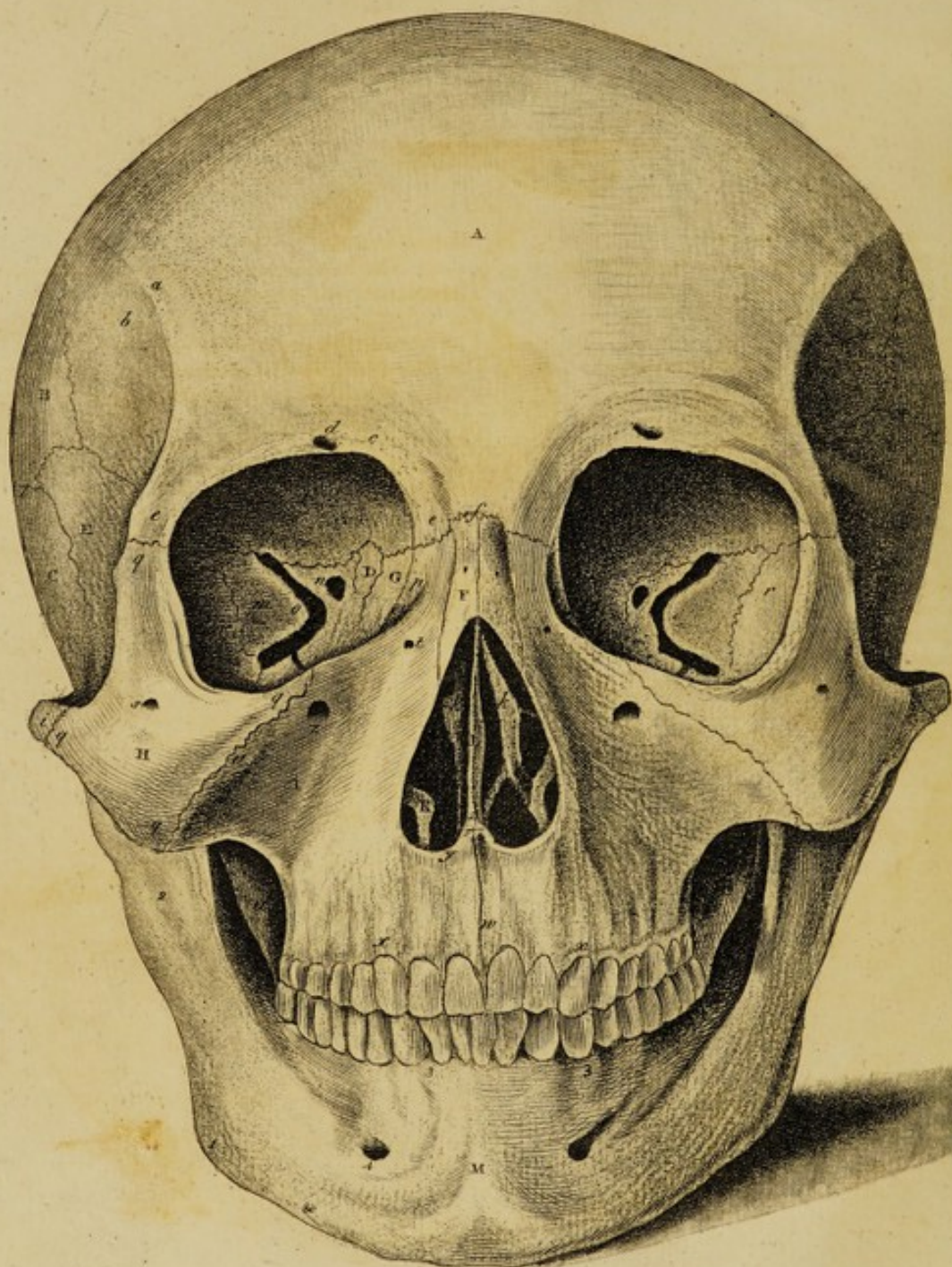
THE  
SKELETON

1. The Skull
2. The Ribcage
3. The Pelvis
4. The Femur
5. The Humerus
6. The Radius
7. The Ulna
8. The Scapula
9. The Sternum
10. The Clavicle
11. The Vertebrae
12. The Sacrum
13. The Coccyx
14. The Pelvis
15. The Femur
16. The Humerus
17. The Radius
18. The Ulna
19. The Scapula
20. The Sternum
21. The Clavicle
22. The Vertebrae
23. The Sacrum
24. The Coccyx





TAB. 3.





## T A B L E III.

## A Front View of the SKULL.

- 
- |  |   |
|--|---|
| <p>A, THE frontal bone.<br/> <i>a</i>, The temporal process, or ridge of the frontal bone.<br/> <i>b</i>, The temporal fossa of that bone.<br/> <i>c</i>, The superciliary ridge.<br/> <i>d</i>, The foramen superciliare.<br/> <i>e, e</i>, The external and internal orbital processes.<br/> <i>f, e, e</i>, The transverse suture.<br/> <i>g</i>, The orbital plate.<br/> <i>h</i>, The lacrymal fossa.<br/> B, The under and fore part of the parietal bone.<br/> C, The squamous part of the temporal bone.<br/> <i>i</i>, The zygomatic process of that bone.<br/> D, The pars plana of the ethmoid bone.<br/> <i>k, k</i>, The ossa spongiosa superiora of the ethmoid bone.<br/> E, The temporal plate of the sphenoid bone.<br/> <i>l</i>, Part of the squamous suture.<br/> <i>m</i>, The orbital plate of the sphenoid bone.<br/> <i>n</i>, The foramen opticum.<br/> <i>o</i>, The foramen lacerum of the sphenoid bone, and the foramen lacerum inferius of the orbit, the former above, and the latter below.<br/> F, The os nasi; in the middle of which is a hole proper to this bone.<br/> G, The os unguis.<br/> <i>p</i>, The lacrymal groove of the os unguis.</p> | <p>H, The os malæ.<br/> <i>q, q, q, q</i>, The four angles or processes of this bone.<br/> <i>r</i>, The internal orbital process.<br/> <i>s</i>, The external orbital hole.<br/> I, The fossa of the os maxillare superius.<br/> <i>t</i>, The base of the nasal process of the superior maxillary bone, where there is frequently such a hole as is marked in this figure.<br/> <i>u</i>, The tuberosity at the back part of the bone.<br/> <i>v</i>, The connexion between the os malæ and os maxillare superius.<br/> <i>w</i>, The connexion between the superior maxillary bones.<br/> <i>x</i>, The alveolar processes, with the teeth.<br/> <i>y</i>, The fossa nasalis.<br/> <i>z</i>, The foramen infra-orbitarium.<br/> K, The os spongiosum inferius.<br/> L, The vomer.<br/> M, The symphysis or middle of the lower jaw.<br/> &amp;, The base of the lower jaw.<br/> 1. Its angle;<br/> 2. The ascending plate which sends off the coronoid and condyloid processes.<br/> 3. The alveolar processes and teeth;<br/> 4. The mental hole.</p> |
|--|---|



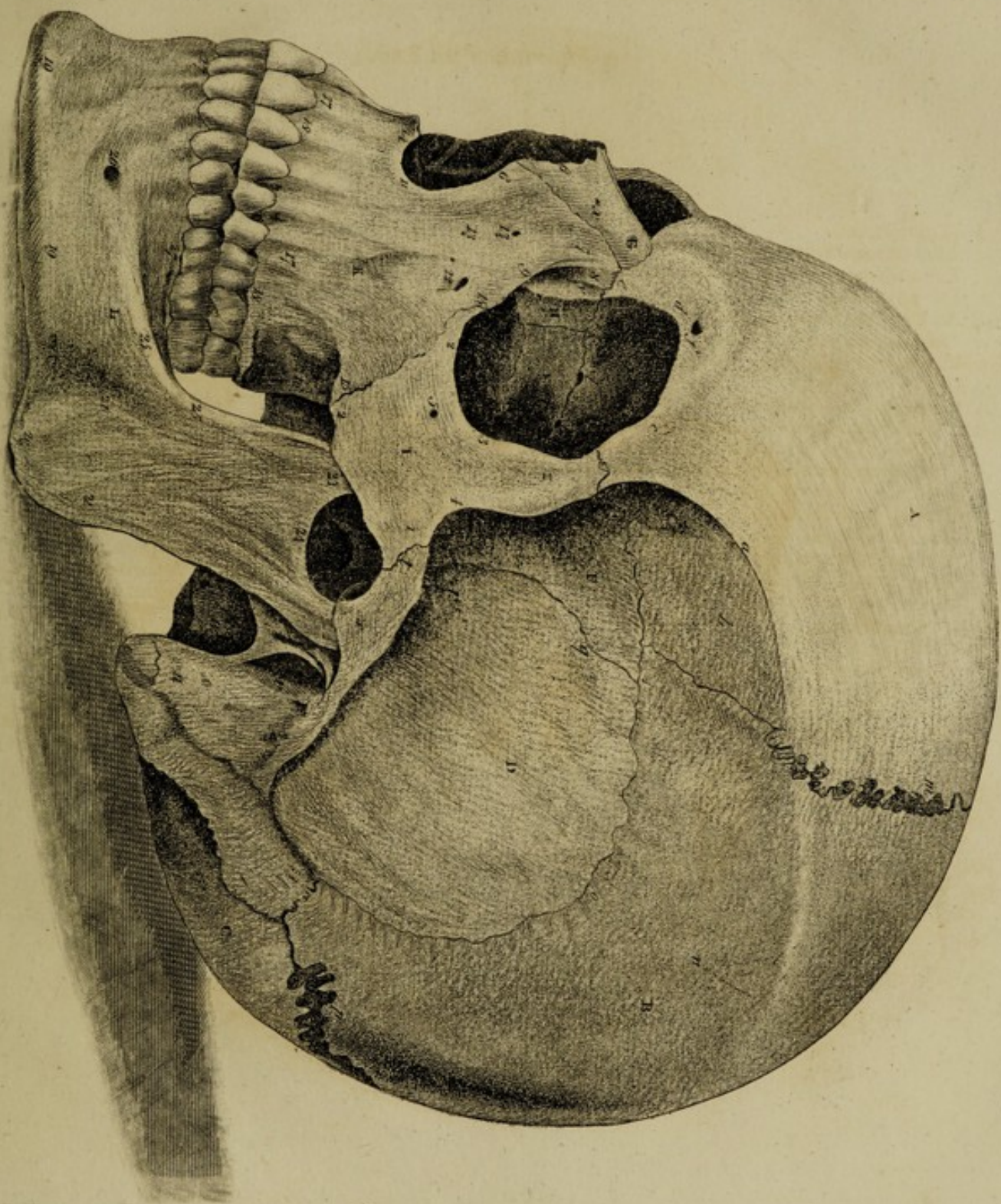
## TABLE IV.

## A PROFILE of the SKULL.

- 
- |  |   |
|--|---|
| <p>A, THE os frontis.<br/> <i>a</i>, The temporal process of this bone.<br/> <i>b</i>, The temporal fossa of the bone.<br/> <i>c</i>, The superciliary ridge.<br/> <i>d</i>, An elevation formed by the frontal sinus.<br/> <i>e</i>, The external and internal orbital processes.<br/> <i>f</i>, The foramen superciliare.<br/> <i>g</i>, <i>h</i>, The orbital plate.<br/> <i>i</i>, Part of the lacrymal fossa.<br/> <i>k</i>, <i>l</i>, That part of the transverse suture which unites the os frontis to the os planum and os unguis.<br/> <i>l</i>, <i>l</i>, The foramina orbitaria interna, anterius et posterius.<br/> <i>m</i>, Part of the coronal suture.<br/> B, The os parietale.<br/> <i>n</i>, The arched impression upon the surface of that bone.<br/> <i>o</i>, The squamous suture.<br/> <i>p</i>, Part of the lambdoid suture.<br/> C, A small portion of the os occipitis.<br/> D, The pars squamosa of the temporal bone.<br/> <i>q</i>, Part of the squamous suture between the temporal and sphenoid bones.<br/> <i>r</i>, The middle of the temporal fossa.<br/> <i>s</i>, The zygomatic process of the temporal bone.<br/> <i>t</i>, The zygomatic suture.<br/> <i>u</i>, The mastoid process of the temporal bone.<br/> <i>v</i>, The meatus auditorius externus.<br/> <i>w</i>, Part of the base of the pars petrosa.<br/> E, The pars plana of the ethmoid bone.<br/> F, The temporal plate of the sphenoid bone.<br/> <i>x</i>, The foramen nasale.<br/> H, The os unguis.<br/> <i>y</i>, The lacrymal fossa of the os unguis.<br/> I, The os malæ.<br/> <i>z</i>, The superior orbital process of that bone.</p> | <p>1. The zygomatic, and,<br/> 2. 2. The maxillary processes of the os malæ.<br/> 3. The orbital plate of that bone.<br/> 4. The cavity for lodging part of the temporal muscle.<br/> 5. The orbital passage of the os malæ.<br/> K, The maxillary fossa.<br/> 6. 6. The ragged edges of the os nasi and os maxillare superius, to which the cartilages of the nose are fixed.<br/> 7. The angular process of the os maxillare superius.<br/> 8. The lacrymal fossa of that bone.<br/> 9. A depression of the os maxillare at the entrance of the orbit.<br/> 10. A portion of the orbit which belongs to the os maxillare.<br/> 11. The notch at the opening of the nose.<br/> 12. The foramen infra-orbitarium.<br/> 13. 13. Several small holes in the os maxillare, for the passage of blood-vessels and nerves.<br/> 14. The spine or ridge, formed by the union of the ossa maxillaria.<br/> 15. 15. The malar processes to which the cheek-bone is fixed.<br/> 16. The large tuber, or bulge of the os maxillare.<br/> 17. 17. Elevations of the alveoli over the roots of the teeth.<br/> 18. 18. The edge of the alveoli.<br/> L, The lower jaw.<br/> 19. 19. Its base;<br/> 20. Its angles.<br/> 21. 21. Muscular prints.<br/> 22. The condyloid process.<br/> 23. The coronoid process.<br/> 24. The notch between these processes.<br/> 25. 25. The sharp edge of the coronoid process.<br/> 26. The mental hole.<br/> 27. 27. The edge of the alveoli.</p> |
|--|---|



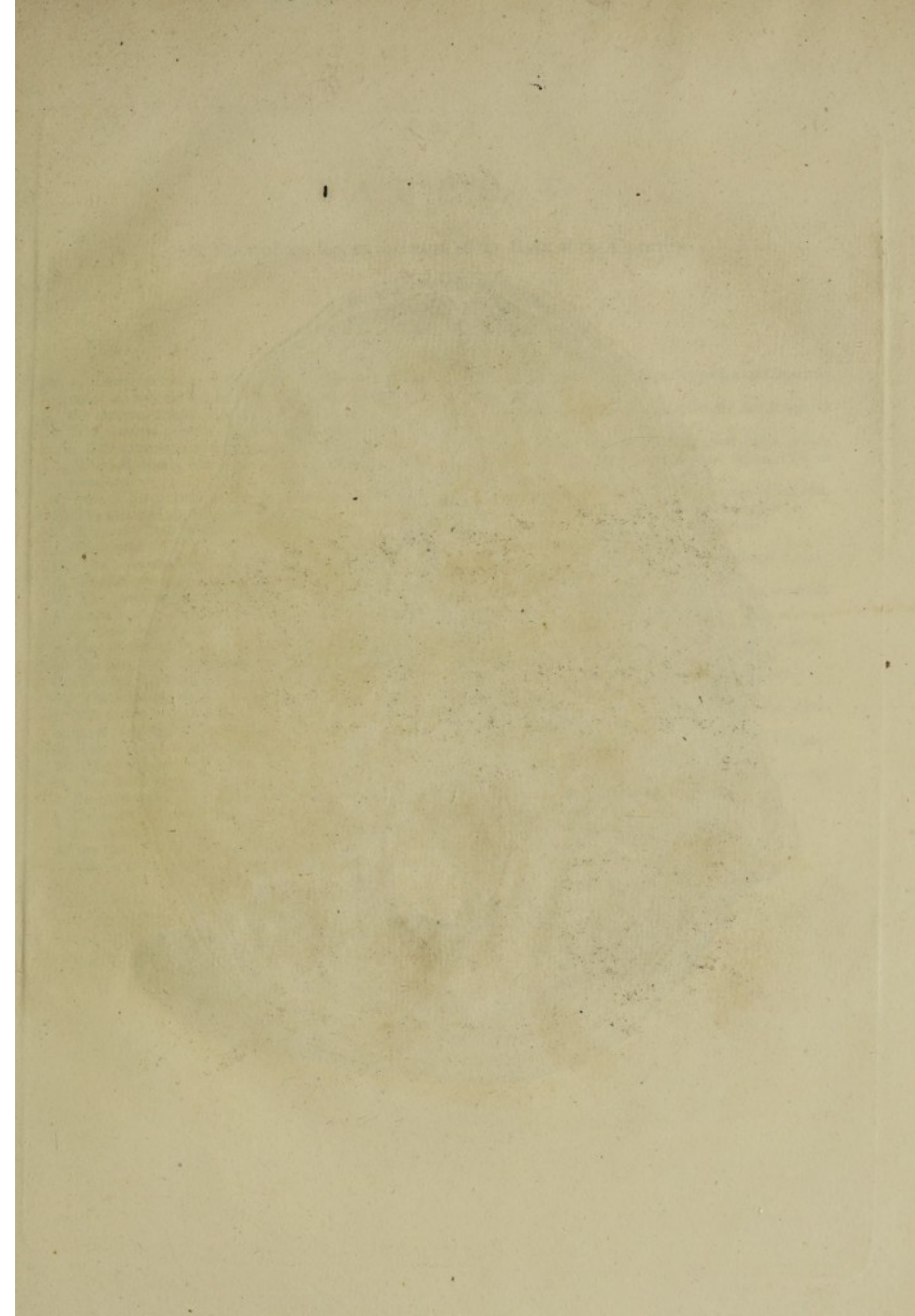
TAB. 4.





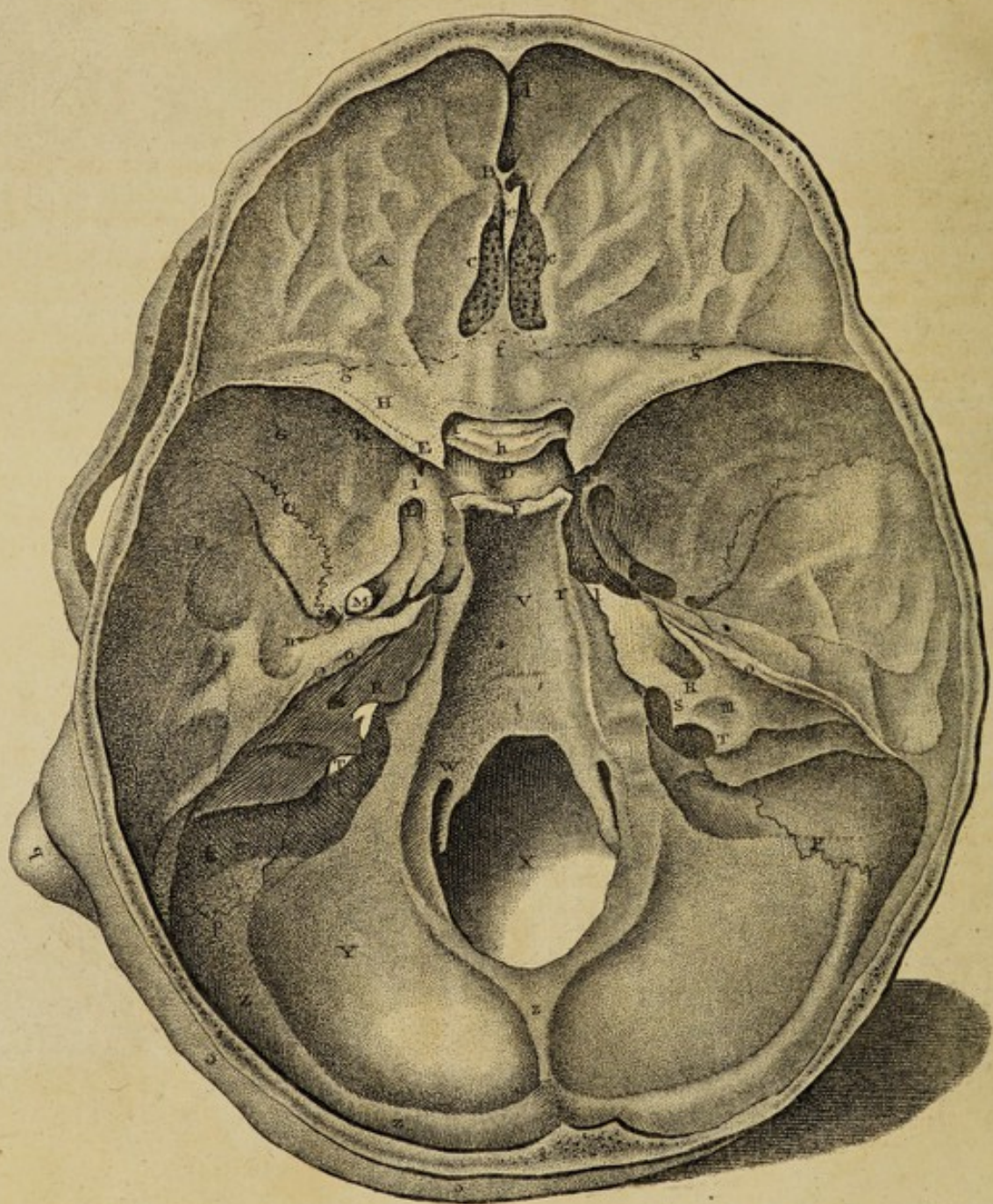








*TAB. 5.*





## T A B L E V.

## A VIEW of the INNER SURFACE of the BASE of the CRANIUM.

- 
- a, a*, THE upper edge of the zygoma. Between the anterior *a*, and the cut edge of the skull, a portion of the external temporal fossa.  
*b*, The mastoid process of the temporal bone.  
*c, c*, The external surface of the occipital bone.  
*A*, The left frontal fossa, marked with ridges and depressions.  
*d*, Part of the frontal spine.  
*B*, The foramen placed at the bottom of the frontal spine.  
*C*, The cribriform plate of the ethmoid bone.  
*e*, The crista galli.  
*D*, The sella turcica.  
*E*, The left anterior clinoid process.  
*F*, The posterior clinoid process.  
*f*, A small process of the sphenoid bone, projecting into the back-part of the ethmoid bone.  
*g*, Part of the sphenoid suture.  
*h*, The processus semi-olivaris.  
*G*, The left temporal fossa of the sphenoid bone.  
*H*, The left transverse spinous process.  
*I*, The foramen opticum.  
*K, i*, A portion of the foramen lacerum.  
*L*, The foramen rotundum.  
*M*, The foramen ovale.  
*N*, The foramen spinale.  
*k*, 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 cartilaginous ligament.  
*O*, The suture common to the sphenoid and temporal bones.  
*P*, The squamous part of the temporal bone, which completes the temporal fossa for the lateral lobe of the brain.  
*Q*, The ridge which divides the pars petrosa of the temporal bone into anterior and posterior surfaces.  
*m*, The posterior surface of the pars petrosa.  
*n*, The foramen innominatum.  
*o*, A groove which lodges the superior petrosal sinus.  
*R*, The meatus auditorius internus.  
*S*, The anterior part of the foramen lacerum common to the temporal and occipital bones.  
*T*, The posterior part of the same foramen.  
*U*, The fossa for lodging a portion of the lateral sinus.  
*V*, The cuneiform process of the occipital bone.  
*W*, The anterior condyloid foramen of that bone.  
*X*, The foramen magnum.  
*Y*, The inferior occipital fossa, which lodges the corresponding lobe of the cerebellum.  
*Z, Z, p*, A fossa of the occipital bone for the left lateral sinus.  
*z, z*, The inferior limb of the cruciform spine, running backwards from the foramen magnum.  
*p*, Part of the lambdoid suture.  
*q*, A continuation of the fossa for the lateral sinus.  
*r*, A fossa for the inferior petrosal sinus.  
*s, s*, The cut edge of the skull.



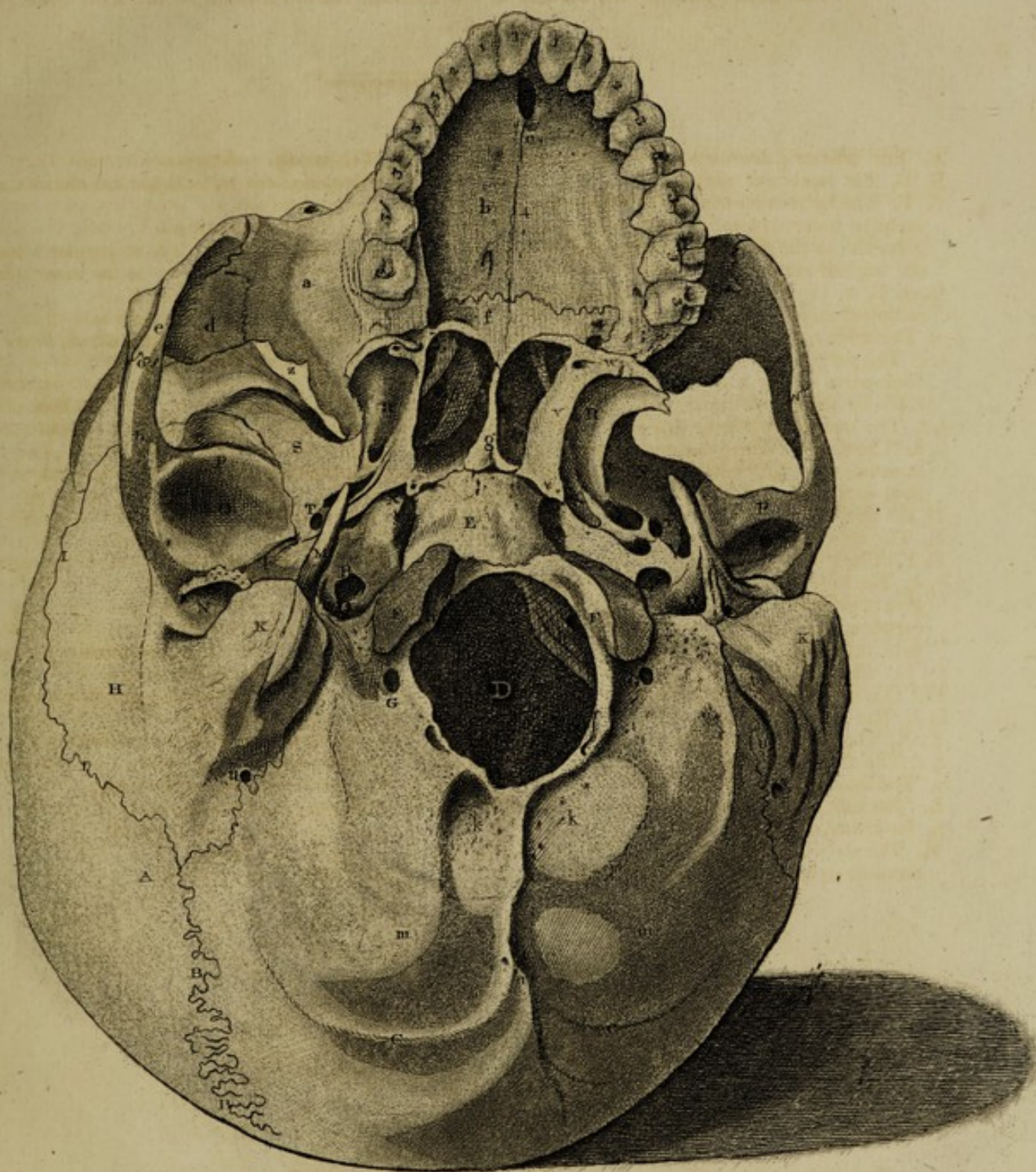
## TABLE VI.

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 transverse 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*, C, *m*, Depressions made by the insertions of the complexi muscles on that bone.  
*n*, The spinous tuberosity, observed only in some skulls.  
*i*, *i*, The perpendicular spine. Between *m*, *m*, and the back-parts of the temporal bones, are impressions made by the splenii muscles.  
*l*, *l*, 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.  
 D, the foramen magnum.  
 E, The cuneiform process.  
 F, F, The condyloid processes.  
*h*, *h*, The tuberosities at the roots of the condyles, 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, G, The posterior condyloid holes.  
 H, The squamous portion of the temporal bone.  
 I, I, The squamous suture.  
 K, K, The mastoid processes.  
*t*, *t*, The mastoid fissures.  
*u*, The foramen mastoideum.  
 L, 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 auditorius externus.  
 O, The glenoid cavity, for the articulation of the lower jaw.  
*g*, The glenoid fissure.  
 P, The foramen caroticum.  
 Q, The thimble-like cavity, or jugular fossa.  
 R, R, The pterygoid fossæ, at the outer sides of which are the external pterygoid plates.  
 V, The internal pterygoid plate.  
 W, The hook-like process, round which the circumflex muscle of the palate moves.  
 S, the temporal process of the sphenoid bone.  
 T, The spinous process and spinous hole of that bone.  
 7, The osseous mouth of the Eustachian tube.  
 Y, The foramen ovale.  
*s*, *s*, Passages common to the temporal and sphenoid bones.  
 X, The foramen pterygoideum.  
 Z, The inferior orbital fissure.  
*a*, The under part of the tuberosity of the superior maxillary bone.  
*b*, The palate process of that bone.  
*c*, The foramen incisivum.  
*d*, The internal surface of the os malæ, which contains a portion of the temporal muscle.  
*e*, The under edge of the zygomatic process.  
*o*, The zygomatic suture.  
*f*, The palate process of the palate bone.  
 5. 6. The superior and inferior spongy bones.  
*g*, The posterior edge of the vomer.  
 4. The foramen gustativum.  
 1. 1. 1. 1. The dentes incisores.  
 2. 2. The dentes canini.  
 3. &c. The dentes molares.



TAB. 6.





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Fig. 1.

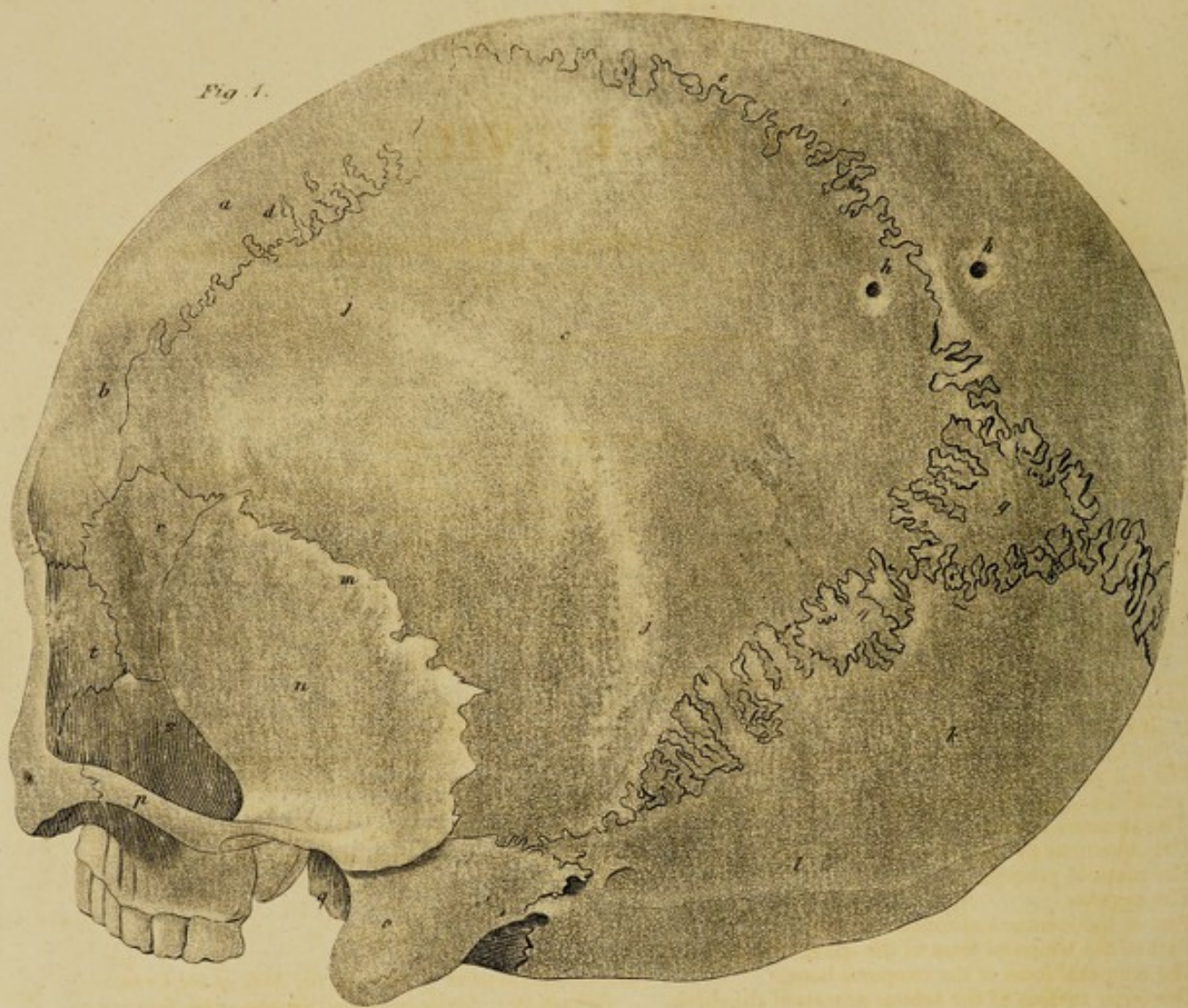


Fig. 2.

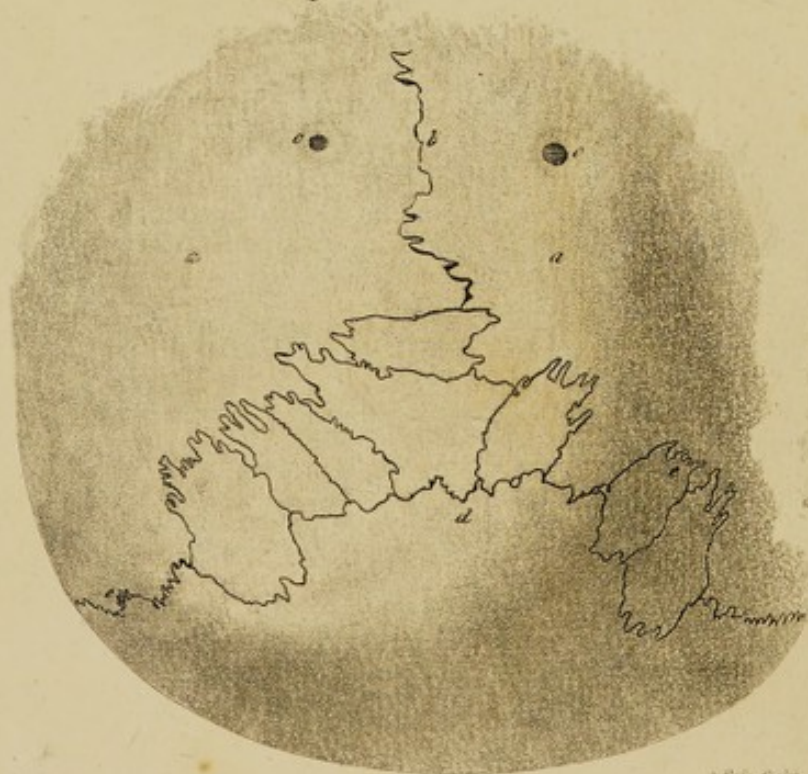


Fig. 3.





## T A B L E VII.

A Back View of the SKULL, with the Additional Bones called OSSA TRIQUETRA.

FIG. 1.

*The SKULL seen from its Posterior and Left Side.*

- a*, The frontal bone.
- b*, Part of the temporal fossa of that bone.
- c, c*, The parietal bones.
- d*, The coronal suture.
- e*, The sagittal suture.
- f, f*, The lambdoid suture.
- g, g*, The ossa triquetra, between the lambdoid and sagittal sutures.
- h, h*, The foramina parietalia.
- i, i*, The arched impression of the left parietal bone.
- k*, The occipital bone.
- l*, Part of the large transverse arched ridge of that bone.
- m*, The squamous suture.
- n*, The squamous part of the temporal bone.
- o*, The mastoid process.
- p*, The zygoma.
- q*, Part of the meatus auditorius externus.
- r*, Part of the temporal fossa of the sphenoid bone.
- s*, The temporal fossa of the temporal bone.
- t*, The outer surface of the orbital process of the cheek-bone.

- u*, The zygomatic suture.
- v*, The superior orbital process of the cheek-bone.
- w*, Part of the superior maxillary bone.
- x*, Part of the outer plate of the pterygoid process.
- y, y*, Some of the teeth.

FIG. 2.

*A Portion of the Upper and Back Part of the CRANIUM, with the Ossa Triquetra.*

- a, a*, Part of the parietal bones.
  - b*, A portion of the sagittal suture.
  - c, c*, The parietal foramina, uncommonly large.
  - d*, The upper part of the occipital bone.
  - e*, Part of the lambdoid suture.
- The ossa triquetra are seen between the occipital and parietal bones, varying considerably in figure and size.

FIG. 3.

*An additional piece of Bone in the Side of the Cranium, inclosed by a double Squamous Suture, and forming a kind of Os Triquetrum.*



# TABLE VIII.

In this Table are represented the Outlines of Six SKULL-CAPS taken from Adult Bodies, to shew how far the HUMAN CRANIUM 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 Mummy, preserved in the Museum of Natural History belonging

to the University of Edinburgh. 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 length.



TAB. 8.

Fig. 1.

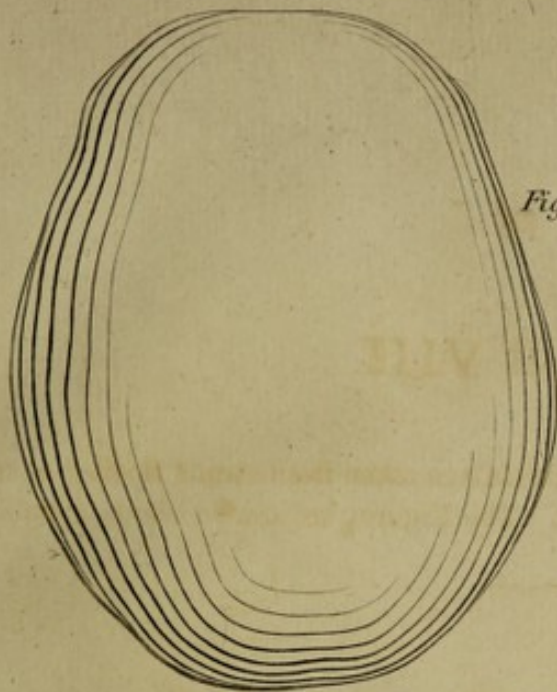


Fig. 2.

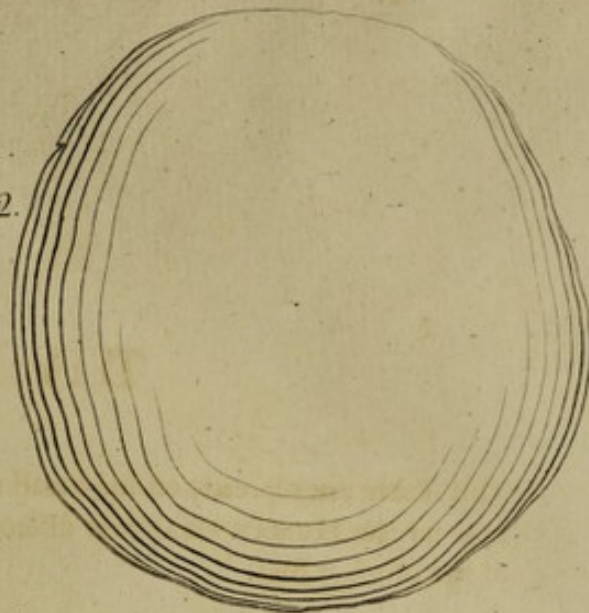


Fig. 3.

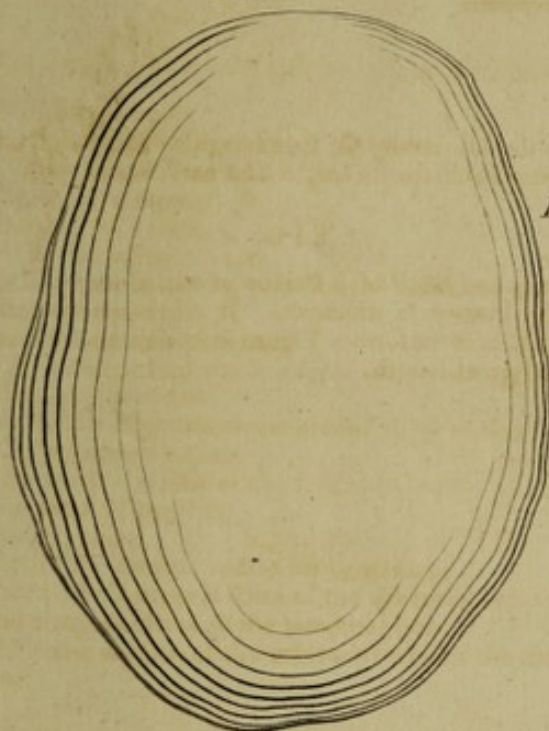


Fig. 4.

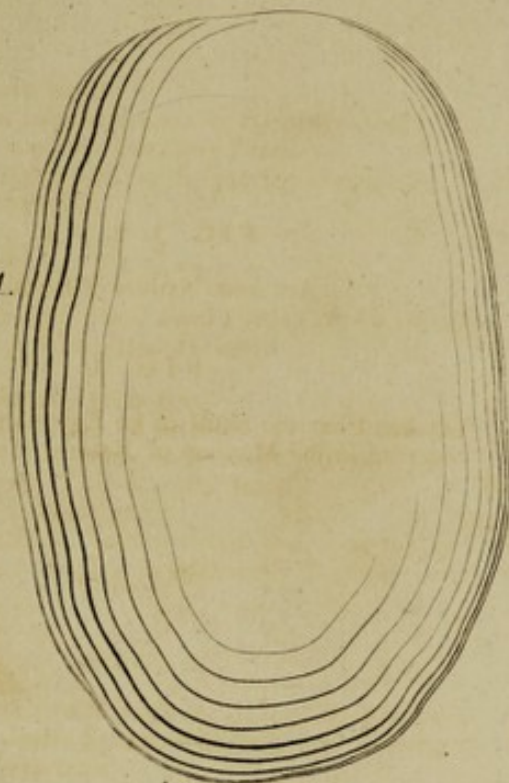
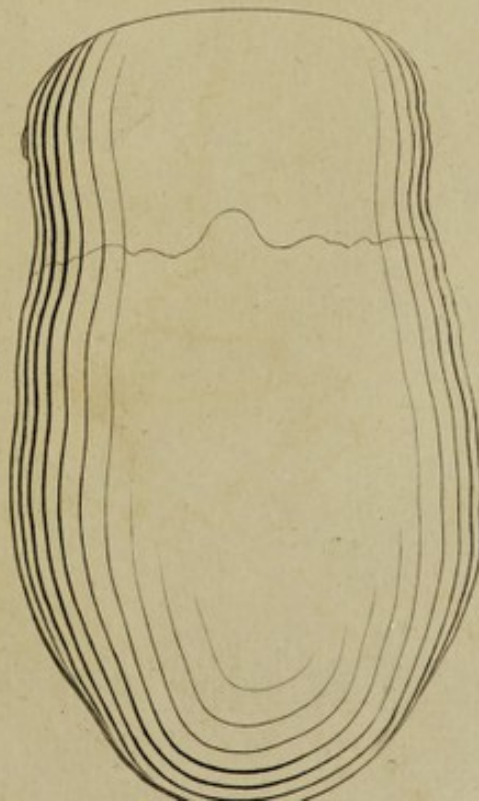


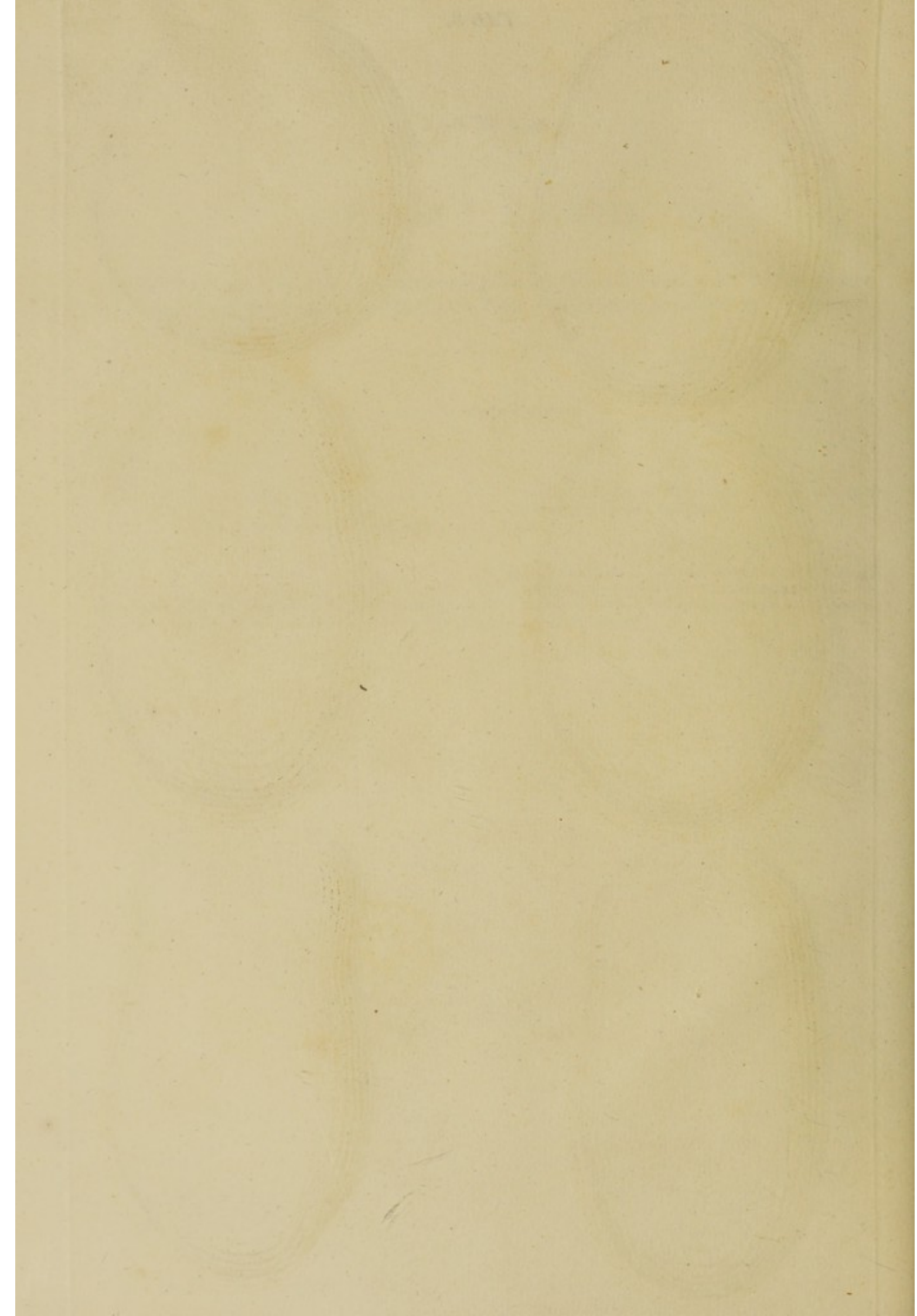
Fig. 5.



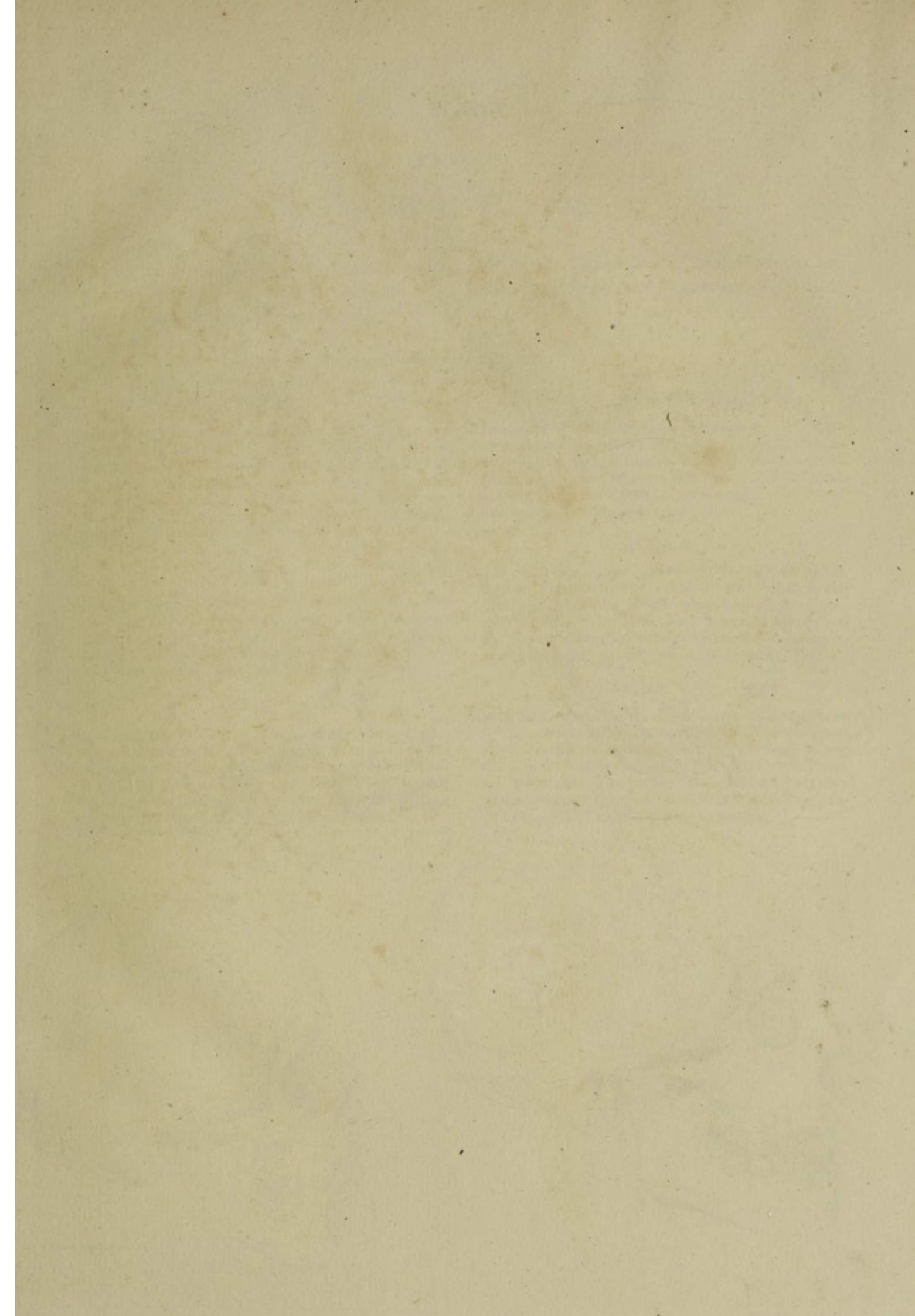
Fig. 6.













TAB. 9.

Fig. 1.

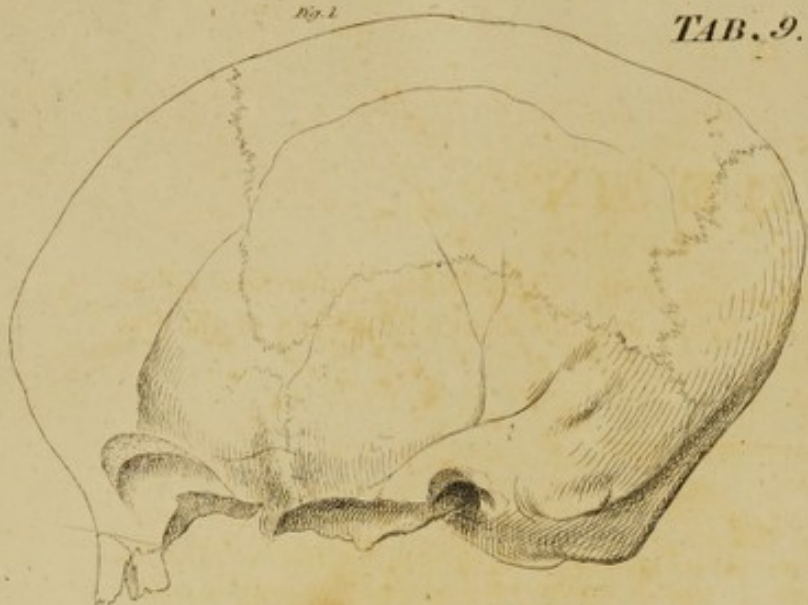


Fig. 2.



Fig. 3.



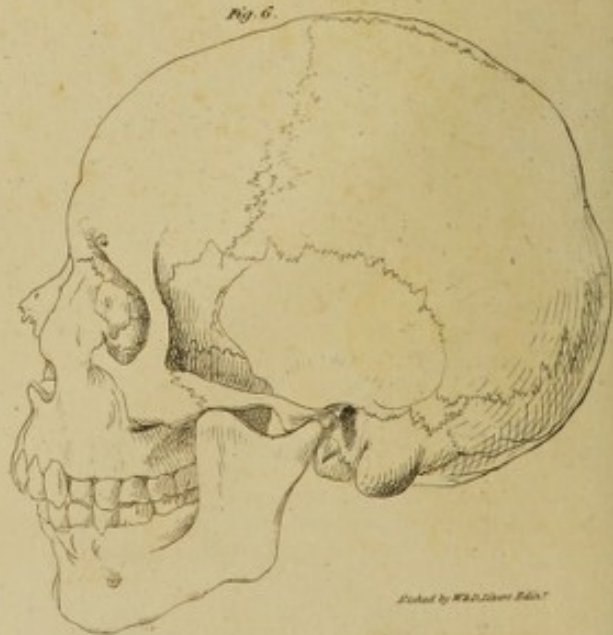
Fig. 4.



Fig. 5.



Fig. 6.





## TABLE IX.

This and the two following TABLES represent a few of the Characteristic Differences in the SKULLS 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 *Mummy*, represented in Fig 5. of the former Table. It is remarkable not only for its length and narrowness, but for the strong impression made by the Temporal Muscle, and for the sharpness of the Arches of the Forehead and Occiput. The Cranium from which this Figure is taken is filled with Pitch.

FIG. 2.

Shews the Skull of another *Egyptian Mummy*. 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 *Turk*, 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 are short, and the Nostrils narrow.

FIG. 4.

This Figure exhibits the Skull of a *Hindoo*. The Cranium is smaller, but the Face rather larger in proportion 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 Cranium is smaller than in the European, but the Bones composing it are uncommonly thick. The Ossa Nasi protrude more, and the Superior Maxilla is deeper from the Nose downwards than that represented in the former Figure.

FIG. 6.

Shews the *Cassan Tartar*. This Cranium is considered by BLUMENBACH as an elegant one. Here the Forehead is large and moderately arched; the Nasal Bones are well formed, descending in a proper direction from the Forehead. The Incisor Teeth of the Upper Jaw project considerably; and the Chin is somewhat prominent. The Occipital Spine is wanting.



# TABLE X.

FIG. 1.

This Figure represents the Skull of a *Tungusan*. Here the Face appears flat, and broad towards the Zygomatic Arches. The Forehead is depressed; the Olfactory Organs large; the Occiput in the Cranium from which this Figure is taken, is observed to be remarkably prominent behind.

FIG. 2.

Exhibits the Skull of a *Cossack*. The aspect is altogether disagreeable to the eye. The Orbits are deep, depressed, 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 Hollander*. The Os Frontis is large, and a little flattened. The Superciliary Arches are elevated. The Orbits are long, when taken in a transverse direction. The Ossa Nasi 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 considerable resemblance to that of the Ethiopian.

FIG. 4.

Is the Skull of a *North American Indian Chief*. The

Vertex is depressed, and the Cranium is uncommonly wide over the Temples. The Malar Bones are somewhat prominent, and the Conchæ excavated as into a Bulla. The Olfactory Organs are extensive, the Superciliary Ridges large and arched. The Facial line inclines to the perpendicular. The Occiput is broader than in the European. The Incisor Teeth are uncommonly small, but sharp. The Skull is light, and all the Bones of the Cranium small.

FIG. 5.

Shews the Skull of an *Esquimaux*, which BLUMENBACH considers as holding a place between the Cranium of the *Mongol* and that of the *American*. The Face is flat, and the projection outwards of the Malar Bones is less than in the *Mongol*. The Nose is small, but projects more than in the people of that nation. The Basilar Fossa is wide, but shallower; the Chin sharp and prominent.

FIG. 6.

Is the Skull of an *Otaheitean*. The Cranium is rather narrow, but the Bregma is protuberant. The Upper Jaw is somewhat prominent, approaching to that represented in Fig. 3. but the Lower Jaw is shorter than in that Figure. The middle of the Forehead and the Occiput are wider than usual. The Superciliary Arches are a little raised, and the whole Skull has the appearance of great strength.



Fig. 1.



Fig. 2.



Fig. 2.



Fig. 4.

Fig. 3.



Fig. 6.

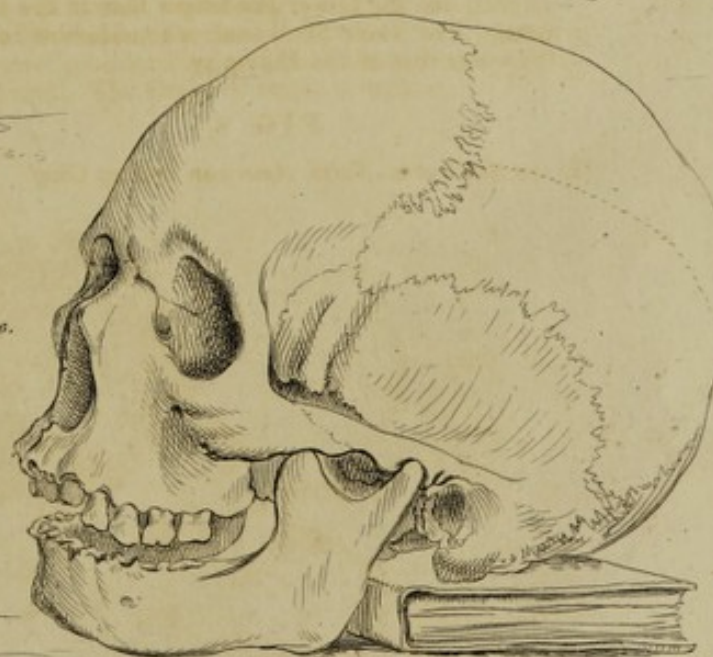


Fig. 5.









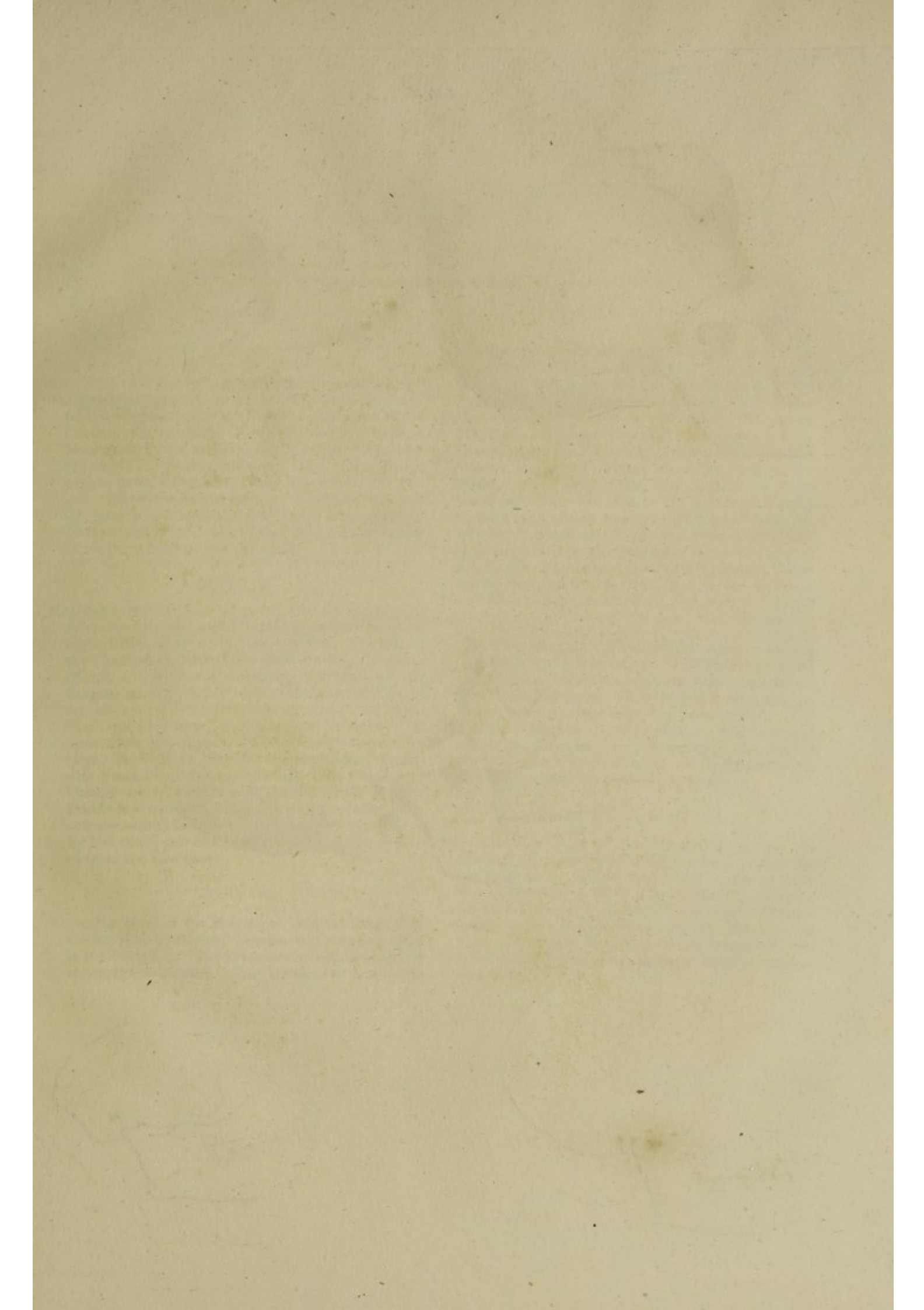




Fig. 1.



TAB. II.

Fig. 2.



Fig. 3.

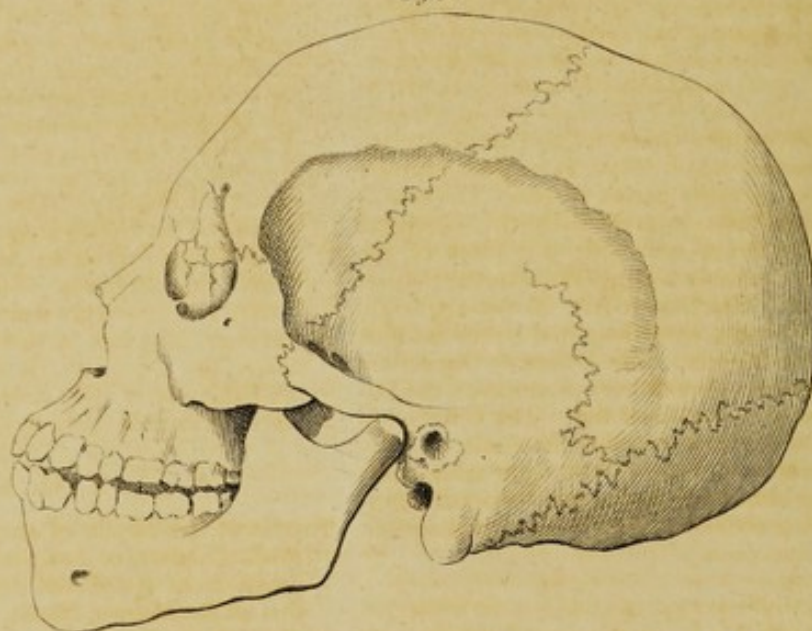


Fig. 4.

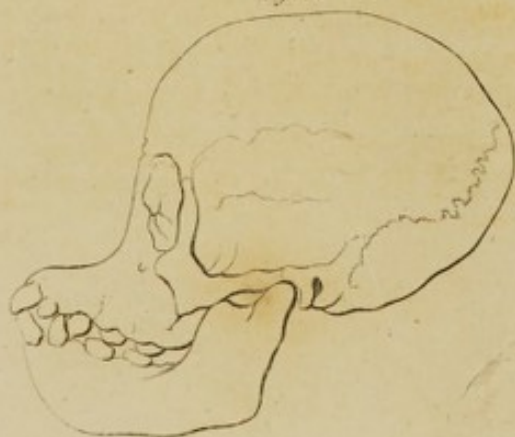


Fig. 5.





## TABLE XI.

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 impressions made by the action of the Temporal Muscles; but the Face is very different. The Malar Bones project more, but the Maxillary less, than in the *Negro*. The distance between the Cheek-Bones, and the general appearance of the Face, is so remarkable, that, according to CAMPER, the *Calmuck* 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 life. The side of the Cranium is strongly marked by the Temporal Muscle. The Bones occupying the place of the Bregma are remarkably high. The Frontal Sinuses scarcely appear. The Superciliary Arches are small. The Orbits are large, spreading, and somewhat oval when taken transversely. The Olfactory Organs are large; the Superior Maxilla very prominent; the Basilar Fossa large, broad, and flat. The Cranium is situated so much backwards, that the Skull, with the Under Jaw removed, being placed on a table, rests entirely on the Mastoid Processes and Occipital Bone. By this the Negro Skull can generally be distinguished from the European.

FIG. 3.

Shews the Skull of the *Ethiopian*. All the Bones here are found to be thicker, heavier, and stronger, than in the European. The Prominences and Depressions are more conspicuous. The Under Jaw is remark-

ably strong, and the sides of the Cranium deeply depressed by the Temporal Muscles. The Os Frontis is narrow, and flatter than in the European. The Zygomatic Processes are much arched. The Malar Bones are large, prominent, and square. The Antra Maxillaria 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 the *Simiæ*. The Cavity of the Nose is observed to be broad and large, like that of the American Indian; hence is supposed to arise the acuteness of smell peculiar to these nations; but no part of the Negro Skull is so remarkable as the projection of the fore part of the Alveolar Processes of the Maxillary Bones. These are evidently more prominent than in the Skulls of any other nation; so much so, that there is a strong similarity to the Jaws of the Ape tribe. In the Negro, the Chin also reticulates a little, approaching to that of the Monkey. The space between the Incisor Teeth and the Nose is longer. The Teeth have more of an oblique direction, and are larger and firmer than in the European. The Occiput is narrower and flatter, and converges more to a point behind. 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, than in the European.

FIG. 4. &amp; 5.

Represent the Skulls of an *Ourang-Outang*, and the *Simia Caudata*, or Long-tailed Monkey, to shew the direction of the Facial line, when compared with that of the Human Skull. In the Ourang, (Fig. 4.) the high Forehead gives the Animal a sort of resemblance to the Human Face. In the Monkey, the great size of the Maxillary Bones, compared with the Cranium, gives more the appearance of the Canine tribe.



## OF THE SEPARATE BONES OF THE HEAD.

## OS FRONDIS.

THE principal things to be attended to in this Bone, are,

The *Situation* of the Os Frontis in the fore part of the Cranium. Tab. III. A.

Its *Shape*, which has been compared to that of a Clam-shell, or to the *Concha Bivalvis*, or Cockle. Tab. XII. Fig. 3. 4.

Its *external Surface* convex above, and smooth, being little impressed by muscular action. Tab. XII. Fig. 3.

The *external and internal Angular, or Orbital Processes*, forming part of the Orbits. Tab. XII. Fig. 3. e, e.

The *Superciliary Arches, or Ridges* on which the Supercilia or Eye-brows are placed, extending between the external and internal Angular processes on each side, and giving attachment to part of the Occipito-frontalis and Corrugatores Superciliorum. Tab. XII. Fig. 3. h, h.

*Projections*, generally seen above the inner ends of the Superciliary Ridges, indicating the situation of the Cavities called *Frontal Sinuses*. Tab. IV. d.

The *Nasal Process*, placed between the internal Angular Processes, and forming part of the Nose. It is thick and strong, and much serrated where it supports the Nasal Bones. Tab. XII. Fig. 3. f. Fig. 4. h.

Part of the *Temporal 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 *Orbital Processes, or Plates*, which, contrary to the rest of the Bone, are hollow below, and extend a considerable way back, to form the upper parts of the Orbits for lodging the Eyes and their Appendages. Tab. XII. Fig. 3. k, k.

They are remarkably smooth below, and are rendered so thin by the pressure of the Brain and Eye on the opposite sides, that they become transparent, and the Cancelli, especially in old people, are obliterated.

The *Sinuosity* at the upper part of the Orbit, behind the outer end of the Superciliary Ridge, on each side, for lodging the Lacrymal Gland. Tab. III. h.

Behind each internal Angular Process, a *small Pit*, to which the Cartilaginous Pulley of the Superior Oblique Muscle of the Eye is fixed.

The *Temporal Fossæ*, behind the Temporal Processes, for lodging part of the Muscles of that name. Tab. XII. Fig. 3. d.

The *Opening* between the Orbital Processes, for receiving the Cribriform plate of the Ethmoid Bone. Tab. XII. Fig. 4. p.

The *Foramen Supra-orbitarium*, a little to the inner side of the middle of each Superciliary Ridge, through which a branch of the Ocular Artery, and part of the Ophthalmic Branch of the Fifth Pair of Nerves, pass to the soft parts of the Forehead. Tab. III. 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 only 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 *Foramina Orbitaria Interna, Anterior et Posterior*, sometimes called *Foramina Ethmoidea*, between the Orbital Plates of the Frontal and Ethmoid Bones. They are about three-fourths of an inch distant from each other, and are occasionally found entirely in the Frontal Bone. Through the anterior a small Twig of the first part of the Fifth Pair of Nerves, with an associate Artery from the Ocular, passes to the Nose. The Posterior transmits a small Branch of the Ocular Artery to the same part. Besides these, there are sometimes other *Foramina Orbitaria Interna*, which also give passage to Twigs of the Ocular Artery to the Nose. Tab. IV. l, l.

*Small Perforations* are found upon the under and fore part of the Frontal Bone, for the transmission of very minute Arteries or Nerves into the Sinuses, or to the Substance of the Bone.

The *concave* inner and fore part of the Os Frontis, for lodging the Anterior Lobes of the Brain.

The *convex* under parts, for supporting these Lobes, and covering the Eyes. Tab. V. between g, g, and the fore part of the Cranium.

The *Ridges and Depressions* of the Orbital Processes, marked by the convolutions of the Brain. Tab. V. A.

*Small Furrows* on the inside of the Bone, for lodging Blood-vessels of the Dura Mater. Tab. XII. Fig. 4.

*Slight Sinuosities*, more evident on the under than on the upper part of the Bone, occasioned by the convolutions of the anterior part of the Brain. Tab. V. between g, g, and the fore part of the Bone.

The *Frontal Spine, or Crista Interna*, 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. XII. Fig. 4. c.

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

The *Frontal Furrow*, extending upwards from the Spine, for lodging the upper part of the superior Longitudinal



tudinal Sinus of the Dura Mater, and for the attachment of the Falx. Tab. XII. Fig. 4. d.

The *Foramen Cæcum* 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 Longitudinal Sinus takes its origin. This Hole is frequently common to the Frontal and Ethmoid Bones. Tab. XII. Fig. 4. o. Tab. V. B.

The *Frontal Sinuses*, placed behind the inner ends of the Superciliary Ridges, about an inch in height, and somewhat more than that in breadth, and, in some Skulls, forming prominences near the root of the Nose. Tab. IV. d.

The *Walls* of the Sinuses, formed by a separation of the Tables of the Bone; there being no Diploe here.

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

Their capacities vary much in different Subjects, and they are frequently unequal in size in the same Body. In some they are wanting, which is oftener found to happen in persons having a flat Forehead, and where the Sagittal Suture is continued to the Nose. In others, 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. Sometimes, though rarely, they have a communication with each other. Tab. XVII. Fig. 1. C.

At the inner and under part of the internal angular Process, a small round *Passage* from each, leading into the Cavity of the anterior Ethmoid Cells, and from these to the Nose.

The Frontal Sinuses add to the strength and melody of the Voice, by serving as a vault to resound the notes. Hence, in a stoppage of the Nose, by disease or otherwise, the Voice is rendered harsh and disagreeable.

The Frontal Bone is composed of two Tables with intermediate Cancelli, is of moderate thickness, and nearly of equal density throughout, excepting at the Orbital Plates, which are remarkably thin.

The Frontal Bone serves to defend and support the Anterior Lobes of the Brain. It forms a considerable part of the Orbits of the Eyes, assists in forming the Septum Narium, Organ of Smelling, &c.

It gives origin to the Corrugator Supercilii, to part of the Temporalis and its Aponeurosis, and of the Orbicularis Palpebrarum. It gives Insertion to part of the Occipito-Frontalis, and to the Trochlea of the Trochlearis.

In a Fœtus of nine months, the Os Frontis is divided through its middle into two Pieces, which are incomplete at their upper and back part, where they assist in the formation of the Bregma or opening of the Head. —The Superciliary Holes and Frontal Sinuses are not yet formed, the latter not appearing till several years after birth.

VOL. I.

# OSSA PARIETALIA.

The parts here to be attended to are,

The *situation* of the Ossa Parietalia, in the upper and lateral parts of the Cranium. Tab. IV. B.

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

The *Superior*, or *Sagittal Margin*, the longest and straightest. Tab. XIII.

The *Anterior*, or *Coronal edge*, next in length. Tab. XIII.

The *Posterior*, *Occipital*, or *Lambdoid edge*, shorter. Tab. XIII.

The *Inferior*, or *Temporal*, shortest and thinnest, and in form of a ragged Arch, to be connected to the upper rounded edge of the Squamous part of the Temporal Bone. Tab. XIII.

The *three first edges* of the Bone *ragged*, where they assist in forming the true Sutures. Tab. XIII.

The *corners* of the Bone *obtuse*, excepting the inferior-anterior, which forms a kind of Process. Tab. XIII.

The *Corners* or *Angles* of the Bone are named Frontal, Sphenoidal, Occipital, and Mastoid, according to their situations.

The external Surface of the Bone *convex* and *smooth*, having no Muscles but the Temporal fixed to it. Tab. XIII. Fig. 1.

The *Transverse arched Ridge*, or *Line*, frequently of a whiter colour than the rest of the Bone, placed externally a little below its middle height, for the origin of the Temporal Muscle. Tab. IV. n.

The *radiated Furrows* at the under part of the Bone, formed by the Fibres of the Temporal Muscle. Tab. IV. o.

Near the inferior or semicircular edge, many inequalities, which join similar inequalities on the inside of the Temporal Bone, to form the Squamous Suture.

The *Foramen Parietale*, near the upper and back part of the Bone, for the transmission of a Vein, which passes obliquely 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. XII. Fig. 1. 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 *concave* surface of the Bone.

The *Furrows* made by the Blood-vessels of the Dura Mater; the principal of which begin by a trunk, termed *Meningea Media*, at the under and fore part of the Bone, Tab. XIII. Fig. 2. where frequently a real Canal is formed, which ought to be attended to by Surgeons in the operation of the Trepan over this part.

In the progress upwards, the Furrows divide into many Branches, and frequently small passages are seen running from these into the Diploe.

D

The



The *depression* at the upper edge of the Bone, for the attachment of the upper part of the Falx, and lodgement of part of the superior longitudinal Sinus. Tab. XII. Fig. 2. This is most distinctly seen when the Bones are conjoined.

The depression for the longitudinal Sinus, like the Sinus itself, becomes larger in its course backwards; and frequently it is larger in one Bone than in the other.

The *Fossa* at the under and back part of the Bone, for lodging a small part of the lateral Sinus. Tab. XIII. Fig. 2.

Numerous, though slight *depressions*, found on the inside of the Bone, especially below, occasioned by the prominences of the Brain.

Near the attachment of the Falx are observed, in many Skulls, *Pits*, varying in size and number, for lodging the Glands of PACCHIONI.

The Parietal Bones have the two Tables and Diploe the completest, and are the most equal and smooth of any of the Cranium. They serve as Walls to protect the upper and lateral parts of the Brain, and give origin to part of the Temporal Muscles and their Aponeuroses.

The connexion of the Parietal Bones to the Os Frontis by the Coronal, and to each other by the Sagittal Suture. Tab. XII. Fig. 1. *b, b, d, d.*

In the Fœtus, the sides of the Parietal Bones are incomplete, and there is no Parietal Hole. Between the Parietal Bones and the middle of the divided Os Frontis, there is a large Interstice, termed, in common language, *Opening of the Head*, and by Anatomists, *Bregma*, *Fons*, vel *Fontanella*, from its being supposed by the Ancients, that through it the superfluous Humours of the Brain were evacuated. Tab. XV. B.

The Bregma is occupied by a strong Ligamentous Membrane, which adheres firmly to the ragged edges of the Bones, and is lined within by the Dura Mater, and covered externally by the Pericranium.

The whole of the Ligamentous Membrane is generally absorbed, and the Bregma filled up with Osseous Matter, by two, though sometimes not till near seven years of age. The Bregma has in some instances, though very rarely, been found open in the Adult.

#### OS OCCIPITIS.

Here attend to,

The *Situation* of the Occipital Bone in the back and under part of the Cranium. Tab. VI.

Its *rhomboid* figure, with the angle above generally a little rounded. Tab. XIII. Fig. 4.

The two lateral *Angles* obtuse. Tab. IX. Fig. 4.

The external surface *convex*, and *smooth* at the upper part. Tab. XIII. Fig. 3.

The large rough *Arched Ridge*, or *Transverse Arch*, or *Linea Semicircularis*, running across the Bone, near the middle of the convex surface, to the middle of

which the Trapezii Muscles are fixed; the outer and upper parts giving origin to the Occipito-frontalis, and the outer and under, insertion to part of the Sternomastoidei. Tab. XIII. Fig. 3. *d, e, e.*

The *smaller Arch*, half-way between the former and the passage termed *Foramen Magnum*. Tab. XIII. Fig. 3. *g, h, h.*

The *depressions* between the middle of the large and small Arches, for the insertion of the Complexi Muscles.

The *impressions* between the Arches and the Temporal Bones, for the attachment of the Splenii. Tab. XIII. Fig. 3.

*Cavities* between the smaller Arch and the Foramen Magnum, for the reception of the Recti Minores, and impressions made more externally by the Recti Majores and Obliqui Superiores. Tab. XIII. Fig. 3.

The *perpendicular Spine*, of inconsiderable size, running through the middle of the two Arches, and separating the Muscles of the opposite sides.

In some strongly-marked Skulls, the upper end of this Spine is so prominent, as to form an external protuberance, or *Spinous Process*.

The *unequal edges* of the Foramen Magnum, for the insertion of the Ligaments, by which the Head is fixed to the Vertebrae of the Neck.

The *inferior Angle*, contrary to the rest of the Bone, flattened and stretched forwards in form of a wedge; hence called *Cuneiform*, or, from its situation, *Basilar Process*. Tab. XIII. Fig. 3. *p.*

The *unequal Surface* of the Cuneiform Process, for the attachment of the Recti Anteriores.

The two *Condyles* placed at the base of the Cuneiform Process, and at the fore and lateral parts of the Foramen Magnum, for the articulation with the Atlas or first Vertebra of the Neck. Tab. XIII. Fig. 3. *l, l.*

The *oval form* and smooth Cartilaginous surface of the Condyles, corresponding with the superior articulating Process of the Atlas.

The Condyles run obliquely forwards and inwards, 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 transversely, giving the appearance of two Prominences.

Round their roots, the surface is unequal, for the attachment of the Capsular Ligaments connecting this Bone to the first one of the Neck.

The *rough Prominences* at the outer sides of the Condyles, for the insertion of the Recti Capitis Laterales; and, anterior to these Prominences, the Semilunar Notches, or Jugular Fossæ, which form part of the Holes common to the Temporal and Occipital Bones. Tab. VI. between F and K.

The Flexion and Extension of the Head are performed at the Condyles, but they are found to be placed behind its centre of gravity, which affords space for the Mouth,



Mouth, Throat, &c.; and the Head is prevented from falling forwards 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 part of the Brain. Tab. XIII. Fig. 4.

The *Cruciform Spine* of the inner side, formed by two Ridges, the one placed perpendicularly in the middle of the Bone, the other crossing the first in a horizontal direction. Tab. XIII. Fig. 4. *a, b, b, b.*

The *Internal Occipital Protuberance*, at the middle of the Cruciform Spine, where the longitudinal Sinus ends in the two lateral Sinuses.

The *upper Limb* of the perpendicular Spine *hollow* in the middle, or frequently at one side, and that commonly the right one, for the reception of the superior longitudinal Sinus, and the attachment of the Falx. Tab. XIII. Fig. 4. *a, b.*

The *lateral Limbs*, placed opposite to the great external arched Ridge, and *hollow* in the middle, for containing the lateral Sinuses, and giving attachment to the Tentorium Duræ Matris. Tab. XIII. Fig. 4. *b, b.*

The hollow in one of the lateral Limbs, and more especially the right one, is frequently the continuation of that made in the perpendicular Spine by the longitudinal Sinus, and therefore is often larger than the other, which, in such cases, is occupied by a continuation of the Vein termed *Torcular HEROPHILI*.

The *lower Limb* of the perpendicular Spine short, and sometimes double, for the attachment of the Falx Minor; sometimes it is hollow, for the reception of an Occipital Sinus.

The *Cerebral Fossæ* at the sides of the upper Limb, for containing the posterior Lobes of the Cerebrum.

The *Fossæ* at the sides of the lower Limb, for containing the Cerebellum. Tab. XIII. Fig. 4. *e, e.*

Anterior to the Fossæ for lodging the Cerebellum, and a little to the outer side of the Foramen Magnum, *two Cavities* for receiving the lateral Sinuses, previous to their passing through the Base of the Cranium.

The *concave Surface* of the Cuneiform Process, for receiving the Medulla Oblongata, Basilar Artery, and Accessory Nerves. Tab. XIII. Fig. 4. *n.*

The *depressions* at each side of the Cuneiform Process, where the inferior Petrosal Sinuses are placed. Tab. V. *r, r.*

The *Foramen Magnum Occipitis*, behind the Basilar Process, and between the Condyles, for the passage of the Medulla Oblongata, and its investing Membranes,

with the Vertebral Blood-vessels, and Accessory Nerves. Tab. V. X.

The Foramen Magnum, of a *rhomboid*, or *oval* form, with the short diameter placed transversely, corresponding with the shape of the Spinal Marrow, by which it is chiefly occupied.

The *superior or anterior Condylloid Foramina*, at the sides of the Foramen Magnum, and immediately over the Condyles, for the passage of the ninth pair of Nerves. Tab. XIII. Fig. 3. *n, n.*

The *posterior Condylloid Foramina*, at the back part of the root of the Condyles, for the passage of Veins from the Occiput, or from the deep parts of the Neck, into the lateral Sinuses, near their terminations. Tab. XIII. *m, m.*

Frequently one of the posterior Condylloid Foramina is wanting; sometimes both, when the Veins 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.

This Bone is among the strongest of the Cranium, though very unequal in thickness; 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 externally, as to be in many Skulls rendered transparent. But the thick Muscles and strong Spines and Protuberances of the Bone, assist greatly in preventing injuries from happening here.

The *connexion* of the Bone to the Ossa Parietalia, by the Lambdoid Suture. Tab. VII.

The Occipital Bone protects the under and back part of the Brain, gives origin on each side to the Occipitofrontalis, to part of the Trapezius, Constrictores Pharyngis Superior et Inferior; insertion to the Recti Capitis Antici Major et Minor, Rectus Capitis Lateralis, Complexus, Recti Capitis Postici Major et Minor, Obliquus Capitis Superior, and to part of the Sterno-cleido-mastoideus and Splenius.

In the Fœtus, the Occipital Bone is divided into *four pieces*, viz. the Occipital, two Lateral or Condylloid, and the Basilar; the first, which is by much the largest, 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 almost the whole of the Condyles; and the fourth forms the Cuneiform Process.



## T A B L E XII.

### VIEWS of the Upper Part of the CRANIUM and of the FRONTAL BONE.

FIG. 1.

*Represents the Upper and Outer Surface of the  
CRANIUM.*

- a*, The frontal bone.
- b, b*, The coronal suture.
- c, c*, The parietal bone.
- d, d*, The sagittal suture.
- e, e*, The parietal holes.
- f*, Part of the occipital bone.
- g, g*, The middle of the lambdoid suture.

- g, g*, Eminences and cavities, to which the nasal and maxillary bones are fixed.
- h, h*, The superciliary arches.
- i, i*, The superciliary holes.
- k, k*, The orbital plates.
- l, l*, The lacrymal fossæ.
- m, m*, The foramina orbitaria interna.
- n, n*, The inequalities which unite the frontal to the sphenoid bone.

FIG. 2.

*A View of the Upper and Inner Surface of the  
CRANIUM.*

- h*, The outer and fore part of the frontal bone.
- 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.
- l, l*, Pits frequently found; the larger occasioned by luxuriations of the brain, and the smaller by the glands of PACCHIONI, or by the meeting of blood-vessels of the dura mater.

FIG. 3.

*The Outer Surface of the FRONTAL BONE.*

- a*, The middle and convex part of the frontal bone.
- b, b*, The elevations of this bone.
- c*, The muscular print of the left side.
- d*, Part of the temporal fossa.
- e, e*, The external and internal angular processes.
- f*, The nasal process.

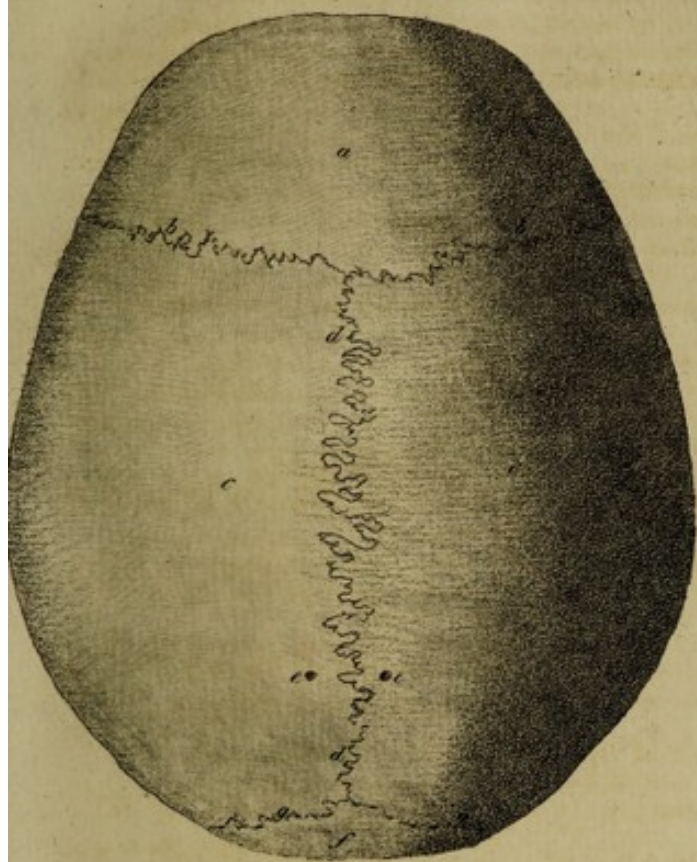
FIG. 4.

*The Inner Surface of the FRONTAL BONE.*

- a*, The internal concave part of the frontal bone.
- b*, The cavity which lodges the anterior lobes of the brain.
- c*, The frontal spine.
- d*, A furrow where the falx is fixed, and the superior longitudinal sinus is lodged.
- e*, 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 inner surface of the four angular processes.
- h*, The posterior surface of the nasal process.
- i, i*, Other inequalities near the nasal process.
- k, k*, the orbital plates.
- l, l*, The lacrymal fossæ.
- m, m*, Cells which correspond with those of the ethmoid bone.
- n, n*, Passages from the frontal sinuses.
- o*, The foramen cæcum.
- p*, The opening which receives the cribriform plate of the ethmoid bone.
- q, q*, The furrows which lodge the blood-vessels of the dura mater.

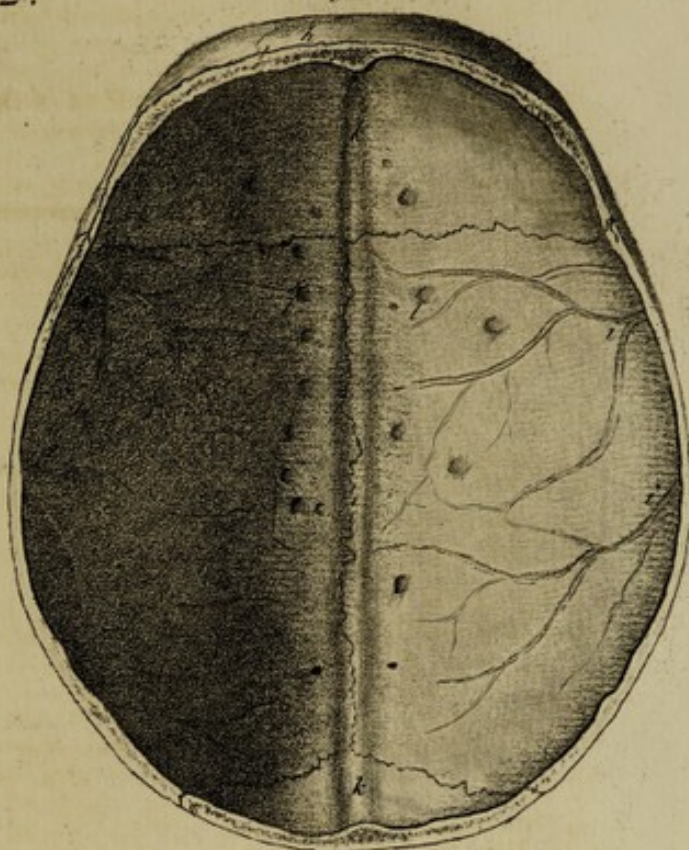


*Fig. 1.*

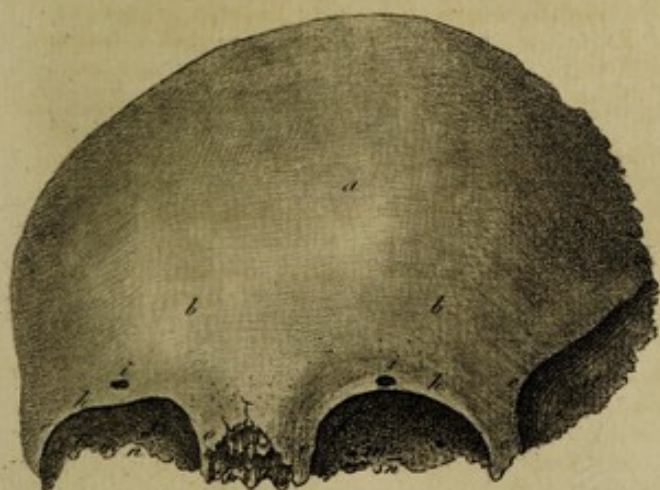


*TAB. 12.*

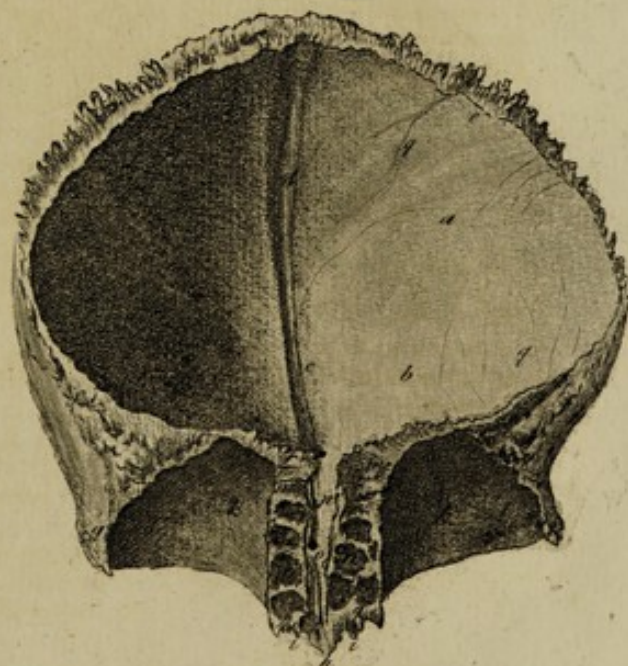
*Fig. 2.*



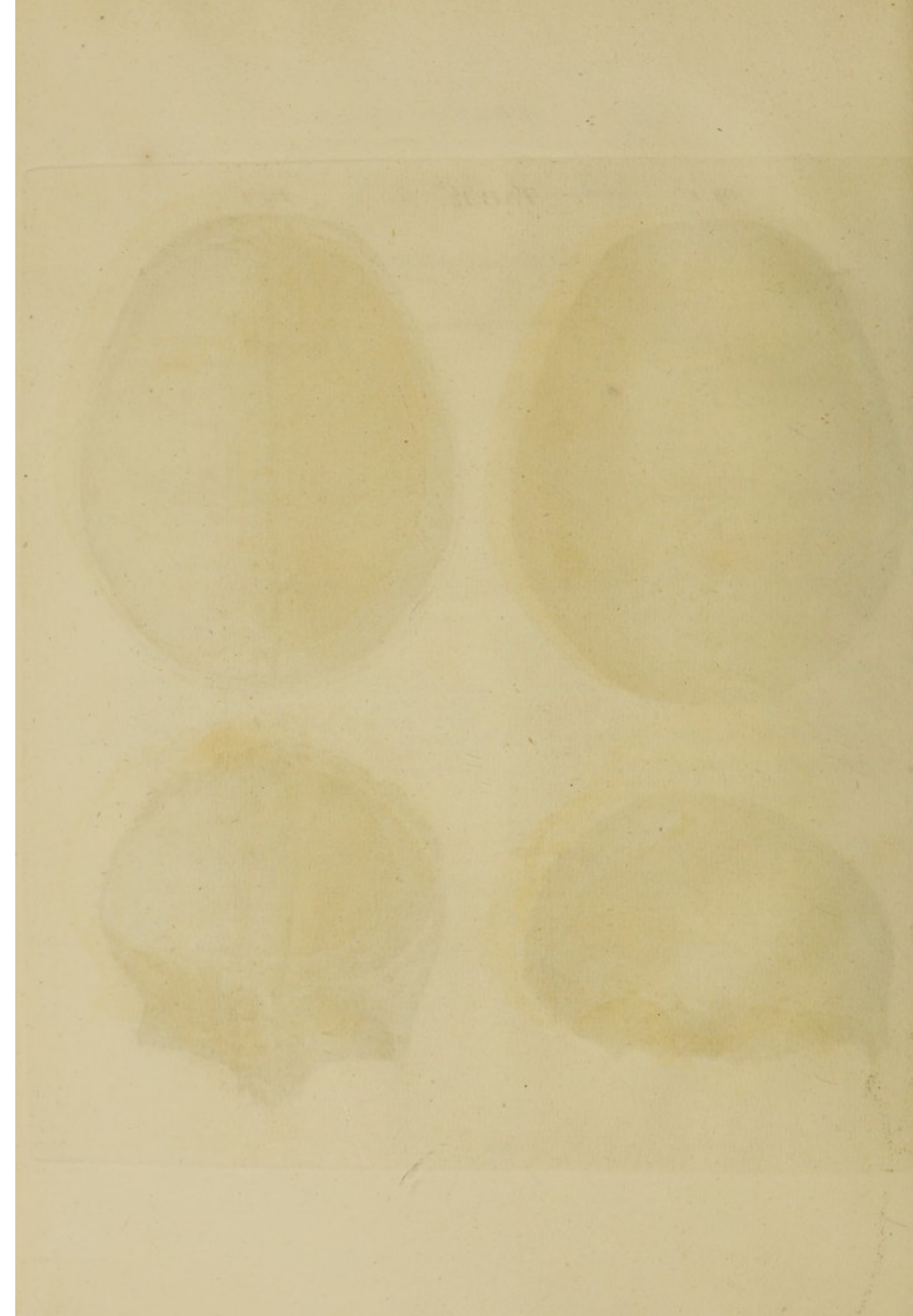
*Fig. 3.*



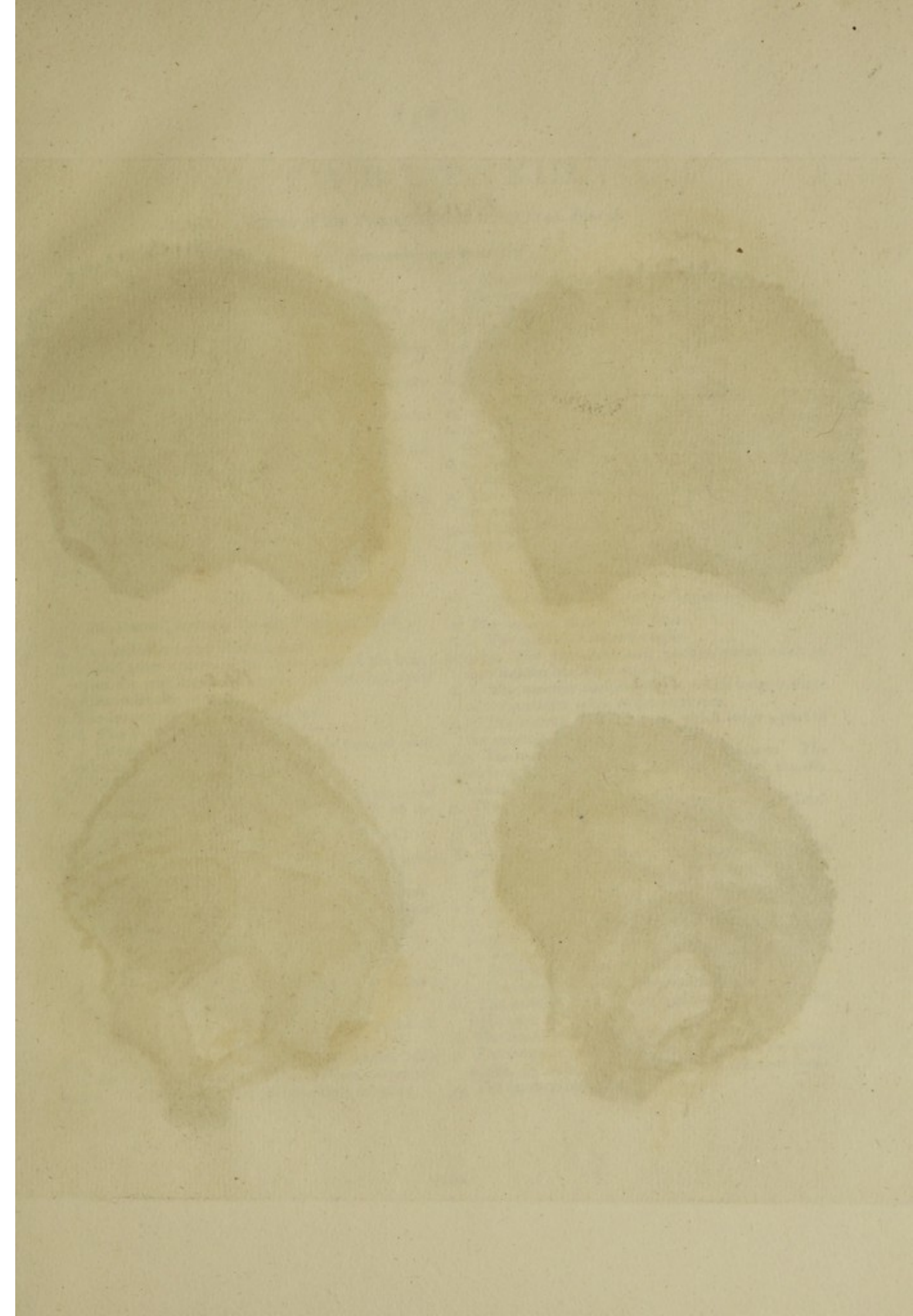
*Fig. 4.*













TAB. 13.

Fig. 1.



Fig. 2.



Fig. 3.

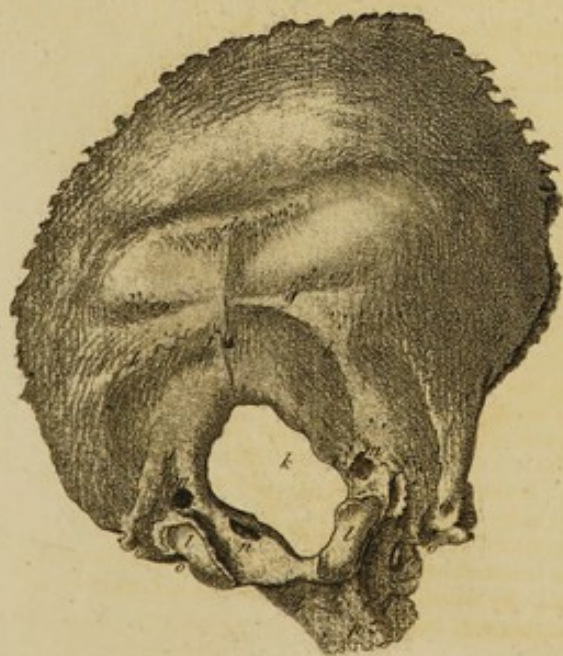
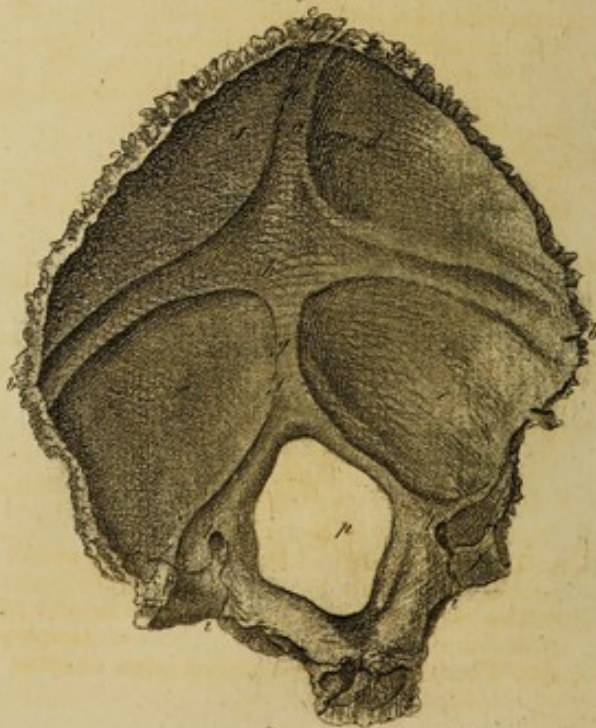


Fig. 4.





## T A B L E XIII.

## VIEWS of the PARIETAL and OCCIPITAL BONES.

FIG. 1.

*The External 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.
- c, c*, The anterior edge, which assists in forming the coronal suture.
- d*, The posterior edge, which joins the occipital bone, and assists in forming the lambdoid suture.
- e, e*, The inferior semilunar edge, which is joined to the *pars squamosa* of the temporal bone.
- f*, The parietal hole.
- g, g*, The arched ridge of the parietal bone, which gives origin to a large share of the temporal muscle.
- h*, The anterior and superior angle of the bone.
- i*, The anterior-inferior angle.
- k, k*, The posterior angles.

FIG. 2.

*The Internal Surface of the same PARIETAL BONE.*

- a*, The middle internal concave part.
- b, b*, The inner surface of the upper edge of the bone, where the indentations are more apparent than those of the outer side.
- c*, The inner orifice of the parietal hole.
- d, d*, The anterior serrated edge of the bone.
- e, e*, The posterior edge, more strongly marked with indentations than its anterior edge.
- f, f*, The superior angles.
- g*, The inferior-anterior angle, where the beginning of the furrow is seen, which lodges the trunk of the principal artery of the *dura mater*.
- h, h, h, h*, The ramifications of that furrow.
- i, i*, Small furrows of the bone, which correspond to its posterior-inferior angle.
- k*, A depression which lodges part of the lateral sinus.
- l*, The inferior edge of the bone, considerably thinner than the rest.

FIG. 3.

*A View of the External Surface of the OCCIPITAL BONE.*

- a*, The superior angle of the bone.
- b, b*, The ragged edge of the bone, 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 *ossa temporum*.
- d, e, e*, The large transverse arched ridge, or spine.

- e, e*, Muscular prints upon the transverse ridge.
- f*, The perpendicular spine.
- g*, The smaller arched ridge, running across the spine of the bone.
- h, h*, Muscular prints above the foramen magnum.
- i, i*, The edge of,
- k*, The foramen magnum.
- l, l*, The occipital condyles.
- m, m*, The posterior condyloid foramina.
- n, n*, The inner side of the left, and outer side of the right anterior condyloid foramina.
- o, o*, Nitches which assist in forming the holes common to the occipital and temporal bones.
- p*, The extremity of the cuneiform process, upon which are seen,
- q, q*, Prints which give origin to some of the flexor muscles of the head.

FIG. 4.

*The Internal Surface of the OCCIPITAL BONE.*

- a*, The superior angle of the bone.
- b, b*, The middle, or lateral angles.
- c, c, &c.* The eminences and cavities which assist in forming the lambdoid suture.
- d, d*, The superior occipital fossæ, which lodge a share of the posterior lobes of the cerebrum.
- e, e*, The inferior occipital fossæ, which lodge a part of the cerebellum.
- f, f*, The extremities of the crucial ridge or spine. The undermost *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 crucial ridge.
- The fossæ which lodge the lateral sinuses, and have the tentorium fixed to their edges, are included between the letters *h, b, b*.
- i, i*, The openings of the *os occipitis*, which form part of the foramina *lacera*, common to the occipital and temporal bones.
- k, k*, The small processes of the *os occipitis*, which assist in forming part of the foramina *lacera*.
- l, l*, The internal orifice of the posterior condyloid holes.
- m*, The anterior condyloid hole of the *os occipitis* of the right side.
- n*, The concave surface of the cuneiform process.
- o*, The inequalities of the cuneiform process of the *os occipitis*, by which it is united with the sphenoid bone.
- p*, The foramen magnum.



# T A B L E XIV.

REPRESENTS the SPHENOID, ETHMOID, and TEMPORAL BONES.

FIG. 1.

*A view of the Outer and Under Surface of the SPHENOID 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 orifices of the sphenoid sinuses.
- d, d*, The foramina lacera.
- e*, The anterior and superior part of the body of the bone.
- f, f*, The external surface of the transverse processes.
- g, g*, The orbital plates.
- h, h*, The superior extremities of the temporal processes.
- i, i*, The middle of the temporal processes, which form part of the temporal fossæ.
- k, k*, The asperities by which this bone is joined to the ossa malarum.
- l, l*, Gutters in the os sphenoides, which lodge branches of the fifth pair of nerves.
- m, m*, The foramina rotunda.
- n, n*, The foramina pterygoidea.
- o, o*, The anterior openings, which assist in forming the spheeno-maxillary fissures.
- p, p*, The foramina ovalia.
- q, q*, The spinous processes.
- r, r*, The roots of the pterygoid processes.
- s, s*, The internal plates of the pterygoid processes.
- t, t*, The hook-like processes, at the extremities of the internal plates.
- v, v*, Small sinuosities in the hook-like processes, over which the tendons of the circumflex muscles of the palate play.
- x, x*, The external plates of the pterygoid processes.
- y, y*, The parts of the bone adapted to the ossa palati.
- z, z*, The posterior openings, common to the sphenoid and temporal bones, over which the internal carotid arteries pass.

FIG. 2.

*A View of the Inner and Upper Surface of the SPHENOID BONE.*

- a, a*, The superior and anterior part of the sphenoid bone, which is joined to the under and back part of the frontal bone.

- b, b*, The temporal plates, or processes of the bone.
- c, c*, The transverse processes.
- d*, The small anterior process, which unites with the ethmoid bone.
- e*, A protuberance situated before the union of the optic nerves.
- f, f*, The foramina optica.
- g, g*, The anterior clinoid processes.
- h, h*, The posterior clinoid processes.
- i, i*, Part of the foramina lacera.
- k, k*, Impressions made by the internal carotid arteries.
- l*, The Sella Turcica.
- m, m*, The cavities of the temporal processes, which receive the lateral lobes of the brain.
- n, n*, The foramina rotunda.
- o, o*, The foramina ovalia.
- p, p*, The foramina spinalia.
- q, q*, The ragged edge of the bone, which assists in forming the sphenoid suture.
- r*, Part of the sphenoid bone, which joins the cuneiform process of the occipital bone.
- s, s*, Part of the spinous processes.
- t, t*, Part of the pterygoid processes.

FIG. 3.

*The Outer and Under Surface of the ETHMOID BONE.*

- a*, The anterior extremity of the nasal plate, which forms the upper part of the septum narium.
- b*, The posterior extremity of the nasal plate, which is very thin.
- c, c*, The ethmoid grooves, or chinks which separate the nasal plate from the ossa spongiosa superiora.
- d, d*, The passages for the branches of the olfactory nerves.
- e, e*, The ossa spongiosa superiora.
- f, f*, The cavities of the ossa spongiosa superiora.
- g, g*, Part of the ethmoid cells.
- h, h*, Inequalities of the ethmoid bone, by which it is joined to the frontal bone.
- i, i*, The posterior extremity, which is joined to the sphenoid bone.
- k, k*, The small cornua, or triangular bones, which, in adults, are joined to the body of the sphenoid bone.

FIG.



TAB. 14.

Fig. 1.

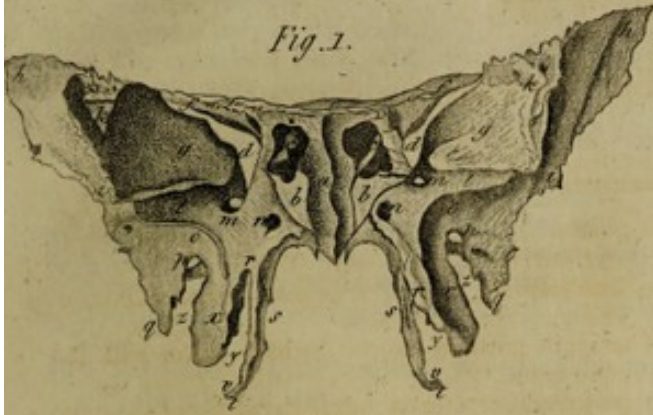


Fig. 2.

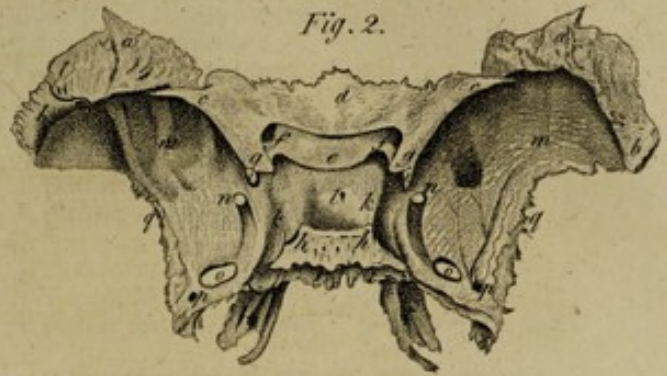


Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.





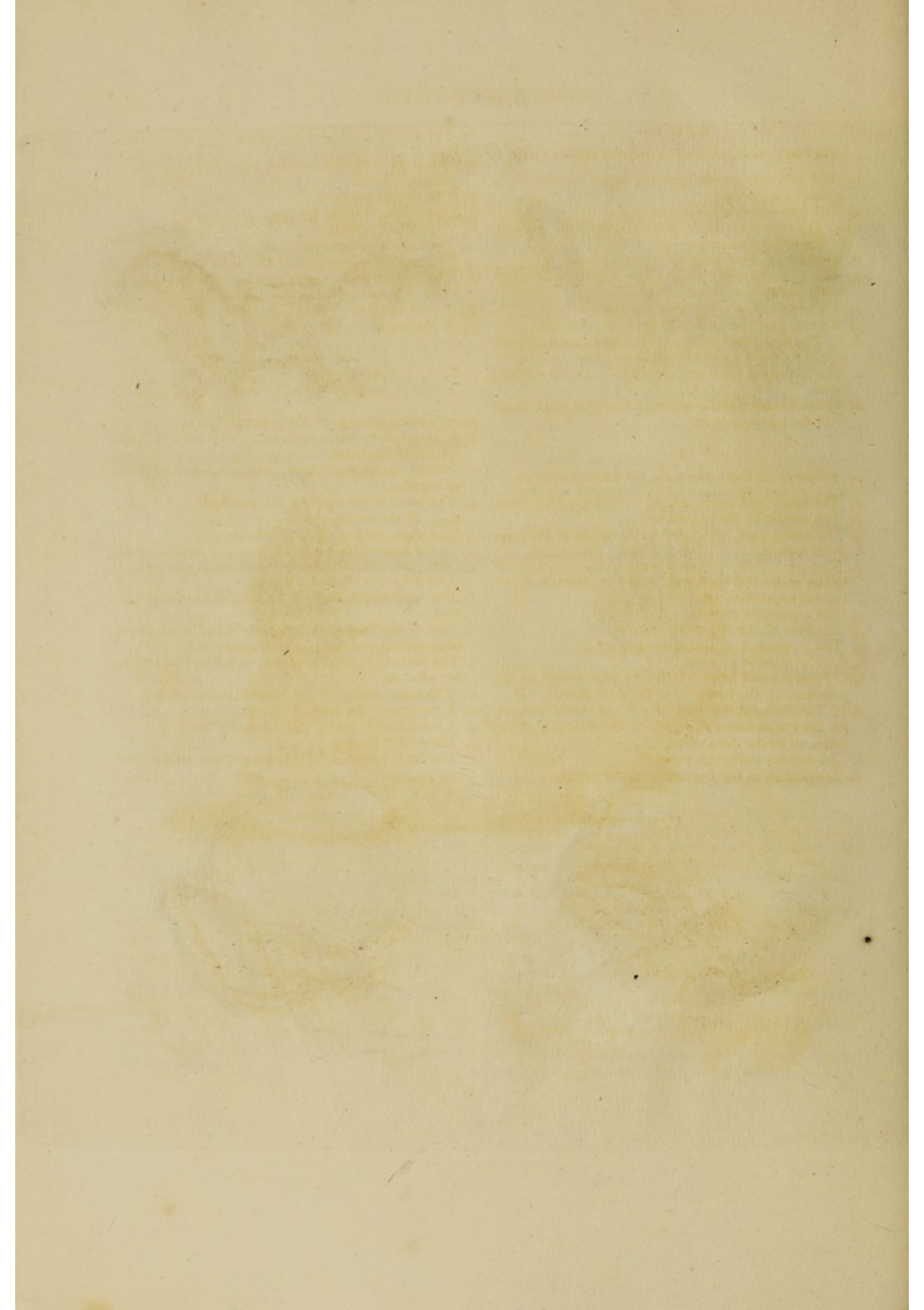




FIG. 4.

*The Inner and Upper Surface of the ETHMOID BONE.*

- a, The anterior extremity of the bone, terminating in a small flat process.
- b, The upper part of the crista galli.
- c, c, The cribriform plate, with the different passages of the olfactory nerves.
- d, d, Some of the cells of the ethmoid bone.
- e, The posterior extremity of the nasal plate, which forms part of the septum narium.
- f, f, The posterior margins of the ethmoid bone.
- g, A great part of the os planum of the left side.
- h, h, The upper part of the triangular bones which are joined to the body of the sphenoid bone.
- i, The joining of the triangular bones with the ethmoid bone.
- k, Holes formed by the union of the triangular bones with the ethmoid bone.

FIG. 5.

*A View of the Outer Surface of the TEMPORAL BONE.*

- a, The upper and squamous part of the temporal bone.
- b, The middle of the squamous part.
- c, The under part, which lodges a portion of the temporal muscle.
- d, That part of the temporal bone, which, when joined to the under and back part of the os parietale, forms the additamentum suturæ squamosæ.
- e, The zygomatic process.
- f, The base of the zygomatic process.
- g, The transverse, or articular process.
- h, h, The mastoid process.
- i, i, Several small holes which transmit vessels to the substance of the bone, or to the dura mater.
- k, k, Two holes at the root of the zygomatic process, for the transmission of vessels to the substance of the bone, or to the dura mater.
- l, The meatus auditorius externus.
- m, Inequalities at the beginning of the meatus.

- n, The glenoid cavity for the articulation of the lower jaw.
- o, The glenoid fissure, to which part of the articular ligament is fixed.
- p, The vaginal process.
- q, Part of the mastoid groove.
- r, The styloid process.
- s, The foramen mastoideum.
- t, The base, or upper part of the mastoid process.
- v, The inferior and anterior part of the temporal bone, which is joined to the os sphenoides.
- x, A portion of the Eustachian 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 correspond with the circumvolutions of the brain.
- c, Part of the temporal bone, which is joined to the os sphenoides.
- d, The notch which receives the posterior and inferior angle of the parietal bone.
- e, The upper part of the pars petrosa.
- f, The groove which lodges the superior petrosal sinus.
- g, The fossa which lodges a part of the lateral sinus.
- h, The meatus auditorius internus.
- i, The notch 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.
- l, The posterior part of the bone, which is joined to the occipital 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.
- q, The inner extremity of the pars petrosa, divided into two portions.



# TABLE XV.

## Views of the FœTAL BONES of the HEAD.

FIG. 1.

*A Lateral View of the SKULL.*

- A, The frontal bone, not yet complete in its middle and upper part.
- B, Part of the fontanella.
- C, The coronal suture, which is here in part membranous.
- D, the parietal bone, formed of radiated fibres.
- E, A portion of the left parietal bone.
- F, The sagittal suture.
- G, The occipital bone.
- H, The lambdoid suture.
- I, The fontanella posterior, seen only in some bones.
- K, The squamous part of the temporal bone.
- L, The zygomatic process of that bone.
- M, The mastoid process.
- N, The squamous suture, partly membranous.
- O, The membrana tympani.
- P, The temporal plate of the sphenoid bone.
- Q, The nasal process of the superior maxillary bone.
- R, The body of that bone.
- S, The orbit.
- T, The os malæ.
- U, The lower jaw.

FIG. 2.

*The Outer Surface of the Two Pieces which form the FRONTAL BONE.*

- A, the right, and,
- B, the left portion of the frontal bone.
- C, C, The orbital plates.

FIG. 3.

*The Outer Surface of the Left PARIETAL BONE, in which the radiated Appearance of the Osseous Fibres is seen; the under and middle part appears prominent, and more compact than the rest of the Bone.*

FIG. 4.

*The Outer Surface of the same Bone.*

FIG. 5.

*The Outer Surface of the Four Pieces which form the OCCIPITAL 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 cuneiform process.

FIG. 6.

*The Outer Surface of the TEMPORAL BONE of the Right Side.*

- A, The squamous plate.
- B, The zygomatic process.
- C, The articular cavity.
- D, The osseous circle, in which the membrana tympani is incased.

FIG. 7.

*The Inner Surface of the same Bone.*

- A, Inequalities which facilitate the union between the squamous and petrous portions.
- B, The fissure of the osseous circle, in which the membrana tympani is incased.

FIG. 8.

*The Outer Surface of the Petrous part of the TEMPORAL 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 organ of hearing.

FIG. 9.

*The Lateral Portions of the ETHMOID BONE.*

FIG. 10.

*The Three Pieces which form the SPHENOID BONE.*

- A, A, The temporal wings, &c.
- B, The middle portion, forming the body of the bone, with the clinoid processes and sella Turcica.



Fig. 3.

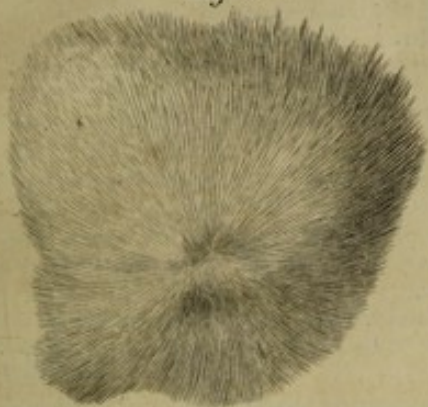


Fig. 4.



TAB. 15.



Fig. 5.



Fig. 8.



Fig. 10.



Fig. 9.



Fig. 2.



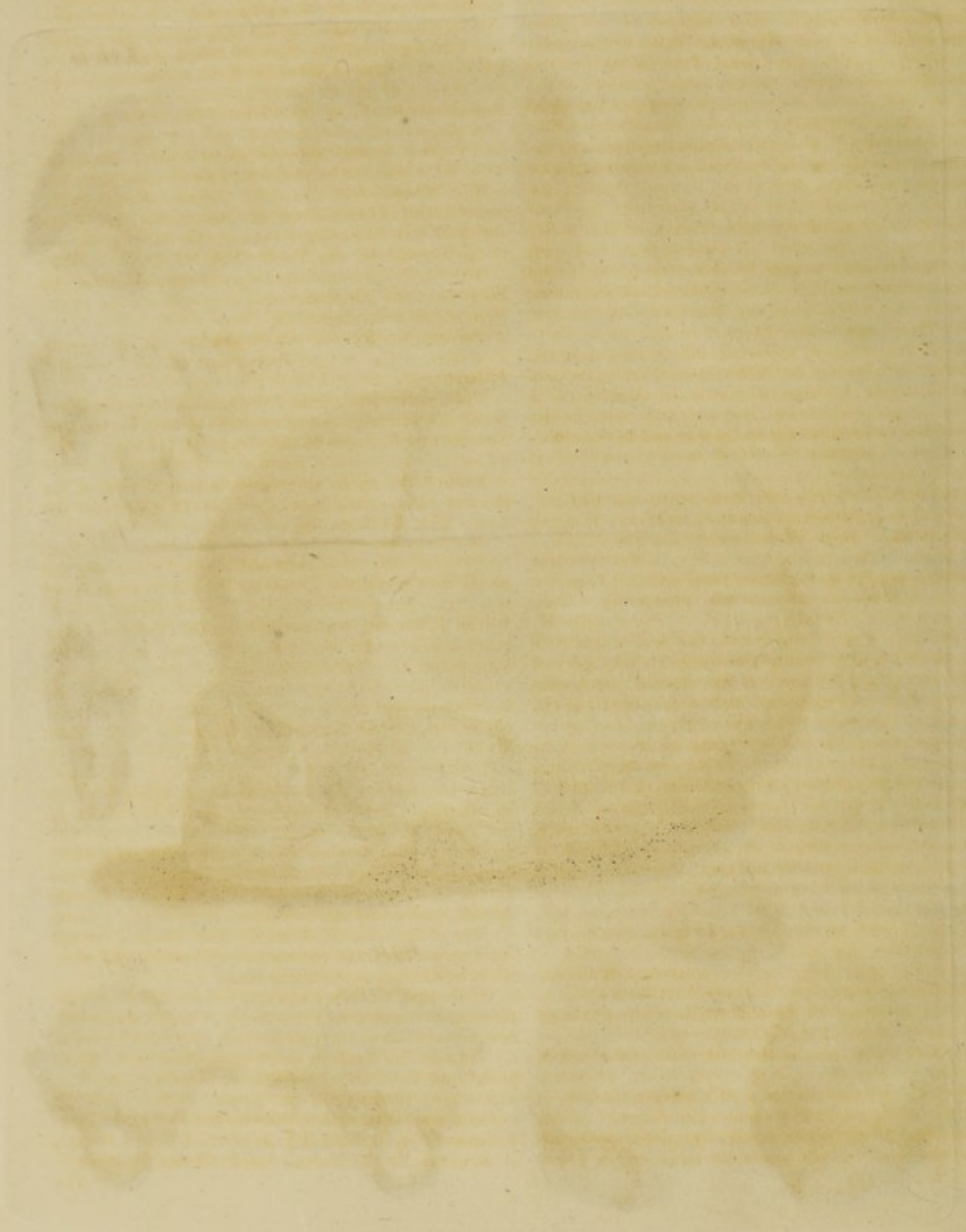
Fig. 6.



Fig. 7.









## OSSA TEMPORUM.

In these we observe,

The *situation* of each Temporal Bone in the under and lateral part of the Cranium. 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 smooth externally, with a thin semicircular edge above, which, by overlapping the under edge of the Parietal Bone, gives name to this Process. Tab. VIII. Fig. 1. N, N.

The *Mastoid or Mammillary Process*, at the under and back part of the Bone, of various form and size, giving insertion to strong Muscles, particularly the Sterno-mastoid; and containing Cells which communicate with each other, and with the Cavity of the Ear called *Tympanum*. Tab. IV. u.

The *Petrous Process*, remarkably hard, very unequal, and of an oblong form, but becoming smaller 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 be afterwards described. Tab. XIV. Fig. 6. f, g.

The *Zygomatic Process*, running almost horizontally from the under and fore part of the Squamous Plate, at first large, then curved, to join the Os Malæ; forming a *Zygoma* or Arch, on the inner side of which the Temporal Muscle passes to the Lower Jaw, while its edges give attachment to part of the Temporal and Masseter Muscles, and to the Aponeurosis Temporalis. Tab. XIV. Fig. 5. c. Tab. IV. s.

A *Tubercle* of an oblong form at the root of this Process, covered with a smooth Cartilage, making part of the Articulation of the Lower Jaw. Tab. IV. behind s.

The *Styloid or Pencil-like Process*, placed at the under part of the root of the Pars Petrosa, and going obliquely downwards and forwards, to give origin to Muscles which borrow part of their name from it, and belong to the Tongue and Throat. Tab. XIV. Fig. 5. n. Tab. VI. M.

It is generally about an inch in length, though sometimes much longer, and is remarkably slender. It is frequently, even in Adults, not entirely ossified, and is then apt to drop off in macerating the Bones.

The *Vaginal Process*, of an inconsiderable size, surrounding the root of the Styloid Process, and deepest at its fore part. Tab. XIV. Fig. 5. n.

The *Semicircular Ridge*, at the under part of the external Meatus; sometimes also considered as a Process, and called *Auditory*, for the connexion of the Cartilage of the Ear. Tab. XIV. Fig. 5. n.

The *Mastoid Groove*, at the inner part of the root of the Mastoid Process, giving origin to the Digastric Muscle; and a little anterior to this another Groove, in which the Occipital Artery runs. Tab. VI. t.

The *Glenoid or Articular Cavity*, placed obliquely behind the root of the Zygoma, of an oblong or some-

what oval form, of great size, and lined with Cartilage, for the Articulation of the Lower Jaw. Tab. IV. O.

The *Glenoid Fissure*, at the back part of this Cavity, and between it and the Pars Petrosa, and also between the Pars Petrosa and Sphenoid Bone, for the attachment of a portion of the Capsular Ligament of the Articulation of the Lower Jaw. Tab. VI. g. Tab. XIV. Fig. 5. o.

A *Depression* between the Glenoid Fissure and Styloid Process, for lodging a portion of the Parotid Gland. Tab. VI. between G and the Styloid Process M.

The *Thimble-like Cavity*, or *Jugular Fossa*, at the inner side of the root of the Styloid Process, and under and back part of the Pars Petrosa, for lodging the top of the internal Jugular Vein. Tab. VI. Q.

This Cavity is frequently larger in the one side of the Head than the other, corresponding with the size of the Vein which goes through it.

Between the roots of the Squamous and Zygomatic Processes, a *Cavity* for lodging part of the Temporal Muscle.

The *Meatus Auditorius Externus*,—a large Canal between the Mastoid and Zygomatic Processes, leading inwards and forwards to the Organ of Hearing. Tab. IV. v.

Around the external Meatus, a rough Surface, for the connexion of the Cartilages and Ligaments of the Ear. Tab. VI. before N.

The *Foramen Stylo-mastoideum*, or *Aqueduct of FALLOPIUS*, between the Styloid and Mastoid Processes, and at the root of the Pars Petrosa, for the transmission of the Portio Dura of the Seventh Pair of Nerves.

The *Foramen Caroticum*, vel *Canalis Caroticus*, at the inner and fore part of the Jugular Fossa, and also before and at the inside of the Styloid Process, leading upwards, then forwards, through the Pars Petrosa, for the transmission of the internal Carotid Artery to, and of the Great Sympathetic Nerve from, the Brain. Tab. VI. P.

In the upper and back part of the Canal, one, sometimes two minute Holes are observed, through which the internal Carotid Artery sends one or two Twigs to the Tympanum.

The *Iter a Palato ad Aures*, or *EUSTACHIAN Tube*, between the Fissure for the Capsular Ligament of the Lower Jaw, and the passage of the internal Carotid Artery, and under the contiguous parts of the Spinous Process of the Sphenoid Bone and Pars Petrosa, extending outwards and backwards in a horizontal direction, till it terminates in the Tympanum.

In the Subject, it is formed, by the addition of Cartilage and Ligament, into a trumpet-like Tube, which is continued 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 EUSTACHIAN Tube, and at the top of the Glenoid Fissure, is the course of the Nerve termed *Chorda Tympani*.



The *Foramen Mastoideum*, occasionally found at the back part of the Mastoid Process, or in the Lambdoid 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. VI. v.

Sometimes 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 uncertain.

The upper and inner Edge of the Squamous Plate, formed into Ridges and Furrows, where it is connected with the Parietal Bone, and the fore part of this Plate irregular, where it joins the Sphenoid Bone. Tab. XIV. Fig. VI. 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. XIV. Fig. 6. b, b.

The *Pars Petrosa*, vel *Pyramis Trigona*, as seen within the Cranium, of great size, running forwards and inwards, with a sharp angle above, and dividing the Bone into two flat sides; one facing obliquely forwards and outwards, and the other as much backwards and inwards.

The anterior and outer Surface of the *Pars Petrosa* opposed to the lateral Lobe of the Brain. Tab. V. n, o.

The posterior and inner Surface of the *Pars Petrosa* opposed to the *Cerebellum*. Tab. V. o, m.

The Ridge or Angle between the two Surfaces of the *Pars Petrosa*, for the attachment of the *Tentorium Duræ Matris*. Tab. V. Q.

A Groove frequently found upon the Ridge of the *Pars Petrosa*, for lodging the superior Petrosal Sinus.

A curved Fossa, at the root of the posterior Surface of the *Pars Petrosa*, and opposite to the Mastoid Process, for lodging the Lateral Sinus, where it turns downwards to go out of the Cranium. In this Fossa the passage is observed which corresponds with the *Foramen Mastoideum*.

This Cavity is frequently larger in one Temporal Bone than in the other, which happens in cases when the Lateral Sinuses are of unequal size.

The *Meatus Auditorius Internus*, vel *Foramen Auditivum*, 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 Inner Ear. Tab. V. R.

In the bottom of this passage, there are many Foramina; one above, more conspicuous than the rest, is the beginning of the passage for the Portio Dura of the Seventh Pair of Nerves. The others are the passages of the Branches of the Portio Mollis of that Pair. See last Quarto Table of Ear, in Vol. II.

Some way below the *Meatus Internus*, is the opening of the Passage termed, by COTUNNIUS, *Aquæductus Cochleæ*; and near the same distance behind the *Meatus*, and on the same side of the Bone, is the mouth of the *Aquæductus Vestibuli*.

The *Foramen Innominatum*, near the middle of the Anterior Surface of the *Pars Petrosa*, and leading backwards, for the passage of the *VIDIAN Nerve*, which is reflected from the Second Branch of the Fifth, to the Portio Dura of the Seventh Pair. Tab. V. n.

The Orifice of the *Canalis Caroticus* appearing at the outer and fore part of the *Pars Petrosa*. Tab. V.

The *Foramen Jugulare*, vel *Foramen Lacerum Posterius*, or Hole common to the *Pars Petrosa* and *Cuneiform Process* of the Occipital Bone, for the passage of the Lateral Sinus, the Eighth, and the Accessory Nerves. Tab. V. S, T.

The Nerves pass through the fore part of the Hole, and are separated from the Sinus by a Process of the Dura Mater, stretched between two small Processes of these Bones. In some Skulls, an Osseous Partition separates the Nerves from the Sinus.

The Squamous part of the Temporal Bone is thin, but equal, while the *Pars Petrosa* is thick and strong, but irregular, having within it several Cavities, Processes, and Bones, which belong to the Organ of Hearing.

The connexion of the Bone, at its upper curved Edge, to the Parietal Bone by the Squamous Suture. Tab. IV. o.

To the under and back part of the Parietal Bone, by the *Additamentum Suture Squamosæ*. Tab. IV.

To the Occipital Bone, by the *Additamentum Suture Lambdoidalis*.

The Temporal Bone protects the inferior and lateral parts of the Brain, and contains the Internal Organ of Hearing.

It gives origin to the *Digastricus*, *Stylo-hyoideus*, *Stylo-glossus*, *Stylo-pharyngis*, *Levator Palati*, *Anterior Auris*, *Retrahentes Aures*, and *Stapedius*, to part of the *Temporalis* and its *Aponeurosis*, *Constrictor Pharyngis Superior*, and *Masseter*; insertion to the *Trachelo-mastoideus*, and to part of the *Sterno-mastoideus* and *Splenius*.

In a Fœtus, the Squamous part of the Bone is separated from the Petrous by a Fissure; there is no appearance of Mastoid or Styloid Process; and instead of an Osseous *Meatus Externus*, there is only a Ring of Bone, in which the *Membrana Tympani* is fixed. Tab. XV.

#### OS ETHMOIDES.

Observe here,

The situation of the Ethmoid, or Cribiform Bone, in the fore part of the Base of the Cranium.

Its Cuboid Figure, and division into middle and lateral portions, which are connected together at the upper part.

The Cribiform Plate, from which the Bone has its name, placed horizontally at the upper part of the Bone, and perforated, excepting at its posterior portion, with many Holes, disposed irregularly and of different sizes, for



for the transmission of the Branches of the First, or Olfactory Pair of Nerves.

In the recent Subject, these holes are so much filled up by the Processes of the Dura Mater which inclose the Nerves, that they are much less evident than in a Bone where the Membranes have been removed.

The *Crista Galli*, or Process compared to the Comb of a Cock, arising perpendicularly from the middle of the Cribriform Plate, and highest at the fore part, becoming gradually lower in its passage backwards. Tab. XIV. Fig. 4. b.

To the edge of this Process, and to the *unimperfurated* part of the Cribriform Plate, the Falx of the Dura Mater is fixed.

A *Notch* at the fore part of the root of the *Crista Galli*, contributing, in a small degree, to the formation of the Foramen Cæcum of the Frontal Bone.

The *Nasal Plate*, extending downwards and forwards from the base of the *Crista Galli*, to form the upper and back part of the *Septum Narium*, or Partition of the Nostrils. Tab. XVII. Fig. 2. F.

The greater part of this Process is very thin, but towards its anterior and under edge it becomes thicker, for its firmer junction with the Bones and middle Cartilage of the Nose.

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

The *Ethmoid Cells*, sometimes termed *Labyrinth*, of an indeterminate number, size, 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. X. Fig. 4. d. Tab. XIII. Fig. 1. G, H.

Their *communications* with each other, with the opening of the Frontal Sinuses of the corresponding side, and also with the Cavity of the Nose. Tab. XVII. Fig. 3. B.

The *Os Spongiosum Superius*, on each side, projecting inwards and downwards into the Cavity of the Nose, from the Ethmoid Cells, at the side of the Nasal Lamella, and serving for enlarging the Organ of Smell. Tab. XIV. Fig. 3. l.

The *Triangular Form*, and *thick Spongy Texture* of each at its under edge. Tab. XVII. Fig. 1. k, l, m, n.

Its *convexity* towards the Septum, and *concavity* outwards. Tab. XIV. Fig. 3. e.

In the Quadruped, this Bone is convoluted like a *Shell*, or a *Turban*; hence, in the Human Species, as well as in the Quadruped, it is frequently called *Concha*, vel *Os Turbinatum*.

The *Ossa Plana*, or *Orbital Plates*, for covering a large share of the Ethmoid Cells, and forming the greater part of the inner sides of the Orbits. Tab. XIV. Fig. 4. g. Tab. IV. E.

On the upper edge of each *Os Planum*, two small Notches appear, which, with similar Notches in the Frontal Bone, form the Internal Orbital Holes. Tab. IV. l, l.

The Substance of the Ethmoid Bone is the thinnest of any of the Bones of the Cranium, the *Ossa Plana*, and parts which form the Ethmoid Cells, being as thin as writing-paper, and extremely brittle. It differs, besides, from almost every other Bone in the Body, in its Sides or Walls being formed of single Lamellæ, with scarcely any Medullary Cells, the *Crista Galli* excepted.

The *connexion* of the Cribriform Plate to the Orbital Plates of the Frontal Bone by the Ethmoid Suture; and to the Sphenoid Bone by a Suture common to the two Bones, but generally considered as belonging to the latter. Tab. V. f, g, g.

The *connexion* of the *Ossa Plana* to the Orbital 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. XVII. Fig. 2.

Its *upper edge*, joined to the Nasal Processes of the Frontal and Nasal Bones. Tab. XVII. Fig. 2.

Its *anterior edge*, joined to the middle Cartilage of the Nose. Tab. XVII. Fig. 2. I.

The Ethmoid Bone assists in sustaining the Anterior Lobes of the Brain, gives passage to the Olfactory Nerves, attachment to the Falx, forms a large portion of the Organ of Smelling, and of the inner sides of the Orbits, but has no Muscles attached to it.

In the Fœtus, 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. XV.

#### Os SPHENOIDES.

Here attend to,

The *situation* of the Sphenoid, Cuneiform, or wedge-shaped Bone, in the middle of the Cranium. Tab. V. g, f, O, F.

Its *irregular Figure*, which has been compared to that of a Bat with extended wings. Tab. XIV. Fig. 2.

The *Temporal Plates*, or *Wings*, placed at the sides of the Bone, and each hollow at the upper and outer part, for lodging a share of the Temporal Muscle; and also at the under and outer part, where the *Pterygoideus Externus* has some of its origin. Tab. IV. f.

The *Orbital Plates*, at the fore part of the Temporal Wings, forming a portion of the outside of the Orbits. Tab. III. m.

The upper and fore part of the Temporal Plates, forming irregular Surfaces, where they are connected to the under and lateral portions of the Frontal Bone.

The *Spinous Process*, at the under and back part of each Temporal Plate. Tab. XIV. Fig. 2. s.

A *Styloid Process*, frequently observed at the point of the Spinous, from both of which the *Circumflexus Palati* arises. Tab. XIV. Fig. 2.

Between the Temporal and Spinous Processes, a  
ragged



*ragged Arch* for receiving the fore part of the Squamous Plate of the Temporal Bone. Tab. IV. q. Tab. XIV. Fig. 2. q.

The two *Pterygoid*, or *Aliform Processes*, placed almost perpendicularly to the Body of the Bone. These Processes are compared to the wings, though more properly resembling the feet of the Bat. Each is composed of two Plates.

The *External Plate*, broad and hollow without, where the External Pterygoid Muscle has its origin. Between the root of this Plate and that of the Temporal one, a large Depression, where the principal part of the External Pterygoid Muscle arises. Before this is another Depression, forming part of the opening common to the Sphenoid, Malar, and Superior Maxillary Bones.

The *Internal Plate*, narrower and longer than the External, and, with its fellow on the opposite side, forming the back part of the Nose.

A *hook-like Process* upon the Internal Plate, over which the *Circumflexus Palati* moves as on a Pulley.

The *Fossa Pterygoidea*, facing backwards between the Pterygoid Plates, giving rise to the internal Pterygoid Muscle. Tab. VI. R.

A small Depression behind the root of the internal Pterygoid Plate, which gives origin to part of the Circumflex Muscle of the Palate.

A *Groove on each side*, which extends at the inner part of the Bone, between the root of the Styloid Process and that of the internal Pterygoid Plate, assisting in the formation of the EUSTACHIAN Tube.

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 Bones of the Face. Tab. XIV. Fig. 1. b. Fig. 3. k.

The *Processus Azygos*, standing single, and forming a sharp ridge, which projects from under the middle and fore part of the Bone. Tab. XIV. Fig. 1. a. This Process is often bent to one side, dividing the two Nostrils unequally.

The *Clinoid Processes*, seen on the inside of the Bone, compared to the supporters of a bed, of which there are,

Two *Anterior*, projecting from the fore and lateral part of the Body of the Bone, and extending horizontally outwards; each terminating in a point which obtains the name of *Transverse Spinous Process*, Tab. V. E. Tab. XIV. Fig. 2. c;

One *Posterior*, situated transversely, some way behind the anterior Processes, but projecting obliquely upwards and forwards, and frequently ending in two Knobs, which also incline a little forwards, and form two Posterior Clinoid Processes. Tab. XIV. Fig. 2. h.

Sometimes one or both of the anterior Clinoid Processes are united with the posterior, forming an Arch over the internal Carotid Artery.

The *Processus Olivaris*, a small ridge running transversely between, and a little behind, the roots of the

anterior Clinoid Processes, and considered by some as a fourth Clinoid Process. Tab. V. h.

Between the anterior Clinoid Processes, a *small pointed Process* frequently juts forwards, to join the Cribiform Plate of the Ethmoid Bone, from which it is sometimes called Ethmoid Process. Tab. V. f.

The *Temporal Fossæ* of this Bone, which lodge a share of the lateral Lobes of the Brain. Tab. V. P.

A *Fossa* between 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 these Nerves are situated, previous to their entering the Orbits. Tab. XIV. D.

The *Fossa Pituitaria*, *Sella Turcica*, *Ephippium*, or *Turkish Saddle*, situated between the *Processus Olivaris* and posterior Clinoid Process, but open laterally, for lodging the *Glandula Pituitaria*. Tab. V. D. Tab. XIV. Fig. 2. l.

A *Notch*, running upwards at each side of the Posterior Clinoid Process, and from it a *slight impression*, stretched along the lateral parts of the *Sella Turcica*, and terminating in a Pit at the root of the anterior Clinoid Process. These point out the course of the internal Carotid Arteries, when they have entered the Cranium, and previous to their perforating the *Dura Mater*, to be dispersed upon the Brain. Tab. V. k.

Besides these Impressions, several others may be observed, made by Nerves and Vessels leading to or from their respective Foramina in the base of the Cranium.

The Foramina observed in this bone are placed at the roots of the Temporal Processes, or between these and the Body of the Bone, and are as follow, viz.

The *Foramina Optica* between the roots of the anterior Clinoid Processes and body of the Bone, for the transmission of the Optic Nerves and Ocular Arteries. Tab. X. Fig. 2. f.

Sometimes, though rarely, there are Foramina peculiar to these Arteries.

The *Foramina Lacera Superiora*, or *Superior Orbital Fissures*, under the anterior Clinoid Processes and their transverse Spinous Parts, for the passage of the third, fourth, first part of the fifth, and the sixth pair of Nerves, with the Ocular Veins. Tab. XIV. Fig. 2. i.

The *Foramina Lacera* are largest at their inner ends. At their outer extremities they are considerably smaller, and are partly formed there by the *Os Frontis*; hence, they may be ranked among the common Holes of the Cranium.

The *Foramina Rotunda*, a little behind the *Foramina Lacera*, for the passage of the second part of the fifth pair of Nerves, which are termed also Superior Maxillary. Tab. XIV. Fig. 2. o.

From the outer end of each Foramen Rotundum, a *small Groove* frequently extends outwards between the Ridge separating the Orbital from the Temporal Process, and points out the course of a Branch of the Superior Maxillary Nerve to the Temporal Muscle.

The



The *Foramina Ovalia*, considerably larger than the *Foramina Rotunda*, and placed farther back, and more externally, for the passage of the third part of the fifth pair of Nerves, and commonly for the passage of the Veins also, which accompany the principal Arteries of the Dura Mater.

The *Foramina Spinalia*, a little to the outer and back part of the *Foramina Ovalia*, and in the points of the Spinous Processes, for the transmission of the middle or principal Trunks of the Arteries of the Dura Mater, the impressions of which are so conspicuous on the inner side of the Temporal Bones. Tab. XIV. Fig. 2. p.

The *Foramina Pterygoidea*, vel *Foramina Pterygopalatina*, termed also, after the discoverer, *Foramina VIDIANA*, at the roots of the inner Plates of the Pterygoid Processes, for the passage of two recurrent or reflected Branches of the second part of the fifth Pair of Nerves. Tab. XIV. Fig. 1. n. Tab. VI. XIV.

The *Foramina Pterygoidea* are the smallest of the Sphenoid Holes, and cannot be distinctly seen in the entire Skull, being partly concealed by the Palate-Bones.

Sometimes one or more small passages are observed in or near the Sella Turcica, for the transmission of Blood-vessels into the Sphenoid Sinuses, or to the substance of the Bone. These passages were, in former times, considered by some Authors as conducting Pituita by the Sphenoidal Sinuses into the Nose.

The *Foramina Lacera Anteriora*, common to the points of the *Partes Petrosæ* and the Sphenoid Bone. Tab. V. before l.

In a recent Skull, each of these Holes is filled behind by a thin plate of Bone, which covers the internal Carotid Artery, and farther forwards, by a Cartilaginous Ligament, which lies over the EUSTACHIAN Tube, both of which drop out by maceration. Through this opening, also, Mucus was formerly supposed to be conveyed from the Glandula Pituitaria to the Nose.

The Two Sphenoid Sinuses, occupying the whole of the Body, or middle of the Bone, at the under and fore part of the Sella Turcica, answering the same purposes with the Ethmoid and Frontal Cells. Tab. XIV. Fig. 1. c.

A complete Partition running perpendicularly between the right and left Sphenoid Sinuses. Tab. XIV. between c, c.

A Passage from the upper and fore part of each of the Sphenoid Sinuses, descending in a slanting direction into the Meatus Superior, or superior-posterior part of the Nose. Occasionally one of these passages is wanting.

The two Sinuses are frequently of unequal size, and sometimes there is but a single large Cavity, with an opening into one of the Nostrils; In some Subjects, instead of Sinuses, the Body of the Bone is composed of large Cells.

The substance of this Bone is the most unequal of any in the Body, some parts being extremely thin, while others are thicker than most parts of the Cranium.

The connexion of the Bone to all the other Bones of the Cranium, by the Sphenoid Suture, though others, as the Transverse, Ethmoid, &c. are confounded with it.

The Sphenoid Bone forms the middle of the Base of the Cranium, a share of the Temples, Orbits, and Nose, and assists in supporting the anterior and middle Lobes of the Brain. It gives passage to the Blood-vessels of the Dura Mater and Eye, and to the greater part of the Cerebral Nerves.

It affords origin to the Levator Palpebræ, Laxator Tympani, and all the Muscles of the Eye-ball, excepting the Obliquus Inferior; to part of the Buccinator, Pterygoidei Externus et Internus, Temporalis, Circumflexus Palati, and Constrictor Pharyngis Superior.

In the Fœtus, the Temporal wings are separated from the Body of the Bone by maceration, and there are no Sphenoid Sinuses. Tab. XV.

In the early period of life, the Sphenoid Bone is joined to the Cuneiform Process of the Occipital Bone by a Thin Cartilage, which by the age of fifteen or sixteen years, is in general completely absorbed, and the two Bones so firmly united by an accretion of substance, or in the manner that Processes are united to the bodies of long Bones, that Dr SOEEMMERRING has described them as one Bone, under the name of *Sphenoccipitale*.

## OF THE BONES OF THE FACE.

THE Bones of the Face, and the relative proportions between the Face and Cranium, vary considerably among people of different nations, but they likewise differ among the individuals of the same country. It is difficult, therefore, to ascertain the proportions with accuracy.

An Angle termed *Facial*, however, is considered by some late Authors, as being the simplest method of determining this circumstance.

The Facial Angle is formed by drawing a line, called *Transverse*, through the external Auditory Passage and bottom



bottom of the Nostril, and another, termed *Facial*, from the convexity of the Forehead to the under and fore part of the Upper Jaw, so as to intersect the former.

In the Grecian, as measured from the Antique Statue, the Facial Angle is found 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 prominence of the Jaws, about  $70^\circ$  only.

According to DR CAMPER, the boundaries of the Facial Angle, in the Human Subject, are  $70^\circ$  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 Bones of the Face we observe,

Their *Division* into *Upper* and *Under Jaws*.

The Upper Jaw, or Maxilla Superior, besides the Teeth, composed of seven Pair of Bones, and one without a fellow; viz.

Two Ossa Nasi; Two Ossa Unguis; Two Ossa Malarum; Two Ossa Maxillaria Superiora; Two Ossa Palati; Two Ossa Spongiosa Inferiora; Two Ossa Triangularia; and the Vomer.

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

The Bones of the Upper Jaw are joined together by Sutures which have no distinct Indentations, like those of the Cranium; but, like them, they are frequently found obliterated in the Skulls of old people. The Bones here, in consequence of the nature of the Sutures, have no motion but what they possess in common with the Cranium. The Sutures shall be taken notice of in the description of the Bones between which they are placed.

#### OSSA NASI.

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

The *oblong Form* of each, though irregularly so. Tab. XVI. Fig. 3.

The *thick, ragged*, upper end, where it forms a strong connexion with the Frontal Bone. Tab. XVI. Fig. 3.

Each narrowest a little below the upper end, and bent backwards.

The Inferior Extremity, thinner and broader than the rest of the Bone, and unequal where it gives attachment to the Cartilaginous part of the Nose. Tab. XVI. Fig. 3.

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

The inner margin thick and broad above, but thin below, where it joins its fellow on the opposite side.

Its internal *Concavity*, where it forms part of the Cavity of the Nose. Tab. XVI. Fig. 4.

The *Spinous Process*, which joins the Nasal Lamella

of the Ethmoid Bone, and thereby forms part of the partition of the Nose. Tab. XVI. Fig. 4. C.

One or more *Holes* externally, for transmitting Vessels into the Substance of the Bone, or to the Membrane of the Nose. Tab. IV. x.

The Substance of the Bone remarkably firm and strong, with very few Cancelli.

Its *Connexion* to the Frontal Bone by the transverse Suture. Tab. III. b, and,

To its fellow by the anterior Nasal Suture. Tab. III. before F.

The Ossa Nasi form the upper and fore part of the Nose, and give attachment to the Compressor Naris, and to part of the Occipito-Frontalis.

In the Fœtus, the Ossa Nasi are proportionally short, but are otherwise complete.

#### OSSA UNGUIS, vel LACRYMALIA.

Their *Situation* at the inner and fore part of the Orbit. Tab. IV. H.

Their *Size*, the least of the Bones of the Face.

The *Division* of each externally, into two depressed Surfaces, with a Ridge between them which forms the boundary of the Orbit at the inner Angle. Tab. XVI. Fig. 5. C.

The Ridge between these surfaces frequently forms a little Process below, where it assists in covering part of the Lacrymal Sac.

The *posterior Surface*, the larger of the two, forming part of the Orbit; and having the appearance of being a continuation of the Pars Plana of the Ethmoid Bone. Tab. XVI. Fig. 5. B.

The *anterior Surface*, for lodging part of the Lacrymal Sac and Duct, and perforated by small Holes, through which Fibres pass, to make a firm connexion between the Bone and its investing Membrane. Tab. XVI. Fig. 5. A.

In the Anterior Depression, the perforation is made in performing the operation for Fistula Lacrymalis.

The *inner or Nasal Surface*, composed of a Furrow and two irregular convex Surfaces, corresponding with the Anterior Ethmoid Cells. Tab. XVI. Fig. 6.

The Substance of the Bone is the *thinnest* and *most brittle* of any in the body, in consequence of which it is frequently met with in an imperfect state.

Its *Connexion* to the Frontal Bone by the Transverse Suture, and to the Os Planum by the Ethmoid Suture.

*Internally*, it is connected with the Ethmoid Cells.

The Os Unguis forms the inner and fore part of the Orbit, covers part of the Ethmoid Cells, and receives a share of the Lacrymal Sac.

In the Fœtus, it is fully formed.

#### OSSA MALARUM, vel OSSA JUGALIA.

The *Situation* of each in the outer part of the Cheek. Tab. IV. I.

The



The *external convex Surface*, smooth and of a somewhat rhomboid form. Tab. III. H.

The *posterior hollow Surface*, for lodging part of the Temporal Muscle. Tab. XVI. Fig. 8. F.

The *superior Orbital Process*, forming part of the outside of the Orbit. Tab. IV. z.

The *inferior Orbital Process*, forming part of the lower Edge of the Orbit. Tab. IV. uppermost 2.

The *Maxillary Process*, forming the under part of the Prominence of the Cheek. Tab. III. undermost q.

The *Arch* between the Orbital Processes, which forms near a third part of the anterior Circumference of the Orbit. Tab. IV. 3.

The *Zygomatic Process*, the most conspicuous, extending backwards, and becoming oblique, to join the Zygomatic part of the Temporal Bone, and with it to form an Arch over the Temporal Muscle. Tab. IV. 1.

The *Internal Orbital Plate*, hollow and extending back between the Orbital Processes, to form a share of 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 Orbital Process, assisting in the formation of the large slit at the bottom of the Orbit.

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

The *connexion* of the Superior Orbital Processes and internal Orbital Plate to the Frontal and Sphenoid Bones, by the Transverse Suture. Tab. III. q, r.

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

The Os Malæ closes the outer part of the Orbit, and gives form to the Cheek. It affords origin to the Zygomatici Major et Minor, to part of the Masseter and Temporalis, and insertion to part of the Aponeurosis Temporalis.

In the Fœtus, the Bone is fully ossified.

#### OSSA MAXILLARIA SUPERIORA.

Their *Situation* in the fore part of the Upper Jaw, and sides of the Nose. Tab. III. I.

Their *Size*, the largest of the Bones of the Upper Jaw, on which account they have got their name. Tab. XVI. Fig. 1.

The *Nasal*, or *Angular Process* of each, forming a portion of the side of the Nose, and of the inner part of the Orbit, and overlapping the outer edge of the Os Nasi above, while that Bone covers the edge of the Nasal Process below. Tab. III. t.

A *Ridge* at the under and inner side of the Nasal Process, for supporting part of the Os Spongiosum Inferius. Tab. XVI. Fig. 2. b.

The *Orbital Plate*, facing obliquely outwards, and

forming a large share of the under side of the Orbit. Tab. IV. 10.

The *Malar Process*, at the outside of the Orbital Plate, *unequal, ragged*, and of a triangular shape, where it contributes, with the Os Malæ, to form the Prominence of the Cheek. Tab. XVI. Fig. 1. e, e, f, f.

The *Tuberosity*, or *Bulge* at the back part of the Bone, which forms the posterior boundary of the Cavity called *Antrum Maxillare*, and gives origin to a portion of the External Pterygoid Muscle. Tab. IV. 16.

A *Depression* behind the Malar Process, where the under end of the Temporal Muscle plays. Tab. III. a.

A *Depression* at the under and fore part of the Malar process, where the Muscles which raise the Upper Lip and corner of the Mouth originate, and where a Branch of the Fifth Pair of Nerves is lodged, and commonly a large portion of Fat. Tab. III. l.

The *Alveolar Arch*, at the under part of the Bone, of a Spongy nature, where the Alveoli or Sockets of the Teeth are placed. Tab. III. x.

The *Alveoli*, or *Sockets* for the Teeth, *porous*, for the firmer adhesion of the reflected Membrane of the Gums, and for the transmission of Blood-vessels into the Substance of the Bone; the Sockets corresponding in number with those of the Teeth, and varying in depth, size, and form, according to the nature of the Teeth fixed in them. Tab. XVIII. Fig. 1. A, B, C, D.

The *Palate Plate or Process*, placed horizontally, forming part of the Roof of the Mouth, and of the Bottom of the Nose. Tab. VI. b.

The *Palate Plate*, *thin* in its middle, and *thick* at its edges; *smooth* towards the Nose, but *rough, unequal*, and *porous* below, for the firm connexion of the Membrane of the Palate, and for the passage of Blood-vessels and Nerves to the Substance of the Bone. Tab. XVI. Fig. 2.

The *Nasal Spine*, contributing, in a small degree, to the formation of the Septum of the Nose. Tab. XVI. Fig. 2. h.

An *Arch* formed by the Palate Plate, both above and below, for enlarging the Cavities of the Nose and Mouth. Tab. VI. b.

In advanced life, where the Teeth have fallen out, the Roof of the Mouth, which was formerly arched, becomes flat, in consequence of an absorption of the Alveoli, and the Cavity of the Mouth is now diminished in size.

A *Notch* forming the under and fore 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. Tab. III. y.

The *Lacrymal Fossa*, at the outer and back part of the Nasal Process, which, with that of the Os Unguis, forms a passage for the Lacrymal Duct into the Nose. Tab. IV. 8.

A *Canal*, termed *Infra-orbital*, in the Orbital Plate, terminated anteriorly by the *Foramen Infra-orbitarium*, through which the *Infra-orbital Branch* of the second part



part of the Fifth Pair of Nerves, with a Branch of the internal Maxillary Artery, pass to the Face. Tab. XVI. Fig. 1. *d.* Tab. III. *z.*

From this Canal, minute Passages lead downwards, for receiving the Blood-vessels and Nerves that supply the fore part of the Jaw and corresponding Teeth.

The *Foramen Incisivum*, vel *Palatum Anterius*, behind the Fore-Teeth, common to both Bones below, but proper to each above, and filled with a Process of the Soft Palate, and with Small Vessels and Nerves, which run between the Membranes of the Mouth and Nose, the Nerves chiefly belonging to the Naso-palatine Branch of the Second Branch of the Fifth Pair. Tab. VI. *C.*

In some Subjects, there is a distinct *Ductus Incisivus*, leading from one or from both Nostrils into the Cavity of the Mouth, similar to that which is always found in the large Quadrupeds.

A small *Hole* commonly found in the Nasal Process, and some minute *Passages* at the back part of the Tuberosity, for the transmission of Blood-vessels and Nerves into the Substance of the Bone and Large Dentes Molares, and into the Antrum Maxillare. Tab. III. *t.*

The *Sinus Maxillaris*, *Antrum Maxillare*, or, from its describer, *HIGHMORIANUM*, of great size, being the largest of all the Sinuses of the Head, occupying the whole inner part of the Body of the Bone. It is situated under the Orbital Plate, and above the large Dentes Molares, and destined for the same purposes as the other Sinuses of the Bones of the Head. Tab. XVI. Fig. 2. *c, c.* Tab. XVII. 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, and small Prominences, containing the points of the roots of the Teeth, may often be observed in the middle of this Cavity.

The *Opening* of the Sinus, large in the separated Maxillary Bone, but, in the connected state, so covered by the *Os Spongiosum Inferius*, and by the Palate Bone and Membranes, as to leave only one, and sometimes two Apertures, little larger than to admit the point of a Surgeon's Probe. The Aperture is situated at the upper part of the Sinus, and descends obliquely backwards to terminate in the Cavity of the Nose, between the *Ossa Spongiosa Superius et Inferius*. Tab. XVII. Fig. 1. *q.*

The *Substance* of this Bone is hard and dense, except at the *Alveoli*, where it is remarkably Spongy.

The *connexion* of the Bone to the *Os Frontis*, by the Transverse Suture, Tab. III. between *e* and *p*;—to the *Os Unguis*, by the Lacrymal Suture, Tab. III. between *p* and *G*;—to the *Os Nasi*, by the Lateral Nasal Suture, Tab. IV. behind *x*;—to the *Os Malæ*, by the internal and external Orbital 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. IV. 4;—to its fellow also, between

the fore part of the Nose and Mouth by the *Mystachial Suture*. Tab. III. *w.*

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

The Superior Maxillary Bone gives origin to the *Obliquus Inferior Oculi*, *Levator et Depressor Labii Superioris* *Alæque Nasi*, *Levator Anguli Oris*,—to part of the *Orbicularis Palpebrarum*, *Pterygoideus Externus*, *Buccinator*, *Masseter*, and *Constrictor Pharyngis Superior*.

In the *Fœtus* there are six Sockets for the Teeth,—no Tuberosity, and the Maxillary Sinus is only beginning to form.

#### OSSA PALATI.

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

The *Oblong Shape* of the Palate Plate of each, which forms the back part of the Osseous Palate. Tab. VI. *f.*

Its *posterior Curved Edge*, where it is connected with the *Velum Palati*; also the point at the inner extremity of the Curve, for the origin of the Muscle of the Uvula. Tab. VI. *f.*

Its *thick, strong Substance*, where it joins its fellow. Tab. XVI. Fig. 2. *n.*

Its *Spinous Process or Crest*, at the inner edge of the Palate-Plate, joining the under part of the Vomer, and contributing to the formation of the *Septum Narium*. Tab. XVI. Fig. 2. between *l* and *n.*

The *Pterygoid Process*, of a *Triangular or Pyramidal form*, with *Fossæ* corresponding to the Pterygoid Plates of the Sphenoid Bone. Tab. XVI. Fig. 11. *B.*

The *Nasal Plate*, forming a portion of the side of the Nose and Antrum Maxillare. Tab. XVI. Fig. 2. *l.*

A *Ridge* on the inside of this Plate, upon which the back part of the inferior Spongy Bone rests. Tab. XVI. Fig. 2. *m.*

The *Two Orbital Processes*, at the upper and back part of the Nasal Plate, contributing a little in the formation of the Orbit, and of the Ethmoid and Sphenoid Sinuses, being hollow within. Tab. XVI. Fig. 2. *k.*

The *Anterior Orbital Process*, the larger of the two, with its upper Surface appearing in the bottom of the Orbit, behind the back part of the *Os Planum* and *Os Maxillare*.

A *Notch* between the Orbital Processes, forming part of the *Foramen Spheno-Palatinum*; and sometimes this a complete Foramen, for the passage of the Nasal Vessels and Nerves, the former belonging to the Internal Maxillary, and the latter to the second portion of the Fifth Pair. Tab. XVI. Fig. 11. *F.* Fig. 2. under *k.*

The *Foramen Palatinum Posterius*, vel *Palato-Maxillare*, at the outer end of the Palate-Plate of this Bone, but common to it and the Maxillary Bone, for the transmission



mission of Nerves of the Second Branch of the Fifth Pair, with associate Blood-Vessels, which are the principal Nerves and Vessels of the Palate. Tab. VI. 4.

A *small Hole* frequently observed behind the former, and communicating with it, for the passage of a Branch of the Palatine Nerve. Tab. XVI. Fig. 2. o.

The *Foramen Spheno-Maxillare, Lacerum Inferius, or Inferior Orbital Fissure*, at the under and outer part of the Orbit, and common to the Cuneiform, Maxillary, Malar, and Palate Bones, for lodging Fat belonging to the Eye, and transmitting small Twigs of Vessels and Nerves into the Orbit.

The Palate-Plate of this Bone and its Pterygoid Process are firm and strong; but the Nasal Plate and Orbital Processes are thin and brittle.

The *connexion* of the Os Palati to the Palate-Plate of the Maxillary Bone, by the Transverse Palate Suture, Tab. VI. before *f*;—to the Maxillary Bone, at the side of the Nose and bottom of the Orbit, by the Palato-Maxillary Suture, Tab. XVI. Fig. 2. *f*;—to the Pterygoid Process of the Sphenoid Bone, by the Sphenoid Suture;—to the Os Planum and Ethmoid Cells, by the Ethmoid Suture;—and to its fellow, by the Longitudinal Suture. Tab. VI. at the inside of *f*.

The Palate Bone forms part of the Palate, Nose, and Orbit, covers a share of the Ethmoid, Sphenoid, and Maxillary Sinuses, gives origin to part of the Azygos Uvulae, to a portion of the Pterygoideus Externus, and insertion to part of the Circumflexus Palati.

In the Fœtus, the Palate Bone is complete, but there are no Cells in the Orbital Processes.

#### OSSA SPONGIOSA, vel TURBINATA INFERIORA, vel CONCHÆ INFERIORES.

The *Situation* of each Spongy Bone, projecting in the under part of the side of the Nose. Tab. XVII. between *q* and *r*.

Its *triangular form* and spongy appearance resembling the Os Spongiosum Superius. Tab. XVI. Fig. 9.

Its *convexity* towards the Septum Nasi, and *concavity* outwards. Tab. XVII. Fig. 8. Q.

The *under edge* placed horizontally near the under part of the Nose, more or less convoluted, of considerable thickness and strength, and ending in a thin sharp point behind.

The *two Processes* at the upper part of the Bone, 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 Maxillary Sinus, and to contract the opening of that Cavity. Tab. XVI. Fig. 9. B.

The *Connexion* of this Bone to the Os Maxillare, Os Palati, and Os Unguis, by a distinct Suture in the young Subject; but in the Adult, by a concretion of Substance.

The Ossa Spongiosa Inferiora afford a large surface for extending the Organ of Smell, by allowing the Membrane of the Nose to be expanded, upon which the Ol-

factory Nerves are dispersed. They form a boundary between the Middle and Inferior Meatus of the Nose; cover the under Orifice of the Lacrymal Canals; assist also in the formation of these Canals, and of the Orifices of the Maxillary Sinuses.

In the Fœtus, these Bones are almost complete.

#### OSSA TRIANGULARIA, vel CORNUA SPHENOIDALIA.

The *Situation* of each triangular Bone between the Body of the Sphenoid Bone and root of its internal Pterygoid Process, where it covers the under part of the Sphenoid Sinus. Tab. XIV. Fig. 1. *b*.

Its *Connexion* to the back part of the Ethmoid Bone. Tab. XIV. Fig. 3. *k*. In an old person, it grows so firmly 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. Tab. III. L.

It commonly descends perpendicularly, but it is frequently bent to one side, in which case the one Nostril is rendered larger than the other.

Its *Form* approaching that of a rhomboid, or it is compared to that of the Ploughshare, from which it has its name. Tab. XVII. Fig. 2. H.

The *superior* and *posterior* part, *thick* and *strong*, with a *Furrow* above to receive the Processus Azygos of the Sphenoid Bone. Tab. XVI. Fig. 13. A. Tab. XVII. Fig. 2. behind G.

The *superior part*, with a *Groove* to receive the Nasal Plate of the Ethmoid Bone, and the Cartilage of the Nose. Tab. XVII. Fig. 2. before G.

The *inferior Edge* connected with the Spinous Processes of the Palate and Maxillary Bones, by a small Ridge corresponding with a Groove of these Bones. Tab. XVII. Fig. 2. under H.

The *posterior-inferior Edge*, thick above, but thin and sharp below, unconnected with any other Bone, and turned to the Cavity of the Throat. Tab. XVII. Fig. 2. M. Tab. VI. *g*.

The Vomer has a smooth Surface, and a dense Substance, and consists of two Plates in a young person; but in an old Subject, the Plates are compressed together, so as to render the Bone transparent.

It divides the Cavity of the Nose into right and left Nostrils, receives the middle Cartilage of the Nose, and serves to extend the Olfactory Membranes.

#### MAXILLA INFERIOR.

The *Figure* of the Maxilla Inferior, or Lower Jaw, compared to that of the letter U; or it forms half of a long oval, with the convex middle part forwards.

The *division* into *Chin, Sides, and Processes*.

The



The *Chin*, extending between the Holes termed *Mental Foramina* at the fore part of the Jaw. Tab. IV.

The under part of the *Chin* more prominent than the upper edge of the Jaw, with a triangular eminence in the middle of its outer Surface, which, with the projecting under edge, renders this part peculiar to Man. This projection of the *Chin* is less apparent in the Negro, where the Alveolar Border is so expanded as to increase the prominence of the Mouth.

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

A *Transverse Ridge* on the fore part of the *Chin*, with depressions on each side, for the Origin of Muscles of the Under Lip. Tab. III. M.

*Small Prominences and Depressions* on the under, inner, or back part of the *Chin*, for the attachment of the *Frænum Linguae*, and of several Muscles which belong to the Throat. Tab. XXXV. Fig. 13.

The *Base*, or lowest part, forming the under boundary of the Face. Tab. IV. XXIV.

The *Angle* of the Jaw at the back part of the Base. Tab. IV. XXV.

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

The *Plate*, which rises from the angle of the Jaw, on each side, running upwards and a little backwards, and terminating in two Processes, termed *Condylod* and *Coronoid*. Tab. XVIII. Fig. 2. F.

The *Condylod*, or *Articular Process*, with an oblong rounded head, covered with Cartilage, and placed almost transversely upon a Cervix at the upper and back part of the Bone; though, with respect to each other, the Condyles are somewhat oblique, the external extremity being directed a little forward.

At the under and fore part of the Condyle, a cavity for the insertion of the Pterygoideus Externus.

The *Coronoid Process*, into which the Temporal Muscle is inserted, situated a little lower than the Condylod Process, and, in the natural situation of the Jaw, placed on the inner side of the Zygoma. Tab. IV. XXVIII.

The Anterior Edge of this Process, forming a Ridge which goes downwards and forwards, terminating at the outside of the Posterior Alveoli. From this the under edge of the Buccinator takes its Origin.

From the inner side of the Coronoid Process, another Ridge seen terminating nearly opposite to the former. To this the Internal Membrane of the Gums, and Mylo-hyoideus, are attached.

The *Alveolar Process*, and *Alveoli*, nearly similar to those of the Upper Jaw. Tab. XIV. II.

The *Alveolar Process*, extending along the Upper Edge of the Bone, from the Coronoid Process of one side to that of the other; and thickest behind, corresponding there with the increased thickness of the Teeth.

The Alveolar Process, composed of two Plates, and

divided by cross Partitions, which, as in the Upper Jaw, mark the different Alveoli for the Fangs of the Teeth.

The Posterior Part of the Internal Plate, slanting inwards, and thinner than the external, giving the Jaw a twisted appearance.

Opposite the Alveoli, the external Plate swelling, and giving a fluted form, which is observed in the whole extent of the Alveolar Process of the Upper Jaw, and in the fore part of the Lower Jaw.

At the fore part of the Jaw, the Alveoli are perpendicular, but turn inwards behind, where they are placed nearer the inner than the outer part of the Jaw.

The *Sockets* are worn down by absorption in old age, in consequence of which the Teeth drop out, the Jaw becomes narrower, the face shorter, and, when the Mouth is shut, the Jaw appears more prominent. Tab. XVIII. Fig. 7. A.

The *posterior Maxillary Foramen*, at the roots of the Condylod and Coronoid Processes, upon the inner side of the Jaw, for the passage of the Third, or inferior Maxillary Branch of the Fifth Pair of Nerves, with the corresponding Blood-vessels, into the Bone. Tab. XXXV. Fig. 13. 7.

A *small-pointed Process* at the inner edge of this Hole, where a Ligament goes off to be fixed to the Temporal Bone. Tab. XVIII. Fig. 2. at the inner side of the Bone, opposite E.

Above the Hole, the Bone marked by the passage of the Nerve and Vessels; and below it, commonly a *small Furrow*, pointing out the course of a Branch of this Nerve which goes to the Mylo-hyoideus and the Sublingual Gland.

Between the Posterior Maxillary Foramen and the Angle, the Bone marked by the insertion of the Internal Pterygoid Muscle. Tab. XXXV. Fig. 13. 6.

The *Anterior Maxillary Foramen*, or *Mental Hole*, at the side of the *Chin*, where the remains of the Inferior Maxillary Nerve and Vessels come out. Tab. IV. XXXI. C.

The *Inferior Maxillary Canal*, running in the substance of the Bone, between the Posterior and Anterior Foramina, a little below the roots of the Teeth, and having many Perforations, for the passage of small Branches of Vessels and Nerves which supply the Jaw and Teeth.

The *Tables* of the Jaw, remarkably thick, compact, and hard, and within, furnished with numerous *Medullary Cells*, which surround the Maxillary Canals.

The *Articulation* of the Jaw by its Condylod Process with the Glenoid Cavity of the Temporal Bone, and also with the Tubercle at the root of its Zygomatic Process.

An *intermediate moveable Cartilage*, thin in the centre and thicker at the edges, is placed in the Articulation of the Lower Jaw, allowing the Condyle to remain in the Glenoid Cavity, in the gentler motion of the Jaw, but admitting



admitting it to advance upon the Tubercle or Root of the Zygoma, when the Mouth is widely opened. Tab. XXXV. Fig. 17. r.

The Lower Jaw is a principal agent in Manducation, Deglutition, and Speech; and gives origin to the Depressor Labii Inferioris, Depressor Anguli Oris, Levator Labii Inferioris, Mylo-hyoideus, Genio-hyoideus, and to part of the Buccinator, of the Genio-hyo-glossus, and Constrictor Pharyngis Superior; insertion to the Tem-

poralis, Masseter, Pterygoidei Externus et Internus, Digastricus, and to part of the Platysma Myoides.

In the Fœtus, the Lower Jaw is somewhat of a semi-circular Figure, and is composed of two pieces joined together in the middle of the Chin, by the intervention of a Cartilage. Tab. XXXII. This union, termed *Symphysis*, gradually ossifies, and leaves no mark of any former division.

## TEETH.

**THE Situation of the Teeth, in the Alveoli of the Jaws.** Tab. III. and IV.

**Their Number, sixteen in each Jaw.** Tab. III.

**The Base, or Body of each Tooth, appearing without the Sockets.** Tab. XVIII.

**The Roots, or Fangs, placed in the Sockets, and of a conical form.** Tab. XVIII.

**The Cervix, or Collar, between the Base and Roots of the Teeth.** Tab. XVIII.

**The Roots of the Teeth covered by a Vascular Membrane, reflected from the Gums, and serving as a Periostrum to the Teeth, and a lining to the Alveoli.**

**The Cortex, or Enamel, covering the Base of each Tooth, and becoming gradually thinner towards the Cervix.**

**The Fibres of the Osseous part forming Lamellæ, which run according to the length of the Teeth.**

**A Foramen 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 Substance called Pulp of the Tooth.**

**Division of the Teeth into four Classes, viz.**

—On each Side of each Jaw,—

**Two Incisores;—One Cuspidatus, or Caninus;—Two Bicuspidati, or Small Molares;—and Three Large Molares.** Tab. XVIII.

**The Incisores, having their Bases formed into Wedges sloped out behind.**

**The Cuspidatus, having its Base in form of a Wedge, like the Incisores, but pointed in the middle.**

**The Bicuspidati, each with double points, one external, the other internal, which, in the Upper Jaw, are nearly upon a level, but, in the Under Jaw, highest on the outside of the Teeth.**

**The Incisores, Cuspidus, and Bicuspidati, with single 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 Jaw, with five, and each of the other two with four points.**

**Each of these three Teeth having two, three, or sometimes four roots.**

**In the Upper Jaw, the first large Molaris having four, 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 Gomphosis, and by a firm adhesion to the Gums.**

**At Birth, the outer shell only of the five Temporary Teeth, and of the anterior Permanent Molaris, in each side of each Jaw, is found.**

**These Teeth are situated in Capsules, within the Jaw. At this period there are no roots formed.**

*For a fuller description of the Teeth, see Vol. II.*



# T A B L E XVI.

## VIEWS of the different BONES of the FACE.

FIG. 1.

*The Outer Side of the Right Os MAXILLARE SUPERIUS, with a small Portion of the Os PALATI.*

- A, The maxillary fossa.
- B, The nasal process of the maxillary bone.
- a, Inequalities by which it is joined to the os frontis.
- b, The angle which is joined to the under end of the os nasi, and to the cartilage of the nose.
- C, The orbital plate.
- c, The edge of the orbit.
- d, A groove which belongs to the infra-orbital canal.
- e, e, f, f, The malar process.
- D, D, The alveolar process.
- E, The maxillary tuberosity of the bone.
- F, A small portion of the os palati.
- g, g, Two of many small holes which penetrate into the substance of the bone.
- 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 palate-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, &c. The dentes molares.

FIG. 2.

*Represents the Inner Surface of the same Os MAXILLARE SUPERIUS, with the Os PALATI.*

- A, The nasal process, or upper angle.
- a, The middle angle, at the base of the nasal process.
- b, Inequalities, where the fore part of the os spongiosum inferius is fixed.
- B, B, The palate-process.
- D, D, The irregular surface of the palate-process.
- C, C, The alveolar process.
- c, c, c, c, The edges of the maxillary sinus.
- E, The cavity of the maxillary sinus.
- d, d, Small cells in the upper part of this bone.
- F, The lacrymal fossa.
- e, The palate-fissure which assists in forming the foramen incisivum.

- f, The suture which unites this bone to the os palati.
- g, The part of this bone 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, e, The irregular surface, by which the fore part of this bone joins its fellow on the opposite side.
- H, H, 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 sinus.
- m, An eminence by which this bone is connected to the os spongiosum inferius.
- n, The rough surface where the two palate-bones unite.
- o, The hole proper to this bone.
- p, The foramen gustativum.
- q, The pterygoid process.
- 1, 1, The dentes incisores.
- 2, The dens caninus.
- 3, 3, The dentes molares.

FIG. 3.

*The Outer Surface of the OSSA NASI.*

- A, A, The upper part, which is joined to the frontal bone.
- B, B, The lower ragged end, to which the cartilage of the nose is fixed.
- A, B, A, B, Holes penetrating the bone.

FIG. 4.

*The Inner Surface of the OSSA NASI.*

- A, A, The upper ragged end.
- B, B, The lower end, broader and thinner than the rest.
- C, 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.
- D, D, The cavity which forms part of the arch of the nose.

FIG. 5.

*The Outer Surface of the Left Os UNGUIS.*

- A, The lacrymal process, perforated by numerous holes.
- B, The orbital process.
- C, The ridge which separates the processes.

FIG.



TAB. 16.

Fig. 1.

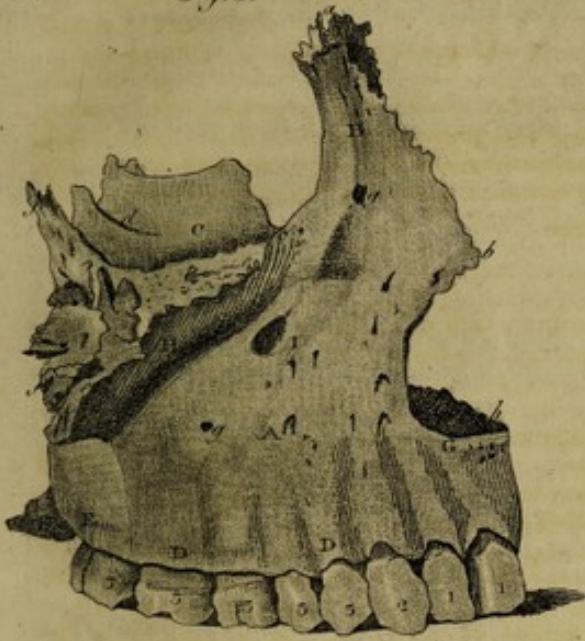


Fig. 2.



Fig. 3.



Fig. 4.

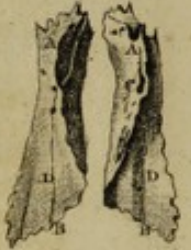


Fig. 6.



Fig. 7.

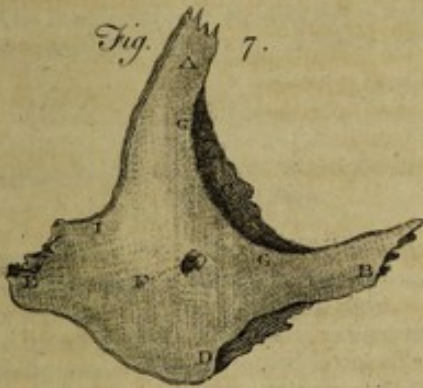


Fig. 8.

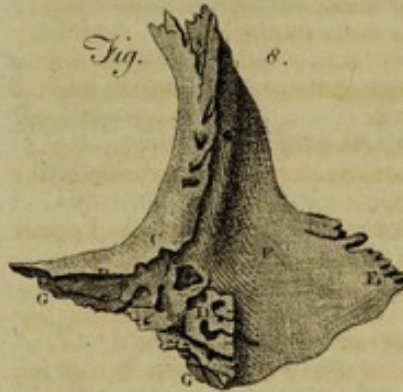


Fig. 5.



Fig. 9.



Fig. 11.



Fig. 10.



Fig. 12.



Fig. 13.





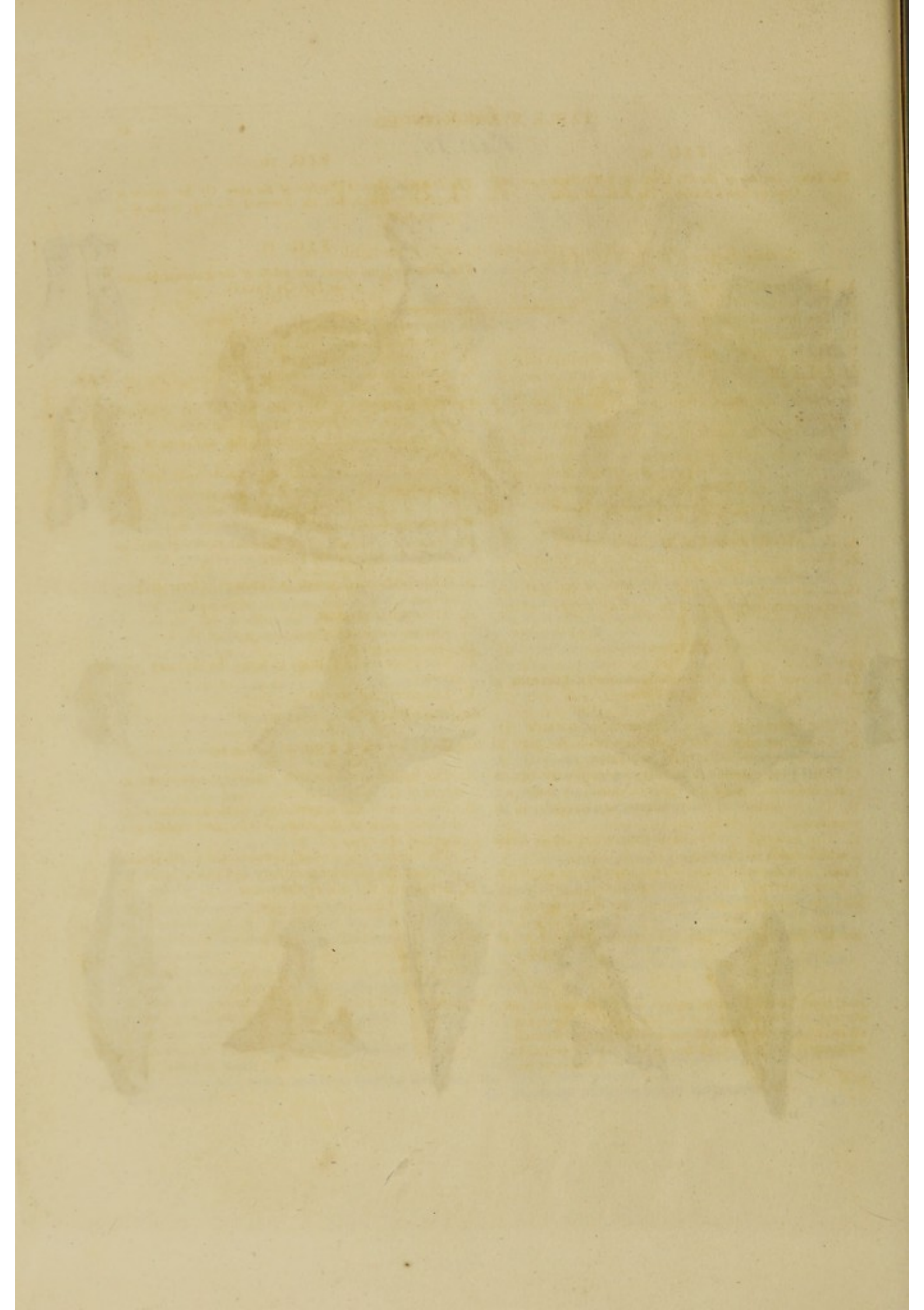




FIG. 6.

*The Inner Surface of the Os UNGUIS, with Eminences and Cavities which belong to the Ethmoid Cells.*

FIG. 7.

*The Outer Surface of the Right Os MALÆ.*

- A, The superior orbital process.
- B, The inferior orbital process.
- C, The internal orbital plate.
- D, The maxillary process.
- E, The zygomatic process.
- F, The external orbital hole.
- G, G, The under and outer edge of the orbit.
- H, Part of the inner rough surface of the maxillary process.
- I, The zygomatic notch of the os malæ.

FIG. 8.

*The Inner Surface of the same Os MALÆ.*

- A, B, C, D, E, As in Fig. 7.
- F, The internal fossa, and situation of the external orbital hole.
- G, G, The rough edge which joins the os malæ to the superior maxillary bone at the external orbital suture.

FIG. 9.

*The External Surface of the Os SPONGIOSUM INFERIUS of the Right Side.*

- A, The under edge of the bone turning outwards.
- 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 connexion is chiefly made with the superior maxillary bone.
- D, The posterior extremity, narrow and irregular in its surface.
- E, The external surface, with numerous small holes which mark its porosity.
- F, G, The superior edge, which joins the os unguis to form a share of the lacrymal groove.

FIG. 10.

*The Internal Convex Surface of the same Os SPONGIOSUM INFERIUS, which, like the External Surface, is also of a spongy texture.*

FIG. 11.

*The Posterior, and almost the whole of the External Surface of the Left Os PALATI.*

- A, The palate-plate.
- B, The pterygoid process.
- C, The nasal plate.
- D, The orbital process.
- E, A small sinus, corresponding with those of the ethmoid bone.
- F, The notch which, with the body of the sphenoid bone, forms the foramen sphenopalatinum.
- G, A small hole which penetrates the thickness of the bone.
- H, Part of the groove which helps to form the foramen gustativum.

FIG. 12.

*The Anterior, and almost all the External Surface of the same Os PALATI.*

- A, The notch which assists in forming the foramen gustativum.
- B, The orbital 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 Side of the VOMER.*

- A, The hollow surface which receives the processus azygos of the sphenoid bone.
- B, The anterior and upper edge, which is connected to the nasal plate of the ethmoid bone, and middle cartilage of the nose.
- C, The inferior edge, which is connected to the palate-plates of the superior maxillary and palate bones.
- D, A ridge on the side of the vomer.



## T A B L E XVII.

Gives different VIEWS of the CAVITY of the NOSE.

FIG. 1.

*The Left Portion of the BASE of the HEAD divided from the Septum Narium 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 frontal 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 ethmoides.
- F, The upper part of the ethmoid bone.
- G, The fore part of the ethmoid cells entire. From a little behind G to H, the anterior, middle, and posterior ethmoid cells laid open.
- I, Openings of the ethmoid cells into the nose.
- K, The last and uppermost passage of the nostrils.
- L, The left anterior clinoid process of the sphenoid bone.
- M, The posterior clinoid process.
- N, The Sella Turcica.
- O, The left sphenoid sinus.
- P, The part where the sinus opens into the 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 bone.
- T, The internal pterygoid plate.
- U, The uncus of the sphenoid bone.
- V, The fore part of the meatus auditorius.
- W, The superior condyloid foramen, for the passage of the ninth pair of nerves.
- X, The mastoid process of the temporal bone.
- Y, Part of the os occipitis.
- Z, The inner side of the occipital bone.
- a, The cut edge of the occipital bone.
- b, The under and outer part of this bone.
- c, The nasal process of the superior maxillary bone.
- d, The inner side of this bone, which forms the middle passage of the nostril.
- e, Part of the same bone, which forms the beginning of the lower passage of the nostril.
- f, A section of the alveolar process.
- g, A section of the osseous palate.
- h, The upper part of the osseous palate.

- i, The descending, 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 maxillare. Between q and r, the os spongiosum inferius.
- r, A part of the inferior spongy bone, opposite the opening of the lacrymal duct.
- s, t, The lowest passage of the nostril.

FIG. 2.

*The Left Surface of the SEPTUM NARIUM.*

- A, The os frontis, with its plates and diploe.
- B, The frontal sinus.
- C, The crista Galli.
- D, Part of the os planum of the left side, having no ethmoid cells.
- E, The foramina cribrosa of the ethmoid bone.
- F, The nasal plate of the ethmoid bone, which forms part of the septum narium.
- G, That part of the nasal plate of the ethmoid bone where it is joined to the vomer.
- H, The vomer.
- I, The cartilaginous part of the septum narium.
- K, Part of the upper jaw.
- L, L, The dentes incisivi of the upper jaw.
- M, The posterior edge of the vomer, covered with a membrane.
- N, Part of the cuneiform process of the occipital bone.
- O, The right sphenoid sinus.
- P, The posterior clinoid process of the sphenoid bone.
- Q, The anterior clinoid process of the sphenoid bone.
- R, The Sella Turcica.
- S, A portion of the septum, between the two sphenoid sinuses.
- T, A partition between the sphenoid sinus and the nostrils.

FIG. 3.

*The Anterior and Right Portion of the BASE of the HEAD, taken off by a Longitudinal Section separating it from the Septum, and by a Transverse Section separating it from the Posterior Part. The two cut Surfaces of this Preparation are represented.*

A, The



TAB. 17.

Fig. 1.

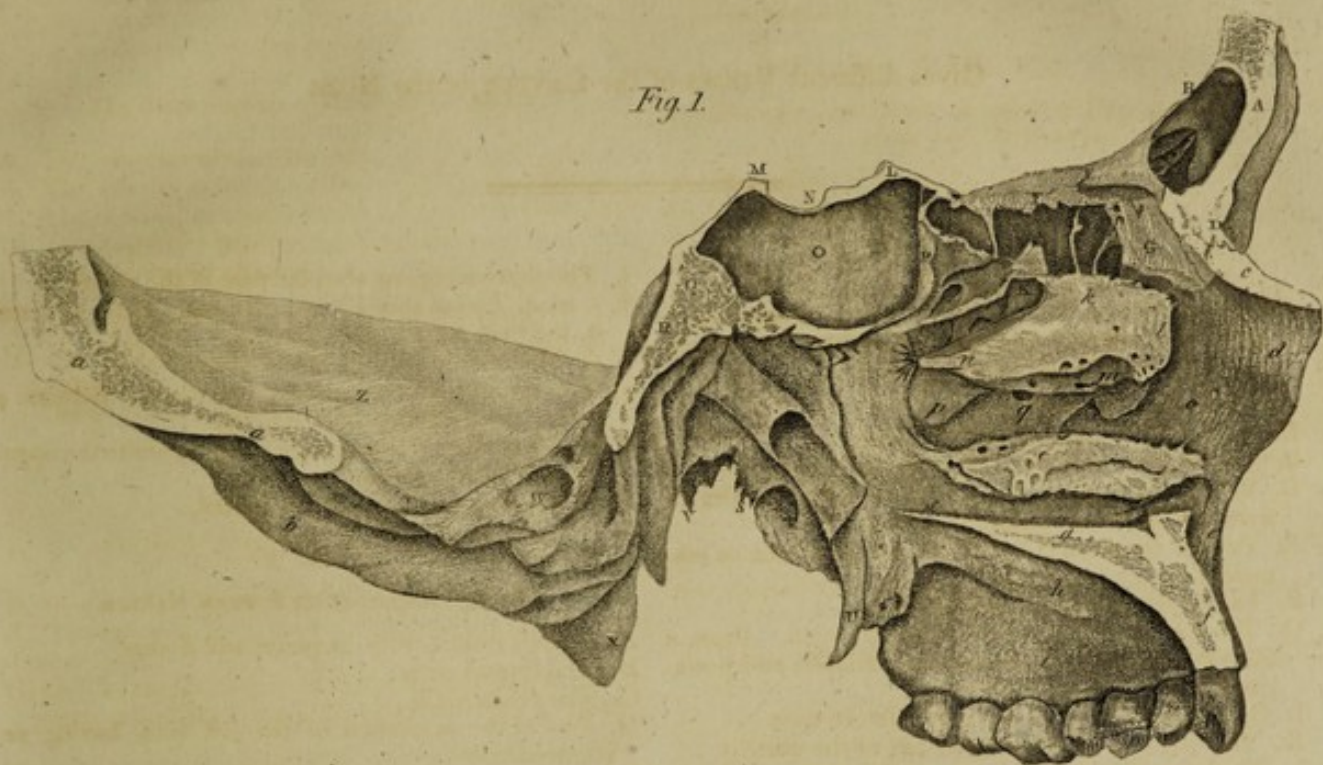


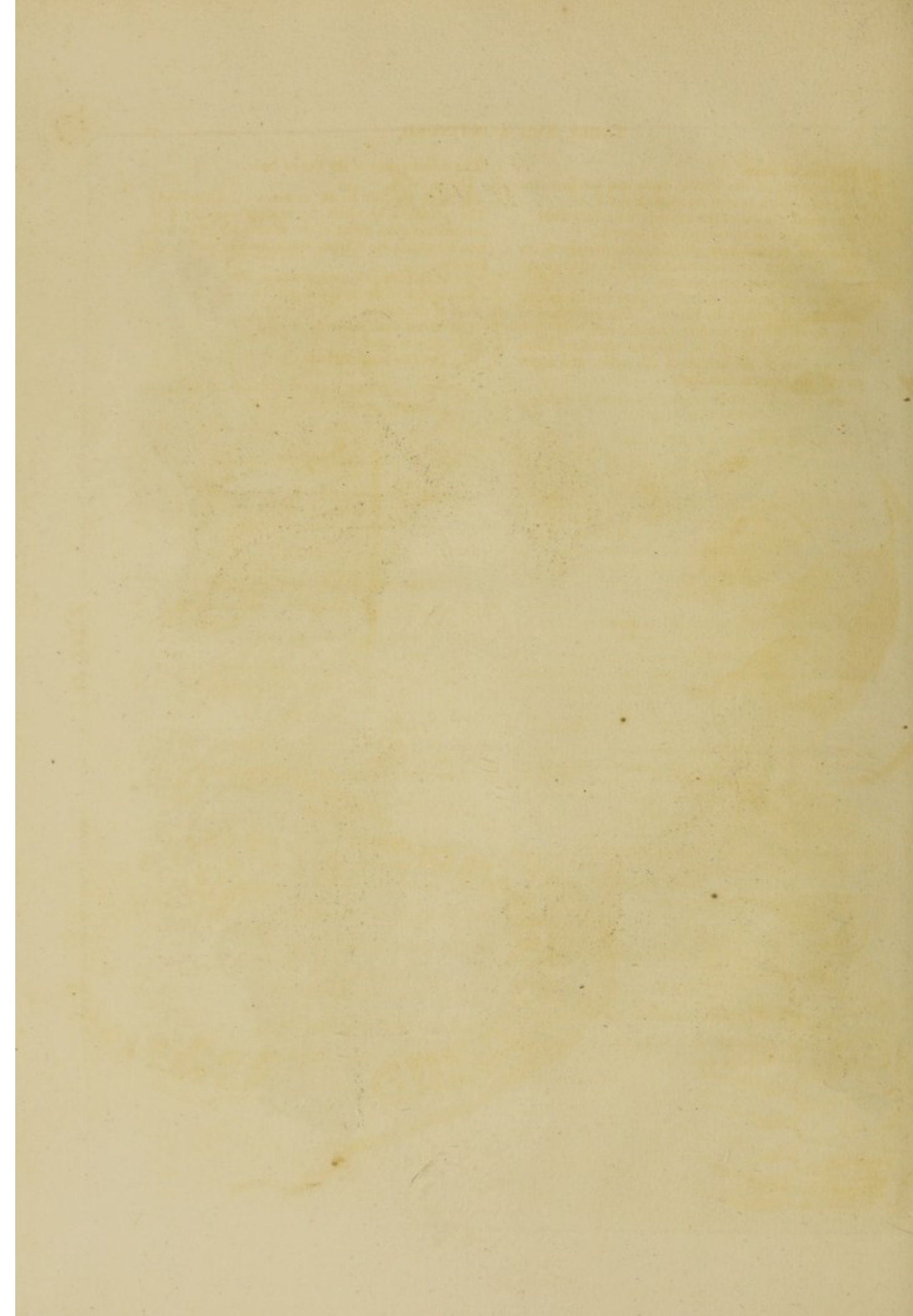
Fig. 2.



Fig. 3.









- A, The frontal sinus.  
 B, The opening of the frontal sinus into the first ethmoid cell, which is seen on each side of C.  
 D, The nasal process of the superior maxillary bone.  
 E, A section of the os spongiosum superius.  
 F, The wall, or boundary of the middle passage of the nose, by which it is separated from the superior appendix of the maxillary process.  
 G, Cells in the superior maxillary bone and its orbital part, first described by Haller. The uppermost of these opens into the anterior ethmoid cell.  
 H, The orbital plate of the superior maxillary bone, forming part of the bottom of the orbit, and upper part of the antrum maxillare.

- I, The orbital plate of the frontal bone.  
 K, The os malæ.  
 L, M, N, O, P, The sinus, or antrum maxillare.—O, The partition by which the antrum maxillare is separated from the cavity of the nostril.—P, The foramen by which the antrum communicates with its appendix.  
 Q, A section of the os spongiosum inferius.  
 R, The orifice of the lacrymal groove.  
 S, Part of the palate.  
 T, The lateral dens incisivus.  
 U, The dens caninus.  
 V, W, The two small molares.



## T A B L E XVIII.

Gives different VIEWS of the BONES of the EAR;—of the JAWS and TEETH;—and likewise a  
VIEW of the Os HYOIDES.

FIG. 1.

*Represents the SOCKETS of the Upper Jaw, and OSSEOUS Part of the Palate.*

- 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.  
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 Lower 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.  
F, F, The condyloid processes.

FIG. 3.

*A View of the FANGS of the Teeth in both Jaws, the number of Fangs corresponding to that of the Sockets seen in Fig. 1. and 2.—The External Plate of the Alveolar Process is removed.*

FIG. 4.

*Views of the different 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 straight fang.  
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 small molaris, with its straight single fang.  
G, A large molaris of the under jaw, with its fangs crooked at the points.  
H, A large molaris of the upper jaw, with three diverging fangs.  
I, A molaris of uncommon size, with an appearance of four fangs.

FIG. 5.

*A View of the DECIDUOUS, or MILK TEETH, in various degrees of Growth.*

- A, The body of an incisor, the fang not yet evolved.  
B, The body of a small molaris.  
C, The body of a canine tooth.  
D, The body of a large 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 advanced than E.  
G, A canine tooth nearly complete.  
H, I, Two incisores nearly complete.

FIG. 6.

*A View of the Disposition of the two Sets of TEETH, in both Jaws, at the time of shedding the Milk Teeth.*

- 1, 1, &c. The deciduous, first set, or milk-teeth.  
2, 2, &c. The permanent, adult, or second set of teeth, proceeding to the edge of the alveoli.

FIG. 7.

*A View of the Upper and Under Jaws of an Old Person, without the Teeth, and the Alveoli obliterated, whence the Jaws are narrower, the Chin much more prominent, and the Cavity of the Mouth diminished.*

FIG. 8.

*A magnified View of the SMALL BONES of the EAR, articulated with each other, and covered with their Periosteum, in which the Blood-vessels appear.*

- A, The incus.  
B, The malleus.  
C, The stapes.  
D, The os orbiculare in situ.

FIG. 9.

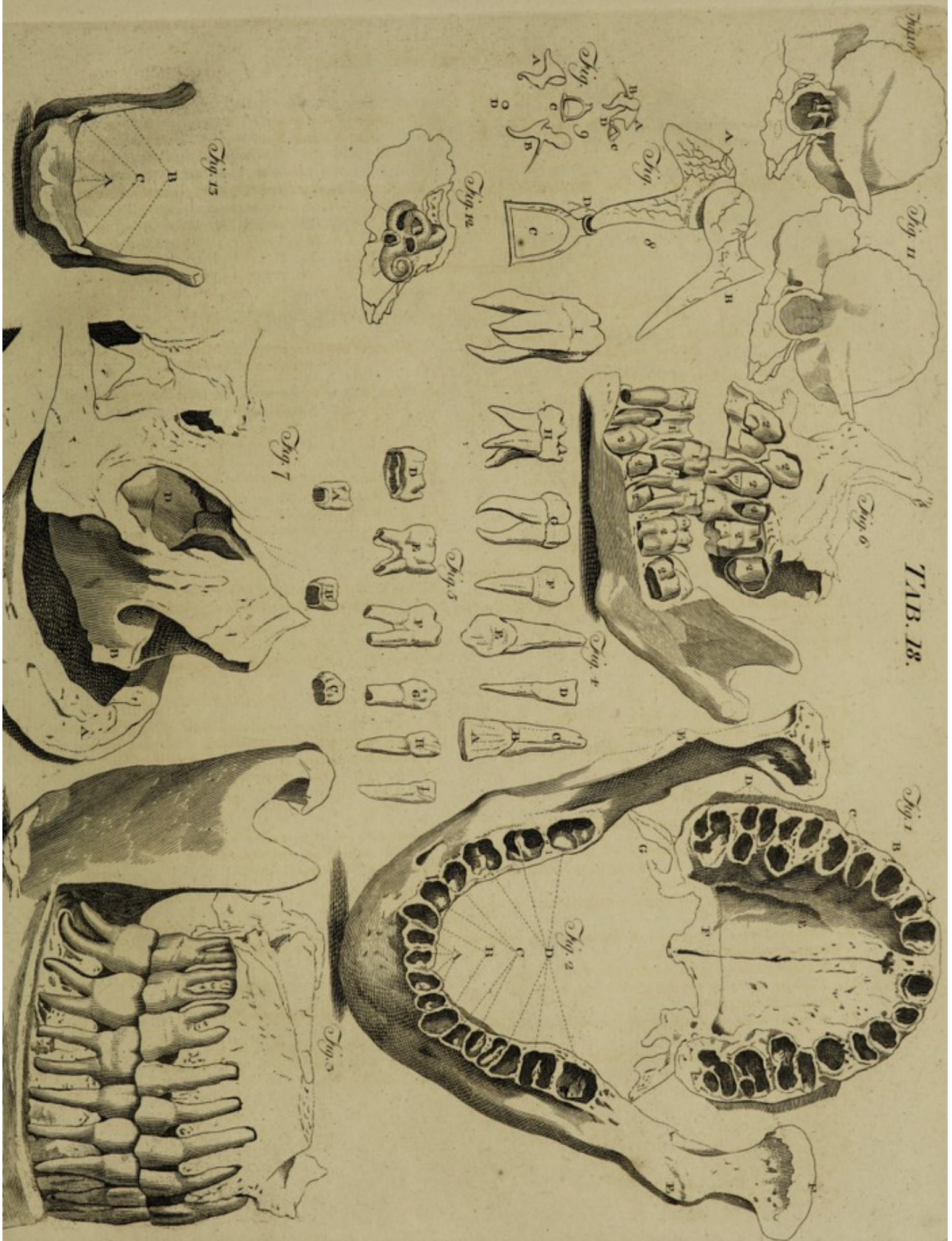
*Views of the SMALL BONES of the EAR.*

The upper set gives a view of the small bones of the ear of their natural size, and as they are connected with each other.

The



TAB. 18.





THE HISTORY OF THE

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The under set shews these bones separated from each other, and somewhat magnified.

- A, The incus, with its body, articular cavity, short posterior, and long inferior branch.
- B, the malleus, with its head, neck, cavity of articulation with the incus, great process or handle, middle process, and long slender one.
- C, The stapes, with its head, crura, and base.
- D, The os orbiculare.

FIG. 10.

*The Temporal Bone of a Young Subject, with the Small Bones of the Ear in situ,—the Membrana Tympani being removed.*

FIG. 11.

*The Temporal Bone, with the Membrana Tympani in situ, the Small Bones shining through it.*

VOL. I.

FIG. 12.

*An External View of the RIGHT LABYRINTH, and Outlines of the PARS PETROSA of a young Subject.*

In the labyrinth are seen,

- Anteriorly,—the cochlea.
- Posteriorly,—the semicircular canals.
- Superiorly,—the foramen ovale.
- Inferiorly,—the foramen rotundum.

FIG. 13.

*A View of the Upper and Fore Part of the Os HYOIDES.*

- A, The body of the os hyoides.
- B, Its cornua.
- C, Its appendices.

G



## OS HYOIDES, vel OS LINGUALE.

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  $\nu$ , from which the Bone has derived its name. Tab. XVIII. Fig. 13.

The *division* of the Bone into Body, two Cornua, and two Appendices.

The *Body* of the Bone, the middle broad part, *convex* before, and *concave* behind, and by much the largest of the five pieces.

The *Body* of the Bone of an oblong form, placed transversely, and divided anteriorly into an upper and under Surface by a Transverse Ridge.

Several *Impressions* seen on the fore part of the Body, occasioned by the numerous Muscles fixed to it.

The concavity behind oblique, to receive the Thyroid Cartilage, when the Os Hyoides and Larynx are pulled towards each other.

The *Cornua*, extending backwards and upwards from each end of the Body, with their two plain Surfaces slanting from above downwards and outwards, and giving attachment to Muscles and Ligaments of the Tongue and Larynx.

Each of the Cornua becoming gradually smaller in its course backwards, and ending in a round Tubercle, which is connected to the upper Cornu of the Thyroid Cartilage.

Between the Body and Cornua, frequently a Furrow, pointing out the former separation in young Subjects.

The *Appendices*, having the size and form of a grain of decorticated Barley, placed at the upper part of the Articulation between the Body and Cornua, for the attachment of Muscles.

From each Appendix, a *Ligament* is sent up to the Styloid Process of the Temporal Bone, to assist in connecting the Os Hyoides to the Cranium. Tab. XXXVI. Fig. 1, 2.

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

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 Os Hyoides serves as a Lever for numerous Muscles acting upon the Tongue, Larynx, and Fauces.

It gives origin to the Hyo-glossus, and to part of the Constrictor Pharyngis Medius; insertion to the Sternohyoides, Omohyoides, Stylohyoides, Geniohyoides, Thyrohyoides, to part of the Geniohyoglossus, Digastricus, and Mylohyoides.

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

In a young Adult, the five pieces of which this Bone is composed may be separated by putrefaction, in consequence of which SOEEMMERRING describes them as so many distinct Bones.

## TRUNK.

We observe here,

The Trunk, composed of the Spine, Pelvis, and Thorax.

## SPINE.

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

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

The several *Curves* 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. XVI. XXII.

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

The Upper Pyramid, composed of *true Vertebrae*, or Bones which turn upon each other. Tab. II. G.—N.

The Under Pyramid, formed of *false Vertebrae*, or Bones which, at an early period of life, resemble the true Vertebrae, but which afterwards grow together, so as not to contribute to the motions of the Trunk of the Body. Tab. II. h.—P.



## TRUE VERTEBRÆ.

## TRUE VERTEBRÆ IN GENERAL.

The true *Vertebræ*, commonly twenty-four in number, though in some rare cases only twenty-three; or, on the contrary, twenty-five.

Each of the true *Vertebræ* composed of a *Body* and *Processes*.

The *Body* of a *spongy* nature, with *upper* and *under Surfaces* placed horizontally. Tab. XXXVI. Fig. 11. *a*.

The anterior *convexity* of the *Body*, and posterior *concavity*. Tab. XXIII. Fig. 9, 10.

Numerous *small Holes* on the anterior and lateral parts of the *Body*, for the passage of *Blood-vessels* into the Substance of the *Bone*, or for the attachment of *Ligamentous Fibres*. Tab. XXI. Fig. 8. *a*.

A *Ring of Bone*, at the *upper* and *under edges* of the *Body*, of a firmer texture than the rest of its Substance, and thereby adding to the general strength of the *Bone*. Tab. XXIII. Fig. 9. *b, b*. Tab. XXXVI. Fig. 12. *r*.

The *Ring of Bone* forming a *superficial Cavity*, which receives the *Intervertebral Substance*. Tab. XXIII. Fig. 9. *a*.

The *Bodies* of the upper *Vertebræ* in general smaller and more solid; as they descend, they become larger and more spongy.

The *Intervertebral Substances*, of a *Cartilago-Ligamentous nature*, placed between the *Bodies* of the *Vertebræ*, for fixing them together, and allowing the *Spine* to be moved in all directions. Tab. I. E. Tab. XXXVI. Fig. 15. *u*.

The *Intervertebral Substances*, composed of *Concentric Lamellæ*, with their edges firmly fixed to the *Bodies* of the *Vertebræ*.

The *Lamellæ* of these *Substances*, formed of *Oblique Fibres*, which decussate each other, and are very compressible.

The *Centre* of these *Substances* changes from *Lamellæ*, and puts on the appearance of a *Mucus* or *Pulp*, which has little compressibility, and serves as a *pivot*, upon which the other parts of the Substance can move with such gradual yielding, as to lessen shocks in the *Spine*, in violent motions of the *Body*.

The *Intervertebral Substances*, like the *Vertebræ* themselves, larger and thicker as they descend, to give more security to the parts they support. Tab. I.

An *Arch* sent out from the back part of the *Body* of each *Vertebra*, which, together with the *Body*, forms a *large Hole*; and the different *Holes* being placed over each other, a *Canal* is formed for lodging the *Spinal Marrow*. Tab. XXIII. Fig. 3. *h*.

A *Notch* at the *upper* and *under edges* of each side

of the *Arch*, forming, in the contiguous *Vertebræ*, the passages of the *Spinal Nerves*. Tab. XXIII. Fig. 10. *d, d*. Fig. 8. *c, c*.

The *Processes* of each *Vertebra*, seven in number, viz. two *Superior Oblique*, two *inferior Oblique*, two *Transverse*, and one *Spinous*.

The two *Superior Oblique* or *Articulating Processes*, covered with *Cartilage*, placed upon the upper part of the sides of the *Arch*. Tab. XXIII. Fig. 3. *b, b*.

The two *Inferior Oblique* or *Articulating Processes*, also covered with *Cartilage* and placed upon the under part of the sides of the *Arch*. Tab. XXIII. Fig. 4. *h, h*.

The two *Superior Oblique Processes* of one *Vertebra*, articulated with the two *Inferior Oblique* of the *Vertebra* immediately above it. Tab. XXIII. Fig. 5. *e, m*.

Round the edges of the *Oblique Processes*, rough *Lines* for the attachment of their articulating *Ligaments*. Tab. XXIII. Fig. 10. *e, e*.

The two *Transverse Processes* projecting from the sides of the *Arch*, and between the *Oblique Processes*.

The *Spinous Process*, sent out from the back part of the *Arch*, which, being sharp and pointed, gives name to the whole chain of *Bones*. Tab. XXIII. Fig. 7. *d, i*.

The *Edges* of this *Process*, as well as of the *Arch*, rough, where *Ligaments* come off which fix the corresponding parts of the contiguous *Vertebræ* together.

The *Substance* of the *Processes* stronger, with a thicker external *Plate* than the *Bodies* of the *Vertebræ*.

The *Vertebræ* are joined to each other by a double *Articulation*, their *Bodies* being connected by the *Intervertebral Substances* already described; and their *Oblique Processes* so joined by their *Ligaments*, as to allow a small degree of motion to all sides.

In the *Fœtus*, each *Vertebra* consists of three pieces connected by *Cartilages*; viz. the *Body* not fully ossified, and a curved *Bone* on each side, forming a small share of the *Bony Arch*, on which are observed, the *Oblique Processes* complete, the beginning *Transverse Processes*, but no *Spinal Process*.

## PECULIARITIES OF THE VERTEBRÆ.

The *Vertebræ*, on account of certain peculiarities, divided into *Cervical*, *Dorsal*, and *Lumbar*.

The *Cervical Vertebra*, or *Vertebræ of the Neck*, commonly seven, in some very rare cases only six; or, on the contrary, eight in number; having their *Bodies* smaller than those of the other *Vertebræ*. Tab. XIX. *A, A*, &c.

The *Bodies* of the *Cervical Vertebra* flattened anteriorly,



riorly, for the passage of the Esophagus, and for the attachment of the Longi Colli and Recti Majores; and flattened also posteriorly, corresponding with the breadth of the Spinal Marrow. The Bodies of these Vertebrae mutually embracing each other, the under and fore part of each overlapping, in a small degree, the upper and fore part of the Vertebra immediately below, while the lateral parts of the inferior Vertebra overlap the sides of that directly above it.

The *Articulating Processes*, more oblique than the rest. Tab. XXIII. Fig. 5. e, m.

The *Transverse Processes*, perforated for the passage of the Vertebral Blood-vessels, and hollowed above for the transmission of the Spinal nerves. Tab. XXIII. Fig. 2. e, e.

The *Spinal Processes*, placed horizontally, shorter than the rest, and forked for the attachment of the Musculi Inter-spinales. Tab. XXIII. Fig. 6. r, r.

The Cervical Vertebrae admit of free motion, in consequence of the thickness of their Cartilages, and the nature of their Processes, but give less protection behind to the Spinal Marrow than is given in other parts of the Spine, in consequence of which, punctures in the back part of the Neck are more apt to become fatal.

The first Vertebra, called *Atlas*, from its supporting the Globe of the Head, having only a small Arch instead of a Body. Tab. XXIII. Fig. 1. a.

The upper and under Surfaces of the Arch, marked by the Ligaments which fix it to the head and second Vertebra. Tab. XXIII. Fig. 1. 2.

The back part of the Arch hollow, and covered by a smooth Cartilage, where it turns upon the Processus Dentatus of the second Vertebra. Tab. XXIII. Fig. 2. a.

The inner parts of the sides of the Vertebra, between the superior and inferior oblique Processes, marked by the Lateral Ligaments which go to the Processus Dentatus, and by the Transverse Ligament which passes behind that Process. Tab. XXIII. Fig. 2. c, c. Tab. XXVI. Fig. 1. d, d.

The *Foramen Vertebrale*, larger than in any of the other Vertebrae, for receiving in its fore part the Tooth-like Process of the second Vertebra, and in its back part the beginning of the Spinal Marrow.

An Arch upon the back part of the Atlas, instead of a Spinous Process, marked by Muscles and Ligaments. Tab. XXIII. Fig. 2. g.

The *Superior Oblique Processes*, oval, slanting, and hollow, for receiving the Condyles of the Occipital Bone. Tab. XXVI. Fig. 1. D, D.

A *Curved Fossa* under the outer and back part of each Oblique Process, for the passage of the Vertebral Arteries into the Head, and Tenth Pair of Nerves out of it. Tab. XXVI. Fig. 1. f.

The *Transverse Processes*, longer than in any other Cervical Vertebra, for the origin of several Muscles. Tab. XXIII. Fig. 5. d, d.

The connexion of the Atlas to the Occipital Bone,

where the Head has its flexion and extension, but little other motion.

The second Vertebra, called *Dentata*, from the Processus Dentatus, or tooth-like Process on the upper part of its Body.

The Body of this Vertebra larger than the rest, and of a Conical figure. Tab. XXIII. Fig. 5. h—l.

The fore part of the Processus Dentatus, convex, and covered with Cartilage where it turns upon the Atlas. It has the same appearance behind, where it moves upon the Transverse Ligament. Tab. XXIII. Fig. 5. 6.

The Sides of this Process, 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 Magnum of the Occipital Bone. Tab. XXIII. Fig. 4. a.

The *Superior Oblique Processes* placed horizontally, and a little elevated in the middle, to be received into the hollow Inferior Oblique Processes of the Atlas, where the Head has its principal rotatory motion. Tab. XXIII. Fig. 3. b, b. Fig. 5. m, m.

The *Spinous Process*, thick and strong, to give origin to the Muscles which assist in the extension and rotation of the Head, and turned down to allow these motions to be readily performed. Tab. XXIII. Fig. 3. g, g. Tab. XXXVI. Fig. 5. d, e.

In the Fœtus, the Vertebra Dentata consists of four pieces, three of which are common to all the Vertebrae; the fourth is the Processus Dentatus, which is joined by Cartilage to the Body of the Bone.

The third, fourth, fifth, and sixth Vertebrae differing from each other chiefly in becoming larger in their descent.

The seventh Cervical Vertebra, approaching in form to the Dorsal Vertebrae.—The Spinal and Transverse Processes have no Bifurcation. Tab. XXXVI. Fig. 17.

The *Dorsal Vertebrae*, commonly twelve in number, sometimes eleven only, have been observed, at other times thirteen have occurred.

The Bodies of the Dorsal Vertebrae, horizontal above and below, larger, sharper before, flatter at the sides, and more hollow behind, than those of the Cervical Vertebrae. Tab. XXIII. Fig. 7. F. Tab. XXXVI. Fig. 10.

A *Pit*, lined with Cartilage at each side of their upper and under Edges, near the Transverse Processes, for the Articulation of the Heads of the Ribs. Tab. XXXVI. Fig. 15. t, t, W.

The *Intervertebral Substances*, thin to admit only of little motion; and thinnest anteriorly, to enlarge the Curve of the Spine, and increase the Cavity of the Thorax. Tab. XIX.

The Spinal Canal is here more Circular, but corresponding with the size of the Spinal Marrow,—is smaller than in any of the other Vertebrae.

The *Oblique Processes*, having nearly a perpendicular direction, the upper ones slanting forwards, and the under ones backwards. Tab. XXXVI. Fig. 9. b. Fig. 10. k.

The



The *Transverse Processes*, long, turned obliquely backwards, and enlarged at their outer extremity, where they are faced with Cartilage, to be articulated with the Tubercles of the Ribs. Tab. XXIII. Fig. 7. Fig. 8. f. f.

The *Spinous Processes*, long, thick at the roots, but slender near the extremities, and pointing obliquely downwards over each other, by which the Spinal Marrow in this part is well protected. Tab. XXIII. Fig. 7. Tab. XXXVI. Fig. 17.

The upper edge of each of the Spinous Processes of these Vertebrae, formed into a *Ridge*, which, in certain motions of the Spine, is received by a Groove in the under part of the Spinous Process of the Vertebra immediately above it. Tab. XXIII. Fig. 7. 8.

The last peculiarity of Structure, with the others already mentioned, prevent the Dorsal Vertebrae from having much motion.

The Spinous Processes becoming gradually larger and more oblique, from the fourth to the eighth or ninth, from which downwards, they are shorter and placed more horizontally, the undermost Vertebra of the Back resembling the uppermost of the Loins.

The Bodies of the four uppermost Dorsal Vertebrae, contrary to the general rule, becoming smaller as they descend, which allows the Trachea to divide at a sharp angle.

The *first Dorsal Vertebra*, having the whole of the Pit for the Head of the uppermost Rib formed in it.

The *eleventh Dorsal Vertebra*, wanting the Articular Surface on its Transverse Process, and frequently has the whole cavity for the Head of the eleventh Rib on its Body.

The *twelfth Dorsal Vertebra*, receiving the whole Head of the last Rib, and having no Cartilaginous Surface on its Transverse Process.

The *Lumbar Vertebrae*, or those of the Loins, commonly five, seldom six, and still more rarely four in number.

The *Bodies* of the Lumbar Vertebrae larger and broader than those of the other two classes. Tab. XXIII. Fig. 9. 10.

The *Intervertebral Substances*, the thickest of any, and most so at their fore part, by which the Spine is rendered convex there, for the support of the Abdominal Bowels. Tab. XX.

The *Oblique Processes*, remarkably deep, and placed upright, the Superior Oblique Processes of one Vertebra facing inwards, and receiving the Inferior Oblique Processes of the Vertebra above it, which are turned in the opposite direction. Tab. XXXVI. Fig. 12. b. Fig. 13. k.

The *Transverse Processes*, long, slender, and spread out from the Bone, to give origin to large Muscles, and to admit free motion. Tab. XXIII. Fig. 9. 10.

The *Spinous Processes*, short, large, and strong, and placed horizontally, with narrow edges above and below, and broad flat sides, giving origin to Muscles of great strength. Tab. XXIII. Fig. 9. 10. Tab. XXXVI. Fig. 12. 13.

The *Spinal Canal*, larger than in the back, for the passage of the Cords of the Spinal Marrow, which form the Cauda Equina. Tab. XXIII. Fig. 9.

In consequence of the thickness of the Intervertebral Substances, and the situation of the Processes of the Lumbar Vertebrae, the motion of this part of the Spine is extensive, though not so much so as in the Neck.

The True Vertebrae give an erect posture to the Trunk of the Body; allow a sufficient and secure motion to the Head, Neck, and Trunk; conduct the Spinal Marrow; support and protect the Bowels, and other soft parts; and on each side give Origin to the Longus Colli, Recti Capitis Anterior Major et Minor, Rectus Capitis Lateralis, Lesser Muscle of the Diaphragm, Psoe Magnus et Parvus, Rhomboideus, Splenius, Serrati Postici Superior et Inferior, Spinalis Dorsi, Complexus, Trachelo-mastoideus, Levator Scapulae, Semi-spinalis Dorsi, Semi-spinalis Colli, Transversalis Colli, Levatores Costarum, Recti Capitis Postici Major et Minor, Obliqui Capitis Superior et Inferior, Interspinales Colli, Dorsi, et Lumborum, Intertransversales Colli, Dorsi, et Lumborum,—to part of the Obliquus Internus, Transversalis Abdominis, Iliacus Internus, Trapezius, Latissimus Dorsi, Sacro-lumbalis, Longissimus Dorsi, and Multifidus Spinæ;—Insertion to the Longus Colli, Spinalis Dorsi, Semi-spinalis Dorsi, Multifidus Spinæ, Semi-spinalis Colli, Transversalis Colli, Cervicalis Descendens, Obliquus Capitis Inferior, Scaleni Anticus, Medius, et Posticus, Interspinales Colli, Dorsi, et Lumborum, Intertransversales Colli, Dorsi, et Lumborum,—to part of the Splenius, Longissimus Dorsi, and Quadratus Lumborum.



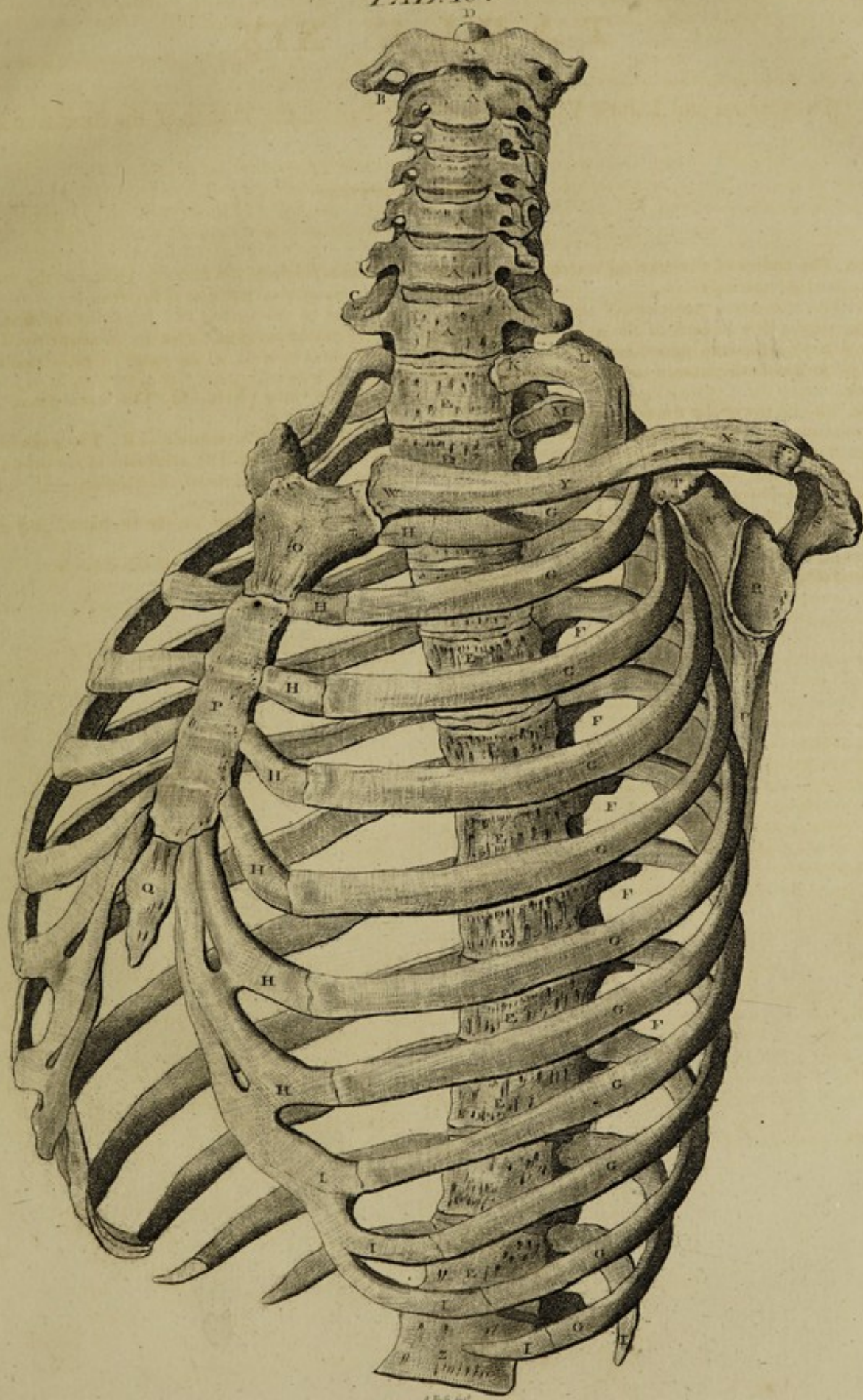
## T A B L E   X I X .

An Anterior and Lateral View of the Upper Part of the TRUNK of the SKELETON.

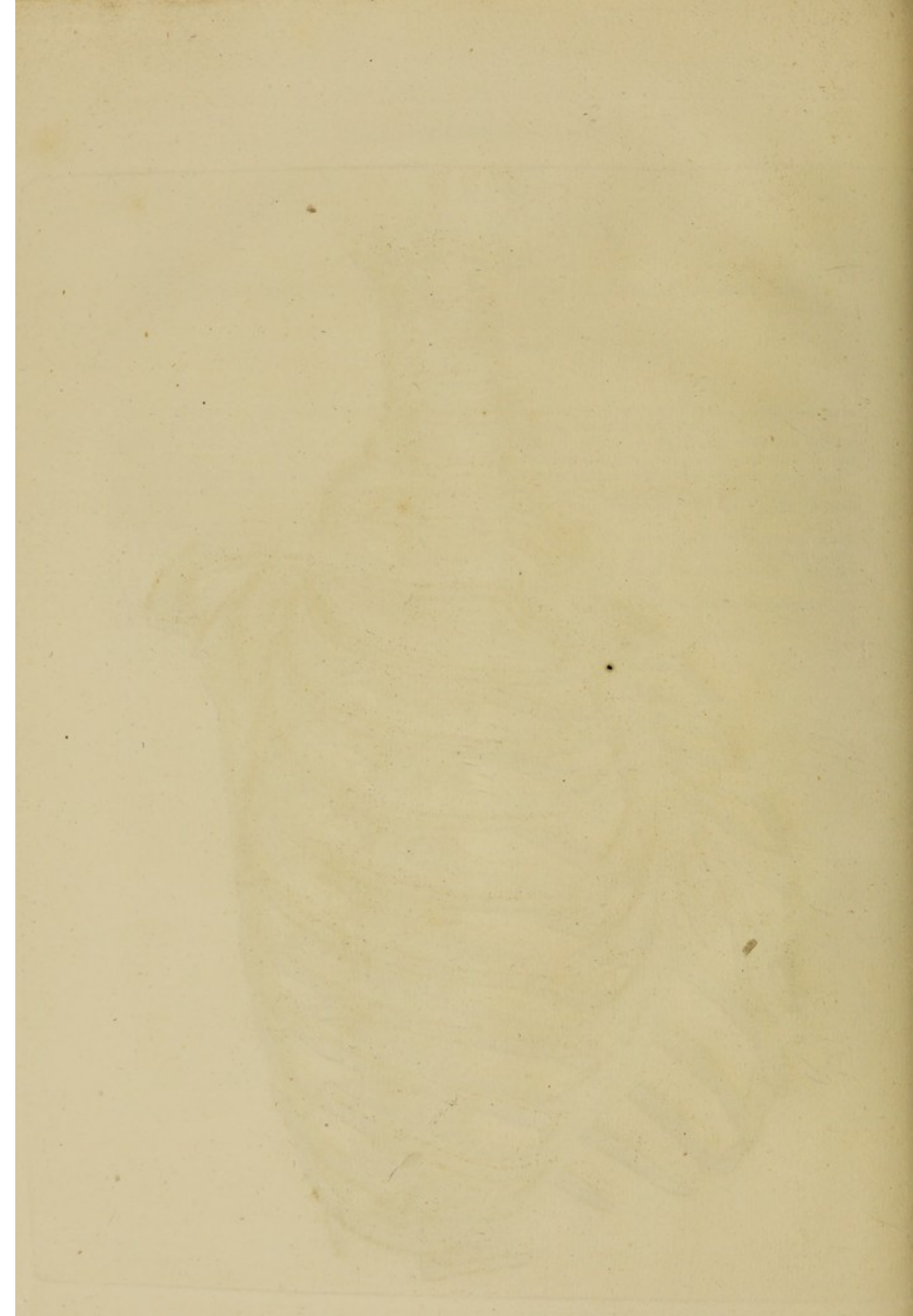
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- |  |  |
|--|--|
| <p>A, &amp;c. The bodies of the cervical vertebræ, with their intermediate cartilages.</p> <p>B, C, The transverse processes of the cervical vertebræ, with a hole in each of the processes, forming a canal for the vertebral blood-vessels.</p> <p>D, The processus dentatus of the second vertebra of the neck.</p> <p>E, &amp;c. The bodies of the dorsal vertebræ, with their intermediate cartilages, forming a curve backwards.</p> <p>F, &amp;c. The transverse processes of the dorsal vertebræ.</p> <p>G, &amp;c. The outer convex surface of the ribs.</p> <p>H, &amp;c. The cartilages of the seven upper or true ribs, by which they are joined to the sternum.</p> <p>I, &amp;c. The cartilages of the false ribs, the three uppermost of which are joined together.</p> <p>K, Head of the first rib, joined to the first dorsal vertebra.</p> | <p>L, The tubercle of the first rib, joined to the transverse process of the first dorsal vertebra.</p> <p>M, Head of the second rib, joined to the first and second dorsal vertebræ, and its tubercle fixed to the transverse process of the latter of these two bones.</p> <p>O, The upper triangular piece of the sternum.—P, The middle or long piece.—Q, The lower piece, or ensiform cartilage.</p> <p>R, S, T, U, V, The scapula.—R, The glenoid cavity of that bone.—S, The acromion of the scapula.—T, The coracoid process of the scapula.—U, The inferior costa of the scapula.</p> <p>W, The clavicle joined to the sternum, and at X, to the scapula.</p> <p>Y, The anterior convexity of the clavicle.</p> |
|--|--|



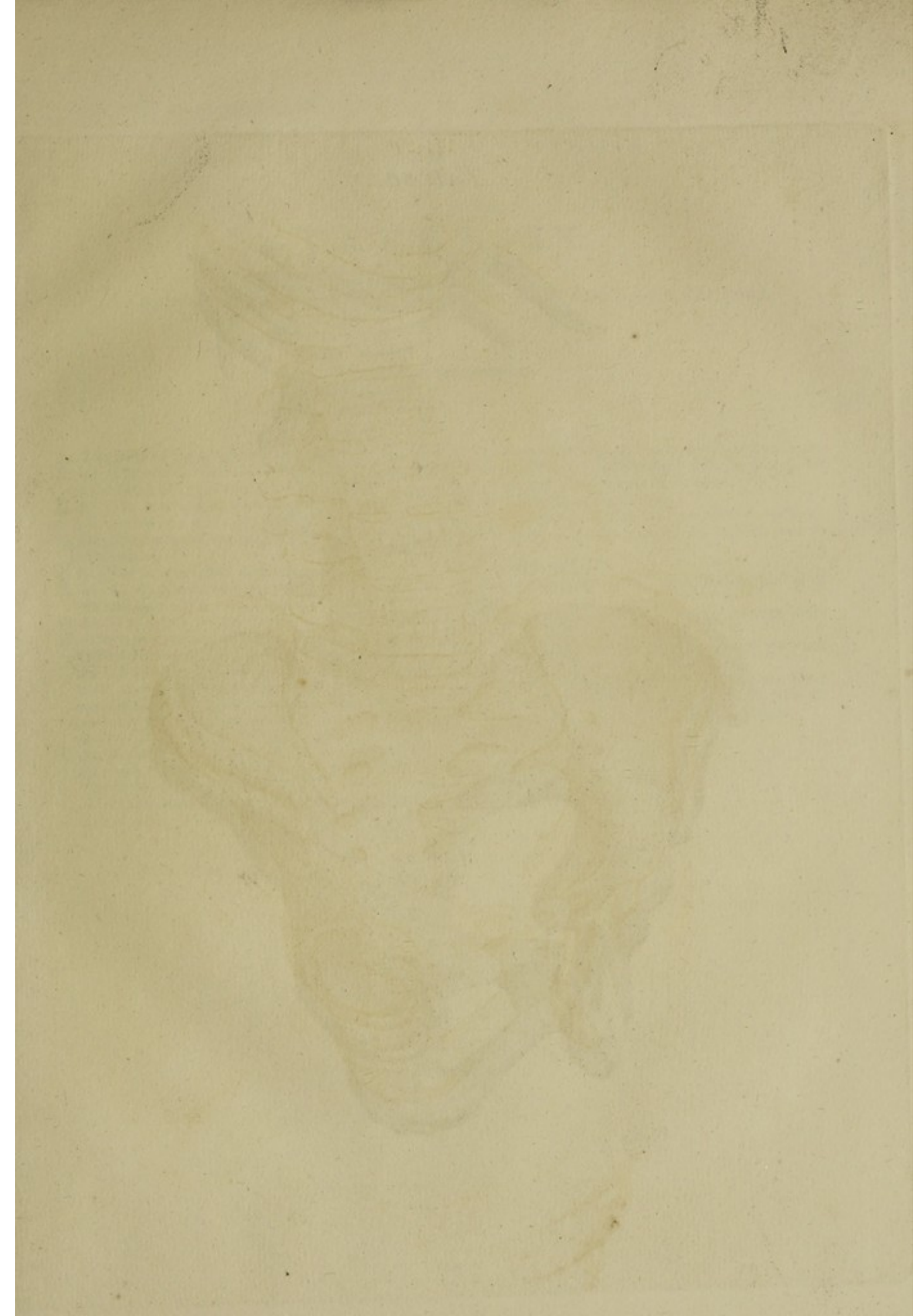
TAB. 19.





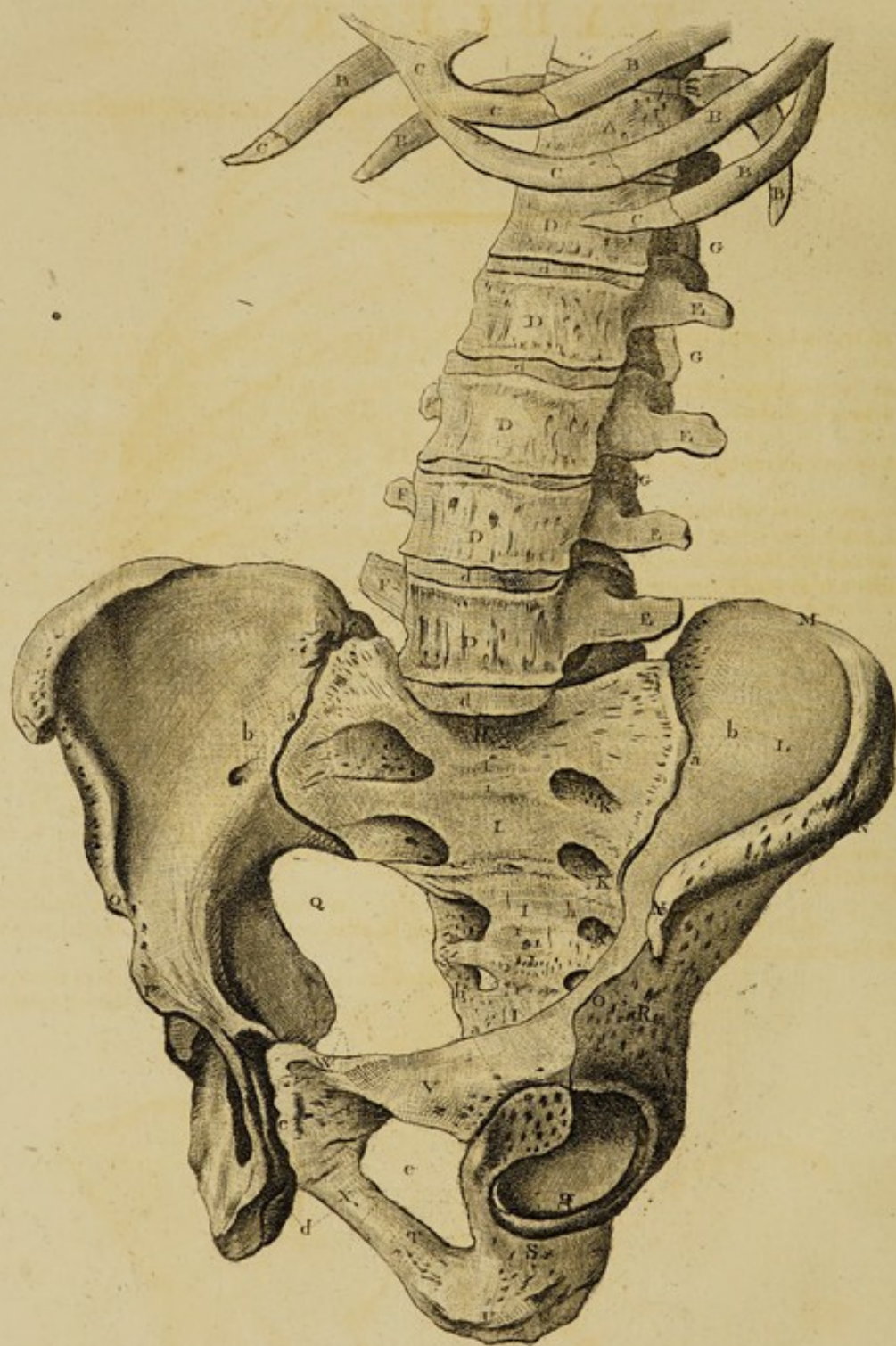








TAB. 20.





## T A B L E XX.

An Anterior and Lateral VIEW of the Under Part of the TRUNK of the SKELETON.

- 
- A, The body of the last dorsal vertebra.  
 B, &c. The anterior extremities of the four lowest ribs of the left, and two lowest of the right side.  
 C, &c. The cartilages of the four lowest ribs of the left, and two lowest of the right side.  
 D, &c. The bodies of the lumbar vertebræ, 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, &c. The points of three spinous processes.  
 H, The upper piece of the os sacrum, joined to the last lumbar vertebra.  
 I, &c. The five original pieces which compose the os sacrum, grown together, but leaving traces of their former divisions, near the parts where the letters are placed, and forming an arch backwards, whereby the cavity of the pelvis is considerably enlarged.  
 K, &c. Slanting holes opposite the original interstices of the pieces of which the os sacrum is composed.  
*a*, The brim of the pelvis.  
 L, The inner hollow side, or venter of the os ilium.  
*b*, The connexion between the os sacrum and os ilium. —A little below *b*, on the right side, the passage for the principal blood-vessels of the bone.  
 M, N, The spine of the os ilium.  
 O, The anterior-inferior spinous process of the os ilium.  
 P, The point of union between the os ilium and os pubis.  
 Q, The ischiatic notch.  
 R, Part of the outer surface, or dorsum of the os ischium.  
 T, The crus of the os ischium, joining the crus of the os pubis.  
 U, The tuberosity, forming the lowest part of the trunk of the skeleton.  
 V, The upper part of the os pubis, where the flexor muscles and great blood-vessels of the thigh, with the anterior crural nerve, pass out of the abdomen.  
 W, The crest of the os pubis.  
 X, The crus of that bone.  
*c*, The symphysis of the pubis.  
*d*, The arch of the ossa pubis.  
*e*, The foramen thyroideum.

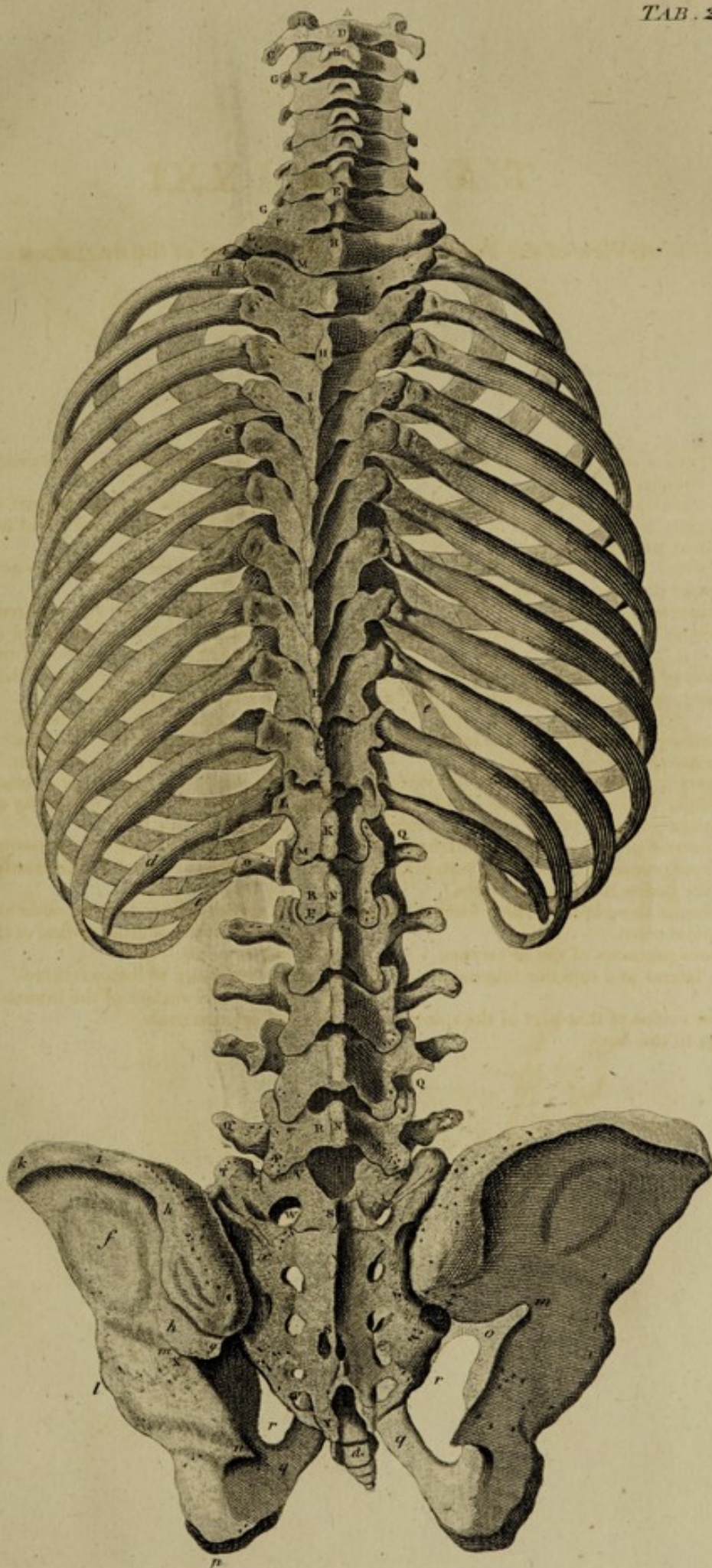


## T A B L E XXI.

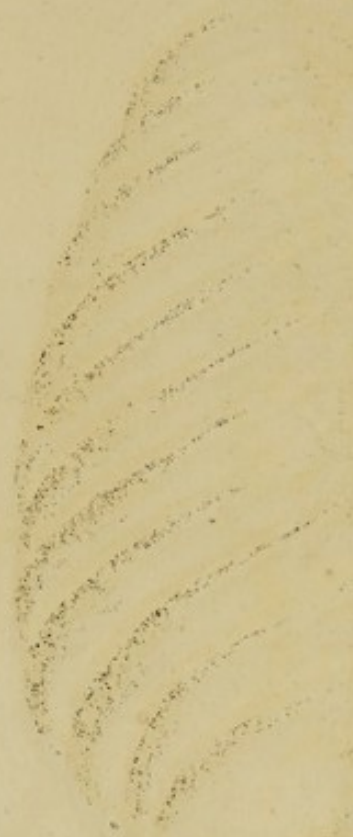
A View of the Posterior Part of the TRUNK of the SKELETON.

- 
- A, The upper part of the first cervical vertebra.  
 B, One of the oblique, and,  
 C, One of the transverse processes of this bone.  
 D, Muscular prints on the back part of this bone.  
 E, E, The spinous processes of the six other cervical vertebrae, of which the four first are forked.  
 F, F, The oblique processes of these vertebrae.  
 G, G, The transverse processes.  
 H, H, The spinous processes of the three first vertebrae of the back.  
 I, I, The spinous processes of the six middle vertebrae, which are long, and sloping downwards over each other.  
 K, K, The spinous processes of the three last dorsal vertebrae, which are short and straight.  
 L, L, The transverse processes of all the dorsal vertebrae.  
 M, M, The oblique processes of all these vertebrae.  
 N, N, The spinous processes of the lumbar vertebrae.  
 O, O, The transverse processes of these vertebrae.  
 P, P, The oblique processes of the same vertebrae.  
 Q, Q, Part of the bodies of the same bones.  
 R, R, The arches of these bones, which form the back part of the spinal canal.  
 S, S, The spinous processes of the os sacrum.  
 T, One of the lateral and superior tuberosities of this bone.  
 U, The superior orifice of that part of the spinal canal which belongs to this bone.  
 V, One of the superior oblique processes of the os sacrum.  
 W, W, The holes in the back part of the os sacrum, which transmit small vessels and nerves to the parts adjacent.  
 X, X, The eminences and cavities at the lateral parts of this bone.  
 Y, One of the cornua of the os sacrum.  
 Z, The inferior orifice of the spinal canal.  
 a, The first or uppermost piece of the os coccygis.  
 b, b, The posterior extremities of the ribs.  
 c, c, The necks of the ribs.  
 d, d, The angles of the same bones.  
 e, e, The cartilages of the false ribs.  
 f, The outer surface of the os ilium.  
 g, g, The posterior spinous processes of this bone.  
 h, h, The great posterior tuberosity of the same bone.  
 i, The spine of this bone.  
 k, A portion of the anterior tuberosity of this bone.  
 l, The posterior edge of the acetabulum.  
 m, The ischiatic notch.  
 n, The spinous process of the os ischium.  
 o, A portion of the internal surface of the superior branch of the os pubis.  
 p, The tuberosity of the os ischium.  
 q, The internal surface of the branch of this bone.  
 r, The foramen ovale.

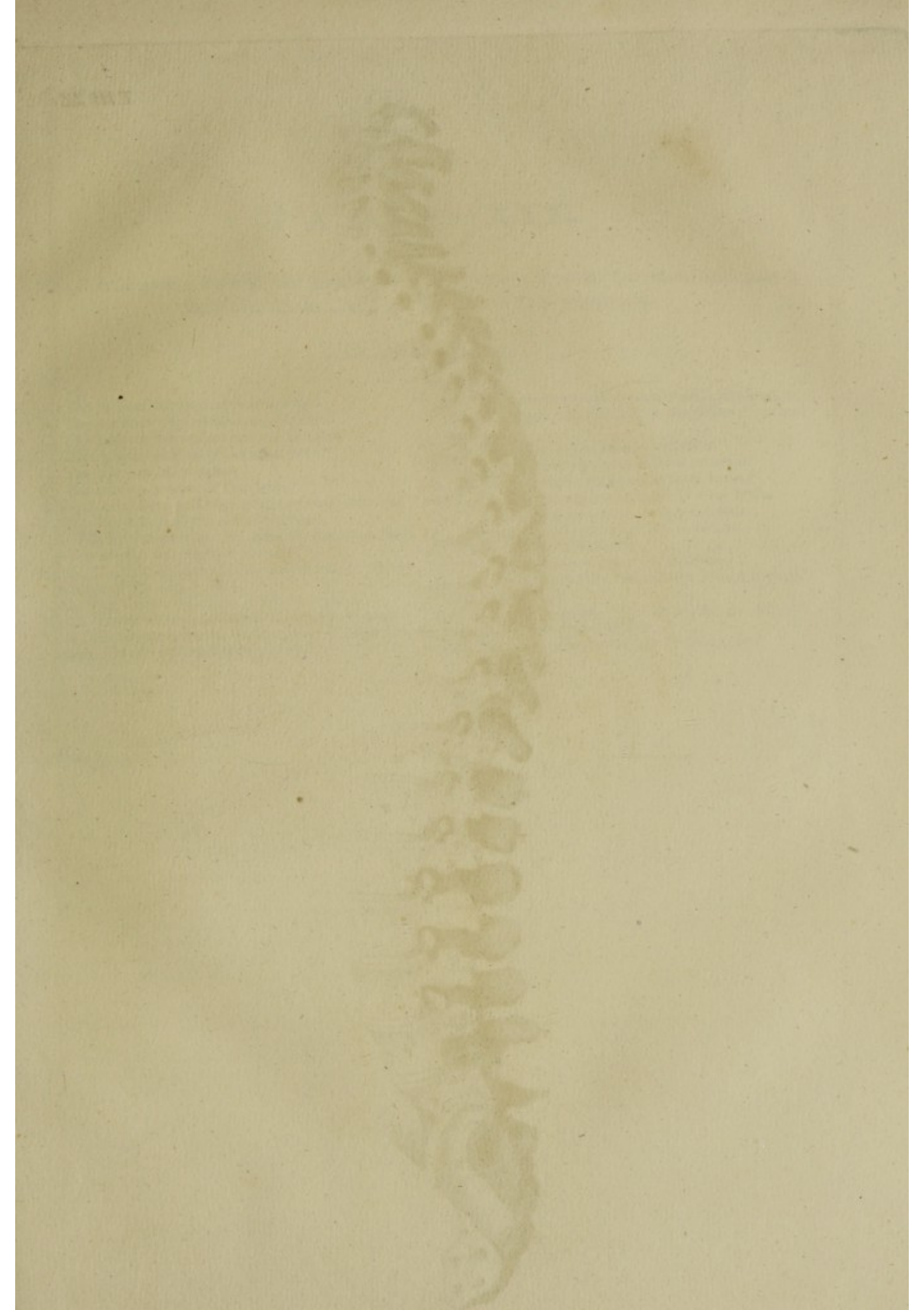


















## TABLE XXII.

This TABLE gives a View of the Right Side of the SPINE. Here the Curvatures belonging to the NECK, BACK, LOINS, and PELVIS, are very conspicuous.

- |  |   |
|--|---|
| <p>A, The body of the first cervical vertebra.<br/>         B, The posterior part of the same vertebra.<br/>         C, The body of the second cervical vertebra.<br/>         D, The spinous process of the same bone.<br/>         E, The last cervical vertebra.<br/>         F, The spinous process of that bone.<br/>         G, G, The oblique processes of the cervical vertebrae.<br/>         H, H, The bodies of the dorsal vertebrae.<br/>         I, I, The impressions on the sides of these vertebrae, which receive the heads of the ribs.<br/>         K, K, The notches between the same vertebrae, for the passage of the spinal nerves.<br/>         L, L, The oblique processes of these vertebrae.<br/>         M, M, The transverse processes of the same bones.<br/>         N, N, The impressions on the fore part of these processes, for the articulation of the ribs.</p> | <p>O, O, The spinous processes of the dorsal vertebrae, varying in length and obliquity in the different parts of the back.<br/>         P, P, The bodies of the lumbar vertebrae.<br/>         Q, Q, The oblique processes of these vertebrae.<br/>         R, R, The transverse processes of these bones.<br/>         S, S, The lateral notches and holes of these bones.<br/>         T, T, The spinous processes of these vertebrae.<br/>         U, The upper and fore part of the os sacrum.<br/>         V, The under part of this bone.<br/>         W, W, The spinous processes of this bone.<br/>         X, The oblong surface by which the os sacrum is united with the os ilium.<br/>         Y, The irregular surface by which it is joined to a corresponding one of the os ilium.<br/>         Z, Z, The pieces which compose the os coccygis.</p> |
|--|---|



# TABLE XXIII.

Gives different VIEWS of the TRUE VERTEBRÆ.

FIG. 1.

*A View of the Inferior Surface of the ATLAS, or FIRST VERTEBRA of the NECK.*

- a*, 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.
- e, e*, The inferior orifices 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 fossæ, 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 vertebral arteries.
- f, f*, Extremities of the transverse processes, each in form of a tuberosity.
- g*, A muscular print on the posterior part of the bone.
- h*, The large vertebral hole.

FIG. 3.

*The VERTEBRA DENTATA, viewed superiorly, and a little posteriorly.*

- a*, The odontoid process of the second vertebra.
- b, b*, The superior oblique processes.
- c, c*, The transverse processes.
- d, d*, The superior notches of this vertebra, for the passage of the spinal nerves.
- e, e*, A portion of the inferior oblique processes.

- f, f*, The extremities of the spinous process, of a forked shape.
- g, g*, Muscular prints on the two sides of the spinous process.
- h*, The large vertebral hole.

FIG. 4.

*The Anterior and Inferior Part of the VERTEBRA DENTATA.*

- a*, 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.
- e, e*, The extremities of the transverse processes.
- f, f*, The oblique holes at the roots of the transverse processes, for the passage of 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 vertebral hole.

FIG. 5.

*The Connexion of the two First VERTEBRÆ of the NECK with each other, seen anteriorly.*

- a*, The eminence, or anterior print of the atlas.
- b, b*, The two superior fossæ of the atlas.
- c, c*, The anterior edge of the superior oblique processes.
- d, d*, The extremities of the transverse processes.
- e, e*, The anterior edge of the inferior oblique processes.
- f, f*, The inferior fossæ, or hollows of the atlas.
- g*, The extremity of the tooth-like process of the second vertebra.
- h*, The root of the tooth-like process.
- i*, A small eminence on the middle of the body of the second 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



TAB 23.

Fig. 1.

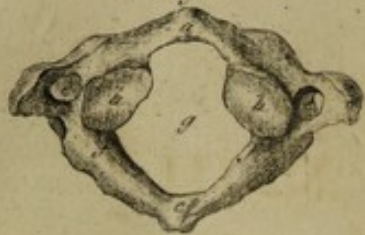


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.

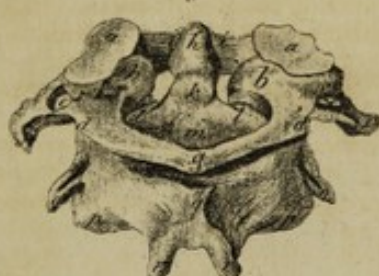


Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.





# THE HISTORY OF THE

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Second Part of the History of the

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Thirteenth Part of the History of the

Fourteenth Part of the History of the

Fifteenth Part of the History of the

Sixteenth Part of the History of the



- n, n*, The inferior oblique processes.  
*o, o*, The transverse processes.  
*p, p*, The inferior hollows of the vertebra.

## FIG. 6.

*The Connexion of the two First VERTEBRÆ of the NECK, seen posteriorly and superiorly.*

- a, a*, Cavities of the superior oblique processes of the atlas.  
*b, b*, The ligamentous protuberances at the under and inner part of the superior oblique processes.  
*c, c*, The posterior edge of the inferior oblique processes of the atlas.  
*d, d*, The posterior fossæ of the atlas, through which the vertebral arteries and tenth pair of nerves pass.  
*e, e*, The holes of the transverse processes of the atlas.  
*f, f*, The extremities of the transverse processes of the atlas.  
*g*, The eminence of the atlas, in form of a spinous process.  
*h*, The superior extremity of the tooth-like process of the second vertebra.  
*i, i*, Ligamentous impressions upon the superior extremity of that process.  
*k*, The neck of the tooth-like process.  
*l, l*, The posterior edge of the superior oblique processes of the second vertebra.  
*m*, The middle of the large vertebral hole.  
*n, n*, The posterior orifices of the passages at the roots of the transverse processes of the second vertebra.  
*o, o*, The extremities of the transverse processes of that vertebra.  
*p, p*, The posterior edge of the inferior oblique processes of the second vertebra.  
*q*, A crest projecting from the upper part of the spinous process of the second vertebra.  
*r, r*, The extremities of the spinous process of the second vertebra, on which are muscular prints.

## FIG. 7.

*A View of the Upper and Back Part of one of the First DORSAL VERTEBRÆ.*

- a*, The superior surface of the body of the first dorsal vertebra, which is somewhat triangular.  
*b, b*, The superior oblique processes.  
*c*, Part of the body of the bone, which assists in forming the vertebral hole.  
*d*, The thin sharp edge of the vertebral hole.  
*e, e*, The posterior part of the transverse processes.  
*f, f*, The under edge of the inferior oblique processes.  
*g, g*, The posterior fossæ of this bone.  
*h*, The ridge of the spinous process.  
*i*, The small extremity of the spinous process.

## FIG. 8.

*A View of the Under and Fore part of the VERTEBRA represented in the preceding Figure.*

- a*, The anterior part of the body of the bone.  
*b*, The inferior surface of the body.  
*c, c*, The superior notches for the passage of the spinal nerves.  
*d, d*, The inferior notches for the passage of the spinal nerves.  
*e, e*, The transverse processes.  
*f, f*, The small articular cavities, which receive the tubercles of the ribs.  
*g, g*, The inferior oblique processes.  
*h*, The large vertebral hole.  
*i*, The interior fossa, or groove of the spinous process of the first dorsal vertebra.  
*k*, The inferior extremity of the spinous process.

## FIG. 9.

*The Inferior Surface of the Third VERTEBRA of the LOINS.*

- a*, The middle of the inferior surface of the third lumbar vertebra.  
*b, b*, The osseous lamina, which borders the whole circumference of the inferior surface.  
*c, c*, The inferior notches of this vertebra.  
*d, d*, The transverse processes.  
*e, e*, The inferior oblique processes.  
*f, f*, The superior notches.  
*g*, The large vertebral hole.  
*h*, A small groove on the inner side of the spinous process.  
*i*, The rounded extremity of that process.

## FIG. 10.

*The VERTEBRA represented in the preceding Figure, seen from its Upper and Back Part.*

- a*, The centre of the body of the vertebra, which is very spongy.  
*b, b*, The small osseous lamina, which surrounds the spongy surface.  
*c*, A portion of the body of this vertebra, which forms part of the vertebral hole.  
*d, d*, The superior fossæ of this vertebra.  
*e, e*, The extremities of the transverse processes.  
*f, f*, The superior oblique processes.  
*g, g*, The inferior fossæ of this vertebra.  
*h, h*, The posterior fossæ.  
*i, i*, The inferior oblique processes.  
*k*, The large vertebral hole.  
*l*, The exterior ridge of the spinous process.  
*m*, The rounded extremity of the spinous process.



## FALSE VERTEBRÆ.

THE FALSE VERTEBRÆ, composed of the Os Sacrum and Os Coccygis.

## OS SACRUM.

The Bone obtaining its name from its having been offered in Sacrifice.

The *triangular form* of the Bone, with its pointed under extremity. Tab. XXIV.

The *flat concave anterior Surface*, for enlarging the Cavity of the Pelvis. Tab. XXIV.

The *under and fore part* forming a *turn*, called by some the *Lesser Angle* of the Bone, and this turn varying much in different Subjects.

The *convex irregular Surface behind*, where strong Muscles arise, which assist in extending the Spine and Thigh. Tab. XXXVI.

*Four transverse prominent Lines* seen anteriorly, indicating the situation of the Cartilages which originally divided the Bone into five pieces. Tab. XXIV.

The upper part of the Body of the first portion of the Os Sacrum, similar to that of the Vertebrae of the Loins, while the fifth portion corresponds with the first piece of the Os Coccygis.

The *Spinal Canal*, of a triangular form, of great size above, but becoming gradually smaller in its descent; corresponding to the size of the under end of the Spinal Marrow, termed *Cauda Equina*, which goes through it. Tab. XXIV. Fig. 2. Tab. XXXVI. Fig. 18.

The *under part* of the Spinal passage, commonly open behind; the Canal being completed, in the Subject, by the addition of a strong Ligamentous Membrane. Sometimes the Canal is open through the whole length of the Os Sacrum. Tab. XXI. Tab. XXIV.

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

The *Oblique Processes*, excepting the two uppermost, all united together, and confounded with the Transverse Processes.

The *two Superior Oblique Processes* belonging to this Bone, facing backwards, to correspond with the two inferior Processes of the last Lumbar Vertebra. Tab. XXIV.

A *large Oblong Process* on each side of the Bone, formed by the concretion of the outer ends of all the original Transverse Processes. Tab. XXIV.

The upper lateral parts of the Bone, which correspond with the three superior Transverse Processes, divided into *two irregular Cavities* on each side, by a *perpendicular Ridge*. Tab. XXIV. Fig. 5. G, H.

The *anterior* 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 Cartilage which unites these Bones to each other is remarkably thin, but adheres so intimately to the Os Sacrum, that in separating that Bone from the Ilium, the Cartilage commonly comes with it, leaving the Ilium quite bare.

The *posterior Cavity*, *rough*, and *irregular*, divided into two, by a Transverse Ridge formed by the union of the Oblique Processes; and in the recent Subject, full of *Ligamentous Fibres* and *Cellular Substance*, which are included in the general Capsular Ligament, and which also assist in fixing this Bone to the Os Ilium.

The portion of this Process formed by the three uppermost Transverse Processes, remarkably thick and strong, while that belonging to the two last is much smaller, but irregular behind, where it gives attachment to the Ligament termed *Sacro-sciatic*.

Of the *Spinous Processes*, the three uppermost commonly *distinct*, but remarkably *short*. There is a great variety, however, in the number and appearance of the Spinous Processes in different Bones, and consequently of the length of the complete part of the Spinal Canal. Tab. XXIV.

The two inferior Spinous Processes commonly *forked*, the parts not meeting behind into a Spine, but leaving between them the opening already mentioned, for the under end of the *Cauda Equina*.

Sometimes the whole Spinous Processes are wanting.

*Four Pair of large Holes* on the *anterior Surface* of the Bone, at the end of the Lines already described, and *superficial Grooves* running out from the Holes, for the passage of the Sacral Nerves. Tab. XXIV.

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

*Four Pair of Holes* on the *posterior Surface*, not much smaller than those seen anteriorly, but so filled with Cellular Substance, and covered with Membranes in the recent Body, as only to admit small Nerves to pass out to the Muscles on the back part of the Pelvis, and minute Arteries to enter the *Cauda Equina*. Tab. XXIV.

At the root of each superior Oblique Process, anteriorly, an impression made where the last Lumbar Nerve passes out. Tab. XXIV. Fig. 2. I.

A *Notch* at the under end of each side of the Bone, or a *Hole* common to it and the Os Coccygis, for the passage of the last Spinal Nerve. Tab. XXIV.

The *Substance* of the Os Sacrum, like that of the other Vertebrae, is very *spongy*, and covered only by a thin external Plate; this, however, is rendered considerably



derably stronger by a Ligamentous Membrane which adheres to it. Tab. with the Nerves of the Pelvis.

The *connexion* of this Bone above to the last Lumbar Vertebra, in the same manner as the other Vertebrae are connected to each other, and the same motion allowed as to these Vertebrae.—The projection formed between these two Bones anteriorly, obtains the name of *Promontory*, or *Greater Angle* of the Os Sacrum. Tab. XX. XXI.

The Os Sacrum serves as the common Base and support of the Trunk of the Body, guards the Nerves issuing from the under end of the Spinal Marrow, defends the back part of the Pelvis, and gives origin to Muscles moving the Trunk and Thigh, viz. to the *Curvator Coccygis*, to part of the *Latissimus Dorsi*, of the *Sacro-lumbalis*, *Longissimus Dorsi*, *Obliquus Externus Abdominis*, *Multifidus Spinæ*, *Gluteus Maximus*, and *Pyriformis*.

In the *Fœtus*, the Os Sacrum consists of five distinct Vertebrae, each of which has several Osseous Nuclei, and the pieces have *Intervertebral Substances* similar to those of the True Vertebrae. Tab. XXXII.

At this time, each of the Vertebrae of the Os Sacrum, as well as of the True Vertebrae, consists of a Body and two lateral parts, which are joined together by *Cartilages*.

The *Cartilages* between the different Vertebrae of the Os Sacrum continue till about the time of *Puberty*, when they are absorbed.

#### OS COCCYGIS, vel OSSA COCCYGIS.

The Os Coccygis, or *Rump-Bone*, forming an Appendage to the under end of the Os Sacrum.

The *Situation* of this Bone at the under end of the Os Sacrum. Tab. XXIV. XXV.

Its *Figure*, broad and flat above, and tapering below, convex behind, and forming a Curve forwards, to defend it from injury when a person is in a sitting posture. Tab. XXI. XXIV.

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

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

The first or uppermost piece by much the largest, with Shoulders reaching farther out than the end of the Os Sacrum. This is regarded by some as a proper distinction between the Os Coccygis and Os Sacrum. Tab. XXIV.

From the back part of the Shoulders, two Cornua frequently ascend to join the forked Spinous Processes at the end of the Os Sacrum, and form a passage for the transmission of the last Pair of Spinal Nerves. Tab. XXIV.

The three lower Bones of the Os Coccygis becoming gradually smaller, the fourth terminating in a rough point. Tab. XXIV. XXV.

*Cartilage* is interposed between the different pieces of this Bone in young Subjects, Tab. XXXII. joining them together, after the manner of the Vertebrae; allowing motion upon each other forwards and backwards, but chiefly between the first and second pieces; and a greater degree of motion there in the Female than in the Male.

In advanced life, but earlier in Men than in Women, the pieces grow together so as to admit no motion; but this takes place much later between the first and second, than between the other pieces.

The Substance, like that of the Os Sacrum, is spongy; but this Bone differs from the Sacrum in having no passage for the Spinal Marrow, nor Holes for Spinal Nerves.

The connexion of this Bone, in young Subjects, to the Os Sacrum, by *Cartilage*,—in old People, by an union of Substance.

The Surface of the Bone is covered by a strong Ligament, which adds to its strength; and its sides give rise to numerous Muscular Fibres, which, while they derive their origin from it, serve at the same time to protect it.

The Os Coccygis sustains the Intestinum Rectum, contracts the Inferior Opening of the Pelvis, and assists in supporting the Rectum, Bladder, and Uterus.

It gives origin to the *Sphincter Ani*, and to part of the *Gluteus Maximus*, insertion to the *Coccygeus*, *Curvator Coccygis*, and to part of the *Levator Ani*.

In the *Fœtus*, the Os Coccygis is almost entirely composed of *Cartilage*; but the different Processes can readily be distinguished from each other by their form.

#### PELVIS.



## PELVIS.

HERE observe,

The PELVIS or Bason, situated at the lower part of the Trunk, and formed by the Os Sacrum, Os Coccygis, and two Ossa Innominata.

## OS INNOMINATUM,

Vel Os COXÆ.

The *Situation* of the Os INNOMINATUM, in the fore part and side of the Pelvis, and in the under and lateral part of the Abdomen. Tab. XX.

The size the largest of the Broad Bones of the Skeleton.

The *Division* of the Bone, in Children, and to the age of Puberty, into Os Ilium, or Haunch-bone, Os Ischium, or Hip-bone, and Os Pubis, or Share-bone. Tab. XXXVII. Fig. 15. *f, g.* Tab. XXXII.

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

## OS ILIUM.

The *Os Ilium*, or Iliac portion of the Os Innominatum, the largest of the three pieces, forming the upper part of the Os Innominatum, and spreading out, to assist in supporting the contents of the Abdomen. Tab. XX. L.

The *Dorsum* or *outer Surface* of the Bone, depressed at the fore part, raised farther back, and concave behind, Tab. XXI. the whole giving origin to the Glutei Muscles, or Extensors of the Thigh.

The *Crista* or *Spine*, or upper semicircular edge of the Bone, for the attachment of the Oblique and Transverse Abdominal Muscles. Tab. XX. M, N.

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

The *anterior-superior Spinous Process*, or anterior extremity of the Spine, for the attachment of the Sartorius, the Tensor Vaginæ Femoris, and of POUPART'S Ligament, or Crural Arch. Tab. XX. O.

The *anterior-inferior Spinous Process*, a little below the former, for the attachment of the Rectus Femoris.

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

The *two posterior Spinous Processes*, at the back part of the Spine, less considerable than the two anterior; partly for the origin of Muscles of the Back, but chiefly for the attachment of Ligaments which belong to the Joint between this Bone and the Os Sacrum. Tab. XXXVI. The outside of the posterior Spinous Processes flat and rough, where parts of the Gluteus Maximus and Pyriformis take their origin.

The *Notch* of the Os Ilium under the posterior-infe-

rior Spinous Process, for the passage of the Pyriform Muscle, Sciatic Nerve, and Blood-vessels. Tab. XXIV.

The *Venter*, or *inner concave Surface* of the Bone, for the attachment of one of the Flexors of the Thigh, termed *Iliacus Internus*, and the support of a portion of the Intestinum Ilium and Colon. Tab. XXV. F.

A *Passage* in the Venter, near its under part, and another in the Dorsum towards its anterior region, for the principal Medullary Vessels of the Bone. Besides these, different Foramina are seen, of less consideration, for admitting Vessels into the Substance of the Cancelli. Tab. XX. under *b*, right side.

A *Depression* at the inside of the anterior-inferior Spinous Process, where the Flexor Muscles of the Thigh, viz. the Iliacus Internus and Psoas Magnus, pass, with the anterior Crural Vessels and Nerve. Tab. XX. O, P.

The *Linea Innominata*, vel *Linea Ilio-pectinea*, 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 Abdomen. Tab. XX. *a.*

Into the Iliac Portion of the Linea Innominata, the Tendinous Expansion continued from the Psoas Parvus is inserted.

The *inner and back part* of the Bone, *rough* and very *irregular*, the posterior portion of this irregular surface projecting behind the Os Sacrum, and giving origin to some of the large Muscles of the Back; the middle being for the attachment of Ligaments which go to the Os Sacrum, and the anterior for the firm connexion which subsists between this Bone and the Cartilage which glues it to the Os Sacrum.

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

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

## OS ISCHIUM,

Or *Ischiatic part of the Os Innominatum.*

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

Its *Figure irregular*; its *size* next to that of the Os Ilium.

The *upper thick posterior part* of the Bone, forming the under and largest portion of the Acetabulum. Tab. XX. *g.*

The



The *Spinous Process* sent back from the upper part of the Bone, for the attachment of Muscles,—and of the superior Sacro-sciatic Ligament, which completes the Notch of the Os Ilium into an Iliac Foramen. Tab. XX. U, right side.

The outer Surface of the Bone, at the root of the Spinous Process, *hollow* for the passage of the Pyiformis.

Under the Spinous Process, a *Sinuosity*, which, in a recent Subject, is covered with Cartilage where the Tendon of the Obturator plays as on a Pulley, in its way from the inner side of the Pelvis to the Thigh-bone.

Below the Acetabulum, the *Cervix* of the Bone, where the Tendon of the Obturator Externus is lodged.

The *Tuberosity*, or *Tuber Ischii*, below the Cervix of the Bone, which is covered with Cartilage that is separated by maceration. Tab. XX. U, left side. Tab. XXI. p.

The *upper part* of the Tuber placed obliquely, and giving attachment to the Geminus Inferior, to the under Sacro-sciatic Ligament, and to the largest Flexor Muscles of the Thigh, consisting of the long Head of the Biceps Flexor Cruris, Semi-tendinosus, and Semi-membranosus.

The external anterior Margin of the Tuberosity forming an *obtuse Ridge*, which gives rise to the Quadratus Femoris.

The thinner and more scabrous part of the Tuber, which has a curved direction, is what we rest upon in sitting. It gives origin to the Crus Penis in the Male, to the Crus Clitoridis in the Female, and to part of the Adductor Magnus Femoris.

The Tuberosity of the Bone contracting and going upwards and inwards to form the *Crus*, which is united to that of the Os Pubis by an accretion of Substance. The Crus impressed on the outer side by the origin of the Adductor Magnus Femoris, and on the inner side by the Crus and Erector Penis in the Male, and the Crus and Erector Clitoridis in the Female. Tab. XX. T.

#### OS PUBIS, vel OS PECTEN,

Or Pubal part of the Os Innominatum.

The *Situation* of this Bone at the upper and fore part of the Pelvis. Tab. XX. V, W, X.

Its *Size*, the least of the three portions of the Os Innominatum.

The *Division* of the Bone into two Branches, an horizontal and a descending.

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

The upper part of this portion of the bone, formed into a kind of ridge by its junction with the Os Ilium.

The *upper part* of the Bone becoming smaller where it is flattened above, and rendered smooth by the pas-

sage of the Flexor Muscles of the Thigh, and of the anterior Crural Vessels and Nerves. Tab. XX. N.

The upper and inner part of the Bone increasing in size, and forming the rough *Crest* or *Angle*, where the Rectus and Pyramidalis, and the inner end of POU-PART's Ligament, are attached. Tab. XX. W.

A *Ridge*, or *Spine*, extended from the outer and fore part of the Crest, along the upper and inner edge of the Bone, to form, with a similar Ridge of the Os Ilium, the *Linea Ilio-pectinea*, *Brim*, or upper opening of the Pelvis. Tab. XX. a.

This Ridge is described by some Authors as being sometimes so sharp, as to injure the parts which lie immediately 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. XX. under V.

A *Cavity* between these Ridges, for the origin of the Pectineus. Tab. XX. outside of c.

Immediately below the undermost 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 of the Obturator Ligament, for the passage of the Obturator Vessels and Nerves. Tab. XX. under V.

The *inner end* of the Bone *rough* and *unequal*, but covered with a Ligamentous Cartilage, which, in fresh Bones, joins the two Ossa Pubis so firmly together, as to prevent them from moving upon each other. Tab. XX. o.

The *Inner part* of the Bone broad, and depressed before, where it gives origin to part of the Adductor Muscles of the Thigh. Tab. XX. between W and X.

The inner part of the Bone becoming narrower, and ending in the *Crus*, which goes downwards to join the Crus of the Os Ischium, and form, along with that Crus, one side of the Arch of the Pubis. Tab. XX. X, d.

The *Foramen Ovale*, vel *Thyroideum*, passing downwards and outwards, and of a triangular shape, with the angles blunted. It is formed by the Os Pubis and Os Ischium, and in the Subject is filled, excepting at the Notch above mentioned, by a Membranous Ligament, which gives rise to a large share of the Obturator Muscles. Tab. XX. e.

The *Acetabulum*, or *Cavity*, (compared to a Vinegar measure used by the Ancients), placed farther out and a little higher than the Foramen Thyroideum, and formed by the three pieces which compose the Os Innominatum, in such a manner, that the Os Ilium constitutes less than two-fifths, the Os Ischium more than two-fifths, and the Os Pubis one-fifth of that Cavity. Tab. XX. g.

The *Cavity* of the Acetabulum very deep, especially behind, and made still deeper in the Subject, by its Brim being tipped with a Cartilaginous Ligament.

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



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 leaving a Hole behind for containing part of the Substance called *Gland of the Joint*. Tab. XXIV.

The *Cavity* of the Acetabulum lined with Cartilage, excepting at its under, inner, and fore part, where there is a rough Depression for containing the greater portion of the Substance mentioned above. Tab. XXIV. Fig. 6.

The *Brim*, *Introitus*, or *upper Opening* of the Cavity of the Pelvis, approaching in the Male to a circular, and in the Female to an oval form. Tab. XX. XXV.

The *Inferior Opening* is large in the Skeleton, but in the Subject in a great measure is filled up by Ligaments and Muscles, which support and protect the contained parts, and leave only the passages from the Bladder of Urine and Rectum in the Male, and, together with these, the passage from the Uterus in the Female.

In what is considered as a *standard Female Pelvis*, the distance between the Os Sacrum and Os Pubis, at the *Brim*, is found to be between four and five inches, and that between the two Ossa Ilii between five and six inches. In the *Exitus*, or inferior opening, the proportions are reversed, the distance between the Symphysis Pubis and Os Coccygis being longer than that between the Ossa Ilii. The depth of the fore part of the Pelvis, at the Symphysis of the Pubis, is about an inch and a half; behind it is six inches, and at the sides three inches and a half. The Pelvis may vary from the above dimensions according to the size and proportions of the Body, which may differ somewhat in the different nations, yet be well formed; or it may vary from disease either of the Bones or Viscera, and then it is considered as distorted.

The *Substance* of the Iliac part of the Os Innominatum is Cellular, with a thin external Table, which, in some old people, is so much affected by Muscular action about its middle, as to become transparent. The other two portions of the Os Innominatum are Cellular, as in other flat Bones, but some parts of the external Table are of considerable thickness and strength.

The Ossa Innominata, *joined behind* to the Os Sacrum by a *thin Cartilage*, and by *strong Ligaments*, so as to have no motion; the Joint obtaining the name of

*Posterior Symphysis* of the Pelvis, or *Sacro-iliac Symphysis*. Tab. XXV. A.

The *Connexion* of these Bones to each other anteriorly, by a *Ligamentous Cartilage* and *Ligaments*, which also prevent motion here. This connexion is termed *Symphysis Pubis*, or *Anterior Symphysis* of the Pelvis. Tab. XXV. B.

The Os Ilium gives Origin to the Quadratus Lumborum, Glutei Medius et Minimus, Tensor Vaginæ Femoris, Sartorius, Rectus Femoris,—to Part of the Latissimus Dorsi, of the Longissimus Dorsi, Sacro-lumbalis, Obliquus Externus, Obliquus Internus, et Transversalis Abdominis, Pyriformis, Gluteus Maximus, Multifidus Spinæ, and Iliacus Internus.

The Os Ischium gives Origin to the Gemini, Semitendinosus, Semi-membranosus, Long Head of the Biceps Flexor Cruris, Quadratus Femoris, Transversalis Perinei, Coccygeus, Erector Penis in the Male, and Erector Clitoridis in the Female;—to part of the Adductor Magnus Femoris, Obturatores Externus et Internus, and Levator Ani.

The Os Pubis gives Origin to the Rectus Abdominis, Pyramidalis, Pectineus, Gracilis, Adductores Longus et Brevis Femoris,—to part of the Adductor Magnus, Obturatores Externus et Internus, and Levator Ani;—Insertion to the Psoas Parvus, and to part of the Obliquus Externus Abdominis.

**USE OF THE PELVIS.**—The Pelvis constitutes the Basis of the Trunk, and forms Sockets for the Thigh-bones to move in. It contains the Bladder of Urine and the Rectum in the Male, and together with these, the Uterus in the Female. It gives Origin to the Muscles which extend the Trunk, and attachment to those which bend the Body. It sends off the principal part of the Muscles which move the Thigh, and gives passage and protection to Blood-vessels, and to some of the largest Nerves of the Body.

In the Fœtus, the Spine of the Os Ilium, and that part 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, and that portion of it which forms the Acetabulum, are also in a Cartilaginous state. The shape of the Cavity of the Pelvis, at this period, is altogether different from that in the Adult, the under being wider than the upper part.

## TABLE







Fig. 1.

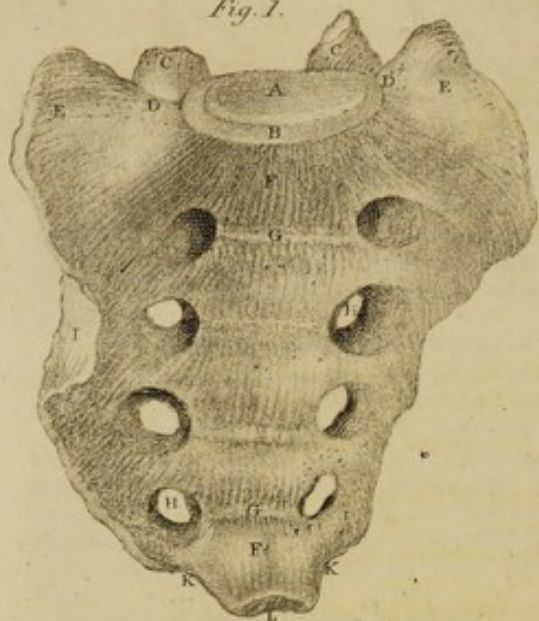


Fig. 2.

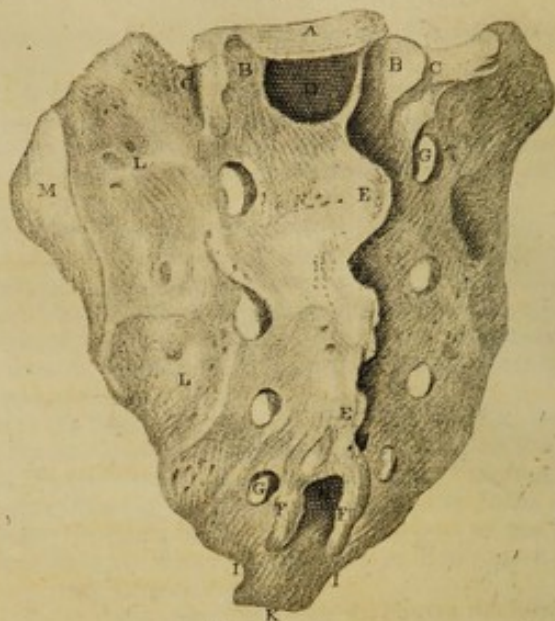


Fig. 6.

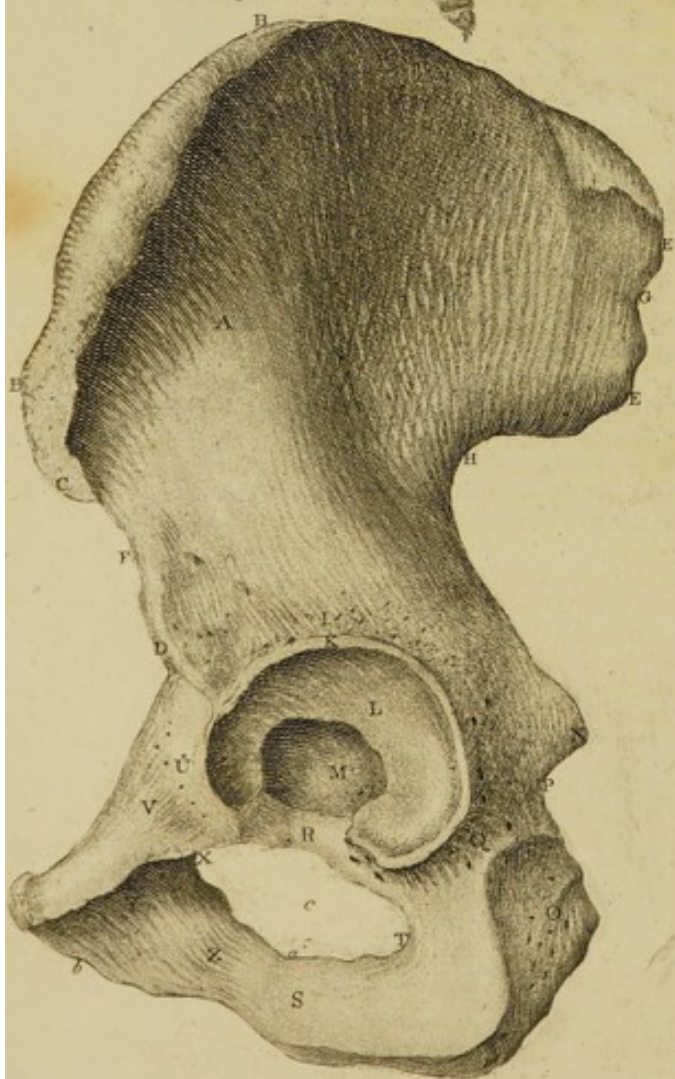


Fig. 5.



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## T A B L E XXIV.

## VIEWS of the SEPARATE BONES of the PELVIS.

FIG. 1.

*The Internal or Anterior Surface of the Os 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.
- C, C, A portion of the oblique processes.
- D, D, The superior notches, 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.
- G, G, The transverse lines which indicate the union of these pieces.
- H, H, The oblique passages on each side, for the transmission of the sacral nerves.
- I, A portion of the surface of the os sacrum, by which it is articulated with the os ilium.
- K, K, The inferior notches, where the last pair of spinal nerves pass out.
- L, The point of the bone which is joined to the os coccygis.

FIG. 2.

*The Posterior Surface of the Os SACRUM, turned a little towards the Left Side.*

- A, The upper surface of the os sacrum.
- B, B, Its superior oblique processes.
- C, C, Its superior notches.
- D, The beginning of the spinal canal of this bone.
- E, E, The spinous processes.
- F, F, The appendices, or cornua.
- G, G, The posterior foramina.
- H, The termination of the spinal canal.
- I, I, The inferior notches.
- K, The point of the bone which is united with the os coccygis.
- 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 bone is united with the os ilium.

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FIG. 3. *The Internal Surface; and FIG. 4. The External Surface, of the Os COCCYGIS.*

- A, A, A, The four pieces of which this bone 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 inferior extremity.

FIG. 5.

*The Internal Surface of the Left Os INNOMINATUM.*

- A, The cavity of the venter of the os ilium.
- B, The orifice of the internal iliac canal.
- C, C, The spine or crest of this bone.
- D, The super-anterior spinous process.
- E, The inferior-anterior spinous process.
- F, F, The posterior spinous processes.
- G, The surface by which the os ilium 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.
- L, The ischiatic, or, more properly, the great iliac notch.
- M, The great sinuosity, where the internal iliac muscle passes out of the abdomen.
- N, The ridge of the os ilium, which forms a share of the brim of the pelvis.
- O, The body of the os ischium.
- P, The spinous process of this bone.
- 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 os ischium.
- U, The eminence which marks the union of the superior branch of the os pubis with the os ilium.
- V, The spine of the os pubis.
- W, The inner surface of the crest of the os pubis.
- X, The inner surface of the superior branch of the os pubis.

Y, The



- Y, The inferior notch of this branch.  
 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.  
*c*, The foramen ovale.  
*d*, The inferior notch of the os pubis, which assists in forming the foramen ovale.

FIG. 6.

*The External Surface of the Left Os INNOMINATUM.*

- A, The dorsum of the os ilium, raised in some parts, and depressed in others.  
 B, B, The crest of this bone.  
 C, The superior-anterior, and,  
 D, The inferior-anterior spinous process.  
 E, E, The posterior spinous process.  
 F, The anterior notch.  
 G, The posterior notch, and,  
 H, The great notch of this bone.  
 I, Eminences and cavities at the upper part of the acetabulum.  
 K, The brim of the acetabulum, tipped with cartilage.

- L, The bottom of this cavity encrusted with cartilage.  
 M, A rough surface in the acetabulum, where the substance 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, 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 part of the foramen ovale.  
 U, The outer end of the superior branch of the os pubis.  
 V, The middle of this bone.  
 W, The crest of this bone.  
 X, The notch at the under part of the branch of this bone.  
 Y, The body of the bone.  
 Z, The crus of this bone.  
*a*, The notch which assists in forming the fore part of the foramen ovale.  
*b*, The part where the one os pubis joins the other.  
*c*, The foramen ovale.

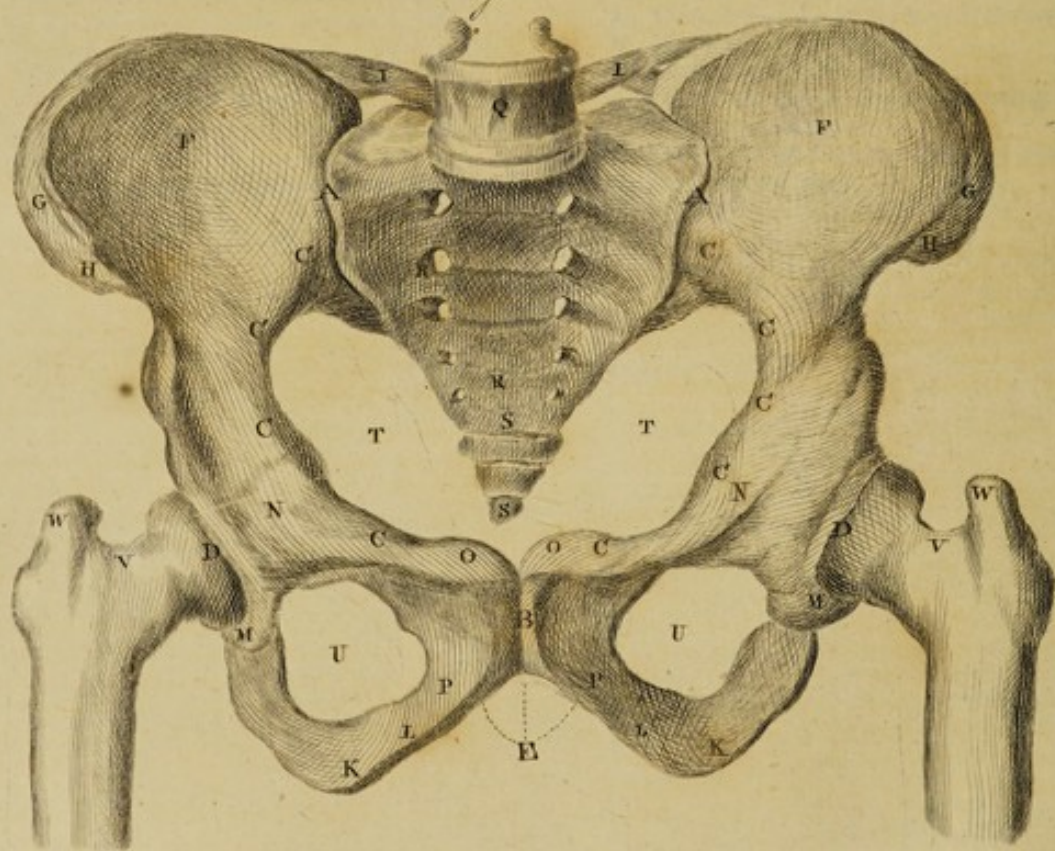






TAB. 25.

Fig 4





# TABLE XXV.

## A VIEW of the FEMALE PELVIS, from the Upper and Fore Part.

- |  |   |
|--|---|
| A, The connexion of the os ilium with the os sacrum.   | N, The back part of the os pubis, forming a portion of the acetabulum.  |
| B, The symphysis pubis.  | O, The angle, or crest.   |
| C, &c. The brim of the pelvis.   | P, The crus of the os pubis.  |
| D, The articulation of the head of the os femoris with the acetabulum of the os innominatum.                   | Q, The last lumbar vertebra.  |
| E, The arch formed by the crura of the ossa pubis.   | R, R, The os sacrum; the transverse lines marking its original pieces, with the four pairs of holes for the transmission of nerves. |
| F, The cavity of the os ilium.   | S, S, The four pieces composing the os coccygis, with a pair of holes between it and the os sacrum.                                 |
| G, The spine or arch of the os ilium.  | T, T, The cavity of the pelvis.   |
| H, The superior-anterior spinous process.  | U, The foramen thyroideum.  |
| I, Ligaments passing between the spine of the os ilium, to the transverse process of the last lumbar vertebra. | V, The cervix of the os femoris.  |
| K, The tuberosity of the os ischium.   | W, The trochanter major.  |
| L, The crus of that bone.  |   |
| M, The posterior part, forming a share of the acetabulum.  |   |



## THORAX.

THE circumstances to be attended to in this part of the Skeleton are,

The *Thorax*, formed of the Sternum or Breast-bone before, of the Ribs on each side, and of the Dorsal Vertebrae behind. Tab. XIX.

The general figure of the Thorax, approaching that of a Cone, but 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 is occupied, in the Subject, by the *Diaphragm*, which forms an arched partition between it and the Abdomen, with the convex side upwards. Tab. LXVI. Fig. 2.

## COSTÆ.

The *Situation* of the Costæ, or Ribs, *slanting* downwards with respect to the Spine. Tab. XIX.

Their *Number*, in the Male as well as in the Female, commonly *twelve* on each side, though sometimes thirteen, and at other times only eleven; their number always corresponding with that of the Dorsal Vertebrae.

Their *Figure*, *convex* externally, by which their strength is increased; and *concave* and *smooth* internally, with their flat sides turned towards the Lungs, which they protect.

The *Head* of each Rib, formed into a *Ridge* and two *hollow Surfaces* covered with Cartilage, to be articulated with the Bodies of two Vertebrae, and their intermediate Cartilage. Tab. XXXVI. Fig. 14. a.

Round the Head, the Bone *spongy*, for the attachment of the Capsular Ligament of the Joint.

The *Tubercle* of the Rib, at a little distance from its Head, and placed posteriorly, with a flat Cartilaginous Surface and irregular Edge, to be articulated to the Transverse Process of the undermost of the two Vertebrae, to which the Head of the Rib is joined. Tab. XXXVI. Fig. 14. b.

The *Cervix* of the Rib, between its Head and Tubercle, of a roundish form. Tab. XXVI. Fig. 3. a.

Another *small Tubercle* in most of the Ribs, 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. XXXVI. Fig. 14. d; and also for the insertion of the outer Slips of the Longissimus Dorsi.

Beyond the Tubercle, the Rib rendered *flat* behind, by the Sacro-lumbalis.

The *Angle* of the Ribs to which the Sacro-lumbalis

is fixed, where the Bones are about to bend, to form the lateral part of the Thorax. Tab. XXXVI. Fig. 14. e.

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

The *upper Edge* of the Rib, *round* where the Intercostales are fixed.

The *under Edge*, *sharp* where the Intercostalis Externus has its origin.

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

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

An *Oval Pit* in the anterior extremity of each Rib, for receiving the Cartilage which runs from it towards the Sternum. Tab. XXXVI. Fig. 14. h.

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

The Cartilages, like the Ribs, *flat* on their outer and inner Surfaces, and *smooth* where they are opposed to the Lungs.

The Cartilage of each Rib, forming, with the Rib itself, a *Curve*, the concave part upwards;

And with the Sternum, an *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 of inspiration cease to act. The Cartilages of the Ribs, in old people, are frequently ossified.

The Ribs are *connected behind* to the Vertebrae by a double articulation, and *before* to the Sternum by the Cartilages, or by the Cartilages to each other, in such a manner as to allow motion upwards and downwards, though only a small degree in any single Rib, and that towards its middle; but no motion in any other direction. Tab. XXXVI. Fig. 17.

## PECULIARITIES OF THE RIBS.

The *first Rib* the *most crooked*; from this downwards the Ribs become gradually straighter. Tab. XIX. G, G, &c.

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

The *Cartilages* of the Ribs, like the Ribs themselves, becoming



becoming gradually longer from the first to the seventh, but, contrary to what happens in the Ribs, approaching nearer to each other in their descent. Tab. XIX. H, H, &c.

The *length* of the Ribs, *increasing* from the first to the seventh, and then *decreasing* to the twelfth.

The *distance* between the Heads of the Ribs and their angles, increasing to the ninth Rib, corresponding with the breadth of the Sacro-lumbalis which covers them. Tab. XLIX.

The seven uppermost Ribs having their Cartilages joined to the Sternum, and opposed to the Heart and Lungs, considered as the *Custodes*, or *Guards of Life*, hence termed *True Ribs*. Tab. XIX.

The five inferior, not reaching the Sternum, termed *False Ribs*. Tab. XIX.

The *Cartilages* of the False Ribs, *shorter* as they descend, and more flexible than those of the True Ribs. Tab. XIX. I, I, &c.

The *first Rib* placed in a horizontal situation, with one of the flat sides facing upwards, and the other downwards, in consequence of which one of the edges is turned outwards, and the other in the contrary direction.

The *posterior Extremity* of the first Rib, articulated only with the first Vertebra of the Back. Tab. XIX. K.

A *flat Surface* upon the upper part of this Rib, where the *Subclavian Vessels* and *Nerves* pass over it to the Arm. Tab. XIX. N.

The *Fossa* for the Intercostal Vessels and Nerve wanting at the edge of this Rib, on account of their running at a distance from this part of the Bone.

The anterior Extremity of the first Rib united to the Sternum at nearly right angles, and its Cartilage so short, so firmly fixed, and so frequently ossified, as to be only moved with the Sternum.

The *Cartilages* of the two under True Ribs, and three upper False Ribs, commonly *joined* to each other by cross Cartilages, or by a union of Substance, though sometimes this union takes place among a smaller number than that mentioned above. Tab. XIX.

The *Cartilage* of the eighth Rib sometimes joined to the Sternum, and then forming one of the True Ribs.

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 Head is only joined to the twelfth Vertebra of the Back. It has no Tubercle, nor articulation with the Transverse Process; neither has it any Fossa at its under edge, the Vessels and Nerve running some way below it. Tab. XIX.

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

The Substance of the Ribs, like that of the Verte-

bræ, is Cellular, and only covered with a thin external Plate, which becomes somewhat thicker towards the Vertebrae.

In the Fœtus, the Heads and Tubercles of the Ribs have Cartilages, part of which become thin Epiphyses. 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, and compose a considerable portion of the Walls of the Abdomen. They cover and defend the Heart and Lungs, and assist the latter in performing respiration.

They give Origin to the Serratus Magnus, Pectoralis Minor, Intercostales Externi et Interni, Subclavius, the three Scalenii, and Accessorii ad Sacro-lumbalem,—to part of the Diaphragm, of the Sterno-hyoideus, Sterno-thyroideus, Pectoralis Major, Latissimus Dorsi, Obliquus Externus, et Transversalis Abdominis;—Insertion to the Intercostales Externi et Interni, Levatores Costarum, Sterno-costalis, Serrati Postici Superior et Inferior, Sacro-lumbalis,—to part of the Longissimus Dorsi, Quadratus Lumborum, Obliquus Internus, et Rectus Abdominis.

#### STERNUM.

The *Situation* of the Sternum, in the fore part of the Thorax. Tab. XXXIV. Fig. 10. V.

The Sternum, *thick and broad above*, and *thin and narrow below*. Tab. XIX.

The *outer Surface* flat. Tab. XIX.

The *inner Surface* *slightly hollowed*, to enlarge the Cavity of the Thorax.

*Pits* upon each edge of the Sternum, to receive the Cartilaginous ends of the seven True Ribs. Tab. XXVI. Fig. 2. D—L. Tab. XIX.

The *Pits* at a considerable distance from each other above, but becoming gradually nearer as they descend. Tab. XXVI.

The *Cancelli* of the Sternum, covered only by a thin external Plate, but this rendered stronger by a Tendinous Membrane investing it in the recent state. Tab. LX. Fig. 10.

*Three Pieces* composing the Sternum, in a person of middle age, and these joined together by Cartilage. Tab. XIX. O, P, Q.

The different Pieces of this Bone are frequently found *ossified together* in old people.

The *upper piece* of the Sternum, of a somewhat *triangular* figure, compared to that of a Heart as painted on playing-cards, but appearing as if cut across below. Tab. XXVI. Fig. 2.

The *upper and back part* hollowed, to make way for the Trachea. Tab. XXVI. 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 Bones. Tab. XXVI. Fig. 2. B, B.

Under



Under these Cavities, the Bone becoming *thinner*, and having a *Pit* upon each side, for receiving the Cartilage of the first Rib. Tab. XXVI. Fig. 2. D, D.

Part of the *Pit* in each of the *under Corners* of the first piece, for the Cartilage of the second Rib. Tab. XXVI. Fig. 2. F, F.

The *second piece* of the Sternum, of an *oblong* form, but a little broader below than above, and considerably longer than the former. Tab. XXVI. Fig. 2. C, C.

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 throughout.

*Complete Pits* upon the edges of this piece, for the Cartilages of the third, fourth, fifth, and sixth Pair of Ribs, and part of the *Pits* for those of the second and seventh. Tab. XXVI. Fig. 2. F—L. Tab. XIX.

*Lines* extending across the Bone, between the Pits, denoting the original marks of division of this piece. Tab. XXVI. Fig. 2.

The *Connexion* of the second piece of the Sternum to the first by Cartilage, which, in the earlier period of life, allows some yielding, but this becoming gradually less as the person advances in life. Tab. XXVI. Fig. 2. F, F.

The *third piece* of the Sternum *Cartilaginous* in a young Subject, and pointed like a broad-sword, hence termed *Cartilago Ensiformis*. Tab. XIX. XXXV.

The Adult has this piece commonly *ossified* in the

middle, and *cartilaginous* at the edges. Tab. XXXIV. Fig. 10. No. 3. 4.

The *Size* of this piece *much less* than that of the other two. Tab. XIX.

Only *one half* of the Pit, for the Cartilage of the seventh Rib, formed in each side of this piece.

The *Variations* of the Cartilago Ensiformis are considerable in different Subjects;—for, instead of the common form, it is sometimes narrower like the point of a small sword, or 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 or True Ribs, on each side, and by an inter-articular Cartilage to the anterior ends of the Clavicles. Tab. XIX.

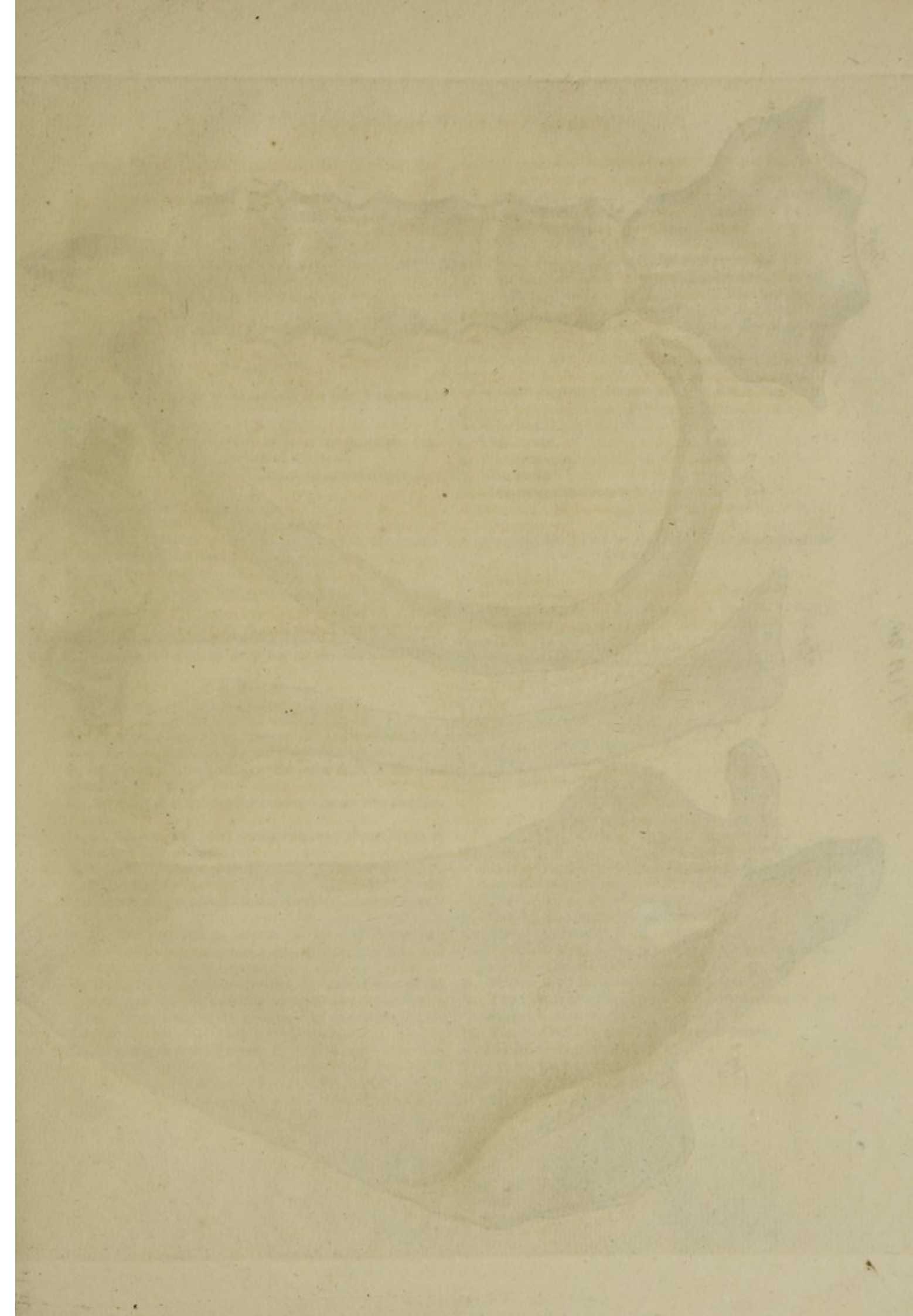
The Sternum defends the Heart and Lungs, assists in the formation of the Thorax, sustains the Mediastinum, is a medium of attachment to the Ribs, and serves as a Fulcrum or point on which the Clavicles roll.

It gives origin to the Sterno-costalis,—to part of the Pectoralis Major, of the Sterno-mastoideus, Sterno-hyoideus, Sterno-thyroideus, Intercostales Interni, and Diaphragm;—Insertion to part of the Rectus, Obliquus Internus, et Transversalis Abdominis.

In the Fœtus, this Bone is composed of seven or eight pieces, but the number of these varies in different Subjects. By degrees the pieces unite, till at length they form the three Bones already described.

## TABLE











## T A B L E XXVI.

Represents the ATLAS, STERNUM, FIRST RIB, CLAVICLE, and SCAPULA.

FIG. 1.

*The Superior Surface of the ATLAS, or FIRST VERTEBRA.*

- A, The spinal hole.
- B, The articular notch which receives 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 atlas.
- D, D, The superior oblique processes.
- d, d, Placed behind prominences, to which the lateral ligaments of the head are fixed.
- E, E, The transverse processes.
- e, e, The holes in the transverse processes for the vertebral blood-vessels.
- F, The spinous process.
- f, f, The posterior depressions, where the vertebral arteries are reflected in their way to the cranium.

FIG. 2.

*The External Surface of the STERNUM.*

- A, The upper triangular piece of the sternum.
- a, a, Impressions made by the pectoralis major.
- B, B, Notches which receive the inner ends of the clavicles.
- C, An excavation where the trachea passes into the thorax.
- D, D, The lateral parts which receive the cartilages of the first pair of ribs.
- E, E, The middle and longest part of the sternum.
- e, e, Transverse lines pointing out the union of the different pieces of which this bone is originally composed.
- F, F, The impressions of the cartilages of the second pair of ribs, and the connexion between the first and second pieces of the sternum.
- G, H, I, K, The lateral cavities, or impressions of the cartilages of the third, fourth, fifth, and sixth ribs.
- L, L, Impressions of the cartilages of the seventh pair of ribs.
- M, The cartilago ensiformis.

FIG. 3.

*The Outer Surface of the Second TRUE RIB of the RIGHT SIDE.*

- A, The head.
- a, The cervix.
- B, The tubercle.
- C, The angle.
- D, The upper and inner 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.
- D, 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.
- I, I, The cervix of the scapula.
- K, The coracoid process.
- L, The inferior angle.

FIG. 5.

*Under Side of the CLAVICLE.*

- A, The middle or body of the clavicle, with a depression running along it, for lodging part of the subclavian muscle.
- B, The inner or sternal extremity.
- C, The inferior angle of this extremity.
- D, The superior angle.
- E, The part where the upper edge of the pectoralis major rises.
- F, The spine of the clavicle.
- G, The ligamentous and muscular impressions of the external extremity.
- H, The orifices of several passages for vessels.
- I, The humeral extremity.



The *Situation* of this Bone at the side of the Thorax, and under the Scapula. Tab. I.

The *Ball or Head* of the Os Humeri, forming a small segment, or about a third part of a large sphere, covered with Cartilage, and placed obliquely at the upper, inner, and back part of the Body of the Bone, to correspond with the Glenoid Cavity of the Scapula. Tab. XXVII. Fig. 1. *a*.

The *Cervix* or Neck, surrounding the edge of the Ball, and forming a superficial Fossa, where the Capsular Ligament is fixed. Tab. XXVII. Fig. 2. *b, b*. Tab. I. *c*.

Numerous *Holes* round the upper end of the Bone, for the insertion of the Fibres of the Capsular Ligament, and for the passage of Blood-vessels into the Bone. Tab. XXVII. Fig. 1. *f*.

A long *Groove* or *Fossa*, lined with a Cartilaginous and Tendinous Crust, in 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 Cavity of the Scapula. Tab. XXVII. Fig. 1. *e*.

The *smaller Tubercle*, placed at the upper and inner side of the above-mentioned Groove, for the attachment of the Subscapularis. Tab. XXVII. 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; viz. the two Spinati, and Teres Minor. Tab. XXVII. Fig. 1. *c*.

A *Ridge* continued down from each Tubercle along the sides of the long Fossa, for the insertion of Muscles passing from the Trunk of the Body, or from the Scapula. Tab. XXVII. Fig. 1. *g, h*.

To the External Ridge the Pectoralis Major is fixed, and to the Internal the Latissimus Dorsi and Teres Major are inserted.

Behind the lower end of this last, another *Ridge* for the insertion of the Coraco-brachialis.

From the back part of the root of the largest Tubercle, a *Ridge* descends, from which the short Head of the Triceps Extensor Cubiti rises.

A *Passage* slanting downwards in the fore and inner part of the Bone, near its middle height, for the Medullary Vessels. Tab. XXVII. Fig. 2. *f*.

The outer side of the Bone, near its middle, somewhat *rough*, for the insertion of the Deltoides.

The Bone, marked at the under end of the Groove for lodging the long Head of the Biceps, for the attachment of the Deltoides and other Muscles. Tab. XXVII. Fig. 1. under *i*. Fig. 2. at the outer side of *g*.

The Body of the Bone, *round* near its upper end; but, as it descends, appearing *twisted*, then *flat*, and increasing in breadth at the lower extremity. Tab. XXVII. Fig. 1. 2.

From the Muscular Prints on the fore part of the Body of the Humerus, a *blunt Ridge* continued to the upper part of the Cartilaginous Surface, covering the lower end of the Bone. Tab. XXVII. Fig. 1. *k, k, k*.

The under and back part of the Bone, rendered *flat*

and *smooth*, by the motion of the Triceps Extensor Cubiti. Tab. XXVII. 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 attachment of strong Tendinous Fasciæ, which give origin to part of the Muscles of the Fore-arm. Tab. XXVII. Fig. 1.

The Ridges ending below in two *Condyles*, or Knuckle-like Processes, the situation of which, in order to avoid confusion in the terms *external*, *internal*, &c. is here to be considered with a reference to the Palm of the Hand turned forwards.

The *external Condyle*, placed at the under and outer part of the Bone, for the origin of the Extensor Muscles of the Hand and Fingers. Tab. XXVII. 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 Flexor Muscles of the Hand and Fingers. Tab. XXVII. Fig. 1. *m*.

The *Surface* at the under end of the Bone, between the Condyles, covered with Cartilage for the articulation with the Bones of the Fore-arm. Tab. XXVII. Fig. 2. *o, p, q*.

The *oblique Situation* of the articulating Surface, the inner end being lower than the outer, by which the Hand turns more readily to the Face, or the upper parts of the Body. Tab. XXVII. Fig. 1. Tab. I.

The *inner part* of the articulating Surface, consisting of a large internal and small external Eminence, with a middle Cavity, or a Trochlea, or Pulley, upon which the Ulna moves. Tab. XXVII. Fig. 1. *p, p, q*. Fig. 2. *o, o, p*.

The *outer Part* of the Articular Surface, upon which the Head of the Radius plays, of a round form, and considered by some Authors as the smooth part of the outer Condyle. Tab. XXVII. Fig. 1. *o*.

Round the edge of the Articular Cavity, the Bone marked by the insertion of the Capsular Ligament of the Joint. Tab. XXVII. Fig. 1. 2.

A *small Cavity* at the under and fore part of the Bone, above the Trochlea, for receiving the Coronoid Process of the Ulna in the flexion of the Fore-arm. Tab. XXVII. Fig. 1. 3.

A *large Cavity* at the under and back part of the Bone, also above the Trochlea, the under part of it for receiving the Olecranon of the Ulna in the extension of the Fore arm, and the upper part for containing the Fat of the Joint. Tab. XXVII. Fig. 2. *r*.

Between these Cavities the Bone is pressed so thin as often to become transparent, especially in an old person.

The *Substance* and *inner Structure* of the Os Humeri are 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 appearance of a hollow Cylinder.

The Ball of the Os Humeri is articulated with the Glenoid



Glenoid Cavity of the Scapula, which, from its superficial nature, and the long Ligaments inclosing the Joint, allows the Arm to move in all directions; the Bone even performing a small degree of motion round its own axis. The extent of motion of the Arm, however, is considerably increased by the rolling of the Scapula.

The Os Humeri gives origin to the Brachialis Internus, second and third Heads of the Triceps Extensor Cubiti, Extensores Carpi Radiales Longior et Brevior, Supinator Radii Longus, Anconeus, Extensor Digitorum communis, and Palmaris Longus;—to part of the Supinator Radii Brevis, of the Extensor Carpi Ulnaris, Pronator Radii Teres, Flexor Carpi Radialis, Flexor Carpi Ulnaris, and Flexor Digitorum Sublimis.—Insertion to the Deltoides, Supra-spinatus, Infra-spinatus, Teretes Major et Minor, Subscapularis, Latissimus Dorsi, Pectoralis Major, and Coraco-brachialis.

In the Fœtus, the extremities of the Bone are Cartilaginous; and the Ball with the Tubercles, and the Trochlea with the Condyles, form afterwards Epiphyses, previous to their union with the Body of the Bone.

### FORE-ARM,

Consisting of two Bones, the Ulna or Cubit, and Radius or Wheel-spoke-like Bone. Both of these are observed to be proportionally longer in the African than in the European.

### ULNA.

The Situation of the Ulna at the inner part of the Fore-arm; the Arm being supposed to hang by the side of the Body, with the Palm of the Hand turned forwards. Tab. I. Upper Extremity, E.

The Olecranon, Processus Anconeus, or Top of the Cubit, placed at the upper end of the Bone, and forming the posterior prominent part of the Elbow. Tab. XXVII. Fig. 4. a, e, e, d.

The upper end of this Process rough, where the Triceps Extensor Cubiti is fixed.

The Coronoid or Sharp Process, 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. XXVII. Fig. 4. b, c, c.

The Great Sigmoid, or Semilunar Cavity, between the Olecranon and Coronoid Process, lined with Cartilage, and divided into two slanting Surfaces by a middle Ridge, the Cavity being adapted to the Trochlea of the Os Humeri. Tab. XXVII. Fig. 4. d, e, e.

Across the middle of the great Sigmoid Cavity, a little Pit, for lodging part of the 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 Small Sigmoid, or Semilunar Cavity, lined with Cartilage, at the outer side of the Coronoid Process, where the round Head of the Radius plays, which is confined in its place by an Annular Ligament, fixed to the Edges of this Cavity. Tab. XXVII. Fig. 4. f.

The Tubercle of the Ulna, or small rough spot under the root of the Coronoid Process, for the insertion of the Brachialis Internus. Tab. XXVII. Fig. 4. h.

At the upper and outer part of the Bone, a triangular Surface, where the Anconeus is lodged.

The Body of the Ulna, of a triangular form, becoming gradually smaller in its descent. Tab. XXVII. Fig. 4.

The sharpest Angle opposed to the Radius, for the attachment of the Interosseous Ligament. Tab. XXVII. Fig. 4. g, g.

The sides forming this angle, flat, and marked by the Muscles which arise from them. Tab. XXVII. Fig. 4.

A Passage slanting upwards, about a hand-breadth below the upper end, for the Medullary Vessels. Tab. XXVII. Fig. 4. l.

The under end of the Bone, forming a small round Head, which is covered with Cartilage on that side where the Radius moves upon it, and also on its extremity, where it is opposed to a moveable Cartilage placed between it and the Carpus. Tab. XXVII. Fig. 4. n, p.

The Styloid Process, at the inner side of the small round Head, from which a strong Ligament goes off to be fixed to the Bones of the Wrist. Tab. XXVII. Fig. 4. o.

The Ulna is articulated at its superior extremity with the lower end of the Os Humeri, the Joint at this part forming a complete Hinge, which allows an extensive degree of flexion, and as much extension as to approach a straight line with the Upper Arm; but little or no rotation.

It gives origin to the Pronator Radii Quadratus, and Indicator;—to part of the Extensores Ossis Metacarpi, Primi Internodii et Secundi Internodii Pollicis, Flexores Carpi Radialis et Ulnaris, Flexores Digitorum Sublimis et Profundus, Supinator Radii Brevis, Pronator Radii Teres, and Extensor Carpi Ulnaris.—Insertion to the Brachialis Internus, Triceps Extensor Cubiti, and Anconeus.

### RADIUS.

The Radius shorter than the Ulna by the length of the Olecranon.

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 Head, which is hollowed above, for receiving the outer part of the Articular Surface of the Os Humeri. Tab. I.

The inner Side of the Head smooth, and also covered



ed with Cartilage, where it plays in the small Semilunar Cavity at the outer side of the Ulna. Tab. XXVII. 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 Ulna. Tab. XXVII. Fig. 3.

The *Tubercle* of the Radius, at the under and inner part of the *Cervix*, for the insertion of the Biceps Flexor Cubiti. Tab. XXVII. Fig. 3. c.

The *Body* of the Bone larger than that of the Ulna, convex on its outer and back part, and rounded here by the Muscles which cover it.

The *anterior* and *posterior Surfaces* next the Ulna flat, where Muscles of the Hand take their origin. Tab. XXVII. Fig. 3. e, e.

The *anterior* and *posterior Surfaces*, terminating next the Ulna, in a *sharp Ridge*, to which the Interosseous Ligament of the Fore-arm is fixed. Tab. XXVII. Fig. 3. d, d.

A *Passage* slanting upwards, on the fore part of the Bone, and about a hand-breadth below its upper end, for the Medullary Vessels. Tab. XXVII. Fig. 3. g.

A *rough Surface* at the outer and middle part of the Bone, for the insertion of the Pronator Radii Teres.

The *lower end of the Radius*, becoming gradually larger, and flat on its fore part, where it is covered by the Pronator Radii Quadratus. Tab. XXVII. Fig. 3. i.

A *Ridge* upon the under and back part of the Radius, with a *Fossa* upon each side of it, where the Tendons of the Extensor Muscles of the Fingers pass. Tab. II.

The outer side of this extremity of the Bone, *hollowed* by the Extensors of the Thumb. Tab. II.

A *semilunar Cavity* at the inner side of the under end of the Radius, lined with Cartilage, for receiving the corresponding extremity of the Ulna. Tab. XXVII. Fig. 3. m.

The *lower end* of the Bone, formed into a *Cavity* of an oval or *navicular* shape, and lined with Cartilage, for receiving the two first Bones of the Carpus. Tab. XXVII. Fig. 3. l.

A small *Transverse Ridge*, frequently 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 a *Process* somewhat similar to the Styloid Process of the Ulna. Tab. XXVII. Fig. 3. k. From this a Ligament is sent to the Wrist.

The *Structure* of the Radius and Ulna is the same as that of other long Bones.

The Head of the Radius is articulated with the outer part of the articular Surface of the Os Humeri; the Radius is besides joined by a double articulation to the Ulna; for above, the Head of the Radius is received into the small Sigmoid Cavity of the Ulna, while the under end of the Ulna is received into the small Semi-

lunar Cavity of the Radius; in consequence of which connexion, the Radius accompanies the Ulna in the flexion and extension of the Fore-arm, while the Radius moves round its own axis above; but, at the lower end, it turns upon the round Head of the Ulna, carrying the Hand with it.

The turning of the Radius with the Hand is termed *Supination* and *Pronation*; when the Palm is turned upwards, it is in a state of supination, and in pronation when in a contrary direction.

The Radius gives origin to part of the Flexor Digitorum Sublimis, Flexor Longus, et Extensor Ossis Metacarpi Pollicis.—Insertion to the Biceps Flexor Cubiti, Supinators Longus et Brevis, Pronatores Teres et Quadratus.

In the Fœtus, the extremities of the Bones of the Fore-arm are Cartilaginous; they afterwards become Epiphyses, before they are united to the Bodies of the Bones.

## HAND.

The Hand, composed of the Bones of the Carpus, Metacarpus, and Fingers.

The *posterior Surface* of the Hand, *convex*, which gives it a greater degree of strength.

The *anterior Surface* of the Hand *concave*, for grasping and holding Substances.

## CARPUS, OR WRIST.

The Carpus is composed of *eight Bones*, disposed in two Rows; each Bone being broader on its posterior than anterior Surface, they form an Arch convex behind, by which it gives security and strength; and concave before, for containing the Muscles, Vessels, and Nerves, which run to the Fingers.

The ends of the Arch on the Palm-side of the Wrist, form projecting Points, between which the Ligamentum Carpi Annulare is stretched, which confines the Muscles in their places. Tab. XXIX. Fig. 2. Tab. XXXVI. Fig. 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 Ligaments.

The Bones of the Carpus are articulated with each other, or with the neighbouring Bones, and all their articular Surfaces are covered with Cartilage, to facilitate the motion of the Joints.

In the First Row of Carpal Bones are,  
The Ossa Scaphoides, Lunare, Cuneiforme, Pisiforme.

In the Second Row,  
The Ossa Trapezium, Trapezoides, Magnum, Unciforme.

The



The *Os SCAPHOIDES*, vel *NAVICULARE*, or Boat-like Bone, placed at the outer and upper part of the Carpus. Tab. XXIX. Fig. 1. B.

The *upper Surface*, *convex*, and articulated with the Radius. Tab. XXVII. Fig. 5. a.

The *under and outer Surface* also *convex*, to be articulated with the Trapezium and Trapezoides. Tab. XXVII. Fig. 5. d.

Between the upper and under Cartilaginous Surfaces, a rough *Fossa* for the insertion of the Capsular Ligament. Tab. XXIX. Fig. 5. c.

The anterior and inner Surface, having an *oval Cavity* which gives name to the Bone, where it is articulated with the *Os Magnum*. Tab. XXVII. Fig. 5. b.

A *Process* upon the outer end of the Bone, for the attachment of part of the anterior Transverse Ligament of the Wrist. Tab. XXVII. Fig. 1. under B.

The *Os LUNARE*, vel *SEMILUNARE*, situated upon the inner side of the former Bone. Tab. XXVII. Fig. 1. C.

The *upper Surface*, *convex*, for its articulation with the Radius. Tab. XXVII. Fig. 1. C.

The *outer Edge*, in form of a *Crescent*, from which the Bone is named, articulated with the *Os Scaphoides*. Tab. XXVII. Fig. 6. a.

The *under Surface*, *hollow*, for its articulation with the *Os Magnum*. Tab. XXVII. Fig. 6. b.

The *inner Surface* of the Bone, articulated with the *Os Cuneiforme*. Tab. XXIX. Fig. 1.

The *Os CUNEIFORME*, or Wedge-shaped Bone, or *Os TRIQUETRUM*, less than the former Bone, and situated on its inner side. Tab. XXIX. Fig. 1.

The *anterior Edge*, *thin*, in form of a *wedge*.

The *upper and outer Surface*, articulated with the *Os Lunare*. Tab. XXIX. Fig. 1.

The upper part forms a slight *Convexity*, which is included in the Joint of the Wrist. Here the moveable Cartilage already taken notice of, is interposed between this bone and the Ulna.

The *under and outer Surface*, articulated with the *Os Unciforme*. Tab. XXIX. Fig. 1.

The *anterior and inner Surface*, forming a slight *convexity* for its articulation with the *Os Pisiforme*. Tab. XXVII. Fig. 7. a.

The three first Bones of the Carpus form an oval convexity, by which they are articulated with the lower end of the Bones of the Fore-arm; the *Ossa Scaphoides* and *Lunare* being received in the Socket formed by the Radius, while the *Os Cuneiforme* is opposed to the Cartilaginous End of the Ulna. Tab. XXIX. Fig. 1.

By this kind of articulation, extensive motion is allowed forwards and backwards, and to each side; and by a succession 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 Radius in the Supination and Pronation of the Hand.

The *Os PISIFORME*, vel *ORBICULARE*, the least of the

Carpal Bones, placed upon the anterior and inner Surface of the *Os Cuneiforme*, forming a Prominence which is readily felt in the Wrist, and which gives attachment to strong Tendons and Ligaments, particularly to part of the *Ligamentum Carpi Annulare*. Tab. XXVII. Fig. 8. Tab. XXIX. Fig. 1. D.

The *Os Pisiforme* gives Origin to part of the *Abductor Minimi Digiti*,—and Insertion to the *Flexor Carpi Ulnaris*, and to part of the *Palmaris Brevis*.

The *Os TRAPEZIUM*, named from the four unequal Edges of its posterior Surface.

The *Situation* of this Bone, at the Root of the Metacarpal Bone of the Thumb. Tab. XXIX. Fig. 1. A.

The upper part of the Bone, forming a *smooth Pit*, to be articulated with the *Os Scaphoides*. Tab. XXIX.

The Inner side, *hollow*, and articulated with the *Os Trapezoides*. Tab. XXIX.

The under Surface, forming a *Pulley*, on which the Metacarpal Bone of the Thumb moves. Tab. XXXVI. Fig. 4.

The anterior Surface, sending out a *Process*, which is prominent in the Palm, and marked by the Transverse Ligament of the Wrist, by the *Flexor Carpi Radialis*, and *Flexors* of the Thumb. Tab. XXVII. Fig. 9. b.

The *Os Trapezium* gives origin to part of the *Opponens et Abductor Pollicis*, *Abductor Indicis*,—and Insertion to the *Extensor Ossis Metacarpi Pollicis*.

The *Os TRAPEZOIDES*, so named from its being somewhat like the former Bone, though considerably smaller. Tab. XXVII. Fig. 10.

The *Situation* of the *Os Trapezoides*, at the inner side of the *Os Trapezium*. Tab. XXIX. Fig. 1. E.

The upper Surface, *hollow* where it joins the *Os Scaphoides*. Tab. XXXVI. Fig. 1. m.

The outer Surface, *convex*, and articulated with the Trapezium. Tab. XXXVI. Fig. 5. m.

The *inner Surface*, articulated with the *Os Magnum*. Tab. XXIX. Fig. 1. E.

The under Surface, formed into a sort of *Pulley*, to be articulated with the Metacarpal Bone of the Forefinger. Tab. XXIX. Fig. 1. E.

The *Os Trapezoides* gives origin to part of the *Flexor Brevis Pollicis*.

The *Os MAGNUM*, vel *CAPITATUM*, or largest Bone of the Carpus, placed at the inner side of the former Bone, and consisting of four oblong sides, with a round head, and triangular end. Tab. XXIX. Fig. 1. F.

The *Head* or *Ball* of the Bone, received into the hollow Surfaces of the *Subscapularis* and *Lunare*, like ball and Socket. Tab. XXIX. Fig. 1.

The under part of the outer side, joined to the *Os Trapezoides*. Tab. XXIX.

The inner side, to the *Os Unciforme*. Tab. XXIX.

The under end, opposed to the Metacarpal Bone of the Middle Finger. Tab. XXIX.

The



The Os Magnum gives Origin to part of the Flexor Brevis Pollicis.

The Os UNCIFORME, placed in the under and inner part of the Wrist. Tab. XXIX. Fig. 1. G.

The upper and inner Surface, articulated with the Os Cuneiforme. Tab. XXIX.

The outer Surface, articulated with the Os Magnum. Tab. XXIX.

The inferior Surface, opposed to the Metacarpal Bones of the Ring and Little Fingers. Tab. XXIX.

The anterior Surface, sending out the *Unciform Process*, which gives name to the Bone. Tab. XXIX. Fig. 1. H.

The Unciform, or Hook-like Process, curved for the passage of the Flexor Muscles of the Fingers. Tab. XXIX.

The Os Unciforme gives Origin to part of the Flexor Brevis Pollicis, Flexor Parvus Minimi Digiti, and Adductor Minimi Digiti.

The Substance of the Carpal Bones is spongy, but strong in proportion to their size.

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 that between the Fore-arm and Wrist.

The Connexion between the different bones in each Row of the Carpus, is of such a nature as not to admit of any sensible motion among themselves.

The Carpus serves as a Base to the Hand, protects its Tendons, &c. and affords free and extensive motion.

In the Fœtus, the Bones of the Carpus are in a Cartilaginous state.

#### METACARPUS.

The Metacarpus, or Bones beyond the Wrist, consisting of four Bones for supporting the Fingers, and one for the Thumb. Tab. XXIX. Fig. 1. K, &c. I.

##### *Metacarpal Bones of the Fingers.*

Their Bodies, long and round behind, forming part of the convexity of the Hand; before, giving hollowness to the Palm. Tab. XXXVII. Fig. 5. 4.

The extremities of these Bones, considerably larger than their Bodies, in consequence of which they leave spaces for the Interossei. Tab. XXXVII.

The upper Ends or Bases, flat, where they are articulated with the Bones of the Carpus. Tab. XXIX.

Round the edges of the Cartilaginous Surfaces, at the upper ends, the Depressions where the Capsular Ligaments are fixed. Tab. XXIX. Fig. 1.

The sides of the upper ends flat, and drawn close together, where they are articulated with each other. Tab. XXIX. Fig. 1.

Their Bodies diverging towards their under extremi-

ties, by which they regulate the motions of the Fingers. Tab. XXXVII.

A Ridge at the upper and back part of their Bodies, with a Depression on each side of it, formed by the Interossei. Tab. XXXVII. Fig. 5.

The under and back part of their Bodies, made flat, by the motion of the Tendons of the Extensors of the Fingers. Tab. XXXVII. Fig. 5.

The anterior Surface of their bodies concave, and rendered flat at the sides, by the Interossei. Tab. XXIX. Fig. 1.

The lower Ends, or Heads, formed into Balls, which are flattened at their sides, by their motions upon each other. Tab. XXIX. Fig. 1.

At the fore part of each side of the Heads, a little Prominence, for the attachment of the Ligaments which fix these Bones to each other. Tab. XXIX. Fig. 1.

Round the Heads, a Depression, for the insertion of the Capsular Ligaments.

The Metacarpal Bones are joined by their Bases to the Carpus, and to each other by nearly plain Surfaces; in consequence of which, and the strength of their connecting Ligaments, their motions here are inconsiderable.

The Bones of the Metacarpus in general give Origin to the Interossei.

The Metacarpal Bone of the Fore-finger, commonly the longest of the Bones of the Metacarpus.

The Base of the Metacarpal Bone of the Fore-finger, opposed to, and corresponding with, the Os Trapezoides, and partly with the Os Trapezium. Tab. XXXVII. Fig. 5.

The inner part of the Base, forming a Ridge, which is articulated with the Os Magnum, and with the next Metacarpal Bone. Tab. XXIX. Fig. 1.

The connexion of the Base is so firm, that it has little or no motion.

The Metacarpal Bone of the Fore-finger gives Insertion to the Flexor Carpi Radialis, and Extensor Carpi Radialis Longior.

The Metacarpal Bone of the Mid-finger, commonly the second in length. Tab. XXXVII. Fig. 5:

The Base of the Bone generally slanting inwards and downwards, opposed to the Os Magnum. Tab. XXXVII. Fig. 5.

The outer and back part of the Base projecting, and forming a sort of Process, the external Surface of which is connected with the Ridge of the former Bone. Tab. XXXVII. Fig. 5.

The motion of this bone little more than that of the former one.

It gives Origin to the Adductor Pollicis,—and Insertion to the Extensor Carpi Radialis Brevior.

The Metacarpal Bone of the Ring-finger, shorter than the former Bone. Tab. XXXVII. Fig. 5.

Its Base, semicircular where it is opposed to the Os Unciforme. Tab. XXXVII. Fig. 5.

The



The motion is something greater than that of the former Bone.

The *Metacarpal Bone of the Little Finger*, the *smallest* of the four. Tab. XXVII. Fig. 1.

The Base, which slants downwards and outwards, opposed to the under and inner part of the Os Unciforme. Tab. XXXVII. Fig. 4.

The inner part of the Base destitute of a smooth surface, not being contiguous to any other Bone.

From the nature of the Joint, the looseness 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.

It has inserted into it the Extensor Carpi Ulnaris, and Adductor Minimi Digiti.

#### *Metacarpal Bone of the Thumb.*

The *Metacarpal Bone of the Thumb*, having the general resemblance of those of the Fingers, but differing from them in being placed obliquely with respect to them, and in some measure opposing them. Tab. XXIX. Fig. 1. I.

This Bone thicker and stronger, but shorter than any of those of the Fingers. Tab. XXIX. Fig. 1.

The *Base* of this Bone articulated with the Pulley formed by the Trapezium, the Bone appearing to admit of flexion and extension only; but, from the looseness of the Ligaments, possessing the same kind of motion with Joints formed after the manner of Ball and Socket. Tab. XXIX. Fig. 1.

The *inferior extremity* of the Bone, considerably *flatter* than those of the other Metacarpal Bones. Tab. XXIX. Fig. 1.

This Bone gives origin to part of the Abductor Indicis;—Insertion to the Opponens Pollicis, and to part of the Extensor Ossis Metacarpi Pollicis.

#### *Bones of the Fingers.*

The *Fingers*, composed each of three Bones; the three Rows of Bones, taken transversely, termed *Phalanges*. Tab. XXIX. N, &c. O, &c. P, &c.

The different Phalanges, *tapering* a little as they descend, and their Bases larger than their inferior extremities. Tab. XXIX.

The posterior Surfaces *convex*, and covered chiefly by the Tendinous Expansions of the Extensors of the Fingers. Tab. XXXVII. Fig. 5.

Their anterior Surfaces *flat*, and in some parts *concave*, for lodging the Tendons of the Flexor Muscles. Tab. XXXVII. Fig. 4.

*Ridges* at the sides of their anterior Surfaces, for the attachment of the retaining Ligaments of the Tendons of the Flexor Muscles. Tab. XXIX. Fig. 1.

The Phalanges, in general, have inserted into them the Extensor Digitorum Communis.

The first or Metacarpal Phalanx, longer than the se-

cond or middle, and the second than the third. Tab. XXIX. Fig. 1.

The *Bases* or upper ends of the first Phalanx formed into *Sockets*, to receive the Balls of the Metacarpal Bones, and to allow motion to all sides. Tab. XXIX. Fig. 1. i, i.

The lower ends of this Phalanx, consisting of *lateral Prominences*, and *middle Cavities* or Pulleys, the Cartilaginous Surfaces of which reach considerably farther up in the fore than in the back part. Tab. XXXVII. Fig. 4, 5.

The first Phalanx, by means of the Extensor Digitorum Communis, gives insertion to the Lumbricales and Interossei.

The *Bases* of the second Phalanx, with *lateral Cavities* and *middle Ridges*, corresponding with the Pulleys of the first Phalanx, and admitting of flexion and extension only. Tab. XXIX. Fig. 1. m, m.

The *lower ends* of this Phalanx, similar to those of the first. Tab. XXIX. Fig. 1. n, n.

To this Phalanx the Flexor Digitorum Sublimis is fixed.

The *Bases* of the third Phalanx, or Phalanx Unguim, or Nail Phalanx, like those of the second, and the motions also similar. Tab. XXIX. Fig. 1. p, p.

The under ends of the third Phalanx *rough*, where the Pulpy, Vascular, and Nervous Substance of the points of the Fingers is situated. Tab. XXIX. Fig. 1.

To this Phalanx the Flexor Digitorum Profundus is inserted.

The peculiarities of the Bones of the Fingers consist only in their size.

The Bones of the Mid-finger the largest and longest. Tab. XXIX. Fig. 1.

Those of the Ring-finger next in length. Tab. XXIX.

The Bones of the Fore-finger next to those of the Ring-finger in length, and of the Mid-finger in thickness. Tab. XXIX.

They have inserted into them the Indicator, and Abductor Indicis.

Those of the fourth Finger the smallest. Tab. XXIX.

They have fixed to them the Flexor Parvus, and Abductor Minimi Digiti.

#### *Bones of the Thumb.*

The *Thumb*, consisting of only two Bones. Tab. XXIX. Fig. 1. L, M.

The first Bone like the Bones of the first Phalanx of the Fingers, but *thicker* and *stronger*. Tab. XXIX.

The *Cavity* at the Base of the Bone, longer from one side to the other, and shallower than the Cavities of the corresponding 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



ral Ligaments, the motions here are confined to flexion and extension only. Tab. XXIX.

The *lower end* of the first Bone of the Thumb like that of the first of the Fingers. Tab. XXIX.

It gives Insertion to the Extensor Primi Internodii, Abductor et Adductor Pollicis,—and to part of the Flexor Brevis Pollicis.

The *second Bone* of the Thumb like the *third* of the Fingers, but broader. Tab. XXIX.

The *Base* of this Bone, like that of the second and third Bones of the Fingers, and like their Joints also, admitting of flexion and extension only.

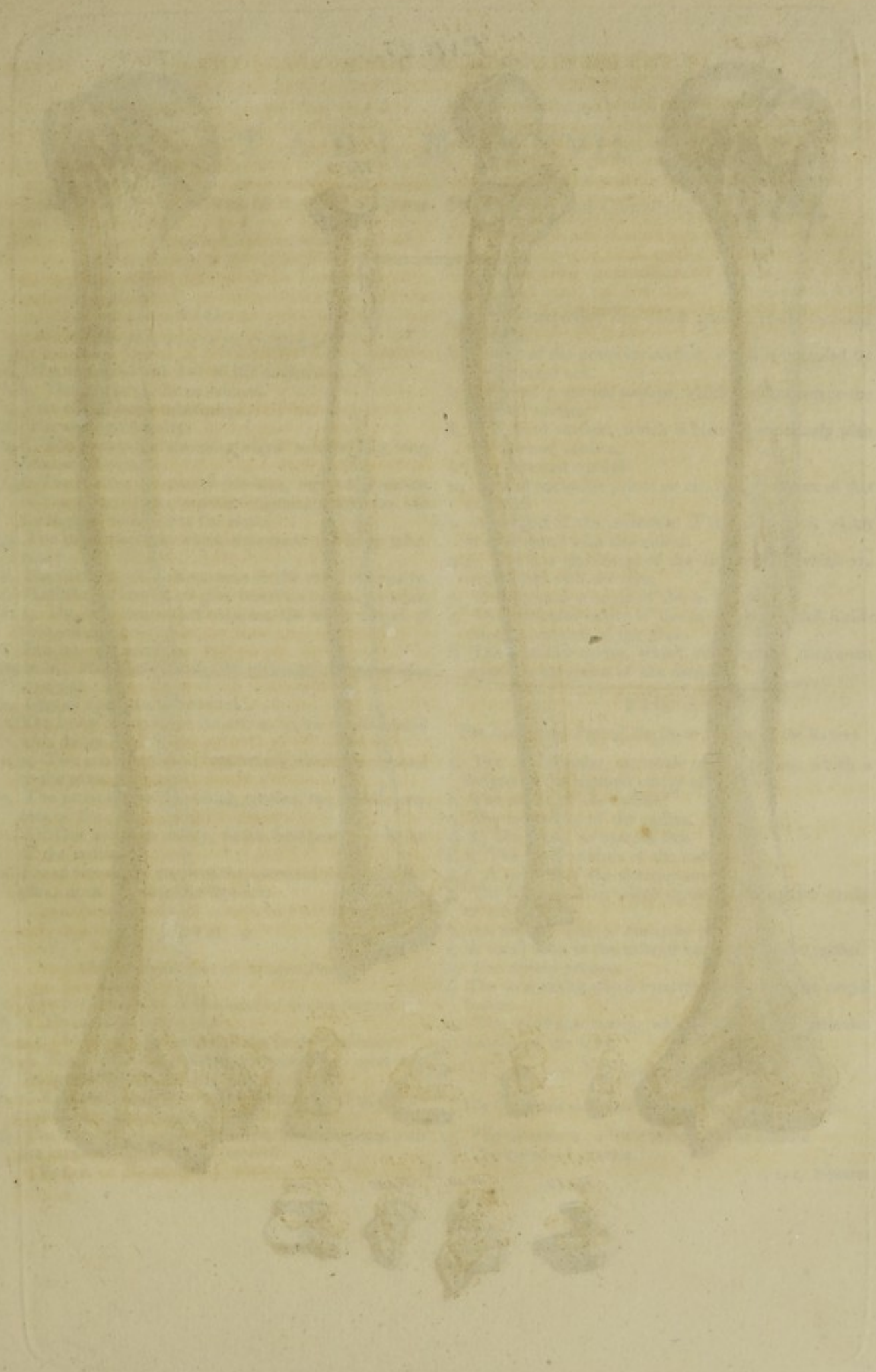
It has inserted into it the Flexor Longus, et Extensor Secundi Internodii Pollicis.

The *Substance* of the Bones of the Metacarpus, and of those of the Fingers and Thumb, is the same with that of the Long Bones.

In the Fetus, both extremities of the Metacarpal Bones, and of the first and second Phalanx of the Fingers, and first Bone of the Thumb, are in a state of Cartilage; as are also the upper ends of the third Phalanx of the Fingers, and second Bone of the Thumb.

## TABLE







TAB. 27.





# T A B L E XXVII.

Represents the BONES of the UPPER ARM, FORE-ARM, and CARPUS of the Left Side.

FIG. 1.

*The Fore Part of the Os HUMERI.*

- a*, The middle of the ball of the os humeri.
- b, b*, The cervix of the os humeri.
- c*, Part of the large tuberosity.
- d*, The small tuberosity.
- 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 tuberosity.
- h*, Another ridge which answers to the small tuberosity.
- i*, Muscular prints which give insertion to the deltoides.
- k, k*, The long line which occupies the whole length of the os humeri.
- l*, The internal condyle.
- m, m, m*, The three facets, or muscular prints of this condyle.
- n*, Part of the external condyle.
- o*, The head, or rounded eminence, which is articulated with the radius.
- p, p*, Two other articular eminences which correspond to the ulna.
- q*, The articular cavity, which receives the middle process of the ulna.
- r*, Another articular cavity, which facilitates the motion of the radius.
- s*, The cavity which receives the coronoid process of the ulna, 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 prints of the large tuberosity.
- d, d*, The orifices of different conduits which open into the substance of the bone.
- e, e*, The superficial triangular cavity, which gives attachment to muscles.
- f*, The orifice of the passage which communicates with the inner cavity of the os humeri.

VOL. I.

- g, g*, The projecting line which answers to the external condyle.
- h*, A part of the posterior surface, which is bounded by the external one.
- i*, A second posterior surface, which also answers to the external surface.
- k, k*, A third surface, which is blended superiorly with the external surface.
- l*, The external condyle.
- m*, Several muscular 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, o*, The two eminences of the os humeri, which are articulated with the ulna.
- p*, The internal condyle of the os humeri.
- 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 Inner, and Part of the Outer Surface 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 inner surface of the radius.
- f, f*, A portion of the anterior surface.
- g*, The small conduit which opens into the inner cavity of the bone.
- h*, An osseous line, or muscular print.
- i*, A small fossa at the inferior extremity of the radius.
- k*, The styloid process.
- l*, The oval cavity which receives the first of the carpal bones.
- m*, The semilunar cavity, which receives the articular process of the ulna.

FIG. 4.

*The Outer and somewhat Posterior Surface of the ULNA.*

- a*, The olecranon, a little hollow in the middle.
- b*, The coronoid process.

L

*c, c, c*, Several



- c, c, c,* Several muscular and ligamentous impressions.  
*d,* The middle, or articular process of the ulna.  
*e, e,* The articular, or great semilunar cavity.  
*f,* The small sigmoid, or semilunar cavity.  
*g, g, g,* An osseous line, extending the whole length of the ulna.  
*h,* A muscular print below the sigmoid cavity.  
*i, i, i,* The inner surface of the ulna.  
*k, k,* The outer surface.  
*l,* A small conduit which communicates with the cavity of the bone.  
*m,* A small fossa, or muscular print of the inferior extremity of the ulna.  
*n,* A semicircular eminence articulated with the under end of the radius.  
*o,* The styloid process.  
*p,* A portion of the cavity which answers to the carpus.

FIG. 5.

*The Convex or External Surface of the Os SCAPHOIDES, viewed in a position most favourable for shewing its NAVICULAR 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 several ligaments are attached.  
*d,* The under end, by which it is articulated with the trapezium and trapezoides.

FIG. 6.

*The Outer Surface of the Os LUNARE, the under Part of which chiefly is shewn.*

- a,* The articular facet of the os lunare, excavated in form of a crescent, by which it is joined to the os scaphoides.  
*b,* The large lunar cavity, by which this bone is articulated with a considerable portion of the large carpal bone.  
*c,* Part of the inferior surface, by which it is joined to the os cuneiforme.

FIG. 7.

*The inner Surface of the Os CUNEIFORME.*

- a,* The small surface, which is articulated with the os pisiforme.  
*b, b,* Different ligamentous impressions.

FIG. 8.

*Os PISIFORME.*

- a,* The articular surface by which it is connected with the os cuneiforme.

FIG. 9.

*The Inferior Part of the TRAPEZIUM, or first of the Second Range of the CARPAL BONES.*

- a, a,* The two small surfaces on the under part of the trapezium.  
*b,* Part of the oblique process.  
*c,* Part of the sinuosity.  
*d,* The small surface by which it is joined with the first metacarpal bone.

FIG. 10.

*The different Surfaces of the Os TRAPEZOIDES.*

- a,* Part of the external surface.  
*b,* The inferior surface.  
*c,* The anterior surface, by which it is joined with the trapezium.  
*d,* Part of the superior surface, by which it is joined with the scaphoides.  
*e,* Part of the print of this bone, which is turned towards the palm.

FIG. 11.

*The External and somewhat Anterior Surface of the Os MAGNUM.*

- a,* The head of this bone incrustated with a smooth cartilage, for facilitating the motions of its articulation with the scaphoides and lunare.  
*b,* The cervix of this bone.  
*c,* The outer surface.  
*d,* Part of its anterior surface.  
*e,* Its under edge, by which it is joined with the second metacarpal bone.

FIG. 12.

*The Posterior Part of the Os UNCIFORME.*

- a,* The upper part, which answers to the os lunare.  
*b,* The inner surface, where there is a sinuosity for the 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 cuneiforme.  
*e, 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.







TAB. 28.





# T A B L E XXVIII.

Represents the different BONES of the EXTREMITIES, excepting those of the THUMB and FINGERS.

FIG. 1.

*An Inside View of the Bones of the SHOULDER and ARM.*

- A, The venter, or anterior cavity of the scapula.
- B, The acromion.
- C, The notch of the scapula, which transmits vessels and nerves.
- D, D, The inferior costa.
- E, E, The base.
- F, The anterior angle, which contains the glenoid cavity.
- G, The coracoid process.
- H, The posterior angle.
- I, The inferior angle.
- K, The posterior end of the clavicle, fixed to the acromion scapulæ.
- L, The sternal extremity.
- M, The ball of the os humeri, articulated with the glenoid cavity of the scapula.
- N, The cervix.
- O, The inner, or small tuberosity.
- P, The round body.
- Q, The internal condyle.
- R, The trochlea.

FIG. 2.

*A View of the Anterior and Inner SURFACE of the Bones of the FORE-ARM, to shew their Articulation.*

- A, The great sigmoid cavity of the ulna, which receives the trochlea of the os humeri.
- B, The olecranon of the ulna.
- C, The coronoid process.
- D, Its triangular body.
- E, The inferior extremity, articulated with the carpus by the intervention of a cartilage.
- F, The styloid process.
- G, The head of the radius, occupying the semilunar cavity of the ulna.

- H, The cervix of the radius.
- I, The tuberosity for the insertion of the biceps.
- K, The triangular body of the radius.
- L, The interstice between the radius and ulna, filled chiefly with the interosseous ligament.
- M, The inferior broad extremity of the radius, articulated with the carpus and ulna.
- N, N, The anterior concave surface of the carpus, composed of

The os scaphoides,  
The os lunare,  
The os cuneiforme,  
The os pisiforme,  
The os trapezium,  
The os trapezoides,  
The os magnum, and  
The os unciforme.

- O, &c. The metacarpal bones of the thumb and fingers.

FIG. 3.

*The Outer and Fore Part of the Os FEMORIS and PATELLA.*

- A, The ball of the os femoris.
- 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.
- E, The curved body of the bone.
- F, The external condyle.
- G, The cartilaginous surface on which the tibia moves.
- H, The trochlea, which receives the patella.
- I, The patella.

FIG. 4.

*A View of the Outer and Fore Part of the Bones of the LEG and FOOT, in their connected state.*

- A, The head of the tibia.
- B, The tubercle of this bone.

L 2

C, The



- C, The body of the tibia.  
 D, The lower extremity, at the inner 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 end, or malleolus externus, joined to the outer side of the tibia and tarsus.  
 H, The space between the tibia and fibula, filled with the interosseous ligament.  
 I to P, The tarsus, composed of,  
 I, The astragalus.  
 K, The os calcis.  
 L, The projection of this bone forming the heel.  
 M, The os naviculare.  
 N, The os cuneiforme medium, on the inner side of which is seen a small part of the os cuneiforme internum.  
 O, The os cuneiforme externum, and,  
 P, The os cuboides.  
 Q, &c. The metacarpal bones of the toes.  
 R, &c. The first phalanx of the bones of the small toes.  
 S, &c. The second phalanx.  
 T, &c. The third phalanx.  
 U, The first bone of the great toe.  
 W, The second bone of the great toe.







TAB. 29.

Fig. 1.

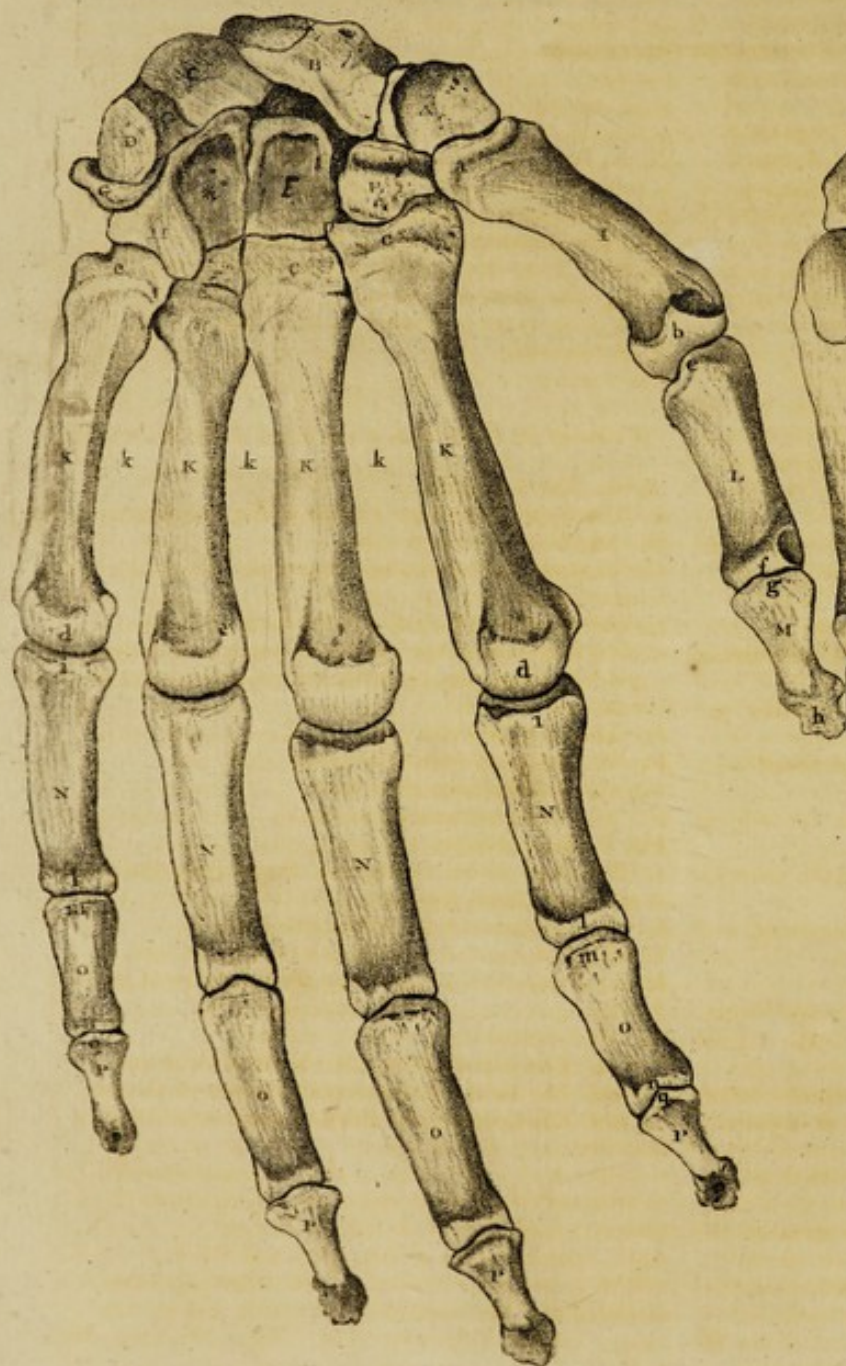


Fig. 2.





# TABLE XXIX.

REPRESENTS the BONES of the HAND and FOOT.

FIG. 1.

*A View of the Inner or Palm Side of the Bones of the LEFT HAND.*

- B, The os scaphoides.
- C, The os lunare.
- G, G, The os cuneiforme.
- D, The os pisiforme.
- A, The os trapezium.
- E, The os trapezoides, or pyramidale.
- F, The os magnum.
- \* H, The os unciforme.
- H, The unciform process.
- I, The metacarpal bone of the thumb.
- a, The base of this bone, sending inwards a coronoid process.
- b, The inferior extremity.
- K, &c. The metacarpal bones of the fingers.
- k, k, &c. The interstices occupied by the interosseous muscles.
- c, c, &c. The upper ends irregular, where they are joined to the carpus, and to each other.
- d, d, The under ends, 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 thumb.
- g, The base, with two lateral cavities, and a middle protuberance corresponding to the end of the former bone.
- h, The under and inner side, rough and irregular, where the soft substance at the end of the thumb is placed.

- N, N, &c. 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, &c. The second phalanx, hollow like the first.
- m, m, The base, similar to g.
- n, n, The under and inner surface, like f.
- P, q, &c. like g, h.

FIG. 2.

*A View of the Under Side of the Bones of the LEFT FOOT.*

- A, A, The astragalus.
- a, The upper and inner surface of the astragalus.
- B, The body of the os calcis.
- C, That portion of the os calcis which forms the lower part of the heel.
- b, That part to which the tendo Achillis is fixed.
- c, The large sinuosity of this bone, which lodges the principal muscles, tendons, vessels, and nerves of the sole.
- D, The os naviculare.
- E, The os cuneiforme internum.
- F, The os cuneiforme medium.
- G, The os cuneiforme externum.
- H, The os cuboides.
- d, The fossa of the os cuboides, for lodging the tendon of the peroneus longus.
- I, The metatarsal bone of the great toe.
- K, &c. The metatarsal bones of the small toes.
- b, &c. Interstices occupied by the interosseous muscles.
- L, The first bone of the great toe.
- M, The second bone of the great toe.
- N, &c. The bones of the first phalanx of the toes.
- O, &c. The bones of the second phalanx of the toes.
- P, &c. The bones of the third phalanx of the toes.



## INFERIOR EXTREMITIES.

OBSERVE here,  
Each of the *Inferior Extremities*, composed of the  
Thigh, Leg, and Foot.

## THIGH.

The *Thigh*, consisting of a single Bone, viz.

## OS FEMORIS.

The *Os Femoris*, or Thigh-bone, the *largest* and *longest* Bone 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. Tab. XXXIV.

The *oblique* situation of the *Body* of the Bone; the under end being considerably nearer than the upper one to its fellow, which is favourable for the passages at the bottom of the Pelvis, for the origin of Muscles, and for walking. Tab. I.

The *Ball* or *Head* of the Thigh-bone, smooth, covered with Cartilage, and forming almost two-thirds of a Sphere, which is received into the deep Socket formed by the Acetabulum of the *Os Innominatum*. Tab. XXX. Fig. 1. *a*. Tab. XXV.

The *Edge* of the Cartilaginous Surface, having an undulated appearance, corresponding with that of the Brim of the Acetabulum.

A *rough Pit* at the inner part of the Ball, a little below its middle, and destitute of Cartilage, for the attachment of the Ligamentum Rotundum, which is fixed by its other end to the bottom of the Acetabulum. Tab. XXX. Fig. 1. *b*.

The *Cervix* or *Neck*, much longer than that of any other Bone, passing obliquely downwards and outwards from the Ball, to allow the free motion of the Body of the Bone in different directions. Tab. XXX.

Numerous *Holes* in the Cervix, for the Insertion of the Fibres of the Ligament reflected from the Capsular one. Tab. XXX. XXXIV.

The *Trochanter Major*, placed at the outer part of the Neck, and upper end of the Body of the Bone, for the Insertion of the Extensor, Abductor, and Rotator Muscles of the Thigh; these, performing the office of rolling or running, give rise to the name *Trochanter*. Tab. XXX. Fig. 1. *c*.

Two *rough Surfaces* upon the upper and fore part of the large Trochanter, for the Insertion of the Glutei Medius et Minimus. Tab. XXX. Fig. 1. *f*.

A *Cavity*, termed *Fossa Trochanterica*, 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 inner part of the Cervix, for the Insertion of the Flexor Muscles of the Thigh. Tab. XXX. Fig. 1. *h*.

The Trochanter Minor is small and pointed, and, in the Subject, is so much covered by Muscles, 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 Ligament. Tab. XXX. Fig. 1. *g*, *g*.

A *rough Line* between the Trochanters, on the back part of the Bone, for the Insertion of the Capsular Ligament, and of the Quadratus Femoris. Tab. XXX. Fig. 2. *k*, *k*.

The *Body* of the Thigh-bone bent forwards, and a little outwards, of a roundish form above, but somewhat triangular about its middle. Tab. XXVIII. Tab. XXX.

The fore part of the Bone, flat, 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. Tab. XXX. Fig. 2.

The *Linea Aspera*, or *Ragged Ridge*, on the back part of the Bone, extending from the Trochanters, but chiefly from the large one, to the lower part of the Bone, and giving attachment to numerous Muscles which pass from the Pelvis to the Thigh, or from the Thigh to the Leg. Tab. XXX.

The *Linea Aspera*, forked at both its extremities; extending above to the Trochanters, while below the two Lines into which it divides terminate in the Condyles. Tab. XXX.

The *Canal* for the Medullary Vessels, slanting upwards, on the posterior part of the Bone, a little below its middle height. Tab. XXX. Fig. 2. *g*.

The under and back part of the Bone flat, where the Popliteal Vessels and Nerves are placed.

The lower End of the Bone becoming gradually larger, and perforated by many Holes, for the Insertion of the Capsular Ligament of the Knee, and for the passage of the Nutritious Vessels of the Bone. Tab. XXX.

The lower end, also marked by the Insertion of several Muscles. Tab. XXX.

The *Cartilaginous 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 Knee-bone, which moves upon it. Tab. XXX.

The *external* and *internal Condyles*, continued back from the Trochlea, and also covered with Cartilage, for the motion of the Tibia. Tab. XXX.

The *internal Condyle*, larger and deeper than the external, to compensate for the obliquity of the Thigh, and to give less obliquity to the Leg. Tab. XXX. Fig. 2. *v*, *v*.



A *Notch* between the back part of the Condyles, for lodging the Popliteal Vessels and Nerves. Tab. XXX. Fig. 2. *z, z*.

A *semilunar rough Notch*, deeper and lower than the former one, for the attachment of the Crucial or internal Ligaments of the Knee. Tab. XXX. Fig. 2. *y*.

The *inner Substance* of this Bone, like that of other long Bones, consists of a fibrous reticular texture 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. Tab. XXXVIII.

The Thigh-bone is articulated above with the Os Innominatum, which allows the free motion of the Body of the Bone in all directions. It is restrained, however, in its motion outwards by the Ligamentum Rotundum, and the high Brim of the Acetabulum.

The Head and Neck of the Bone can move round their own axis, though its Body possesses little rotatory motion. In consequence of the oblique situation of the Head and Neck, when the Ball rolls, the Body of the Bone is only brought forwards or backwards.

The Thigh-bone gives Origin to the Vasti Externus et Internus, Crureus, short Head of the Biceps Flexor Cruris, Gastrocnemius Externus, Plantaris, and Popliteus—Insertion to the Iliacus Internus and Psoas Magnus, Glutei Maximus, Medius, et Minimus, Pyramiformis, Gemini, Obturatores Externus et Internus, Quadratus Femoris, Pectinalis, and Triceps Adductor Femoris.

In the Fœtus, the Body of the Bone is ossified, the different Processes are Cartilaginous, and afterwards form large Epiphyses. Tab. XXXII. Tab. XXXVII. Fig. 15.

## LEG,

Composed of two Bones, the Tibia and Fibula,—to which may be added the Patella.

## TIBIA.

The *Tibia*, or Bone compared to an ancient musical Pipe, situated at the inner part of the Leg, and by much the largest of the two Bones.

The *upper End* of the Tibia, forming a large Head, divided above into two superficial Cavities, for receiving the Cartilaginous part of the Condyles of the Thigh-bone. Tab. XXX. Fig. 3. Tab. XXXVII. Fig. 7.

A *rough Protuberance* projecting between the articulating Cavities, and received in the space between the Condyles. It is *pitted* on its fore and back parts, for the insertion of the anterior and posterior Crucial Ligaments. Tab. XXXVI. Fig. 17. No. 4.

The articulating Surfaces at the upper end of the Tibia, are rendered deeper in the Subject by the addition

of two Semilunar Cartilages placed upon their edges. Tab. XXXVII. Fig. 7. *c, c*.

The circumference of the Head of the Bone, *rough and porous*, for the insertion of the Capsular Ligament. Tab. XXX. Fig. 3. *h, h*.

A *Tubercle* at the upper and fore part of the Bone, for the insertion of the lower Tendon or Ligament of the Patella. Tab. XXX. Fig. 3. uppermost *f*.

A *Cartilaginous Surface* under the outer Edge of the Head of the Bone, for the articulation with the upper end of the Fibula. Tab. XXX. Tab. XXVIII. Fig. 4. *E*.

The *Body* of the Bone, of a *triangular form*, with the sharpest Angle placed anteriorly. Tab. XXX. Fig. 3. *a*.

The *anterior Angle*, called *Spine*, or *Shin*, a little waved, and extending from the Tubercle to the inner Ankle. Tab. XXX. Fig. 3. *b, a, b*.

The *anterior and inner Surface* of the Bone, *smooth*, being covered with skin only. Tab. XXX. Fig. 3. *c, c*.

The *Internal Angle*, for the attachment of part of the Aponeurosis of the Leg.

The *anterior and outer Surface*, *hollowed* by the Tibialis Anticus, and by the long Extensors of the Toes. Tab. XXX. Fig. 3. *d, d*.

The *External Angle*, or that at the *outer and back part* of the Bone, giving attachment to the Interosseous Ligament.

The middle of the posterior Surface, also *hollowed* by Muscles which assist in extending the foot, and in bending the Toes. Tab. XXXVI. Fig. 17. No. 5.

A *Ridge* extending obliquely downwards from the upper and outer part of the Bone, posteriorly, to its inner angle, and giving origin to part of the Muscles which extend the Foot and bend the Toes. Tab. L. Fig. 2.

A *flat Surface* above the Ridge, and under the Head of the Tibia, indicating the situation of the Popliteus. Tab. L. Fig. 2. under the Head of the Tibia.

The *Canal* for the Medullary vessels, slanting downwards at the inner and back part of the Bone, a little above its middle height. Tab. II. above B.

The *under end* of the Tibia *smaller* than the upper one, and its inferior surface *hollow*, and covered with Cartilage, for the Articulation with the Astragalus. Tab. XXX. Fig. 3.

The *Malleolus Internus*, or Mallet-like Process, or *inner Ankle*, produced from the inner and fore part of the under end, and covered also with Cartilage where the Astragalus plays. Tab. XXX. Fig. 3. *r, m*.

A *Pit* in the point of the Malleolus Internus, for the attachment of the internal Lateral Ligament, and a *Groove* behind, where the Tendon of the Tibialis Posticus is placed. Tab. XXX. Fig. 3. *m*.

The *semicircular Cavity*, at the under and outer side of the Tibia, for receiving the under end of the Fibula. Tab. XXX. Fig. 3. *q*. Tab. XXVIII. Fig. 4. *G*.

Round



A *smooth Convexity* on the upper part of the Bone, for its articulation with the under and back part of the Astragalus. Tab. XXXI. Fig. 8. *a*.

A *Fossa* or Sinuous Cavity at the fore part of this articulating Surface, running forwards and outwards, and giving origin to strong Ligaments which are inserted into the corresponding Fossa of the Astragalus. Tab. XXXI. 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. XXXI. Fig. 8. *b, b*.

From the Posterior Prominence, the Cartilaginous Ligament arises, which is fixed to the Os Naviculare.

A *large Cavity* or Arch at the inner side of the Bone, between the posterior of the two last mentioned Processes and Projection of the Heel, for lodging the Tendons of the long Flexors of the Toes, together with the Vessels and Nerves of the Sole. Tab. XXXI. Fig. 5. under B.

A *Depression* in the external Surface of the Bone, near its fore part, where the Tendon of the Peroneus Longus runs, in its way to the Sole. Tab. XXXI. Fig. 8. *f*.

The under and back part of the bone, forming two *Prominences*, where it gives origin to the Aponeurosis, and to several Muscles of the Sole; and before the Prominences, the Bone *concave*, where it lodges part of these Muscles. Tab. XXXVII. Fig. 10. *a, b*.

The anterior Surface *concave*, and somewhat in form of a pulley placed obliquely, for its articulation with the Os Cuboides. Tab. XXVIII. Fig. 4. before K.

The *Os 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.

It gives Origin to the Extensor Brevis Digitorum, Flexor Brevis Digitorum, Flexor Accessorius, and Abductor Pollicis,—to Part of the Adductor Pollicis, of the Flexor Brevis Pollicis, and Abductor Minimi Digiti;—Insertion to the Gastrocnemii Externus et Internus, and Plantaris.

In the Fœtus, a large proportion of this Bone is ossified, and the Projection forming the Heel is for some time afterwards an Epiphysis.

The Os NAVICULARE, or Boat-like Bone, situated at the fore part of the Astragalus, and inner part of the Foot. Tab. XXXI. Fig. 1. C.

The *posterior Surface*, forming a *Cavity* somewhat like that of a Boat, for receiving the Head of the Astragalus in the manner of Ball and Socket. Tab. XXXI. Fig. 6. *o*.

A *Prominence* at the inner side of the Bone, for the insertion of Tendons, Muscles, and strong Ligaments, particularly for the Ligament stretched between this Bone and the Os Calcis, for the support of the Astragalus. Tab. XXXI. Fig. 5. *o*.

The *fore part* of the Bone *convex*, and divided into three *articular Surfaces*, for the articulation with the Ossa Cuneiformia. Tab. XXXI. Fig. 5. *p, p, p*.

Between the Os Naviculare and Astragalus, the Foot has its principal lateral and rotatory motions, though each of the other Joints of the Tarsus contributes a little.

The Os Naviculare gives Insertion to part of the Tibialis Posticus:

The Three OSSA CUNEIFORMIA, or Wedge-shaped Bones, situated at the fore part of the Tarsus, and inner side of the Os Cuboides, and applied to each other like the stones of an Arch. Tab. XXXVII. Fig. 12. *n, o, p*.

The *upper part* of these Bones, *flat* where they are covered with Ligaments. Tab. XXXVII. Fig. 12.

The *under part irregular*, for the attachment of Muscles and strong Ligaments lying in the Sole. Tab. XXXVII. Fig. 10. *n, o, p*.

The *posterior Surface*, *flat*, and covered with Cartilage, to be articulated with the Os Naviculare. Tab. XXXVII. Fig. 12.

The *anterior Surface*, also *flat*, for the articulation with the Metatarsal Bones. Tab. XLI. Fig. 12.

The *Os Cuneiforme Internum*, vel *Maximum*, vel *Primum*, the largest of the Cuneiform Bones, and placed obliquely, with its anterior Surface opposed to the Metatarsal Bone of the Great Toe. Tab. XXXI. Fig. 11. Tab. XXXVII.

The sharp Edge of this Bone turned upwards, while that of the other two bones is in the opposite direction. Tab. XXXVII. Fig. 12. *n*.

It gives Origin to the short Head of the Abductor Pollicis;—Insertion to part of the Tibialis Anticus et Posticus, and Peroneus Longus.

The *Os Cuneiforme Medium*, vel *Minimum*, vel *Secundum*, the least of the three, and articulated at its inner side with the former Bone, and anteriorly with the second Metatarsal Bone. Tab. XXXI. Fig. 10. Tab. XXXVII. Fig. 12. *o*.

The *Os Cuneiforme Externum*, vel *Tertium*, sometimes called *Medium*, as being of a middle size between the former two Bones, opposed to the Metatarsal Bone of the Third Toe.—The inner side of this Bone articulated with the former Bone. Tab. XXXI. Fig. 9. Tab. XXXVII. Fig. 12. *p*.

This Bone gives Origin to part of the Flexor Brevis and Adductor Pollicis.

The Os CUBOIDES, or Cube-like Bone, placed at the fore and outer part of the Tarsus. Tab. XXXVII. Fig. 12. *i*.

The *posterior Surface* of this Bone *smooth*, *convex* at its *inner*, and *concave* at its *outer* part, corresponding with the anterior extremity of the Os Calcis. Tab. XXXI. Fig. 12. *b*.

The



The *inner side* articulated with the Os Naviculare and external Os Cuneiforme. Tab. XXVIII. Fig. 4. K.

Its *under Surface*, *irregular* where it gives attachment to strong Ligaments, and to the Adductor Pollicis. Tab. XXXVII. Fig. 10. k.

A *deep Fossa* in the outer and under part of the Bone, for lodging the Tendon of the Peroneus Longus, where it crosses the Sole. Tab. XXXVII. Fig. 10. l.

The *anterior Extremity*, divided into a small inner, and large outer plain surface, to be articulated with the fourth and fifth Metatarsal Bones. Tab. XXXVII. Fig. 10.

The Os Cuboides gives Origin to part of the Flexor Brevis Minimi Digiti,—and Insertion to part of the Tibialis Posticus and Adductor Pollicis.

The Os Naviculare, Ossa Cuneiformia, and Os Cuboides, are almost Cartilaginous at Birth.

#### METATARSUS.

The *Metatarsus*, or Bones beyond the Tarsus, composed of *five pieces* which answer to the general characters given to the Metacarpal Bones. Tab. XXVIII. Fig. 4. Q, Q, &c.

Their *Bodies long*, *arched upwards*, and *tapering* towards their anterior extremities. Tab. XXXVII. Fig. 12.

The *extremities*, *large* in proportion to their Bodies, and the posterior much larger than the anterior. Tab. XXXVII. Fig. 10.

The *Bases*, or Posterior Extremities, *flat*, or a very little *hollowed*, to be articulated with the fore part of the Tarsal Bones. Tab. XXXVII. Fig. 12.

From the flatness of their Bases, and the strength of the Ligaments which fix these Bones to those of the Tarsus, very little motion is allowed to this part of the Foot.

Round the Bases, *rough Surfaces* for the attachment of Ligaments. Tab. XXVIII. Fig. 4.

The *sides of the Bases*, *flat* where they are articulated with each other. Tab. XXXVII. Fig. 12.

A *Ridge* above, and a *flat Surface* at each side of their bodies, for the Origin of the Interossei. Tab. XXXVII. Fig. 12.

The *flat Surfaces* turned obliquely outwards, and the obliquity increasing the more externally the Bones are placed.

The *anterior Extremities* forming *Balls*, to be articulated with the Toes;—the Balls much longer from above downwards, than from one side to the other. Tab. XXXVII. Fig. 12.

Round the Heads *distinct Impressions*, where the Capsular Ligaments are fixed. Tab. XXXVII. Fig. 12.

The Metatarsal Bones in general give Origin to the Interossei.

The *Metatarsal Bone of the Great Toe*, by much the thickest and strongest, but shortest of the Metatarsus. Tab. XXXVII. Fig. 12.

The *articulating Cavity* of its Base, deeper than the rest. Tab. XXXVII. Fig. 12.

The *anterior Extremity*, bearing a greater proportion to the *Base* than the rest, having a much larger share of the weight of the Body to sustain here, and formed into a *middle Prominence*, with *two lateral Depressions*, where the Bones termed Ossa Sesamoidea move. Tab. XXIX. Fig. 2.

It gives origin to part of the Transversalis Pedis.—Insertion to part of the Tibialis Anticus, of the Peroneus Longus, and Adductor Pollicis.

The *Metatarsal Bone of the first of the small Toes*, the longest of the five. Tab. XXXVII. Fig. 12.

The *Metatarsal Bone of the Middle Toe*, the second in length, with a Base like that of the former Bone, triangular, but a little larger, to be articulated with the Os Cuneiforme Externum. Tab. XXXVII. Fig. 12.

The *Metatarsal Bone of the third of the Small Toes*, nearly of the same length as the former, but distinguished from it by its Base being thicker below, and its Cartilaginous Surface being more of a square form, corresponding with the anterior and inner part of the Os Cuboides, with which it is articulated. Tab. XXXVII. Fig. 10.

The *Metatarsal Bone of the Little Toe*, the shortest of those of the Small Toes, with flat Surfaces facing upwards and downwards. Tab. XXXVII. Fig. 10. 12.

It gives insertion to the Peronei Brevis et Tertius, Transversalis Pedis, and to part of the Flexor Brevis Minimi Digiti.

The *Base* which rests on the Os Cuboides, projecting outwards into a large Tuberosity, which gives origin to Muscles, and forms one of the points on which the Body rests in standing. Tab. XXXVII. Fig. 10.

The Bones of the Metatarsus, with those of the Tarsus, 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 those of the Fingers, viz. two to the Great Toe, and three to each of the smaller Toes; and the different Bones here, as in the Fingers, disposed in Ranks or Phalanges. Tab. XXXVII. Fig. 10. 12.

The *two Bones of the Great Toe* like those of the Thumb, but stronger, and placed in the same row with the Bones of the smaller Toes, for the purpose of walking, and assisting in supporting the Body. Tab. XXXVII. Fig. 12.

The first Bone of the Great Toe gives insertion to part of the Extensor Brevis Digitorum, of the Extensor Proprius, Flexor Brevis, Abductor et Adductor Pollicis.



The second Bone of the great Toe gives insertion to the Flexor Longus Pollicis,—and to part of the Extensor Proprius Pollicis.

The Bones of the Smaller Toes, every way less than those of the Fingers. Tab. XXIX.

Their under Surface depressed, where the Tendons of their Flexor Muscles are lodged. Tab. XXXVII. Fig. 10.

The Bases of the first Phalanx, as in the Fingers, forming Sockets to receive the Balls or Heads of the Metatarsal Bones. Tab. XXXVII. 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 similar, but more confined. Tab. XXXVII. Fig. 10. 12.

Of the Bones of the small Toes, the first, or that next the Great Toe, the largest, the rest becoming smaller the more externally they are placed. Tab. XXXVII. Fig. 10. 12.

The structure of the Bones of the Foot is nearly similar to that of the Bones of the Hand.

The Phalanges of the small Toes, in general, give Insertion to the Extensor Longus, and also to the Extensor Brevis, with the exception of the Little Toe. The first Phalanx has inserted into it the Lumbricales and Interossei, the second Phalanx the Flexor Brevis, and the third Phalanx the Flexor Longus.

To the Little Toe are inserted, besides the Tendons of the general Flexors and Extensors, the Abductor et Flexor Brevis Minimi Digiti.

The Bones of the Toes allow a free and easy motion in Children, and a considerable degree of it also in people whose feet have not been confined in shoes. In others, especially in advanced life, the Toes are frequently found squeezed together, and some of the smallest Bones of the Toes, as the two last of the little

one, have the pieces which originally composed them, joined together by a union of Substance.

In the Fœtus, the Bones of the Metatarsus and Toes are in the same condition as those of the Metacarpus and Fingers.

#### OSSE SESAMOIDEA,

Or Bones resembling the Seeds of the Sesamum, or Oily-grain.

Their size, situation, and number, vary in different persons.

Those always present are placed in pairs at the roots of the Thumb and Great Toe, between the Tendons of their Flexor Muscles and Joints.

They are also occasionally found single at the roots of the Fingers and Small Toes, at the second Joint of the Thumb, and at the corresponding one of the Great Toe; between the Condyles of the Os Femoris and Gastrocnemius Muscle; between the Tendons of the Peroneus Longus and Os Cuboides, &c.

They are convex on their outer Surface, where they are inclosed by the Tendons and Muscles fixed to them. Tab. XXXVII. Fig. 12. a.

And concave, and lined with Cartilage next the Joints, where they play upon the Bones with which they are articulated. Tab. XXXVII. Fig. 14. a. Tab. XXXI. Fig. 3. 4.

They are considered by Anatomists as serving the same general purpose with the Patella, which is looked upon by some Authors as the largest of the Sesamoid Bones.

They give insertion to the Flexor Brevis Pollicis Manus, and to the Flexor Brevis, Abductor et Adductor Pollicis Pedis.

#### TABLE







TAB. 30.

Fig. 2.

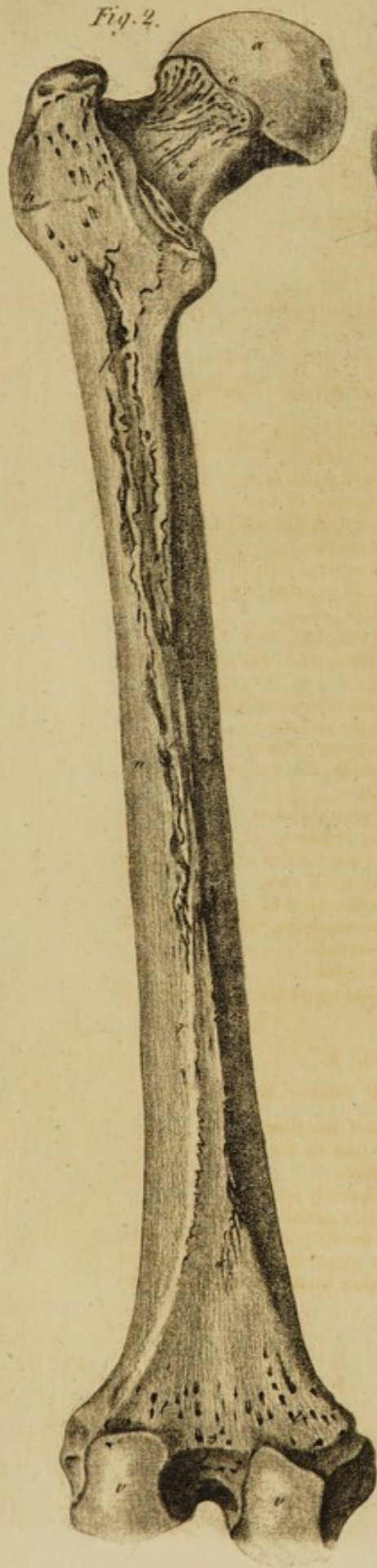


Fig. 3.



Fig. 4.

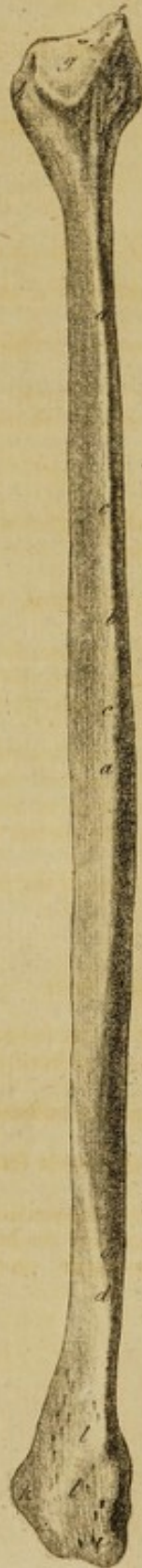


Fig. 1.





# TABLE XXX.

## Different VIEWS of the Os FEMORIS, TIBIA, and FIBULA.

FIG. 1.

*Anterior Surface of the Os FEMORIS of the LEFT SIDE.*

- a, The head of the os femoris, 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, d, Various openings or fissures, which give passage to vessels.
- e, The trochanter major.
- f, The blunt point of this process.
- g, g, The ridge, or projecting line, which extends from the greater to the smaller trochanter.
- h, The trochanter minor.
- i, The upper and middle part of the os femoris, somewhat flattened.
- k, The middle part, which is convex and rounded.
- l, The inferior and middle part, more of a triangular form.
- m, m, Muscular and ligamentous impressions upon the lateral and under parts of the bone.
- n, A triangular cavity, with fissures for the insertion of the capsular ligament, and for the passage of vessels.
- o, A cavity, or pulley, at the bottom of the os femoris, covered with cartilage, to facilitate the motion of the patella.
- p, p, The eminences which form the sides of the pulley.

FIG. 2.

*The Posterior Surface of the same BONE.*

- a, The posterior part of the head of the os femoris.
- b, The cavity, or ligamentous print of the head of the os femoris.
- c, c, The unequal edge of the cartilaginous substance of the head.
- d, The upper and posterior part of the cervix femoris.
- e, The under part of the cervix.
- f, The openings in the cervix, for the transmission of vessels, which penetrate the substance of the bone.
- g, The blunt point of the trochanter major, on which are muscular prints.

- h, The base of this process.
- i, i, Openings in this process for the transmission of vessels.
- k, k, The ragged eminence, or crest, which extends from one trochanter to the other.
- l, The trochanter minor, on which, as well as on the trochanter major, are a number of muscular prints.
- m, The middle of the inner surface of the os femoris.
- n, The middle of the outer surface.
- o, The middle of the linea aspera, which, through its whole length, is only a continuation of muscular impressions.
- p, p, The division of this line into two branches, of which one goes to the larger, and the other to the smaller trochanter.
- q, Orifice of the canal for the medullary vessels, in the middle and inner part of the os femoris.
- r, r, Division of the linea aspera into two small ridges, which extend from the middle and under part of the bone as far as its condyles.
- s, The triangular cavity between these two branches and the condyles, for facilitating the passage of blood-vessels.
- t, t, The fissures at the under part of this cavity, through which the vessels of the cancelli pass.
- v, v, The condyles, encrusted with a smooth cartilage.
- x, x, The tuberosities of the condyles, into which ligaments and muscles are inserted.
- y, A cavity between the condyles.
- z, z, Ligamentous impressions upon the upper edge of this cavity.

FIG. 3.

*The anterior Surface of the TIBIA of the LEFT SIDE.*

- a, The middle of the crest of the tibia.
- b, b, The upper and under part of the crest or ridge.
- c, c, The inner smooth surface.
- d, d, The outer surface, generally hollow.
- e, e, The edge of the superior cavities of the tibia.
- f, f, The tuberosity of this bone divided into two parts, of which the upper gives attachment to the ligament of the patella, and the other insertion to the tendons of muscles.
- g, The



- g, The small 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 spongy substance, which are orifices for the transmission of vessels spread over this part of the bone.  
 k, k, A porous surface, where the tendons of muscles, with their aponeurosis, are fixed.  
 l, 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 body of the bone.  
 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 impressions.

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 posterior from the outer surface.  
 d, Part of the ridge which separates the outer from the inner surface.  
 e, 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, The coronoid process of the malleolus externus.  
 k, k, The asperities, or ligamentous prints of this process.  
 l, l, The orifices of several conduits, for the transmission of vessels.

FIG. 5.

The Posterior Surface of the FIBULA of the LEFT SIDE.

- a, The posterior part of the head of the os femoris.  
 A, The cavity, or ligamentous print of the head of the os femoris.  
 c, The upper and posterior part of the cervix femoris.  
 d, The lower part of the cervix.  
 e, The opening in the cervix, for the transmission of vessels, which penetrate the substance of the bone.  
 f, The blunt point of the trochanter major, on which the muscular prints.

FIG. 6.

- The anterior surface of the TIBIA of the LEFT SIDE.  
 a, The middle of the crest of the tibia.  
 A, The upper and under part of the crest or ridge.  
 c, The inner smooth surface.  
 d, The outer surface, generally hollow.  
 e, The edge of the superior cavity of the tibia.  
 f, The tuberosity of this bone divided into two parts, of which the upper gives attachment to the ligament of the patella, and the other insertion to the tendons of muscles.







TAB. 31.

Fig. 1.



Fig. 2.



Fig. 4.



Fig. 3.



Fig. 5.

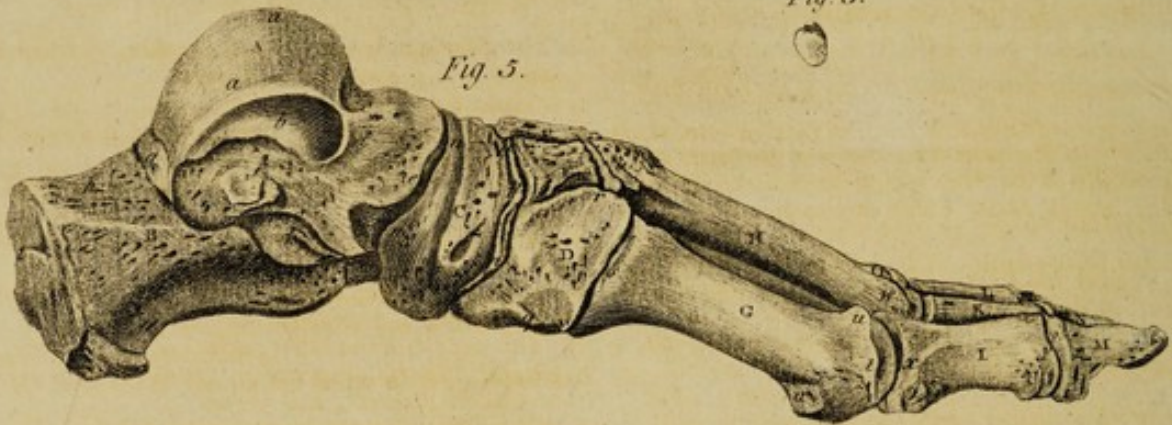


Fig. 7.



Fig. 8.



Fig. 6.



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.





## TABLE XXXI.

## VIEWS of the PATELLA, OSSA SESAMOIDEA, and BONES of the FOOT.

FIG. 1.

*The External Surface of the PATELLA of the LEFT SIDE.*

- a, A hollow in the upper part of the patella, into which the tendon of the extensor muscles of the leg is fixed.
- b, The middle of the bone somewhat convex.
- c, c, The lateral parts, which are so many muscular prints.
- d, Fissures on the surface of the patella, with the orifices of the conduits by which the vessels penetrate into the interior of the bone.
- e, The inferior extremity of the patella, into which a very strong ligament is fixed.

FIG. 2.

*The Inner Surface of the same PATELLA.*

- a, a, a, The circumference of the patella, or margin to which the capsular ligament is fixed.
- b, b, The articular cavities 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 Sesamoid Bone of the Great Toe.*

FIG. 5.

*The Inner Surface of the LEFT FOOT, in a Position nearly horizontal.*

- A, The middle and upper part of the astragalus, where it is somewhat concave, and covered with cartilage.
- a, a, The semicircular eminences which border the upper part of this bone.

- b, The oblong cavity of the inner surface, by which it is joined with the malleolus internus.
- c, The cervix of the astragalus.
- d, Inequalities, or ligamentous prints on the upper and inner part.
- e, The head of the astragalus, which is received into the cavity of the os scaphoides.
- f, Inequalities on the inner surface, also marked with ligamentous prints.
- g, A small eminence on the posterior part of the astragalus, which is articulated with the os calcis.
- B, The middle of the inner surface of the os calcis, excavated, in form of an oblique gutter, for the passage of tendons, vessels, and nerves.
- h, The upper and posterior eminence of the os calcis, by which it is articulated 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, articulated 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 eminence of the os calcis, by which it is joined with the os cuboides.
- C, The upper and middle part of the os naviculare, on which several ligamentous prints are seen.
- n, n, The navicular cavity, which receives the head of the astragalus.
- o, The tuberosity of the os naviculare, 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 cuneiform bone.
- q, The under end of this bone, where there is a small surface anteriorly, to which the tendon of the tibialis anticus is fixed,—and posteriorly, a tuberosity to which the abductor pollicis is fixed.
- r, The upper part of the same bone, by which it is joined with the second os cuneiforme.
- E, The upper part of the second cuneiform bone.

F, A



- F, A small part of the third cuneiform bone.  
 G, The middle and upper part of the large metatarsal bone.  
 s, The posterior part of this bone, where it is joined to the first os cuneiforme.  
 t, The head of the same bone, which forms an arthrodial articulation with the first phalanx of the great toe.  
 u, u, Eminences, or prints, on the lateral parts of this bone.  
 H, The middle and upper part of the second metatarsal bone.  
 v, The posterior and upper part of this bone.  
 w, Its anterior extremity, which terminates in a roundish head.  
 I, The upper and middle part of the first bone of the great toe.  
 x, The edge of the glenoid cavity of this bone.  
 y, The anterior extremity, the articulation of which with the second bone is a complete ginglymus.  
 K, Part of the first bone of the second toe.  
 L, A portion of the first bone of the third toe.  
 M, The middle part of the second bone of the great toe, which is convex.  
 z, The upper and posterior part of this bone, by which it is joined to the first.  
 &, The anterior extremity of the second bone, on which are asperities to support the nails, and furnish attachment to tendinous fibres.  
 N, N, Portions of the second bones of the second and third toes.  
 O, A very small portion of the third metatarsal bone.

FIG. 6.

*The Posterior Surface of the Os SCAPHOIDES, seen a little obliquely.*

- a, a, a, A large part of the upper surface of the os scaphoides, which is very irregular, and gives attachment to several ligaments.  
 b, A portion of the tuberosity of this bone, on which are muscular and ligamentous prints.  
 c, The navicular cavity which receives the head of the astragalus.

FIG. 7.

*The Under Part of the ASTRAGALUS.*

- a, The outer surface of the astragalus, seen a little fore-shortened.  
 b, Its great cavity, which corresponds to the large upper eminence of the os calcis.  
 c, Edge of the large fossa of the astragalus.

- d, d, The bottom of this fossa, on which are several ligamentous prints.  
 e, A small oval surface, which is joined with a part of the oblong cavity on the eminence 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 calcis.  
 g, The under part of the head of the astragalus.

FIG. 8.

*Shows the Upper Part, and External Surface of the Os CALCIS.*

- a, The upper eminence of the middle part of the os calcis, which is articulated with the great cavity of the astragalus.  
 b, b, Another eminence of the inner surface of this bone, in which there is an oblong cavity, which is articulated with another part of the astragalus.  
 c, c, Irregular hollows, into which the principal ligaments which unite the astragalus with the os calcis are inserted.  
 d, d, d, The posterior part, or edge of the large tuberosity of the os calcis.  
 e, The edge of the large hollow 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 ligaments of the peronei are fixed.  
 h, The anterior process of the os calcis, by which it is articulated with the os cuboides.  
 i, The middle external part, which is slightly convex.

FIG. 9.

*The Upper and Outer Surface of the External Os CUNEIFORME.*

- a, The upper surface, to which several small ligaments are fixed.  
 b, A portion of the anterior surface.  
 c, That part of its outer surface which is joined to the cuboides.  
 d, The depressions of this surface, to which strong ligaments are fixed.  
 e, The point of the bone which answers to the sole.

FIG. 10.

*The Upper, Posterior, and outer Surfaces of the Middle Os CUNEIFORME.*

- a, The upper surface, on which are asperities, or ligamentous prints.  
 b, Part



- b*, Part of the posterior surface.
- c*, The outer 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 Anterior Surfaces of the Internal Os CUNEIFORME.*

- a*, *a*, 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 anticus is fixed.
- c*, The anterior surface, a little hollow, for the articulation of this with the large metatarsal bone.

FIG. 12.

*The Superior, and somewhat External Surface of the Os CUBOIDES.*

- 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.
- c*, The anterior surface, which receives the two last metatarsal bones.
- d*, The upper surface, the numerous asperities of which are so many ligamentous prints.
- e*, Part of the inferior oblique process.
- f*, A portion of the sinuosity, through which the tendon of the peroneus longus passes.



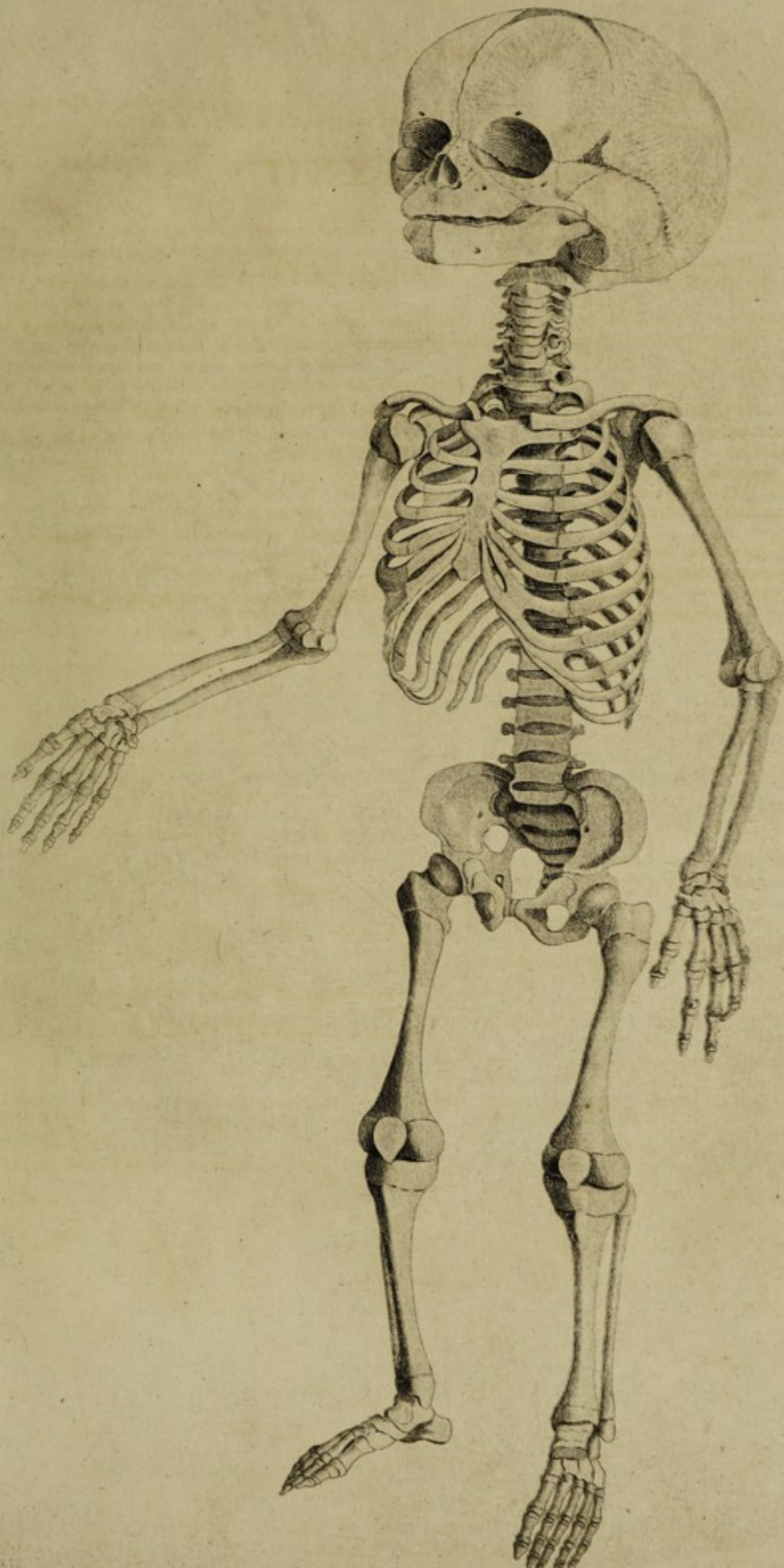
## T A B L E   X X X I I .

Represents the SKELETON of a FÆTUS at the Full Time.

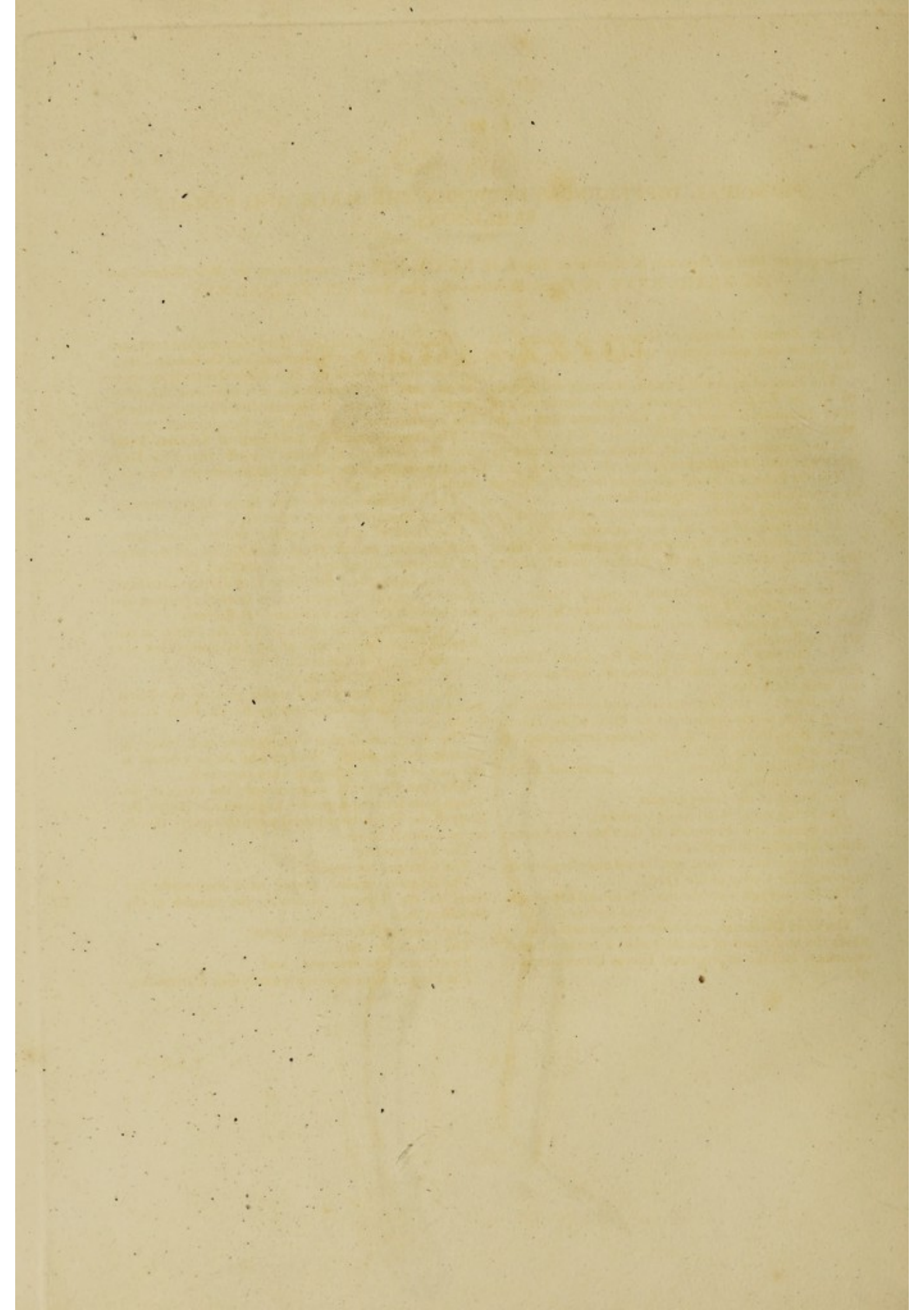
In this figure are seen the following, among other peculiarities of structure ; viz.  
 A portion of the fontanella.  
 A membranous substance, in form of a suture, uniting the two pieces which form the frontal bone.  
 A ring of bone surrounding the outer edge of the tympanum.  
 The symphysis of the lower jaw, formed of cartilage.  
 The os sacrum, composed of distinct vertebræ, 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 compose the os innominatum.  
 The ends of the long bones in general of the superior 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 patellæ in a state of cartilage.  
 The bones of the tarsus partly cartilaginous, and partly osseous.











## PRINCIPAL DIFFERENCES BETWEEN THE MALE AND FEMALE SKELETONS.

*The greater Part of these may be observed in Tab. I. II. XXXIV. XXXVI. representing the Male Skeleton, and Tab. XXXIII. XXXV. the Female Skeleton.—See also Tab. XIX. XX. XXI. XXV.*

THE Female Skeleton is observed, in general, to be smaller and more slender throughout than that of the Male.

The Bone of an Adult Female, is usually distinguished by the Ridges, Depressions, rough Surfaces, and other Inequalities, being less conspicuous than in the Male.

The Circumference of the Female Skull is said by SOEEMMERRING 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 narrower;

All the Bones of the Face more delicate;

The Bodies of the Vertebrae longer, and the Vertebral Canal, according to the Author quoted above, larger;

The Intervertebral Substances deeper or thicker;

The Cartilages of the True Ribs longer in proportion to the Osseous part, and broader and flatter to support the Breasts;

The Sternum more raised, and the whole Thorax shorter, deeper from before backwards, and more distant from the Pelvis;

The length of the Sternum 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 Ensiformis oftener perforated in the middle, or bifurcated;

The length of the Loins greater.

The Pelvis wider in all its dimensions;

The Spines and Processes of the Ossa Innominata farther distant from each other;

The Os Sacrum broader, and turned more backwards, to enlarge the Cavity of the Pelvis;

The Os Coccygis more slender, also turned more backwards, and having a greater degree of motion;

The Ossa Iliæ flatter, and more reflected outwards, by which the under part of the Abdomen is rendered more capacious, and the impregnated Uterus better supported;

The Notches of the Ossa Iliæ wider, and the conjoined Surfaces of the Ossa Innominata and Os Sacrum less;

The space between the Ossa Pubis shorter from above downwards, but larger taken in a transverse direction, especially in Women who have born Children; of course, the Ligamentous Cartilage of the Symphysis thicker;

The Angle formed by the Crura of the Ossa Pubis with the Symphysis Pubis much larger; that of the Male being from 70 to 80, while in the Female the Angle extends from 80 to 90 degrees;

The Tuberosities of the Ossa Ischia flatter, and at a greater distance from each other;

The Brim of the Pelvis wider, and of an oval form, corresponding with the Head of the Child, and the longest Diameter extending between the Ossa Iliæ.

In the Male, the Brim of the Pelvis observed to have more of a circular appearance, to have the greatest extent between the Ossa Pubis and Os Sacrum.

The Opening at the under part of the Pelvis, in the Female, much wider, and of an oval form; but the oval the reverse of that at the Brim.

The Foramina Ovalia larger.

All the Openings at the under part of the Pelvis being wider, leave a large passage for the Birth of the Child.

The Acetabula further distant from each other, in consequence of which, Women who are very broad at this 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 internal Condyle larger.

The Feet smaller;

The Clavicles less crooked;

The Scapulæ smaller, placed more backwards, but closer to the Thorax; of course, the breadth of the Shoulders less;

The Superior Extremities shorter;

The Hands smaller;

The Ossa Carpi narrower; and

The Fingers more tapering towards their Extremities.



# PRINCIPAL DIFFERENCES BETWEEN THE MALE AND FEMALE SKELETONS.

The greater Part of them may be observed in Tab. I. II. XXXIV. XXXV. representing the Male Skeleton, and Tab. XXXIII. XXXV. the Female Skeleton—See also Tab. XIX. XX. XXI. XXV.

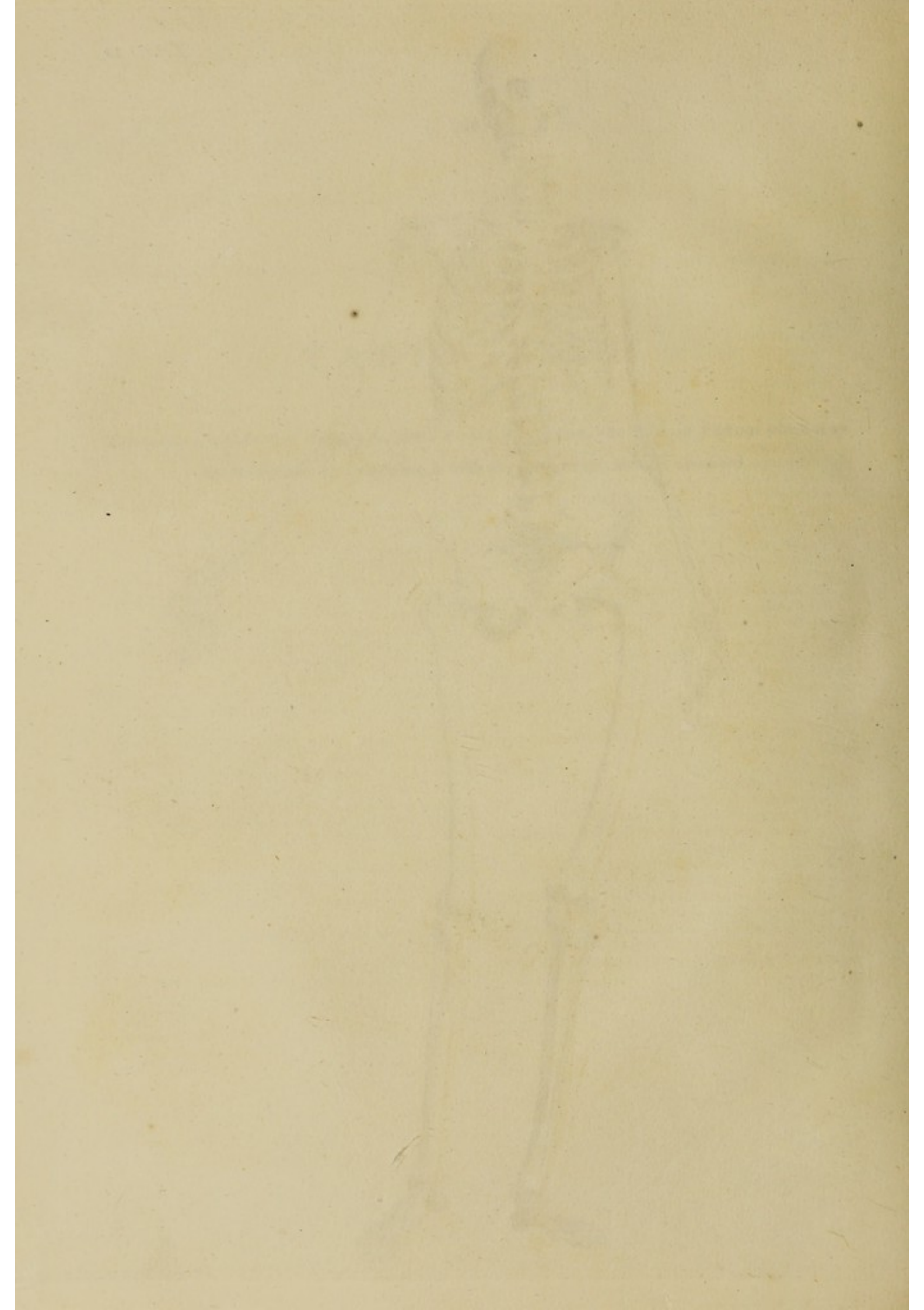
## TABLE XXXIII.

Represents a well-formed YOUNG ADULT FEMALE SKELETON, the different Parts of which may be understood, by comparing it with the SKELETONS already described.











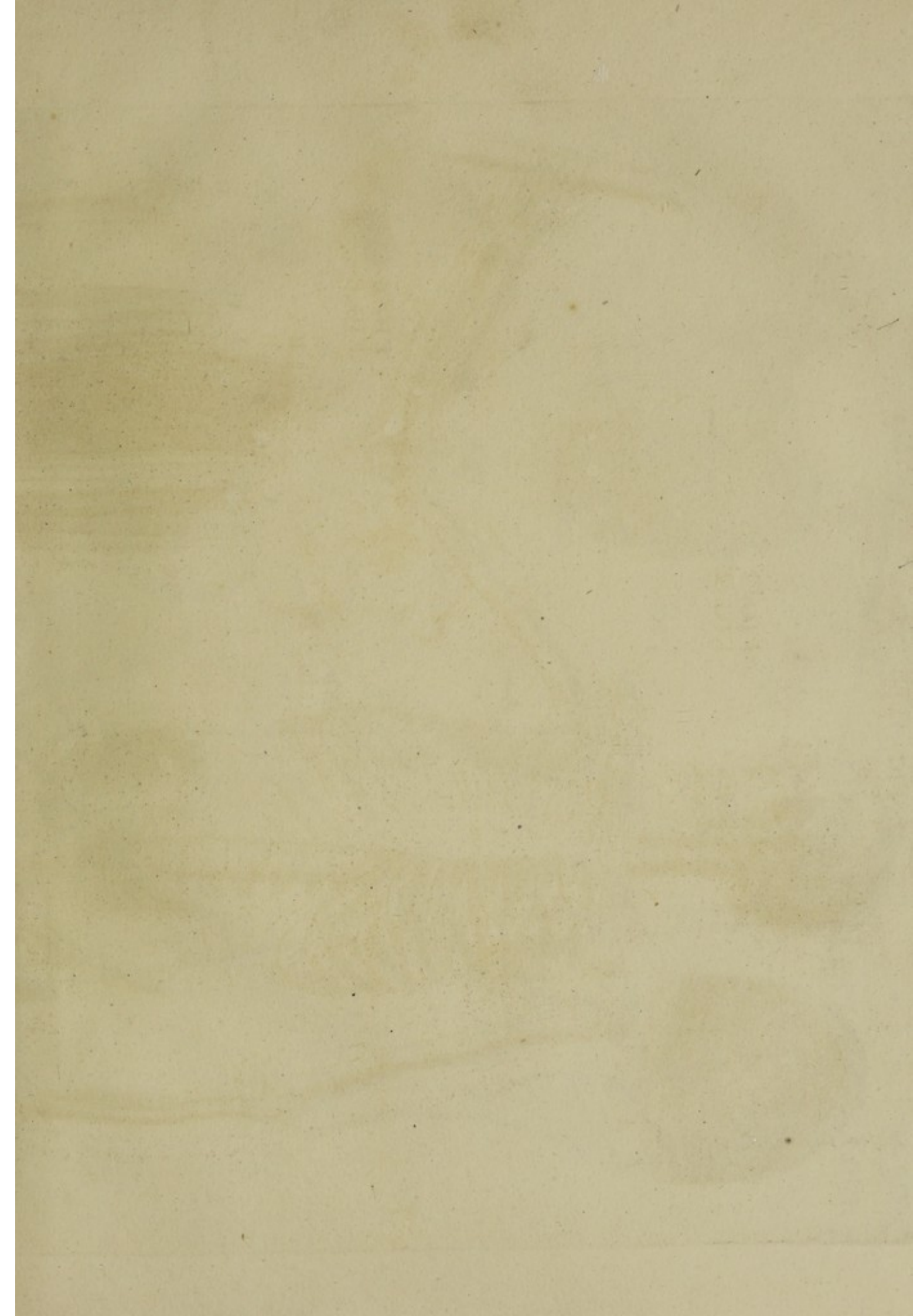




FIG. 1.



FIG. 2.

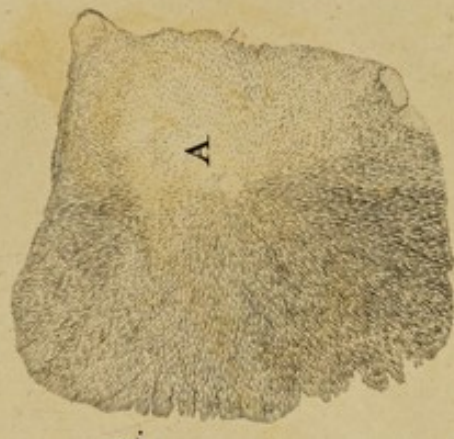


FIG. 6.



FIG. 5.

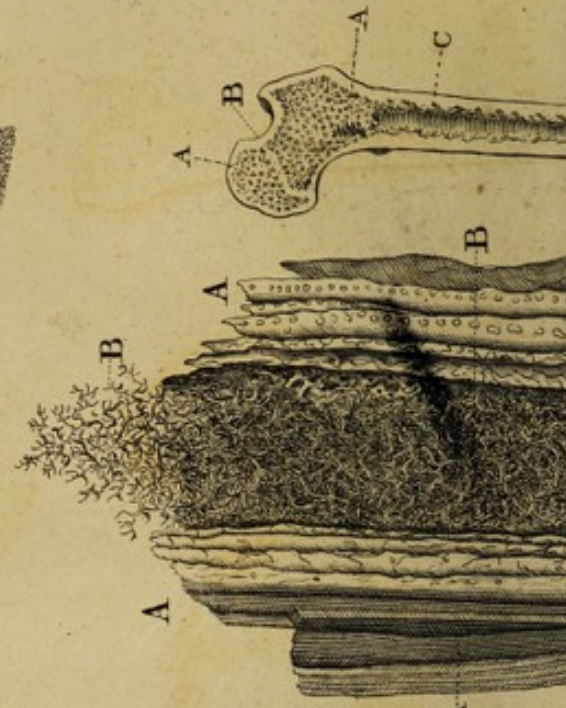






FIG. 3.

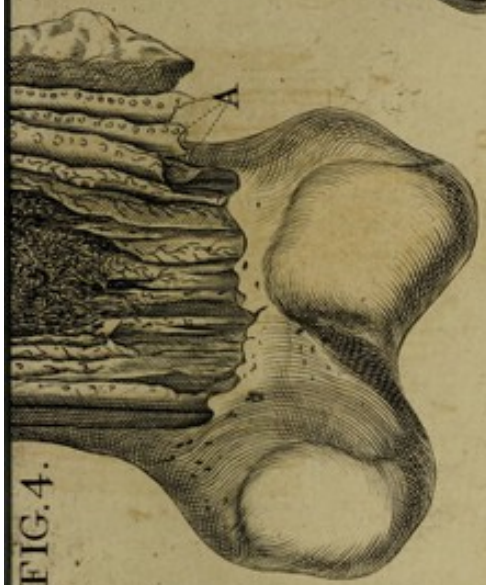
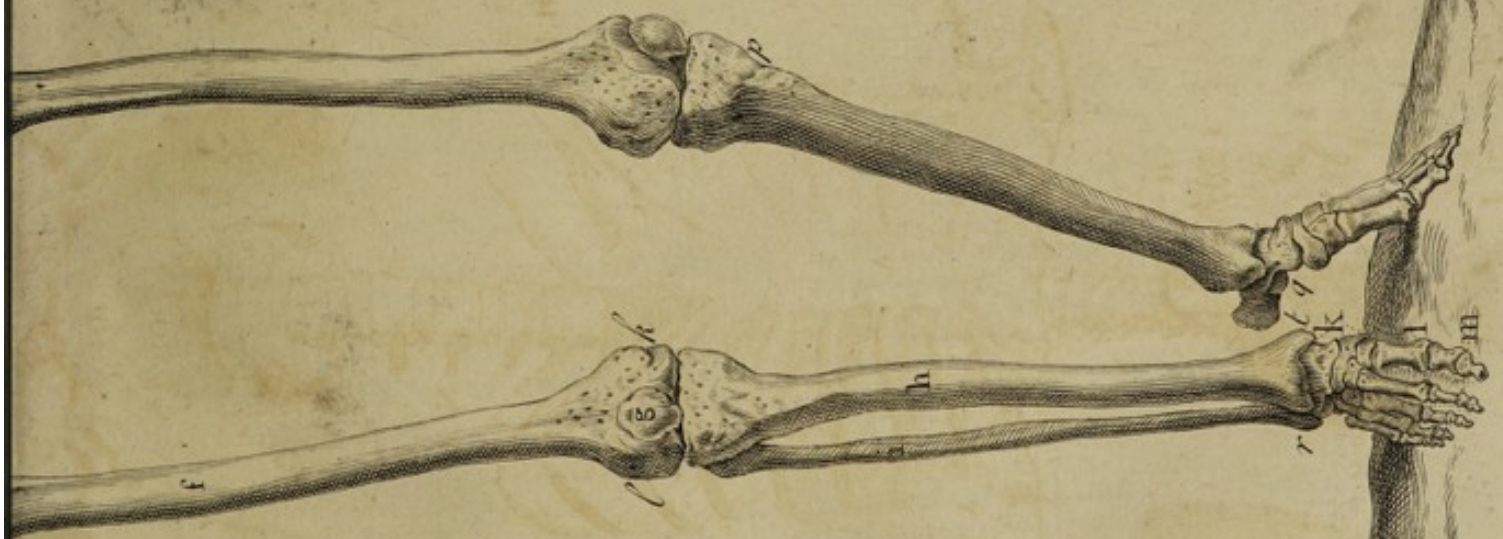


FIG. 4.



FIG. 8.



FIG. 9.

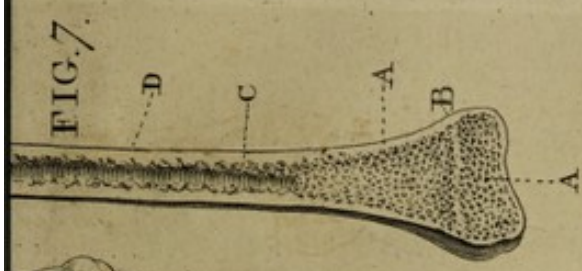


FIG. 7.

*A. Cooper fecit*







# TABLE XXXIV.

Represents the General Structure of the BONES, and a Front View of the MALE SKELETON.

FIG. 1.

*Part of the Os FRONTALIS, covered with its PERIOSTEUM, the ARTERIES of which are injected.*

A, The branches which come from the orbit;—the other small trunks of the arteries observed in several places are sent from the common integuments to the periosteum.

FIG. 2.

*The PARIETAL BONE of a Fœtus, to shew the Radiated Fibres of a flat Bone, proceeding from the first ossified point A.*

FIG. 3.

*The THIGH-BONE of a Fœtus, to shew the Longitudinal Parallel Fibres of a Cylindrical Bone.*

A, The part which first ossifies.

B, B, The two extremities in a cartilaginous state.

FIG. 4.

*Section of Part of the Os FEMORIS, to shew the PLATES and CANCELLI of Long Bones in general.*

A, A, A, A, The plates of the thigh-bone separated.

B, B, The cancelli.

FIG. 5.

*Transverse Section of a Bone burnt, to shew the Cavities for containing the Marrow and Vessels.*

FIG. 6.

*The Appearance of the Marrow, viewed with a Microscope.*

FIG. 7.

*The THIGH-BONE, sawed Longitudinally through the middle.*

A, A, A, A, The cancelli.

B, B, The union of the bone with its extremities, which are here in a state of epiphyses.

C, C, The reticular substance.

D, D, The sides, or tables, which are thick and strong in the middle of the bone, and thinner towards the extremities.

FIG. 8.

*The Os ILIUM, sawed through the middle to shew the Cancelli.*

FIG. 9.

*The HIP-JOINT of a Child, opened to shew,*

A, The head of the thigh-bone.

B, The round ligament connecting it to the acetabulum.

C, The capsular ligament of the joint, with its arteries injected, and,

D, The numerous vessels of the fatty glandular-like substance of the joint also injected.

FIG. 10.

*A Frontal View of the MALE SKELETON.*

A, The frontal bone.

β, Its superciliary hole.

γ, The external orbital process.

δ, The internal orbital process.

B, The parietal bone.

Between A and B, the coronal suture.

C, The temporal bone.

D, δ, The occipital bone.

E, The bones of the nose.

F, The os malæ.

G, The superior maxillary bone.

H, The lower jaw.

I, The teeth.

K, The seven cervical vertebræ, with their intermediate cartilages.

ζ, Their transverse processes.

L, L, &c. The twelve dorsal vertebræ.

M, The five lumbar vertebræ.

N, Their intermediate cartilages.

κ, Their transverse processes.

O, The os sacrum.

P, The os coccygis.

Q, The



- Q, The os ilium.  
 λ, Its spine.  
 μ, Its anterior-superior spinous process.  
 ν, Its inferior-anterior spinous process.  
 ξ, The venter of the ilium.  
 ο, The brim of the pelvis.  
 R, The os pubis.  
 S, The os ischium.  
 π, The crura of the ossa ischia.  
 ς, The foramen thyroideum.  
 p, The acetabulum.  
 T, The seven true ribs.  
 U, The five false ribs.  
 \*, \*, The joining of the ribs with their cartilages.  
 θ, The cartilages of the sixth, seventh, and eighth ribs, united with each other.  
 V, The sternum.  
 1, Its upper piece.  
 2, Its middle piece.  
 3, 4, Its cartilago ensiformis.  
 X, The clavicle.  
 Y, The concave surface of the scapula of the right side.  
 φ, The superior costa of the scapular, with its semilunar notch.  
 τ, The coracoid process of the left side.  
 υ, The acromion of the left side.  
 ϕ, The anterior-inferior costa of the scapula of the right side.  
 ζ, The head of the os humeri under the acromion.  
 ↓, A groove for the tendon of the biceps.  
 Z, The body of the os humeri.  
 a, The trochlea.  
 α, The external,  
 β, The internal condyle of the os humeri.  
 d, The head of the radius of the left side.  
 c, The olecranon of the ulna of the same side.  
 α, The ulna of the right side.  
 b, The radius.  
 c, The carpus.  
 d, The metacarpus.  
 e, The phalanges of the fingers.  
 f, The right os femoris.  
 k, The internal,  
 l, The external condyle.  
 g, The patella.  
 h, The tibia.  
 i, The fibula.  
 k, The tarsus.  
 l, The metatarsus.  
 m, The phalanges of the toes.  
 r, The malleolus externus.  
 t, The malleolus internus.  
 f, The ball of the left thigh-bone.  
 g, The great trochanter.  
 h, The cervix.  
 i, The small trochanter.  
 p, The tubercle of the tibia.  
 q, The os calcis.



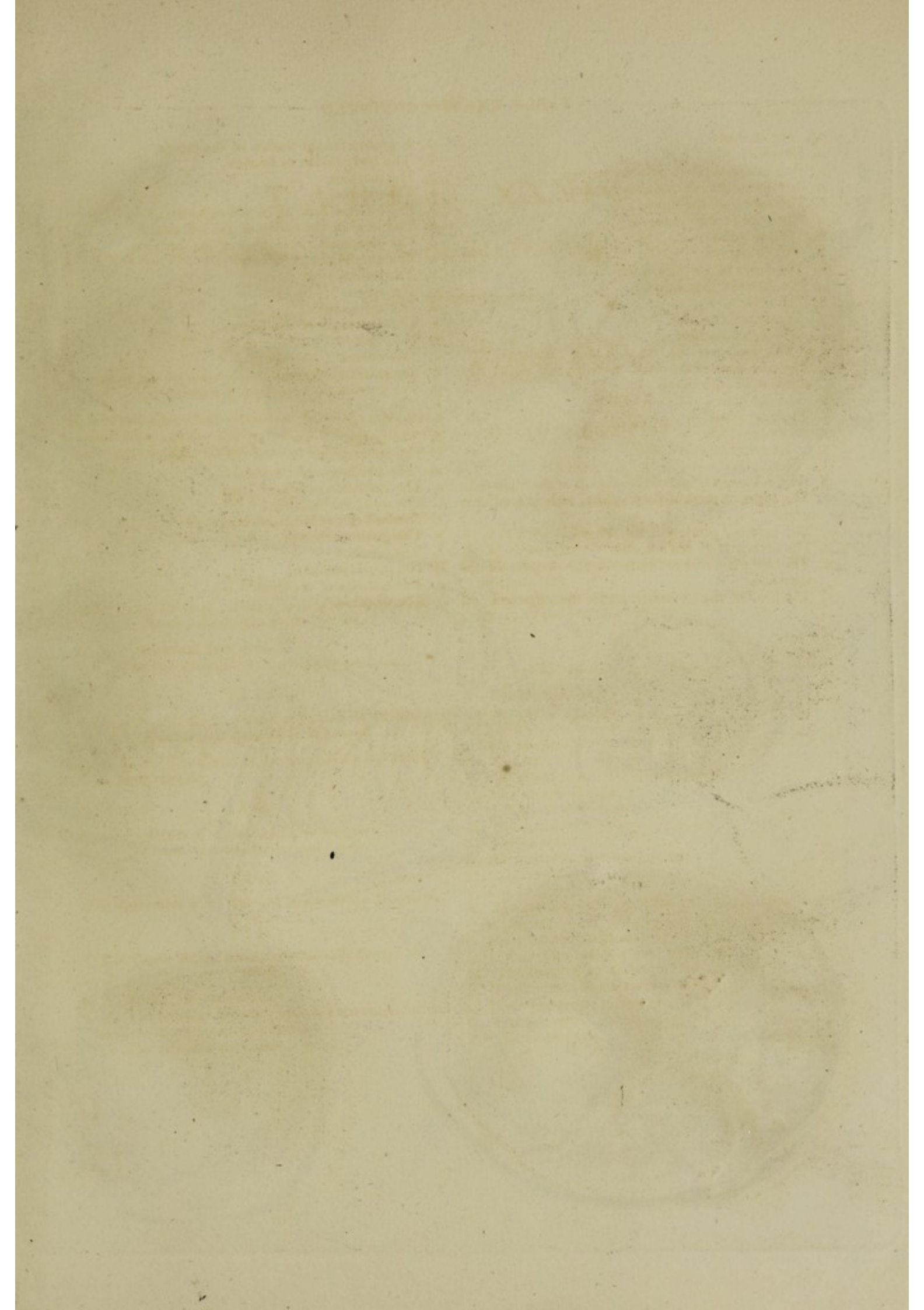




FIG. 15.



FIG. 1.



FIG. 16.



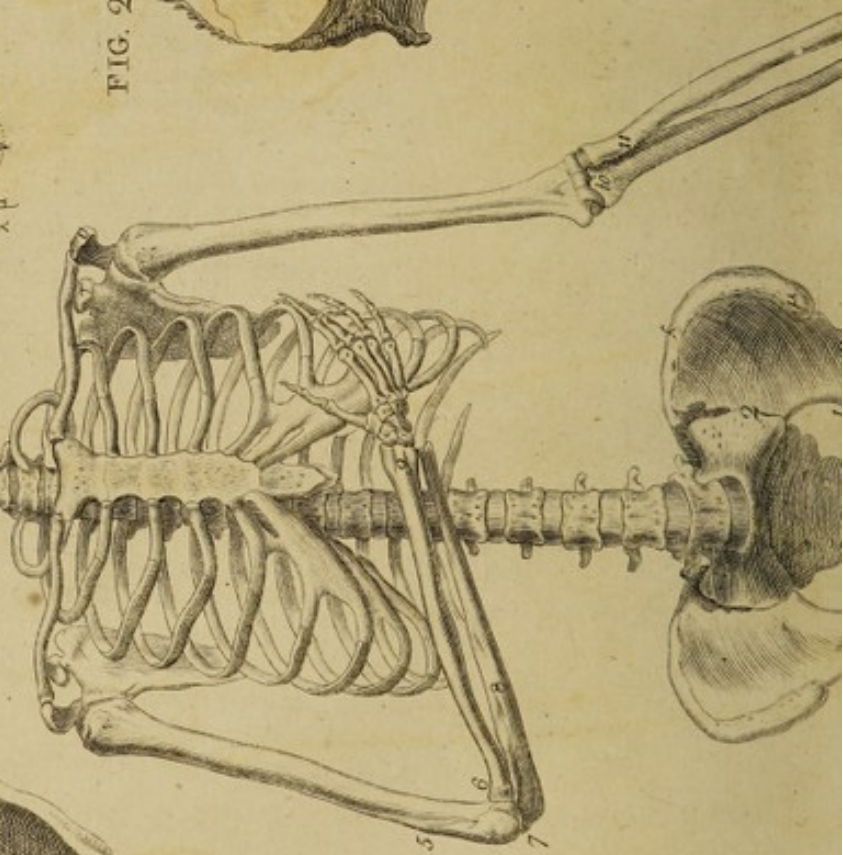
FIG. 2.



FIG. 13.



FIG. 3.





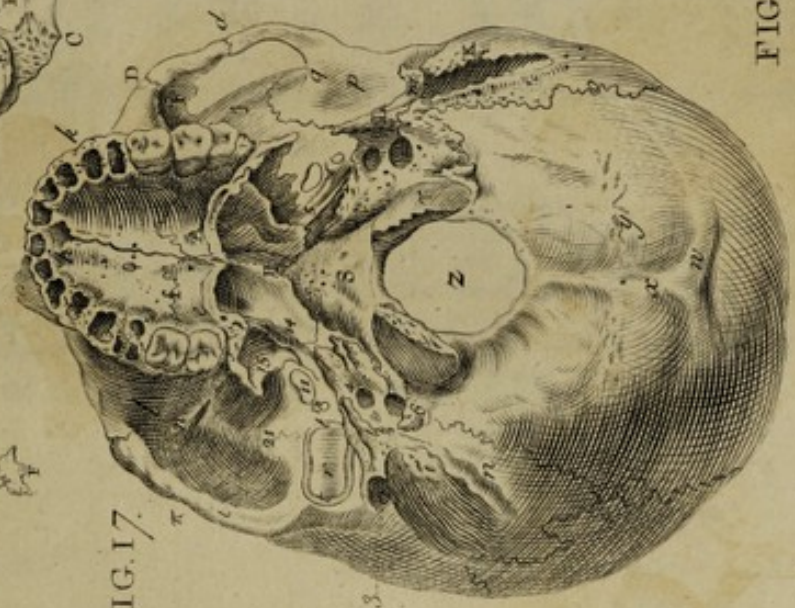
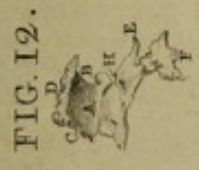
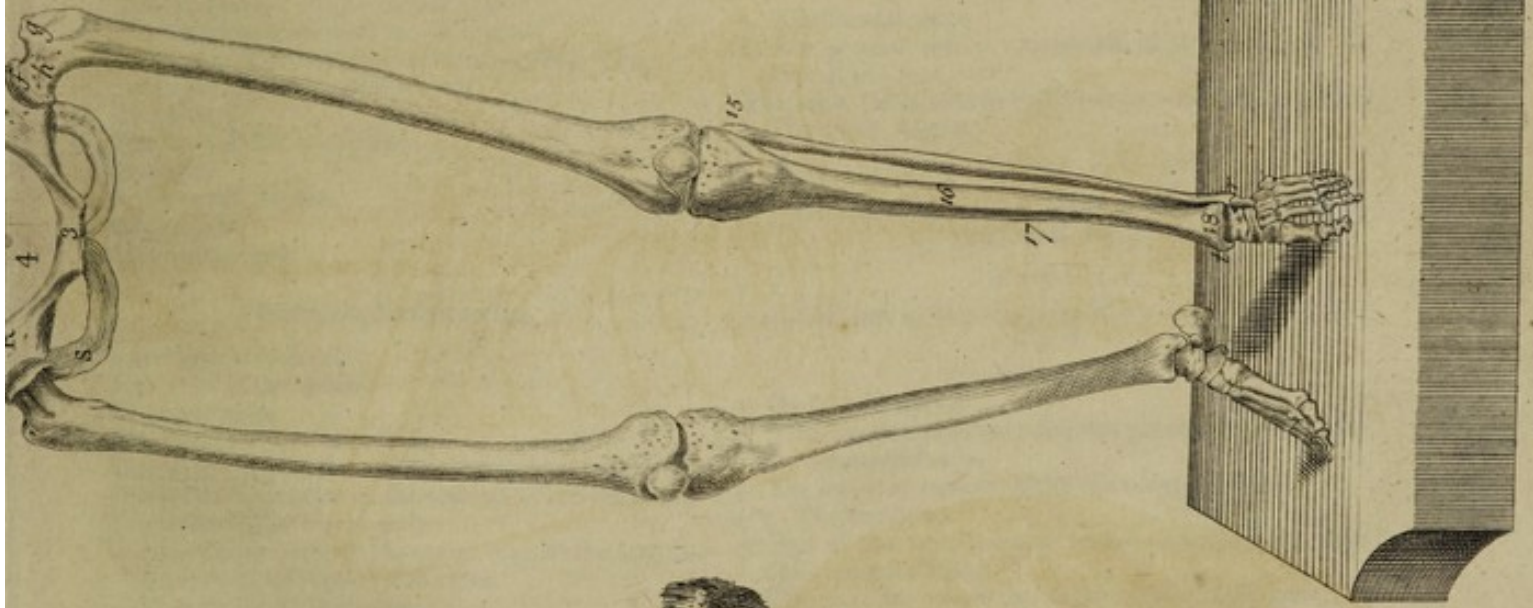
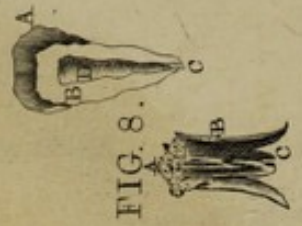
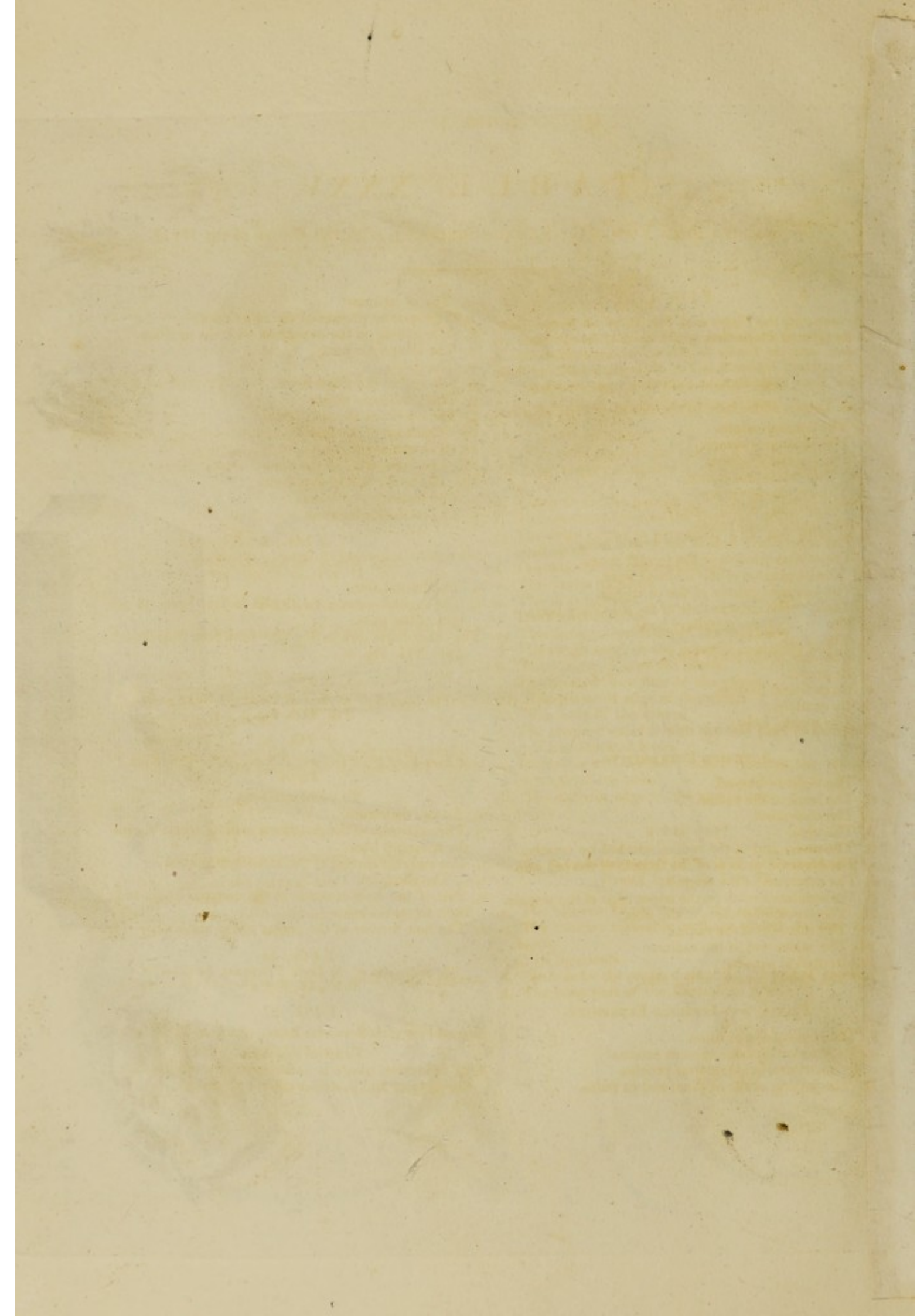


FIG. 14.



*A. Lechner fecit*







# T A B L E XXXV.

Represents a Front View of the FEMALE SKELETON, with the BONES of the HEAD.

## FIG. 1.

*By comparing this Figure with Fig. 10. of the former Table, the different Proportions of the Bones of the two Sexes are seen, and the Letters to the several Bones of the MALE SKELETON, explained in Fig. 10. may guide the Eye to the like Bones of the FEMALE SKELETON represented here.*

THE Letters added here to the BONES of the HEAD are,

- a, The coronal suture.
- b, The squamous suture.
- c, The lambdoid suture.
- c, c, The transverse suture.
- d, The zygomatic suture.
- e, The external orbital suture.
- f, The lateral nasal suture.
- z, The superciliary hole of the frontal bone.
- z, The orbital process of the frontal bone.
- H, The os planum of the ethmoid bone.
- r, The lacrymal groove of the os unguis.
- π, The external orbital hole of the maxillary bone.
- c, The tuber of the maxillary bone.
- 1, The chin.
- 2, The base of the lower jaw.
- 3, Its angle.
- 4, Its coronoid process.
- 5, Its condyle.
- 6, The mental hole.

## SUPERIOR EXTREMITIES.

- 5, The right os humeri.
- 6, The head of the radius.
- 7, The olecranon.
- 8, The ulna.
- 9, The under end of the radius, marked by muscles.
- τ, The coracoid process of the scapula of the left side.
- υ, The acromion of the scapula.
- φ, The semilunar notch on the upper edge of the scapula.
- 10, The coronoid process of the ulna.
- 11, The tubercle of the radius.
- 12, The under end of the radius.
- 13, Its styloid process.
- 14, The styloid process of the ulna.

## PELVIS, AND INFERIOR EXTREMITY.

- λ, The spine of the os ilium.
- μ, Its anterior-superior spinous process.
- ν, Its anterior-inferior spinous process.
- R, The joining of the os ilium and os pubis.

S, The os ischium.

- 1, The spinous process of the os ischium.
- 2, The joining of the os sacrum with the os ilium.
- 3, The symphysis pubis.
- 4, The pelvis.
- f, The ball of the thigh-bone.
- g, The trochanter major.
- h, The cervix of the thigh-bone.
- 15, The head of the fibula.
- 16, The spine, and,
- 17, The inner edge of the tibia.
- 18, The under end of that bone.
- r, The malleolus externus.
- t, The malleolus internus.

## FIG. 2.

*Back View of the FRONTAL BONE.*

- z, The frontal 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 in Tab. XII. Fig. 4.

## FIG. 3.

*The Inner Side of the Left PARIETAL BONE.—See Tab. XIII. Fig. 2.*

## FIG. 4.

*A Fore View of the OCCIPITAL BONE.—See Tab. XIII. Fig. 4.*

*To which add here,*

- π, An os triquetrum.
- c, The extremity of the cuneiform process, where it joins the sphenoid bone.
- ς, The exterior surface of the cuneiform process.
- τ, τ, The condyles.
- α, Part of the hole common to the occipital bone, and right temporal bone.
- β, The hole for one of the nerves of the ninth pair.

## FIG. 5.

*The Inner side of the Right TEMPORAL BONE.—See Tab. XIV. Fig. 6.*

## FIG. 6.

*Internal View of the SPHENOID BONE.—See Tab. XIV. Fig. 2.*

*To which add here,*

- 3, A connexion which is sometimes observed between the anterior and posterior clinoid processes.

FIG.



## FIG. 7.

*Exterior View of the ETHMOID BONE.—See Tab XIV.  
Fig. 3.*

## FIG. 8.

*Posterior View of the two NASAL BONES.—See Tab. XVI.  
Fig. 3. 4.*

## FIG. 9.

*The Side of the Os UNGUIS next the Nose.—See Tab. XVI.  
Fig. 6.*

## FIG. 10.

*Posterior View of the Os MALÆ.—See Tab. XVI. Fig. 8.*

## FIG. 11.

*A View of the Lower Part, and Side next the Nose, of the  
Left Os MAXILLARE, with the Palate Bone, and  $\pi$ , the Os  
Turbinatum Inferius.—See Tab. XVI. Fig. 2.*

## FIG. 12.

*The Left PALATE BONE inverted.*

A, B, C, D, The palate plate.  
The other letters refer to parts belonging to the nose  
and orbit.—See Tab. XVI. Fig. 11. 12.

## FIG. 13.

*A View of the Inner Surface of the Right Side of the LOWER  
JAW.*

- 1, A section of the chin.
- 2, The base of the jaw.
- 3, The angle.
- 4, The coronoid process.
- 5, The condyle,
- 6, The rough print of the internal pterygoid muscle.
- 7, The orifice of the passage for the nerve and blood-vessels.
- 8, The five molares.

## FIG. 14.

*A TOOTH cut perpendicularly, magnified.*

- A, The fibres of the cortical part.
- B, The bony part.
- C, The entry for the vessels and nerve.
- D, The cavity of the tooth.

## FIG. 15.

*A View of the Interior Surface of the BASE of the SKULL.—  
See Tab. V.*

## FIG. 16.

*Interior View of the Right Side of the CRANIUM, and BONES  
of the UPPER JAW.*

- D, D, The two tables and diploe of the frontal and occipital bones.  
a, The coronal suture.  
 $\pi$ , The serrated edges of the parietal bone, for forming the sagittal suture.  
 $\sigma$ , The lambdoid suture.  
b, The squamous suture.  
 $\xi$ , The furrows made by the vessels of the dura mater.  
 $\pi$ , The frontal sinus.  
E, The crista Galli.  
F, The nasal lamella of the ethmoid bone.  
1, The hollow wing of the sphenoid bone.  
6, The sella Turcica.  
19, The sphenoid sinus.  
18, The nasal plate of the sphenoid bone.  
20, The spongy substance of the sphenoid and occipital bones.  
 $\beta$ , The hole for the passage of the ninth pair of nerves.  
c, The squamous part of the temporal bone.  
e, The ridge of the os petrosum, with the print of a small sinus.  
f, The internal meatus auditorius.  
 $\lambda$ , The dentes incisores.  
 $\mu$ , The dens caninus.  
 $\nu$ , The dentes molares.  
 $\pi$ , The foramen incisivum of the maxillary bone.  
 $\xi$ , The rough spine of the superior maxillary bone.  
 $\phi$ , The joining of it to the vomer.  
 $\epsilon$ , The broad hollow base of the vomer.  
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 bones.  
 $\chi$ , Its hollow anterior part, which receives the middle cartilage of the nose.  
P, The anterior edge of the nasal bone.

## FIG. 17.

*The External Surface of the BASE of the CRANIUM and  
UPPER JAW.—See Tab. VI.*

- $\gamma$ , The tubercle of the root of the zygoma.
- $\tau$ , The concave moveable cartilage placed on that tubercle.
- t, t, Its ligaments.
- 3, The hole for the portio dura of the 7th pair of nerves.
- 5, The bony part of the Eustachian tube.



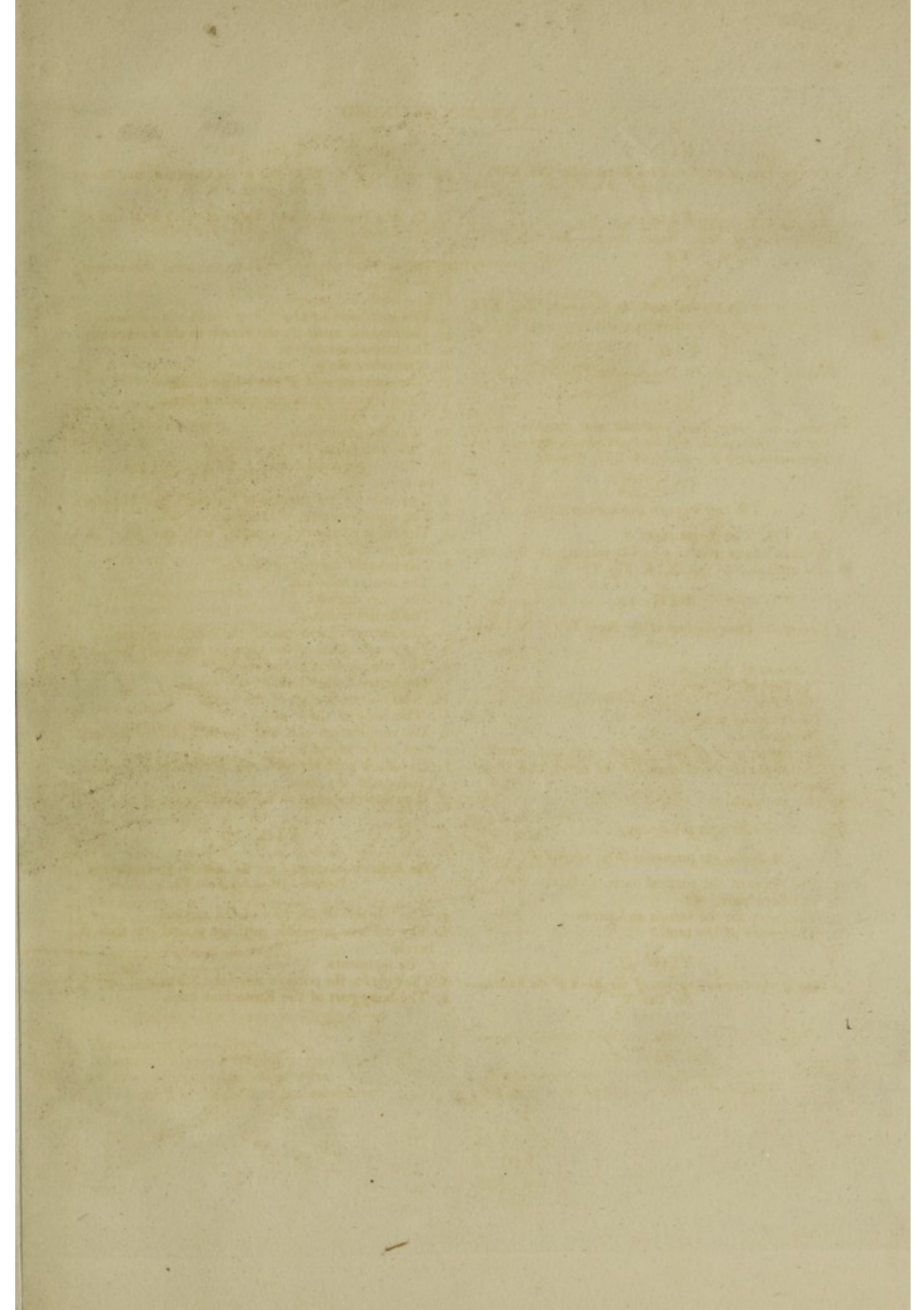




FIG. 4.



FIG. 3.



FIG. 5.



FIG. 6.



FIG. 9.



FIG. II.



FIG. 17.

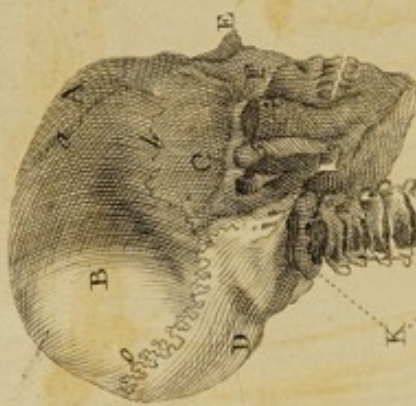


FIG. 7.



FIG. 8.



FIG. I.



FIG. 2.



FIG. 18.





FIG. 10.



FIG. 14.



FIG. 13.



FIG. 12.



FIG. 15.

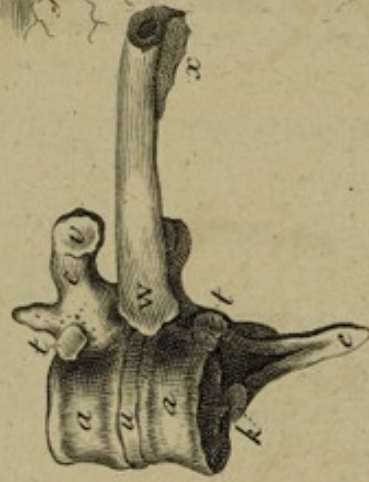
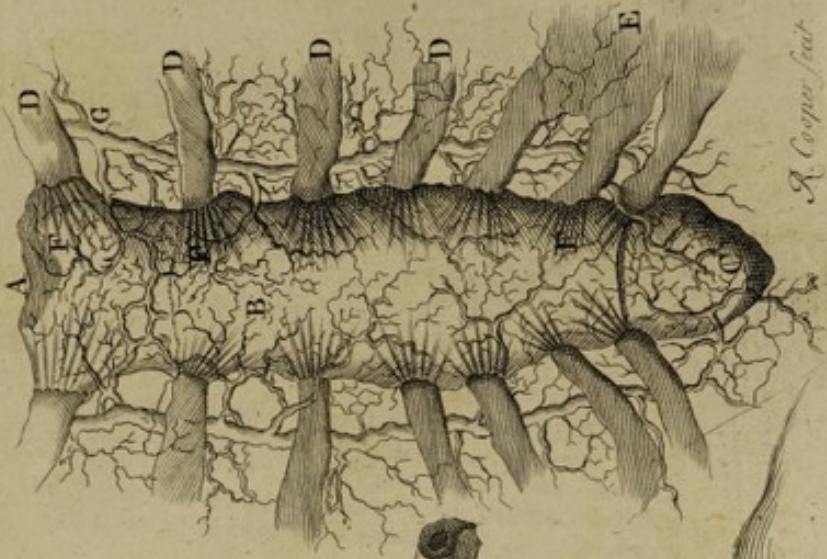


FIG. 16.









# T A B L E XXXVI.

Represents the LARYNX, the BONES of the RUNK of the BODY, and a Posterior View of the MAJ SKELETON.

FIG. 1.

*Anterior View of the CARTILAGES of the LARYNX with the Os HYOIDES.*

- a*, The anterior surface of the base of the os hyo
- b*, Its superior surface.
- c*, A ligament connecting the os hyoides, thyrocartilage, and epiglottis.
- d, d*, The two appendices of the os hyoides.
- e*, The ligament sent out from the appendage on left side, to the styloid process of the left temporal bone.
- e*, The union of the base with the cornu.
- f, f*, The two cornua.
- g, g*, Tubercles at their extremities.
- h, h*, Ligaments going from the tubercles to the anterior cornua of the thyroid cartilage.
- i, k, &c.* The thyroid cartilage; the greater part of which is ossified in the preparation from which this Figure is taken.
- i*, The anterior middle part of the thyroid gland.
- k*, Its right side.
- l, l*, Two unossified cartilaginous pieces on side.
- m*, The right superior cornu.
- n*, The right inferior cornu, connected with the cricoid cartilage.
- o*, A strong ligament.
- p*, The narrow anterior part of the cricoid cartilage.
- q*, Its right side.
- r*, The first cartilage of the trachea, divided into two at the sides.
- s*, The second, third, and fourth cartilages of the trachea.

FIG. 2.

*Back View of the Parts represented in Fig. 1.*

- d, e, f, g, l, m, n*, The same parts as in Fig. 1, but by these letters in Fig. 1.
- t*, The epiglottis.
- G, G*, The two arytenoid cartilages.
- v*, The middle unossified part of the cricoid cartilage.

VOL. I.

*W, W*, The bony sides of that broad posterior part.  
*X*, The membranous back part of the trachea.

*N. B.* These two Figures are as large as life; whereas the Figures of particular bones in this and the preceding Table, are represented only one half of their natural size.

FIG. 3.

*A View of the Upper Part of the first VERTEBRA of the NECK.*

- a*, The body of the bone.
- The other parts are described in Tab. XXIII. Fig. 2.

FIG. 4.

*The Under and Back Part of the same VERTEBRA.*

- i*, The smooth depression for the anterior part of the tooth-like process of the second vertebra.
- For the other parts consult Tab. XXIII. Fig. 1.

FIG. 5.

*A Side View of the Second VERTEBRA of the NECK.*

- a*, The body.
- b*, The superior oblique process.
- c*, The transverse process, and, farther back, the inferior oblique process.
- d*, The plate extended to,
- e*, The spinous process.
- g*, The spinous hole.
- h*, The passage in the transverse process.
- l*, The point of the tooth-like process.
- m*, Its anterior smooth surface.
- n*, Its posterior smooth surface.

FIG. 6.

*The First and Second VERTEBRÆ of the NECK, with part of the OCCIPITAL BONE, and the LIGAMENTS of the TOOTH-LIKE PROCESS.*

- a*, Part of the occipital bone.

*b, b*, Its



- b, b*, Its broken extremities.  
*1, c, h*, Part of the first vertebra.  
*2, e*, Part of the second vertebra.  
*n*, The point of the tooth-like process.  
*o*, Its transverse ligament.  
*p, p*, Its two oblique, or moderator ligaments.  
*q*, Its perpendicular ligament.

See Tab. XXIII. Fig. 6.

## FIG. 7.

*Upper Part of the Fourth Vertebra of the Neck.*

## FIG. 8.

*Upper Part of the Seventh Vertebra of the Neck.*

## FIG. 9.

*Upper Part of the Seventh Vertebra of the Back.—See Tab. XXIII. Fig. 7.*

## FIG. 10.

*Under Part of the Sixth Vertebra of the Back.—See Tab. XXIII. Fig. 8.*

## FIG. 11.

*Side View of the Twelfth Vertebra of the Back.*

- a*, The body.  
*c*, The transverse process.  
*e*, 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 Fourth Vertebra of the Loins.—See Tab. XXIII. Fig. 10.*

## FIG. 13.

*Under and Lateral Part of the Third Vertebra of the Loins.*

- a*, The under part of the body.  
*b*, The superior oblique process.  
*c*, The transverse process.  
*e*, The spinous process.  
*g*, The spinal hole.  
*r*, The process round the body of the bone.

## FIG. 14.

*The Seventh TRUE RIB of the LEFT 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 furrow at the inferior edge.  
*g*, The smooth internal side.  
*h*, The anterior extremity.

## FIG. 15.

*The Sixth and Seventh Vertebrae of the Back, with Part of the Seventh Rib of the Left Side.*

- a, c, e, k, t*, As in Fig. 11.  
*u*, The cartilage between the vertebrae.  
*v*, The depression made by the tubercle of the sixth rib.  
*W*, The seventh rib articulated with the vertebra.  
*x*, The beginning of the furrow on the under edge.

## FIG. 16.

*The STERNUM, with the CARTILAGES of the RIBS, and the Internal MAMMARY ARTERIES.*

- A*, The first or upper bone of the sternum.  
*B*, The second.  
*C*, The third, or cartilago ensiformis.  
*D, D, D, D*, The cartilages of the four superior ribs.  
*E*, The conjoined cartilages of the fifth, sixth, and seventh ribs.  
*F, F, F*, The radiated ligaments connecting the cartilages to the sternum.  
*G*, The internal mammary artery.

## FIG. 17.

*Posterior View of the MALE SKELETON.*

## HEAD.

- a*, The coronal suture.  
*b*, The squamous.  
*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 malæ.  
*3*, The angle of the lower jaw.  
*4*, Its right coronoid process.  
*5*, Its right condyle.

## TRUNK.

- K*, The seven vertebrae of the neck.  
*L, L*, The twelve vertebrae of the back.  
*M*, The five vertebrae of the loins.  
*b*, The transverse processes of the os sacrum.  
*c*, The posterior holes of that bone.  
*e*, Its spinous processes.  
*g*, The open part of the canal for the cauda equina.  
*P*, The os coccygis.  
*a*, The dorsum of the os ilium.  
*ß*, Its spine.

*γ*, The



- γ, The superior-posterior spinous process.
- δ, The inferior-posterior spinous process.
- ε, The great notch.
- ζ, The superior-anterior spinous process.
- η, The inferior-anterior process.
- θ, The brim of the acetabulum.
- ι, The spinous process of the os ischium.
- κ, The tuberosity of that bone.
- λ, Its branch.
- μ, The os pubis.
- ν, Its crus.
- ξ, The great thyroid hole.

## RIGHT SUPERIOR EXTREMITY.

- d, The dorsum of the scapula.
- f, Its posterior costa.
- g, Its superior angle.
- p, The anterior or inferior costa.
- q, The inferior angle.
- t, The cervix of the bone.
- v, The acromion, to which the outer end of the clavicle is joined.
- K, The spine.
- W, The fossa above the spine.
- φ, The superior costa, with the semilunar notch.
- r, The inner end of the clavicle joined to the sternum.
- X, The body of the clavicle.
- a, The ulna.
- b, The radius.
- 6, The head and neck of the radius.
- 7, The olecranon of the ulna.
- 9, The under end of the radius.

## RIGHT INFERIOR EXTREMITY.

- f, The ball of the os femoris.
- g, The trochanter major.
- h, The cervix of the bone.
- i, The trochanter minor.
- k, The upper part of the body of the bone.
- l, Its outer condyle.
- t, The malleolus externus of the fibula.

## LEFT SUPERIOR EXTREMITY.

- α, The inner condyle of the os humeri.
- 7, The olecranon of the ulna.

## LEFT INFERIOR EXTREMITY.

- 1, The linea aspera.
- 2, k, The inner condyle, and,
- 3, The outer condyle of the os femoris.
- 4, The head of the tibia.
- 5, The body of the bone.
- t, Its malleolus internus.
- 15, The head of the fibula.
- 7, The malleolus externus of that bone.
- 10, The os calcis.

## FIG. 18.

*Posterior View of the BONES and LIGAMENTS of the PELVIS.*

- a, The fifth lumbar vertebra.
- b, Its superior oblique process.
- d, The bony plate extended to its spinal process e.
- c, c, &c. The posterior holes of the os sacrum.
- g, The channel for the cauda equina.
- α, β, γ, δ, ε, ζ, η, As in Fig. 17.
- A, The posterior sacro-ischiatic ligament, 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 os coccygis.
- ι, The notch of the os ilium, for the passage of the posterior crural vessels and nerves, and the pyriform muscle.
- C, Passage of the obturator internus.
- D, The fibrous ligamentous substance, connecting the os innominatum and sacrum.
- E, The capsular ligament of the joint of the thigh.
- g, The greater,
- i, The lesser trochanter of the thigh-bone.



# T A B L E XXXVII.

Represents the BONES and some of the Principal LIGAMENTS of the EXTREMITIES; including the SKELETON of TWO YOUNG SUBJECTS.

FIG. 1.

*A Posterior View of Part of the STERNUM and CLAVICLES, with the LIGAMENT connecting the CLAVICLES to each other.*

- a*, The posterior surface of the sternum.
- b, b*, The broken ends of the two clavicles.
- c, c, c*, The two tubercles near the extremity of each clavicle.
- d*, The ligament connecting the clavicles.

FIG. 2.

*Outer and Fore View of the LEFT SCAPULA, and part of the CLAVICLE, with their LIGAMENTS.*

- a*, The spine of the scapula.
- b*, The acromion.
- c*, The inferior angle.
- d*, The inferior costa.
- e*, 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 process.
- i*, The point of that process.
- k*, The broken end of the clavicle.
- l*, Its extremity joined to the acromion.
- m*, A ligament stretched obliquely from the clavicle to the coracoid process.
- n*, A ligament 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 LEFT ARM, with the LIGAMENTS.*

- a*, The os humeri.
- b*, Its internal condyle.
- c, c*, The two prominent parts of its trochlea, appearing through the capsular ligament of the joint.
- d*, The ulna.
- e*, The radius.
- f*, That part of the ligament including the head of the radius.

- g*, The end of that ligament, like a ring, surrounding the neck of the radius, but connected very loosely to it.

FIG. 4.

*Anterior View of the BONES of the RIGHT HAND.*

- a*, The radius.
- e*, Its flat anterior part.
- c*, Its styloid process.
- b*, The ulna.
- f*, Its flattened extremity.
- d*, Its styloid process.
- g*, The os scaphoides of the carpus.
- h*, The os lunare.
- i*, The os pisiforme.
- k*, The cuneiforme.
- l*, The trapezium.
- m*, The trapezoides.
- n*, The capitatum.
- o*, The unciforme.
- p*, Its unciform process.
- q, r, s, t*, The metacarpal bones of the fingers.
- u*, Their bases.
- v*, Their heads.
- a*, The metacarpal bone of the thumb.
- β*, The first bone of the thumb.
- γ*, The second bone.
- δ*, The first phalanx of the fingers.
- ζ*, Their second phalanx.
- η*, Their third phalanx.

FIG. 5.

*Posterior View of the BONES of the LEFT HAND.*

The explanation of Fig. 4. will serve for this Figure, the same letters pointing to the same bones, though in a different view.

- α*, The ridge of the radius between the grooves made by the tendons of the extensor muscles.

FIG. 6.

*View of the Anterior, or Palm Side of the RIGHT HAND, with its LIGAMENTS.*

- i*, The pisiform bone.
- p*, The hook-like process of the unciform bone.
- θ*, The



# TABLE XXVII

Summary of the results of the investigation of the effect of the concentration of the solution on the rate of the reaction between the solution and the solid substance.

The results of the investigation show that the rate of the reaction increases with the increase of the concentration of the solution.

The rate of the reaction is also affected by the temperature of the solution.

The rate of the reaction is also affected by the nature of the solid substance.

The rate of the reaction is also affected by the surface area of the solid substance.

The rate of the reaction is also affected by the presence of a catalyst.

The rate of the reaction is also affected by the pressure of the system.

The rate of the reaction is also affected by the time of the reaction.

The rate of the reaction is also affected by the volume of the solution.

The rate of the reaction is also affected by the concentration of the solid substance.

The rate of the reaction is also affected by the nature of the solvent.

The rate of the reaction is also affected by the presence of impurities.

The rate of the reaction is also affected by the time of the reaction.

The rate of the reaction is also affected by the volume of the solution.

The rate of the reaction is also affected by the concentration of the solid substance.

The rate of the reaction is also affected by the nature of the solvent.

The rate of the reaction is also affected by the presence of impurities.



FIG. 1.



FIG. 2.

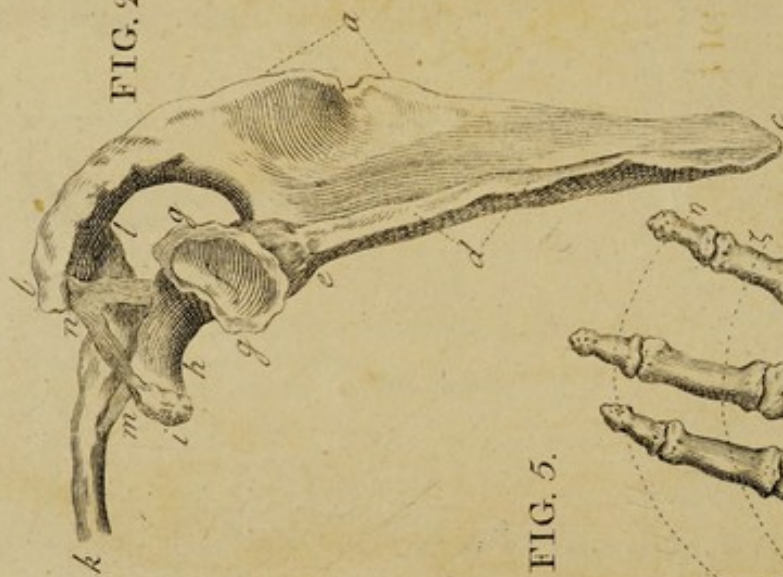


FIG. 3.



FIG. 4.

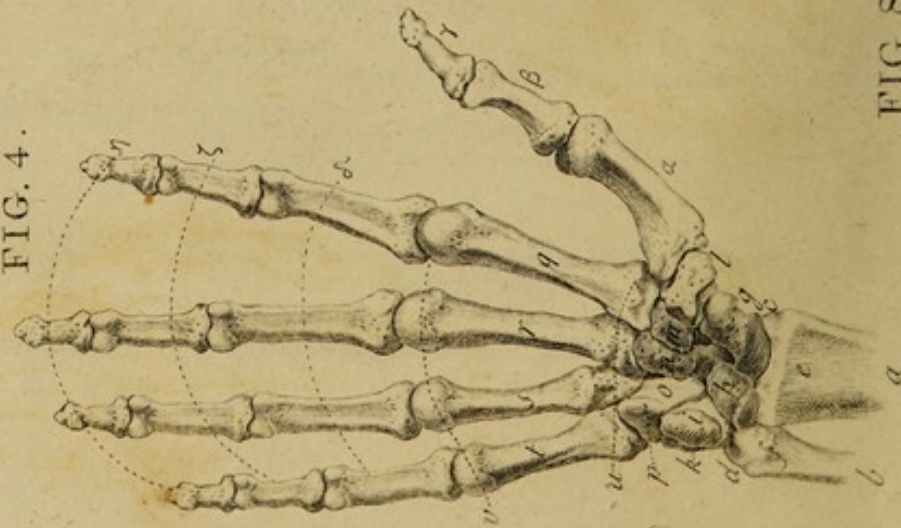


FIG. 5.



FIG. 6.



FIG. 9.

FIG. 8.



FIG. 7.

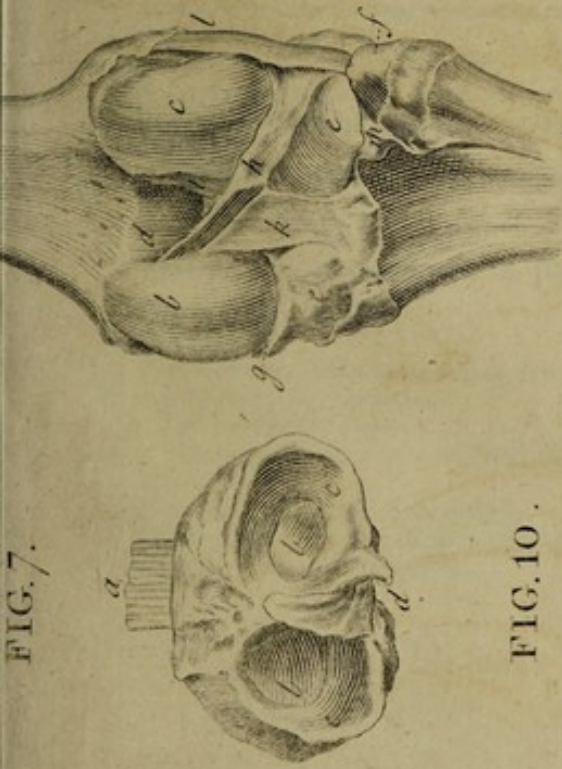


FIG. 10.



FIG. 11.



FIG. 12.

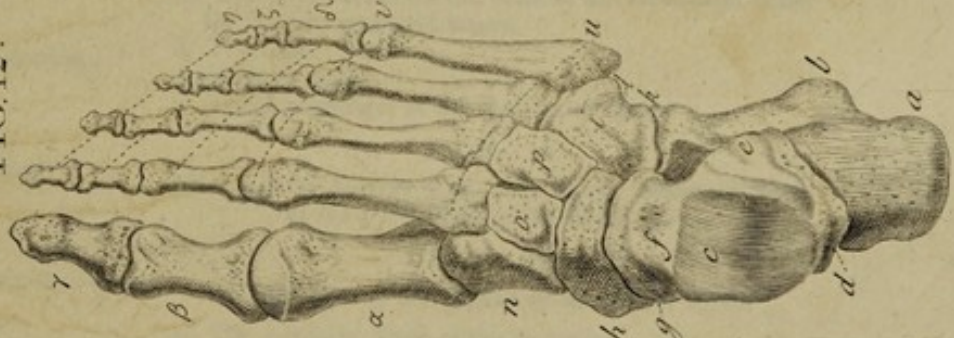


FIG. 14.



FIG. 13.



FIG. 16.

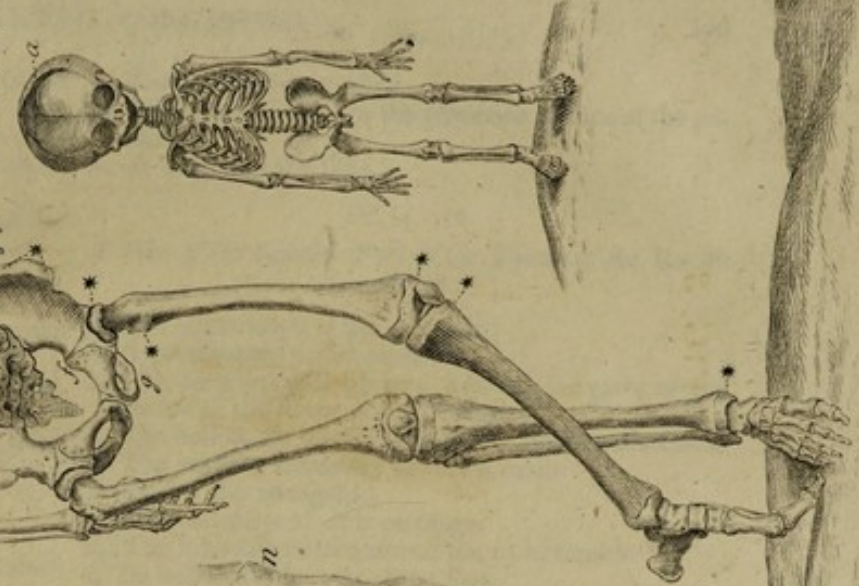
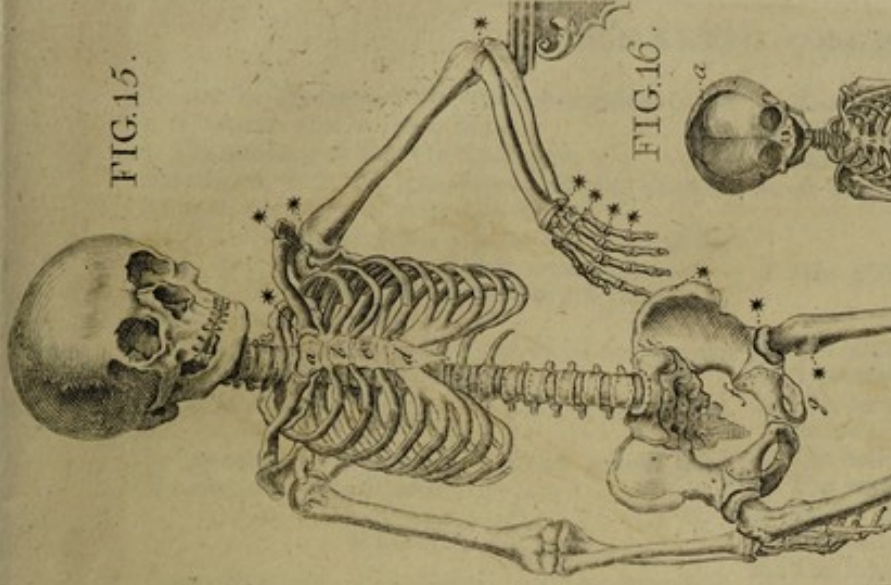
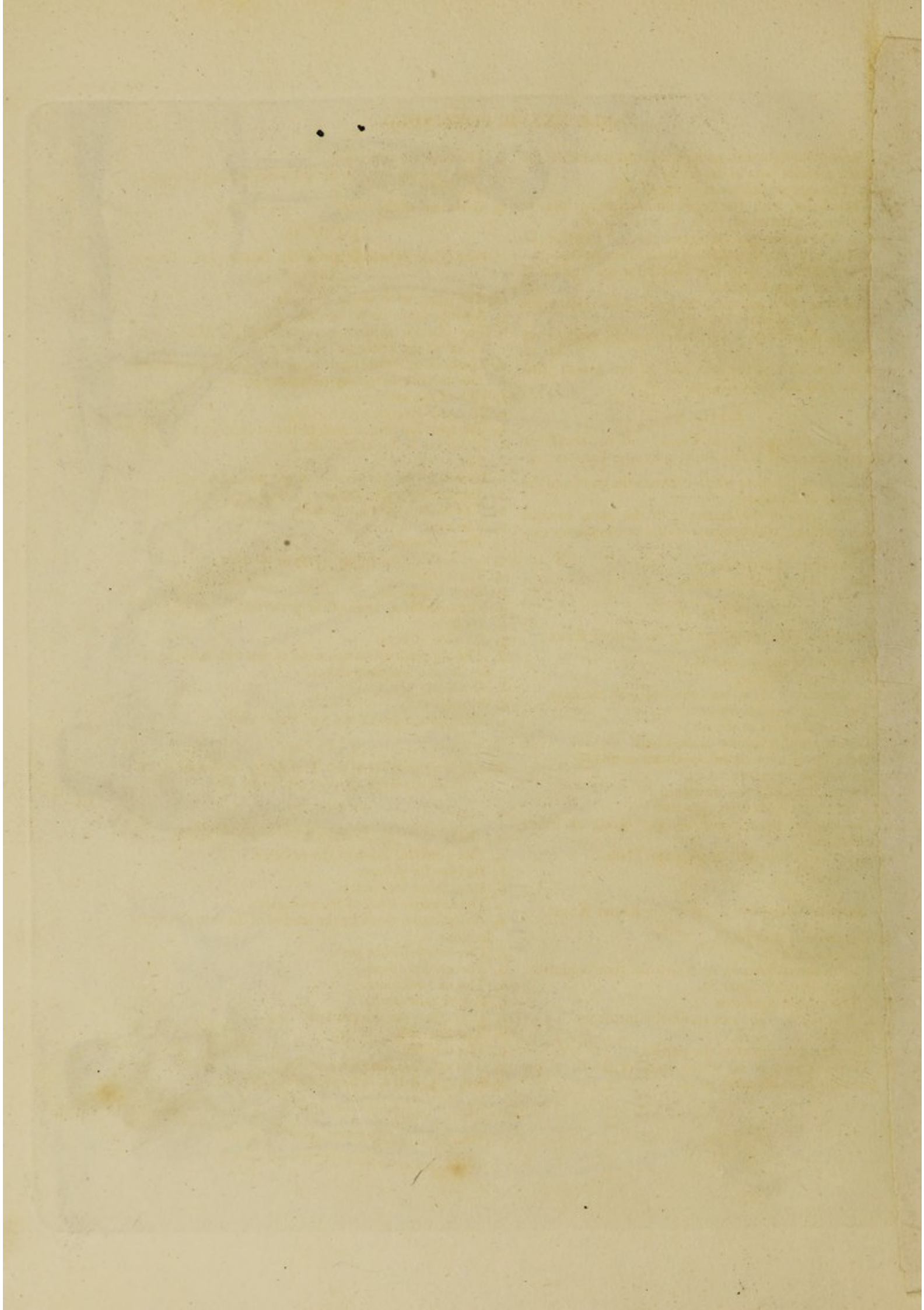


FIG. 15.









- s*, The annular ligament, under which the tendons 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*, *n*, *o*, in Fig. 4.  
*u*, *β*, *γ*, The metacarpal bone, and the two bones of the thumb, with the ligaments of their articulations.  
*z*, The fore-finger, with the sheath for the tendons of the flexor muscles entire.  
*λ*, The ligament connecting the head of its metacarpal bone to that of the middle finger.  
*μ*, The middle finger, with the sheath of the tendons cut open.  
*ν*, The ligaments on the back part of the second joint of the ring and little fingers.

FIG. 7.

*The Upper Extremity of the TIBIA, with the Semilunar CARTILAGES of the KNEE-JOINT and some LIGAMENTS.*

- a*, The strong ligament which connects the patella to the tubercle of the tibia.  
*b, b*, The parts of the extremity of the tibia, covered with cartilage, which appear within the semilunar cartilages.  
*c, c*, The semilunar cartilages.  
*d*, Part of the crucial ligaments.

FIG. 8.

*Posterior View of the JOINT of the RIGHT KNEE.*

- a*, A section of the os femoris.  
*b*, Its internal condyle.  
*c*, Its external condyle, both covered with cartilage.  
*d*, The cavity between the condyles.  
*e, e*, The back part of the tibia.  
*f*, The superior extremity of the fibula.  
*g*, The edge of the internal semilunar cartilage.  
*h*, An oblique ligament.  
*i*, A small perpendicular ligament.  
*k*, A larger perpendicular ligament.  
*l*, The external lateral ligament, connecting the femur and fibula.  
*m*, A ligament between the tibia and fibula.

FIG. 9.

*Anterior View of the JOINT of the RIGHT KNEE.*

- b*, The internal condyle.  
*c*, The external.  
*d*, Part of the os femoris, on which the patella moves.  
*e*, A perpendicular ligament.  
*f, f*, The crucial ligaments.  
*g, g*, The edges of the two semilunar cartilages.  
*h*, The tibia.  
*i*, The strong ligament of the patella.  
*k*, The back part of it, where some of the fat of the joint has been dissected away.

- l*, The external depression.  
*m*, The internal one, on the posterior surface of the patella.  
*n*, A section of the tibia.

FIG. 10.

*A View of the Inferior Part of the BONES of the RIGHT FOOT.*

- a*, The great knob of the os calcis.  
*b*, A prominence on its outside.  
*c*, The interior thin process, bearing the print of the tendon of the flexor pollicis longus.  
*d*, The hollow, for the tendons, nerves, and blood-vessels.  
*e*, The anterior extremity of the os calcis.  
*f*, Part of the astragalus.  
*g*, Its head covered with cartilage.  
*h*, The internal prominence of the os naviculare.  
*i*, Its hollow in the sole of the foot.  
*k*, The os cuboides.  
*l*, Its hollow, for the tendon of the peroneus longus.  
*m*, Its anterior extremity.  
*n*, The os cuneiforme internum.  
*o*, The medium.  
*p*, The externum.  
*q, r, s, t*, The metatarsal bones of the four lesser toes.  
*u*, Their bases.  
*v*, Their heads.  
*α*, The metatarsal bone of the great toe.  
*β*, Its first,  
*γ*, Its second bone.  
*2*, The depressions on the head of the metatarsal bone, for the two sesamoid bones.  
*3*, The first,  
*ξ*, Second, and,  
*η*, Third phalanges of the four lesser toes.

FIG. 11.

*The Inferior Surface of the Two Large Sesamoid Bones at the First Joint of the Great Toe.*

FIG. 12.

*Upper View of the BONES of the RIGHT FOOT.*

- a*, The posterior knob of the os calcis.  
*b*, Its exterior process.  
*k*, Its anterior extremity.  
*c*, The superior head of the astragalus.  
*d*, A depression made by the tendon of the flexor pollicis longus.  
*f*, The rough hollow part.  
*g*, The anterior head.  
*h*, The os naviculare.  
*i*, The os cuboides.  
*l*, The hollow for the peroneus longus.  
*n*, The internal,  
*o*, The middle,  
*p*, The external cuneiform bones.  
*u, v, α, β, γ, δ, ξ, η*, The same as in Fig. 10.

FIG.



FIG. 13.

*View of the SOLE of the FOOT, with its LIGAMENTS.*

- a, d,* As in Fig. 10.  
*c,* The sheaths of the flexores longi pollicis et digitorum opened.  
*f,* The strong cartilaginous ligament supporting the head of the astragalus.  
*g, h,* Two ligaments which join into one, to be fixed to the metatarsal bone of the great toe.  
*i, j, k, l, m,* Other ligaments.  
*n, o,* The ligaments of the joints of the five metatarsal bones.

FIG. 14.

*The Superior Concave SURFACE of the SESAMOID BONES, at the First JOINT of the GREAT TOE, with their LIGAMENTS.*

- a,* Three sesamoid bones.  
*b,* The ligamentous substance in which they are formed.

FIG. 15.

*Front View of the SKELETON of a BOY of nine years of age.*

- \* \* &c. The most remarkable epiphyses.  
*f,* The joining of the ossa ilium and pubis, and  
*g,* Of the ossa ischium and pubis.

*This Figure is executed upon a scale only half as large as that of the Skeleton in Tab. XXXIV.*

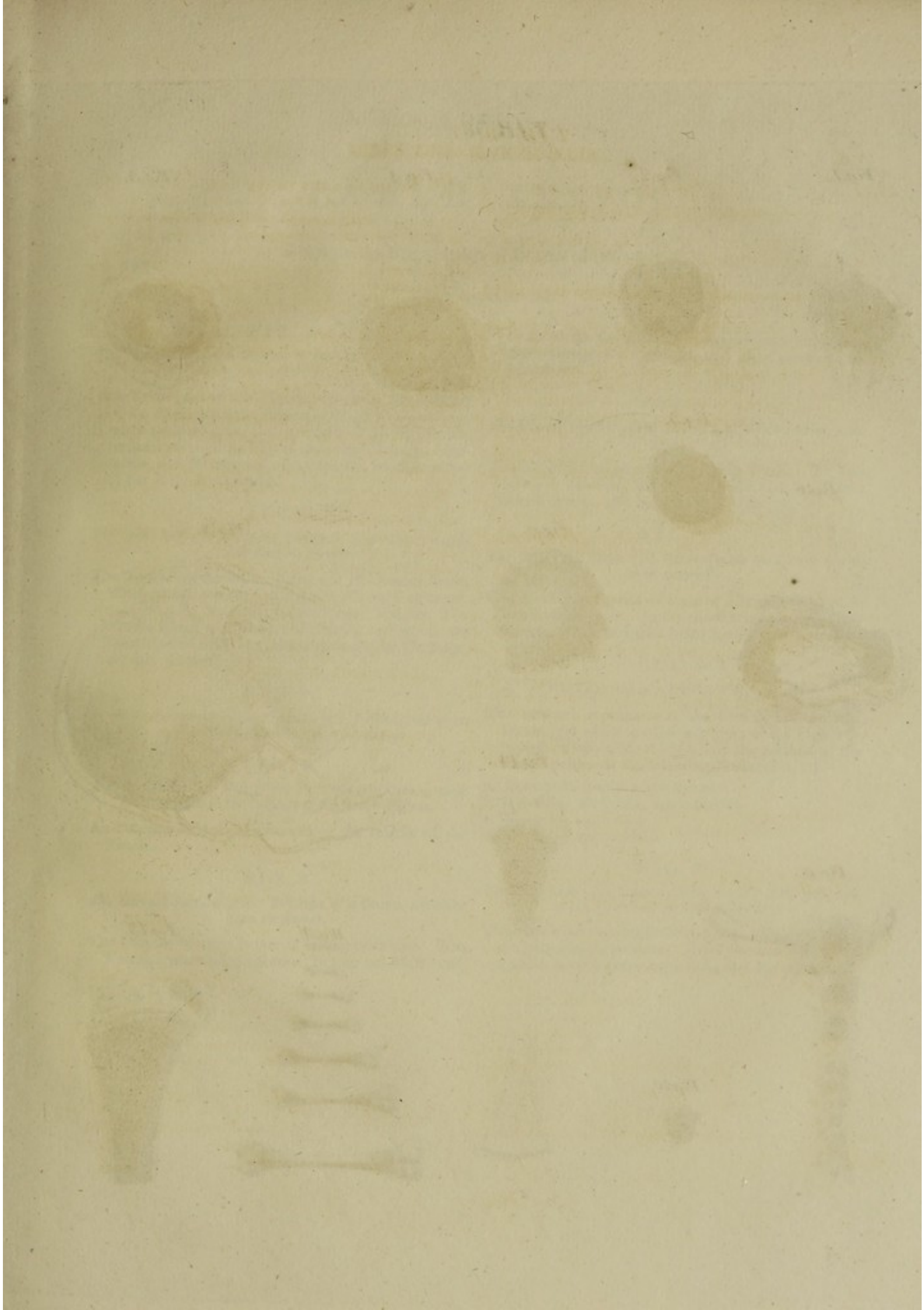
FIG. 16.

*The SKELETON of a NEW-BORN CHILD, where the shades and shrivellings in the Figure represent the parts which are Cartilaginous at Birth, and which are contracted in the Skeleton.*

- a,* The fontanelle.

*This Figure is too small, even in proportion to Fig. 15.*







TAB. 38.

Fig. 1.



Fig. 2.



Fig. 4.



Fig. 5.



Fig. 3.



Fig. 6.



Fig. 7.



Fig. 8.

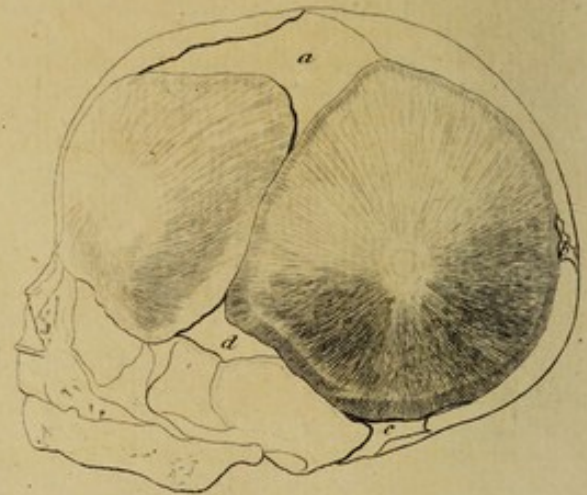


Fig. 9.



Fig. 10.



Fig. 12.

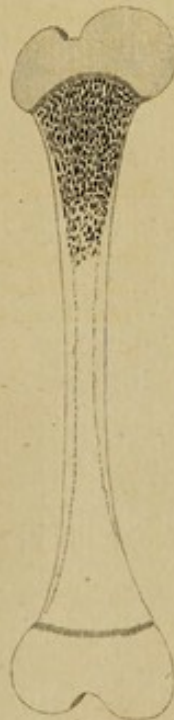


Fig. 11.

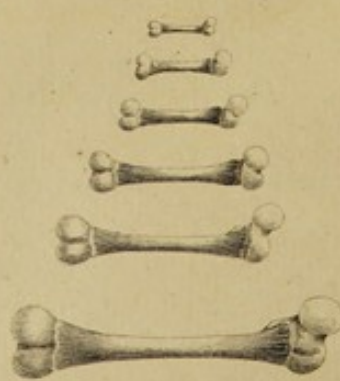


Fig. 13.





# TABLE XXXVIII.

Respects the STRUCTURE of BONES of CHILDREN.

FIG. 1.

*The Inner or Posterior Surface of the PATELLA of a New-born CHILD.*

The darker part of the Figure represents the Arteries of the Perichondrium shining through the Cartilage, but without entering that substance. The lighter unfinished parts of the Figure shew the Tendons, Ligaments, and Membranes of the Patella, with Branches of the Articular Arteries.

FIG. 2.

*The same kind of View of the PATELLA of a CHILD a little older than the former.*

The Vessels appear white, being full of Osseous Juice, which penetrates the Cartilage. Where they terminate, they for the most part form small Nodules. The Vessels which contained red Blood, and which are here injected with wax, shine through the Cartilage, though obscurely.

FIG. 3.

*Shews the ARTERIES of the PATELLA full of Blood, and much enlarged, while Ossification is advancing.*

FIG. 4.

*A View of the Inner Side of the PATELLA of a CHILD, more advanced than in the Subjects of the former Figures.*

An Osseous Nucleus is observed in the middle of the Patella.

FIG. 5.

*The Internal Surface of the PATELLA of a CHILD still older than the former.*

The Osseous Nucleus is now of considerable size. The Vessels transmitting Osseous Matter are white, and

distinct from the Arteries. Sanguiferous Vessels appear through the Cartilage, and some penetrate its substance.

FIG. 6.

*The Internal Surface of the PATELLA of a BOY twelve years of age.*

The Nucleus now occupies half of the Patella; the Vessels are observed which carry the Osseous Juice; others appear, which are injected with wax.

FIG. 7.

*The PARIETAL BONE of a FÆTUS about the Fourth Month viewed externally.*

The whole is composed of Osseous Fibres, which run in a radiated manner. In the middle there is an Osseous Plate, which afterwards forms the external Table.

FIG. 8.

*The CRANIUM of a FÆTUS of Six Months.*

The radiated appearance of the Frontal and Parietal Bones, and which are the only parts of the Figure finished, is very distinct. In this the Author of the Figure points out the following Fontanellæ, viz.

- a*, Fontanella frontalis, seu anterior.
- b*, ——— occipitalis, seu posterior.
- c*, ——— mastoidea.
- d*, ——— sphenoidalis.

FIG. 9:

*The STERNUM of a FÆTUS come to the full time, with part of the First Pair of RIBS joined to it.*

The Bone is divided into its three constituent parts, which are joined by Ligaments. Eight Osseous Nuclei appear in it, of various magnitude, and are represented by



by the dark 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 Fœtus viewed anteriorly.*

The whole appears Cartilaginous, except four Osseous Granula which are seen in the Bodies of the Superior Vertebrae. It is one continued Cartilage, though the Bodies of the Vertebrae are distinct.

## FIG. 11.

*The Left Os FEMORIS of various FœTUSES seen from the Fore Part.*

The uppermost Figure is from a Fœtus in the beginning of the Third Month.—In the middle, an Osseous Granulum appears, from which the rest of the Bone afterwards springs by Diaphysis. All the rest of the Femur is Cartilaginous.

The other Bones are from Fœtuses more advanced. The last one is from a Fœtus in the beginning of the Sixth

Month.—The Diaphysis is almost perfect. The Epiphyses are Cartilaginous.

## FIG. 12.

*The Right Os FEMORIS of a New-born CHILD cut longitudinally.*

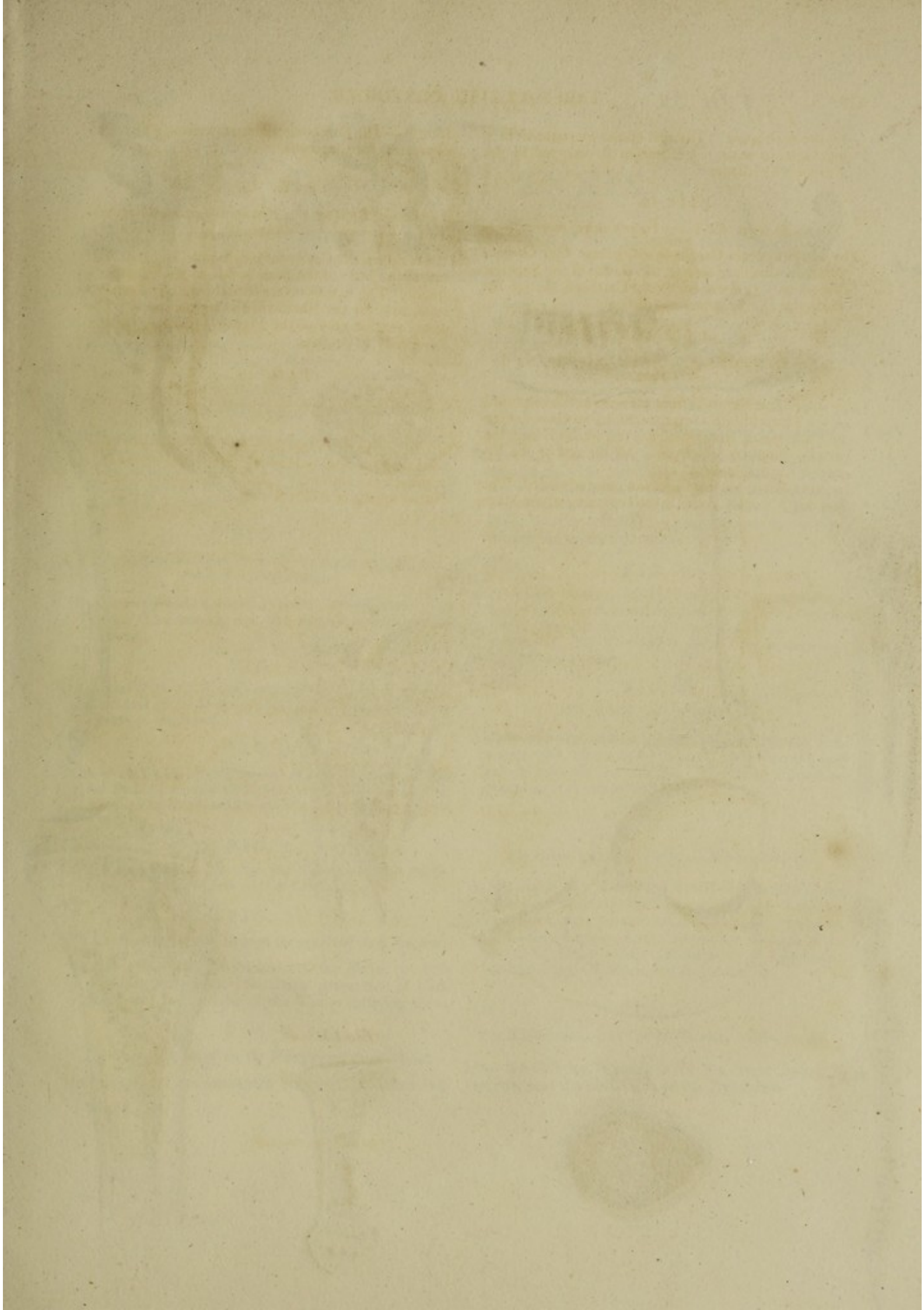
In the middle is the Cavity for lodging the Marrow. The rest of the body of the Bone is full of Reticular Substance. The Epiphyses are entirely in a Cartilaginous state, nor do any Blood-vessels appear there. The upper portion only of the Figure is finished, the rest being only in outlines.

## FIG. 13.

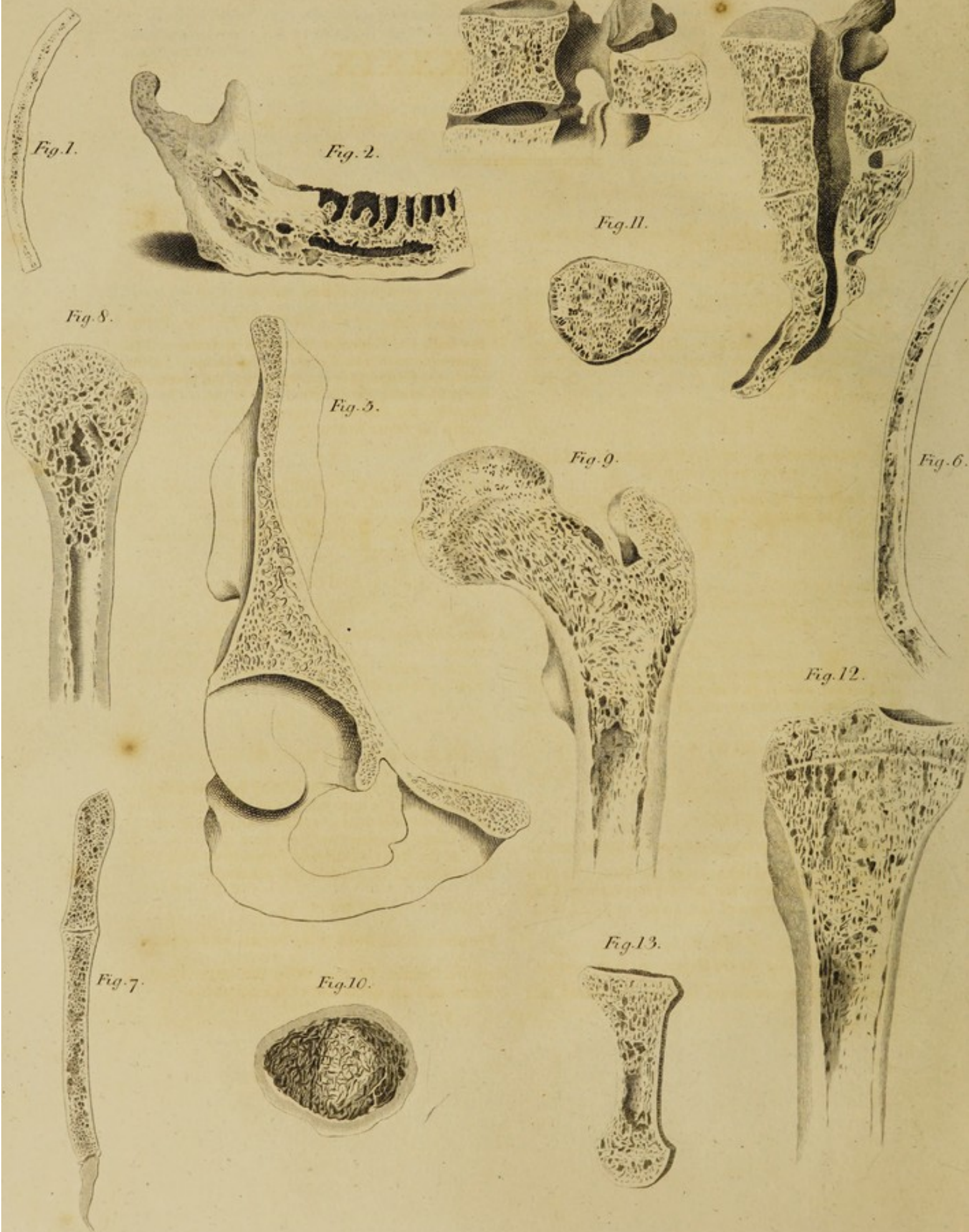
*The Upper Part of the Os HUMERI of a CHILD, cut longitudinally.*

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, Osseous Nuclei appear of different sizes.











# T A B L E    X X X I X .

In this TABLE is represented the Internal Substance of BONES in the Adult State.

FIG. 1.

*A Section of the Upper Part of the CRANIUM, to shew the Tables and Diploe.*

FIG. 2.

*A Section of the Right Half of the LOWER JAW.*

In this is observed the Base and outer parts extremely compact, while the inner parts of the Bone are spongy. The internal Maxillary Canal appears through the greater part of the length of the Jaw; its internal Orifice is also seen.

FIG. 3.

*A Longitudinal Section of one of the VERTEBRÆ of the LOINS, and of part of another.*

In the Body and Spinous Process, many Cancelli appear. The passage for the Spinal Marrow is also evident.

FIG. 4.

*A Section of the Os SACRUM and Os COCCYGIS, shewing the CANCELLI of the Bodies of both, and of the SPINOUS PROCESSES of the former.*

FIG. 5.

*One of the OSSA INNOMINATA cut through the Iliac and Pubal Portions, to shew the CANCELLI and solid Sides of the Bone. The ACETABULUM and Os ISCHIUM are left entire.*

FIG. 6.

*A RIB cut lengthways, to shew the Outer and Inner Tables, with the intermediate CANCELLI.*

FIG. 7.

*A Longitudinal Section through the middle of the STERNUM.*

In this is observed the thickness of the Bone; its division into three parts; the large proportion of Cancelli; and the thinness of the Tables inclosing these.

FIG. 8.

*The Upper Portion of the Os HUMERI cut longitudinally.*

In this appears the connexion between the Head and

Body, and the spongy texture of both. In the under part of the Figure, 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 FEMORIS divided longitudinally.*

In the Ball, the Reticular Substance appears, and the connexion with the Cervix of the Bone. Farther down, the Cancelli are distinctly seen, but become less evident towards the middle of the Bone. The solid sides, on the contrary, appear thinner as they approach the upper extremity.

FIG. 10.

*A Transverse Section of the Os FEMORIS of the natural size, to shew its form, the solid Substance of its Sides, and that it is replete with Reticular Work, which, in the centre, is composed of finer Threads, but nearer the circumference appears more spongy.*

FIG. 11.

*The PATELLA cut longitudinally.*

Almost the whole Bone is composed of Reticular Substance, the Plates and Fibres of which become very minute towards the middle. The solid Plate surrounding it is remarkably thin.

FIG. 12.

*The Upper Part of the TIBIA, cut longitudinally.*

At the upper part is seen the Cavity for containing the Marrow, and this inclosed by a solid Plate, which becomes gradually thinner towards the upper extremity. The Cancelli appear finer, but more numerous, at the end of the Bone which was formerly an Epiphysis; the distinction of which is still discernible.

FIG. 13.

*The METACARPAL BONE of the THUMB, cut lengthways.*

Here the Cellular Texture, as in the larger Bones, is obvious, and the distinction of the Epiphysis.



## TABLE XXXIX.

In this Table is represented the Internal Substance of Bones in the Adult State.

Body, and the internal substance of bone. In the middle part of the shaft, the cavity is seen for containing the marrow, the solid part of the bone is seen on each side.

FIG. 1.

The Upper Part of the Os Femoris, and the internal substance. In the middle, the internal substance appears, and the connection with the Cavity of the Bone. Below, the internal substance is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 2.

A Transverse Section of the Os Femoris, at the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 3.

The Transverse Section of the Os Femoris, at the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 4.

The Upper Part of the Tibia, and the internal substance. In the middle, the internal substance appears, and the connection with the Cavity of the Bone. Below, the internal substance is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 5.

The Metacarpal Bone of the Tibia, and the internal substance. In the middle, the internal substance appears, and the connection with the Cavity of the Bone. Below, the internal substance is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 1. A Section of the Upper Part of the Femur, in the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 2.

A Section of the Middle Part of the Femur, in the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. Below, the internal substance is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 3.

A Transverse Section of the Os Femoris, at the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 4.

A Section of the Os Femoris, at the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 5.

One of the Os Femoris, cut through the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 6.

A Section of the Tibia, at the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 7.

A Transverse Section of the Tibia, at the middle of the shaft. The internal substance is seen, and the connection with the Cavity of the Bone. The solid part is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.

FIG. 8.

The Upper Part of the Os Femoris, and the internal substance. In the middle, the internal substance appears, and the connection with the Cavity of the Bone. Below, the internal substance is seen, but the connection is not so evident towards the middle of the Bone. The solid part, on the contrary, appears distinct as it approaches the upper extremity.



## OF THE MUSCLES IN GENERAL

### PART II.

OF

## THE MUSCLES.



PART II  
OF  
THE MUSCLES.



## 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 surrounds the Muscles, and allows them to move upon each other, and upon the adjacent parts.

The *Cellular Substance*, condensed in certain parts of the Body, and giving an appearance of *Membrane*, formerly called *Tunica Propria Musculorum*.

The *Division* of a Muscle into

The *Origin*, or *Head*;—or that extremity of a Muscle which arises from the most fixed part, and towards which the contraction is made;

The *Belly*, or *thickest part*, which swells when a Muscle is in action;

The *Insertion*, or *Termination*, or that extremity which is implanted into the part to be moved, and which is commonly smaller 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, but 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 size 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 length they escape the observation of the naked Eye.

The ultimate *Fibres* of Muscles have been considered by some as a collection of solid *Cords*, by many as hollow *Tubes*, while several have described them as being composed of a chain of little *Vesicles*.

The Muscular Fibres consist chiefly of *Fibrin*, with a small quantity of *Gelatin*, *Albumen*, and *Saline Matter*.

The *Division* of Muscles into *Rectilineal*, as in the *Sartorius*;—*Simple Penniform*, as in the *Peroneus Longus*;—*Complete Penniform*, as in the *Rectus Femoris*;—*Compound Penniform*, as in the fore part of the *Soleus*; *Radiated*, as in the *Pectoralis Major*;—*Hollow*, as in the *Heart*, *Intestines*, *Bladder of Urine*, &c.

The particular *Names* of Muscles are taken from their *shape*, *size*, *situation*, *direction*, *composition*, *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* are 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 abundantly 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 Muscles are also very numerous; but although the Muscles were called by some Authors, among others *DR CULLEN*, the moving *Extremities* of the *Nerves*, the latter bear a very small proportion to the former, and the Muscles appear to be quite of a different nature from the *Nerves*.

The *Nerves* of voluntary Muscles have been described by some Writers as being much larger than those of the involuntary kind, as the *Heart*; but this circumstance has been exaggerated.

In various parts of the Body, the Muscles receive their *Nerves* from different origins, and many antagonist Muscles receive *Nerves* from the same source.

The *Tendon*, like the *Fleshy part* of the Muscle, is of a *Fibrous nature*, but is not merely Muscle hardened by pressure, as was formerly by some Authors supposed; for, in many instances, *Tendons* have a different direction



tion from the Muscles to which they belong. Tendon is distinguished from the Flesh by being generally *smaller, firmer, stronger*;—of a *white glistening colour*, having no *contractility*, and little or no *sensibility* in the sound state. From long boiling, it is observed to afford a large portion of Gelatin.

Tendons, like Muscles, vary considerably in their form, as *round, flat, annular, &c.*

Tendons have very few *Blood-vessels*, and no evident *Nerves*.

Tendons in general connect Muscles to Bones. In some places they unite Cartilages or Bones to each other. In others, they bind down and fortify parts over which they pass, and, by the smallness of their size compared

to the Belly of the Muscle, preserve the elegance and symmetry of the parts on which they are placed.

Besides the parts of Muscles already taken notice of, they have the following *Appendages*, viz.

*Aponeuroses*, or *Fasciæ*, which are the Tendons 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 starting.

*Trochleæ*, or *Pulleys*, to alter the direction of Tendons.

*Bursæ Mucosæ*, placed where Tendons play over hard Substances, serving to contain Synovia, and prevent Abrasion.

## MUSCLES OF THE INTEGUMENTS OF THE CRANIUM, AND OF THE EYE-LIDS.

### OCCIPITO-FRONTALIS,

*Vel Occipitalis et Frontalis, vel Epicranius, &c.*

*Origin*: Fleishy from near the middle of the upper arched Ridge of the Occipital Bone, and Tendinous from the extremity of that Ridge, where it joins the Temporal Bone.—It arises after the same manner on the other side. From the Fleishy Origins, and also from between them, a Tendinous expansion is extended along the upper part of the Cranium, adhering firmly to the Skin, and but loosely to the Pericranium, Tab. XLVII. Fig. 1. *b, c.* Tab. XLI. Fig. 1. *a.*—At the upper part of the Forehead it becomes Fleishy, and descends with straight Fibres, the under part of the Muscle laying hold of, or taking its Origin from, the Frontal Bone, at the inner part of the Orbits.

*Insertion*: Into the Skin and parts under it belonging to the Eye-brows. Tab. XLI. Fig. 1. *A.*

*Action*: To move all that part of the Skin which covers it, and particularly the Skin of the Brow and the Eye-brows.

From the under and middle part of the Muscle, a *Slip*, termed by CHAUSSIER *Fronto-Nasalis*, is continued down upon the Root of the Nose, to be connected with the Compressor Naris, and Levator Labii Superioris Alæque Nasi. Tab. XLI. Fig. 1. *b.*

This slip may either assist the Nasal Muscles connected with it, or antagonize the Occipito-frontalis.

### CORRUGATOR SUPERCILII,

*By CHAUSSIER, Fronto-Superciliaris.*

*Origin*: From the internal Angular Process of the Os Frontis, above the joining of that Bone with the Os Nasi. From thence it runs upwards and outwards, under a tapering form, in the direction of the Superci-

liary Ridge, and behind the inferior part of the Occipito-frontalis.

*Insertion*: Into the inner part of the Occipito-frontalis and Orbicularis Palpebrarum, where these two Muscles join each other, as far out as the Middle of the Superciliary Ridge. Tab. XLII. Fig. 1. *A.*

*Action*: To assist its fellow in drawing the Eye-brows downwards and inwards, and corrugating or wrinkling the Skin between them into longitudinal folds.

### ORBICULARIS OCULI, vel ORB. PALPEBRARUM,

*Vel Naso-palpebralis.*

*Origin*: From the Orbital Process of the Superior Maxillary Bone; from the internal angular Process of the Frontal Bone; and, by a small round Tendon, from the Nasal Process of the superior Maxillary Bone.

From these Origins the Muscle passes outwards, under the Skin of the Eye-lids, surrounding the Orbit in a circular manner; extending somewhat beyond it, and covering the upper part of the Cheek. Tab. XLI. Fig. 1. *D.*

*Insertion*: Into the Skin of the Eye-lids, its upper and inner Edge being intimately connected with the Frontal and Corrugator Muscles.

*Action*: To close the Eye by bringing the Eye-lids together, to press the Ball of the Eye inwards, 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 remarkably thin, is the *Musculus Ciliaris* of some Authors. Tab. XLI. Fig. 1. *c.*

A *Fleishy Slip* frequently passes down from the under and outer part of the Orbicularis, to join the Levator Labii Superioris Alæque Nasi, Tab. XLI. Fig. 1. between F and G. When present, it may draw a little towards each other those parts to which it is attached.

LEVATOR



## LEVATOR PALPEBRÆ SUPERIORIS,

## Vel Orbito-palpebralis.

*Origin*: From the upper margin of the Foramen Opticum of the Sphenoid Bone. It runs forwards within the Orbit over the Levator Oculi, where it becomes gradually broader, its anterior extremity passing under the Orbicularis Oculi.

*Insertion*: By a broad thin Tendon, into nearly the whole length of the Cartilage of the upper Eye-lid. Tab. XLII. Fig. 1. a.

*Action*: To open the Eye by raising the upper Eye-lid.

## MUSCLES COMMON TO THE HEAD AND EXTERNAL EAR.

## ATTOLLENS AUREM,

## Vel Superior Auris, vel Temporo-auricularis.

*Origin*: By a broad Tendinous Expansion, from the Tendon of the Occipito-frontalis. It goes down over the Aponeurosis of the Temporalis. In its passage, it forms a thin Fleishy Slip, which becomes gradually narrower.

*Insertion*: Into the upper part of the Root of the Cartilage of the Ear. Tab. XLI. Fig. 1. B.

*Action*: To give tension to the part into which it is inserted, and, in some persons, to raise the Ear.

## ANTERIOR AURIS, vel Zygomato-auricularis.

*Origin*: Thin and Membranous, near the posterior

part of the Zygoma; the middle portion being mixed with Fleishy Fibres.

*Insertion*: By a narrow Tendon into the back part of the beginning of the Helix. Tab. XLI. Fig. 1. C.

*Action*: To stretch that part of the Ear to which it is fixed.

## RETRAHENTES AUREM,

## Vel Posteriores Auris, vel Mastoido-auricularis.

*Origin*: By two, and sometimes by three distinct Muscles, from the upper and outer part of the Mastoid Process.

*Insertion*: By small tendons into the back part of the Concha. Vol. 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 MOUTH.

## COMPRESSOR NARIS, vel Super-maxillo-nasalis.

*Origin*: By a narrow beginning from the root of the Ala Nasi, where it is connected with the Levator Labii Superioris Alæque Nasi, and the slip which descends from the Frontal Muscle. It spreads into a number of thin scattered Fibres, which cross the Ala Nasi, and run towards the Dorsum of the Nose. It arises also from the anterior extremity of the Nasal Bone.

*Insertion*: Into its fellow of the opposite side, over the anterior Nasal Suture. Tab. XLI. Fig. 1. d.

*Action*: To press the Ala towards the Septum, as in smelling; or if the Fibres of the Frontal Muscle, which are connected to it, act, they pull the Ala outwards. It also corrugates the Skin of the Nose, and assists in expressing certain passions.

## LEVATOR LABII SUPERIORIS ALÆQUE NASI,

## Vel Super-maxillo-labiales Major et Medius.

*Origin*: By two thin Fleishy Slips; the first from the

external part of the Orbital 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 Upper Lip, and of the second into the Upper Lip and outer part of the Wing of the Nose.

*Action*: To raise the Upper Lip in opening the Mouth, and the Ala Nasi in dilating the Nostril. Tab. XLI. Fig. 1. E. F.

Under this Muscle a few scattered Fibres are noticed by SOEMMERRING, and Termed *Musculus Anomalous Maxillæ Superioris*.

## DEPRESSOR LABII SUPERIORIS ALÆQUE NASI.

*Origin*: Thin and Fleishy, from the Alveoli of the Dentes Incisivi et Caninus of the Upper Jaw; running upwards, at the side of the Furrow of the Lip.

*Insertion*: Into the Upper Lip, and Root of the Ala Nasi.

*Action*: To draw the Upper Lip and Ala Nasi downwards. Tab. XLIII. Fig. 1. E.

LEVATOR



## LEVATOR ANGULI ORIS,

Vel *Levator Labiorum Communis*, vel *Caninus*, vel *Super-maxillo-labialis Minor*.

*Origin*: Thin and Fleshy, from the superior Maxillary Bone, immediately under the Foramen Infra-orbitarium;—running deeper down and farther out than the Levator Labii Superioris.

*Insertion*: Into the Angle of the Mouth, and to the Cheek, where it joins its Antagonist. Tab. XLII. Fig. 1. D.

*Action*: To raise the corner of the Mouth;—as in expressing joy.

## DEPRESSOR LABII INFERIORIS,

Vel *Quadratus Genæ*, vel *Mento-labialis*.

*Origin*: Broad and Fleshy, 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.

*Insertion*: Into one half of the Edge of the Under Lip. Tab. XLII. Fig. 1. G.

*Action*: To assist in opening the Mouth, by depressing the Under Lip, and pulling it a little outwards.

LEVATOR LABII INFERIORIS, vel *Levator Mentis*.

*Origin*: From the Roots of the Alveoli of the Dentures Incisores and Dens Caninus of the Lower Jaw.

*Insertion*: Into the Under Lip and Skin of the Chin. Tab. XLIII. Fig. 1. H.

*Action*: To raise the parts into which it is inserted. It may also assist in inverting the Under Lip.

## DEPRESSOR ANGULI ORIS,

Vel *Triangularis Oris*, vel *Maxillo-labialis Inferior*.

*Origin*: Broad and Fleshy, from the under edge of the Lower Jaw, at the side of the Chin.—It runs over the Origin of the Depressor Labii Inferioris, becoming gradually narrower.

*Insertion*: Into the Angle of the Mouth, where it intermixes with the Levator Anguli Oris. Tab. XLI. Fig. 1. K.

*Action*: To depress the corner of the Mouth;—as in expressing Anger, and in crying.

ZYGOMATICUS MAJOR, vel *Zygomato-labialis Major*.

*Origin*: Fleshy from the Os Malæ, near the Zygomatic Suture.—Descending obliquely forwards.

*Insertion*: Into the Angle of the Mouth, its Fibres intermixing with those of the Depressor Anguli Oris and Orbicularis Oris. Tab. XLI. Fig. 1. H.

*Action*: To raise the Angle of the Mouth, in the direction of its Fibres, and to make the Cheek prominent;—as in laughing.

ZYGOMATICUS MINOR, vel *Zygomato-labialis Minor*.

*Origin*: Higher on the Os Malæ than the former Muscle. It is situated before it, and takes the same course, but is much more slender.

*Insertion*: Into the upper Lip, along with the Levator Anguli Oris. Tab. XLI. Fig. 1. G.

*Action*: To assist the former Muscle in raising the Corner of the Mouth, and drawing it obliquely outwards.

This Muscle is often wanting.

By the frequent action of the Muscles which raise the Corners of the Mouth and Upper Lip, that Furrow is formed which extends between the outer Corner of the Nose and Mouth, and which is so conspicuous in the Face of a person advanced in life.

## BUCCINATOR,

Vel *Retractor Anguli Oris*, vel *Bucco-labialis*.

*Origin*: From a Ridge extending between the last Dens Molaris and Coronoid Process of the Lower Jaw; and from the Upper Jaw, between the last Dens Molaris and Pterygoid Process of the Sphenoid Bone, from the extremity of which it has also part of its origin. Thence going forwards with straight Fibres, it covers and adheres closely to the Membrane which lines the Cheek.

*Insertion*: Into the Corner of the Mouth, along with the Orbicularis Oris. Tab. XLIII. Fig. 1. G.

*Action*: To draw the Angle of the Mouth backwards and outwards, and to contract its Cavity by pressing the Cheek inwards, in consequence of which the Food is thrust between the Teeth in Manducation.—It is likewise active in expelling Substances from the Mouth, and in blowing Wind-instruments, as a Trumpet, from which last circumstance its name is derived.

## ORBICULARIS ORIS,

Vel *Sphincter Labiorum*, vel *Labialis*.

This is a complete Sphincter surrounding the Mouth, and composing the principal part of the Lips, and is in a great measure formed by the Muscles which terminate in it.—At the corners of the Mouth, the Fibres decussate each other, so as to make it resemble two semicircular Muscles, from which it has been named by some Authors, *Semi-orbicularis Superior*, and *Semi-orbicularis Inferior*. Tab. XLIII. Fig. 1. F.

*Action*: To shut the Mouth,—to enable the Lips to embrace any Substance placed between them, and to counteract the different Muscles inserted into them.



*Nasalis Labii Superioris* of Albinus,—part of the former Muscle, running up to be connected to the Septum Nasi, and serving as a Levator of the Upper Lip, or a Depressor of the under part of the Nose. Tab. XLI. Fig. 1. above L.

Of the Muscles described above, the NOSTRILS are compressed by the *Compressores Narium* and *Depressores Labii Superioris Alarumque Nasi*;—opened by the *Levatores Labii Superioris Alarumque Nasi*, and *Fronto-nasalis*. The SEPTUM NASI is pulled down by the *Nasalis Labii Superioris*, and raised by its own Elasticity.

The MOUTH is opened by the *Levatores Labii Superioris Alarumque Nasi*, *Levatores Angulorum Oris*, *Zygomatici Majores et Minores*, *Depressores Labii Inferioris*, and *Depressores Angulorum Oris*;—shut by the *Orbicularis Oris*, *Depressores Labii Superioris Alarumque Nasi*, *Levatores Labii Inferioris*,—and moved laterally by the *Buccinatores*.

The Corners of the Mouth are raised by the *Levatores Angulorum Oris*, *Zygomatici Majores et Minores*, and depressed by the *Depressores Angulorum Oris*.

### MUSCLES OF THE LOWER JAW.

#### APONEUROSIS TEMPORALIS.

This is a strong Tendinous Membrane, proper to be taken notice of before describing the Temporalis. It arises from the Bones which give origin to the upper semicircular part of the Temporal Muscle, and, descending over it, is fixed to the whole upper edge of the Zygoma.

Use: To brace the whole, and to give origin to part of the Temporal Muscle. Tab. LI.

#### TEMPORALIS, vel *Temporo-maxillaris*.

Origin: Semicircular and Fleshy, from the lower half of the Parietal Bone, and Temporal Fossa of the Frontal and Cheek Bones; and from the Squamous part of the Temporal, and Temporal Plate of the Sphenoid Bones.—It arises likewise from the Aponeurosis covering it.—From these Origins the Fibres descend like Radii, and the Muscle sends off a strong Tendon, which passes under the Zygoma.

Insertion: Into the whole of the Coronoid Process of the Lower Jaw, which it incloses as in a sheath, and is continued to near the last Dens Molaris. Tab. XLII. Fig. 1. B, b.

Action: To pull the Lower Jaw upwards, and a little backwards against the Upper Jaw.

#### MASSETER, vel *Zygomato-maxillaris*.

Origin: By strong Tendinous and Fleshy Fibres from the Superior Maxillary Bone, where it joins the Os Malæ, and from the whole length of the under and inner Edge of the Zygoma; the outer part of the Muscle slanting backwards, the inner part forwards, and in some measure decussating the other. In its descent, it covers the Coronoid Process, and under end of the Temporal Muscle.

Insertion: Into the outer side of the Angle of the

Lower Jaw, and from that upwards to the outside of the Coronoid Process. Tab. XLII. Fig. 1. C.

Action: To assist the Temporalis in the elevation of the Lower Jaw, and to pull it a little forwards or backwards, according to the direction of the Fibres of the Muscle.

#### PTERYGOIDEUS INTERNUS, vel *Major*,

##### Vel *Pterygo-maxillaris Major*.

Origin: From the Fossa Pterygoidea of the Sphenoid and Palate Bones; passing downwards and outwards.

Insertion: Into the inner side of the Angle of the Lower Jaw, and continued as far as the Groove for the inferior Maxillary Nerve. Tab. XLIV. Fig. 1. inner side of G.

Action: To raise the Jaw, and draw it obliquely towards the opposite side.

#### PTERYGOIDEUS EXTERNUS, vel *Minor*,

##### Vel *Pterygo-maxillaris Minor*.

Origin: From the outer side of the Pterygoid Process of the Sphenoid Bone; from the Tuberosity of the superior Maxillary Bone; and from the Root of the Temporal Process of the Sphenoid Bone. From these Origins it passes almost horizontally outwards, and a little backwards.

Insertion: Into the Cervix and Capsular Ligament of the Lower Jaw. Tab. XLVI.

Action: To pull the Lower Jaw to the opposite side, and, if both Muscles act, to bring it forwards, so as to make the Fore-teeth project beyond those of the Upper Jaw. The Muscle, in its different motions, acts also upon the Inter-articular Cartilage.

The Lower Jaw is raised by the *Temporales*, *Masse-teres*, and *Pterygoidei Interni*;—depressed by the *Digastrici*,



trici, Platysmæ Myoides, Mylo-hyoidei, and Genio-hyo-glossi;—*moved forwards* by the Masseteres, Pterygoidei Externi, and Mylo-hyoidei;—*Backwards* by the Temporales, Masseteres, Digastrici, Genio-hyoidei, and

Genio-hyo-glossi;—and *laterally*, by the Pterygoidei Externus et Internus, acting upon one side or the other alternately.—By a succession of the above motions grinding is performed.

### MUSCLES ON THE FORE AND LATERAL PART OF THE NECK.

#### PLATYSMA MYOIDES, vel *Cutaneus*, vel *Thoraco-facialis*.

*Origin*: By a number of separate Fleishy Slips, from the Cellular Substance, which covers the upper parts of the Pectoral and Deltoid Muscles.—In their ascent, they unite to form a thin Muscular Expansion, which runs obliquely upwards along the fore and lateral part of the Neck, adhering to the Skin, and is similar to the Cutaneous Muscle of Quadrupeds. Tab. XLI. Fig. 1. *k*, M.

*Insertion*: Into the side of the Lower Jaw and the Depressor Anguli Oris, and into the Skin which covers the under parts of the Masseter, and Parotid Gland.

*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 connected with it under the Lower Jaw.

#### STERNO-CLEIDO-MASTOIDEUS, vel *Sterno-mastoideus*.

*Origin*: From the top of the Sternum, and the anterior end of the Clavicle, by two distinct Heads; the first of which is round, tendinous, and a little fleshy; the other broad and fleshy. A little above the Clavicle, the two Heads unite to form a strong Muscle, which runs obliquely upwards and outwards; the greater part of it being covered by the Platysma Myoides. Tab. XLII. Fig. 1.

*Insertion*: By a thick strong Tendon, into the Mastoid Process, which it surrounds; and becoming thinner, the Insertion extends as far back as the outer end of the great transverse Arch of the Occipital Bone.

*Action*: To turn the Head to one side, and assist in rolling it. When both Muscles act, they bow the Head. But if the Head be pulled back, by the Muscles upon the posterior part of the Neck, till the Insertion of this Muscle gets behind the centre of motion, it then becomes a Flexor backwards.

### MUSCLES SITUATED BETWEEN THE OS HYOIDES AND TRUNK.

#### STERNO-HYOIDEUS.

*Origin*: From the inner Edge of the upper Bone of the Sternum, and from the adjacent parts of the Clavicle and Cartilage of the first Rib;—ascending upon the Trachea and following Muscle.

*Insertion*: Into the Base of the Os Hyoides. Tab. XLII. Fig. 1. I.

*Action*: To depress the Os Hyoides.

#### STERNO-THYROIDEUS.

*Origin*: 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*: Into the under and lateral part of the Thyroid Cartilage. Tab. XLIII. Fig. 1. K.

*Action*: To depress the Larynx.

#### THYRO-HYOIDEUS, vel *Hyo-thyroideus*.

*Origin*: From the Thyroid Cartilage, where the former Muscle terminates, having the appearance of being continued from it.

*Insertion*: Into part of the Base, and almost all the Cornu of the Os Hyoides. Tab. LIV. Fig. 1. K.

*Action*: To depress the Os Hyoides, or to raise the Thyroid Cartilage.

#### CRICO-THYROIDEUS.

*Origin*: From the side and fore part of the Cricoid Cartilage; running obliquely upwards and outwards.

*Insertion*: By two portions; the one into the under part of the Wing of the Thyroid Cartilage, the other into its inferior Cornu. Tab. LIV. Fig. 1. m.

*Action*: To depress and pull forwards the Thyroid Cartilage, or to raise and draw backwards the Cricoid Cartilage.

#### OMO-HYOIDEUS.

*Origin*: From the Superior Costa of the Scapula, near the Semilunar Notch. It goes obliquely upwards and forwards, and is of a very slender form. It crosses under the Sterno-mastoideus, and there grows Tendinous.



dinous. Higher than this Muscle, it again becomes Fleishy.

*Insertion*: Into the Base of the Os Hyoides, at the side of the Sterno-Hyoideus. Tab. XLII. Fig. 11. *k*.

*Action*: To depress the Os Hyoides, and pull it to one side; or, when both Muscles act, to draw it directly downwards.

### MUSCLES SITUATED BETWEEN THE LOWER JAW AND OS HYOIDES.

#### DIGASTRICUS,

*Vel Biventer Maxillæ Inferioris, vel Mastoido-mentalis.*

*Origin*: By a Fleishy Belly, from the Groove at the Root of the Mastoid 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 fixed by a Ligament to the Os Hyoides, and, having received an addition of Tendinous and Muscular Fibres, it runs obliquely upwards and forwards, forming another Fleishy Belly.

*Insertion*: Into a rough Sinuosity at the under part of the Symphysis of the Lower Jaw. Tab. LVII. Fig. 1. *b, c*.

*Action*: To open the Mouth, by pulling the Lower Jaw downwards and backwards; and when the Jaws are shut, to raise the Os Hyoides, and of course the Throat,—as in swallowing. When the Lower Jaw is fixed, this Muscle, according to SOEEMMERRING, can extend the Head, and thereby open the Mouth, by elevating the Upper Jaw. This he thinks he has observed in a child sucking.

*MYLO-HYOIDEUS, vel Maxillo-Hyoideus.*

*Origin*: Fleishy, broad, 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 forwards behind the anterior Belly of the Digastricus.

*Insertion*: Into the lower edge of the Body of the Os Hyoides, and joined to its fellow by the intervention of a white Tendinous Line. Tab. LVII. Fig. 2. *a*.

*Action*: To pull the Os Hyoides forwards, upwards, and to a side, or, when that Bone is fixed, to assist in the depression of the Jaw.

#### GENIO-HYOIDEUS.

*Origin*: From a Tubercle on the under and inner part of the Symphysis of the Lower Jaw, by a slender beginning, from which it goes obliquely downwards and backwards on the inner side of the former Muscles.

*Insertion*: Into the Body of the Os Hyoides. Tab. LVII. 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.

*Origin*: From the same Tubercle with the former Muscle; its Fibres spreading out like a Fan.

*Insertion*: Into the whole length of the Tongue, and into the Base of the Os Hyoides. Tab. LXXVIII. No. 57.

*Action*: According to the direction of its Fibres,—to draw the Tongue forwards or backwards,—to pull it downwards, and render its Dorsum concave,—and when the Jaws are shut, to make the Os Hyoides advance towards the Chin.

#### HYO-GLOSSUS.

*Origin*: From one of the Cornua, and half of the Base of the Os Hyoides; running upwards and a little outwards.

*Insertion*: Into the side of the Tongue, near the Stylo-glossus. Tab. LIV. Fig. 3. *c*.

*Action*: To depress the edge of the Tongue, and thereby render its upper Surface convex.

#### LINGUALIS.

*Origin*: From the root of the Tongue, laterally. It advances between the Genio-hyo-glossus and Hyo-glossus, with the Fibres of both of which it intermixes.

*Insertion*: Into the point of the Tongue. Tab. LIV. Fig. 4. *k*.

*Action*: To raise the point of the Tongue, to contract the Substance of the latter, and bring it backwards.

#### STYLO-GLOSSUS.

*Origin*: From the Styloid Process of the Temporal Bone, and from the Ligament which connects that Process to the Angle of the Lower Jaw. It goes downwards 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 insensibly lost towards the Apex. Tab. LIV. Fig. 2. *d*.

*Action*: To draw the Tongue upwards and backwards, and to move it laterally.



The TONGUE is raised, anteriorly, by the Linguales, and posteriorly, and pressed against the Palate, by the Stylo-glossi;—depressed, and turned down anteriorly, by the Genio-hyo-glossi;—carried forwards, and lengthened, by the Genio-hyo-glossi;—backwards and shortened, by the Linguales, Stylo-glossi, and Genio-hyo-glossi;—moved laterally by the Stylo-glossi acting alternately;—rendered concave above, and convex below, by the Genio-hyo-glossi; and made narrower, convex above, and concave below, by the Hyo-glossi.

#### STYLO-HYOIDEUS.

*Origin*: From the under half of the Styloid Process. It goes downwards and forwards, splitting for the passage of the Digastricus.

*Insertion*: Into the Os Hyoides, at the junction of the Base and Cornu. Tab. LVII. Fig. 1. d.

*Action*: To pull the Os Hyoides to one side, and a little upwards.

#### STYLO-HYOIDEUS ALTER.

When present, it is a more slender Muscle than the former, but, like it, has nearly the same Origin, Insertion, and Action.

#### STYLO-PHARYNGEUS.

*Origin*: From the root of the Styloid Processes;—it goes downwards and forwards.

*Insertion*: Into the side of the Pharynx, along which it expands.—It is also fixed to the back part of the Thyroid Cartilage. Tab. LIV. Fig. 8. g, h, i, k, l.

*Action*: To dilate and raise the Pharynx, and thereby prepare it to receive the Morsel from the Mouth. It at the same time elevates the Thyroid Cartilage.

#### CIRCUMFLEXUS PALATI,

Vel Tensor Palati, vel Pterygo-Palatinus.

*Origin*: From the Spinous Process of the Sphenoid Bone, from the Osseous and Cartilaginous parts of the EUSTACHIAN Tube, and from the root of the Internal 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 Velum Palati, and semilunar edge of the Os Palati, extending as far as the Suture which joins the two Bones. Generally some of its posterior Fibres join the Constrictor Pharyngis Superior and Palato-pharyngeus. Tab. LIV. Fig. 14. b, c.

*Action*: To depress, and stretch the Velum laterally.

#### LEVATOR PALATI,

Vel Levator Palati Mollis, vel Petro-palatinus.

*Origin*: From the point of the Pars Petrosa of the Temporal Bone, and also from the Membranous Portion of the EUSTACHIAN Tube. From these parts it descends.

*Insertion*: By a broad Expansion, into the Velum Palati, extending as far as the root of the Uvula, and uniting with its fellow. Tab. LIV. Fig. 14. a.

*Action*: To raise the Velum in the time of Swallowing, and prevent the food or drink from passing into the Nose, by pressing the Velum against the back part of the Nostrils.

#### CONSTRICTOR ISTHMI FAUCIUM,

Vel Glosso-palatinus.

*Origin*: From the side of the root of the Tongue. It consists of a few thin Fibres, which run 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 Uvula, where it is connected with its fellow.

*Action*: To draw the Palate and root of the Tongue towards each other, and thereby to shut the Opening into the Fauces.

#### PALATO-PHARYNGEUS, vel Pharyngo-palatinus.

*Origin*: From the middle of the Velum Palati, at the root of the Uvula; and from the Insertion of the Constrictor Isthmi Faucium and Circumflexus Palati. The Muscle consists of a thin Stratum of Fibres, which proceed within the posterior Arch of the Palate, and run to the upper and lateral part of the Pharynx, where they spread, and mix with those of the Stylo-Pharyngeus.

*Insertion*: Into the edge of the upper and back part of the Thyroid Cartilage; some of its Fibres being lost between the Membrane and inferior Constrictors of the Pharynx. Tab. LIV. Fig. 11. c, c.

*Action*: To draw the Velum and Uvula downwards, the Larynx and Pharynx being at the same time raised; along with the Constrictor Pharyngis Superior and Tongue, to assist in shutting the passage into the Nostrils; and, in Swallowing, to convey the food from the Fauces into the Pharynx.

The SALPINGO-PHARYNGEUS of ALBINUS is composed of a small portion of this Muscle, which arises from the EUSTACHIAN Tube, and which, when acting, may affect it. Tab. LIV. Fig. 11. c, c.

AZYGOS



**AZYGOS UVULÆ, vel Palato-uvularis.**

*Origin*: From the posterior extremity of the longitudinal Palate Suture. It runs in the middle of the Velum Palati, and goes through the whole length of

the Uvula, inclosed in the Membrane covering that Body, and adheres in its passage to the Circumflexi.

*Insertion*: Into the point of the Uvula. Tab. LIV. Fig. 10. *b*.

*Action*: To shorten the Uvula.

**MUSCLES SITUATED UPON THE BACK PART OF THE PHARYNX.****CONSTRUCTOR PHARYNGIS INFERIOR,****Vel Laryngo-Pharyngeus.**

*Origin*: From the sides of the Thyroid and Cricoid Cartilages. The superior Fibres, running obliquely upwards, cover the under part of the following Muscle, 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 Tendinous line in the middle of the back part of the Pharynx. Tab. LIV. Fig. 6. *a*, *b*.

*Action*: To compress the lower part of the Pharynx, and to draw it and the Larynx a little upwards.

*Action*: To compress the middle and upper part of the Pharynx.

**CONSTRUCTOR PHARYNGIS SUPERIOR,****Vel Cephalo-pharyngeus.**

*Origin*: From the Cuneiform Process of the Occipital Bone, before the Foramen Magnum; from the Pterygoid Process of the Sphenoid Bone, and from both Jaws, near the last Dentes Molares: It is likewise connected with the Buccinator, and with the root of the Tongue and 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. LIV. Fig. 8. *a*, *d*.

*Action*: To compress the upper part of the Pharynx, and, with the assistance of the other Constrictors, to thrust the Food down into the Esophagus.

*Origin*: From the Appendix and Cornu of the Os Hyoides, and also from the Ligament which connects the Cornu to the Thyroid Cartilage. In its passage it spreads out, and terminates in a point both above and below; the upper part covering the following Muscle, and laying hold of, or taking its Origin from, the Cuneiform Process of the Occipital Bone, before the Foramen Magnum.

*Insertion*: Into its fellow on the opposite side by a Tendinous Line, in a similar manner to the former Muscle. Tab. LIV. Fig. 7. *a*, *b*.

The Os HYOIDES, LARYNX, and PHARYNX, being intimately connected together, follow each other, less or more, in their different motions. They are *elevated* by the Mylo-hyoidei, Genio-hyoidei, Genio-hyo-glossi, Stylo-hyoidei, Digastrici, and Constrictores Pharyngis; —*depressed* by the Sterno-hyoidei, Thyro-hyoidei, and Omo-hyoidei; —*moved laterally*, by the above Muscles of the right and left sides acting alternately; —*carried obliquely*, and in every other direction, according to the situation and course of the different Muscles fixed to them.

**MUSCLES OF THE GLOTTIS.****CRICO-ARYTENOIDEUS POSTICUS.**

*Origin*: Broad and Fleshy from the back part of the Cricoid Cartilage.

*Insertion*: By a narrow extremity, into the back part of the Base of the Arytenoid Cartilage. Tab. LIV. Fig. 11. *p*.

*Action*: To pull back the Arytenoid Cartilage, by which the Ligament of the Glottis is made tense, and the Glottis itself longer.

**CRICO-ARYTENOIDEUS LATERALIS.**

*Origin*: From the side of the Cricoid Cartilage, where it is covered by the Thyroid.

*Insertion*: Into the side of the Base of the Arytenoid Cartilage. Tab. LIV. Fig. 16. *b*.

*Action*: To open the Glottis, by separating the Arytenoid Cartilages, and, with them, the Ligaments of the Glottis.

THYRO



## THYRO-ARYTENOIDEUS.

*Origin* : From the under and back part of the middle of the 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 Larynx.

*Insertion* : Into the fore part of the Arytenoid Cartilage. Tab. LVII. Fig. 7. *k*.

*Action* : To pull the Arytenoid Cartilage outwards and forwards, and thereby to widen the Glottis, and shorten and relax its Ligaments. It may also affect the Ventricle of the Larynx.

A small Slip, termed by ALBINUS *Thyreco-Arytenoideus Alter Minor*, arises from the upper and back part of the middle of the Thyroid Cartilage, and is inserted into the Arytenoid Cartilage, above the Insertion of the Crico-Arytenoideus Lateralis. *Use* : To assist the former in shortening and relaxing the Ligaments of the Glottis.

ARYTENOIDEUS OBLIQUUS, 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. LIV. Fig. 11. *n*.

*Action* : To draw the Arytenoid Cartilages towards each other, and assist in closing the Aperture of the Glottis.

Frequently one of the oblique Arytenoid Muscles is wanting.

ARYTENOIDEUS TRANSVERSUS, vel *Major*.

*Origin* : From almost the whole length of the back part of one of the Arytenoid Cartilages, running transversely.

*Insertion* : In a similar manner, into the other Arytenoid Cartilage. Tab. LIV. Fig. 11. *o*.

*Action* : To act with the Obliqui in closing the Glottis, by drawing together the two Arytenoid 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. LIV. Fig. 16. *c, e, f*.

*Action* : To assist its fellow, in drawing the Epiglottis towards the Glottis.

## ARYTENO-EPIGLOTTIDEUS.

*Origin* : By a number of small Fibres from the Arytenoid Cartilage. It runs along the outer side of the external Opening of the Glottis.

*Insertion* : Into the Epiglottis, along with the former Muscle.

*Action* : To assist its fellow, in drawing the Epiglottis directly down upon the Glottis, in the time of Swallowing.

The two last-mentioned Muscles are obscurely seen, excepting in robust Bodies.

By the Crico-arytenoidei Postici, and Arytenoidei Transversus et Obliqui, the GLOTTIS is made *longer*, its Ligaments rendered *tense* and brought together, as in forming *acute sounds*.—By the Crico-arytenoidei Laterales, and Thyro-arytenoidei, the GLOTTIS is *opened*, its Ligaments *shortened* and *relaxed*, as in forming *grave sounds*.—By the Thyro-epiglottidei, and Aryteno-epiglottidei, assisted by the pressure of the root of the Tongue, the EPIGLOTTIS is made to cover and completely shut up the GLOTTIS, in the time of Swallowing; after Deglutition, the EPIGLOTTIS rises again by its own elasticity, the Tongue at the same time being carried forwards.

## MUSCLES SITUATED ON THE ANTERIOR AND LATERAL PARTS OF THE ABDOMEN.

PREVIOUS to the description of the Abdominal Muscles, it is proper to take notice of certain Expansions or Fasciæ covering the first of these.

Over the Tendon of the Muscle called External Oblique, there is a thin Expansion, termed *Superficial Fascia*, consisting chiefly of Transverse Fibres. This can also be traced down upon the fore part of the Thigh. It adheres to the whole length of the Crural Arch. Part of it is fixed to Ligaments about the root of the Penis and Clitoris. It sends also a Sheath along the Spermatic Cord as far as the Scrotum, the rest of it

spreading over the Inguinal Glands, and vanishes in the Fat of the Thigh.

The whole of this Fascia is frequently so thin, as to appear little else than Cellular Substance condensed. In the inflamed state, however, it sometimes becomes remarkably thick. It forms the outer, or Superficial Fascia, in Inguinal and Crural Herniæ.

Under the Superficial Fascia, on the Thigh, there is a thick and strong Aponeurosis, which arises from the fore part of the Spine of the Ilium, from the whole under edge of the Crural Arch, and from the upper and fore part



part of the Os Pubis. This forms a portion of the *Fascia Lata Femoris*, (to be afterwards taken notice of), which incloses the Muscles, Vessels, and Nerves of the Thigh.

The part arising from the Ilium and Crural Arch is termed *Ilial*, and that from the Pubis, *Pubal portion* of the *Fascia Lata*. The Ilial and Pubal portions are united behind the upper end of the Vein termed *Saphena Major*, and form a considerable Angle at the inner side of the Femoral Vessels, and between the Muscles on the fore and those on the inner side of the Thigh.

The upper and inner part of the Ilial portions, 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*. The upper and inner part of this process is twisted in, where it is fixed to the Os Pubis, and forms the *Femoral Ligament* of MR HEY.

The Falciform Process leaves a *large Opening*, where the Vena Saphena Major, ascending upon the Pubal portion of the *Fascia Lata*, terminates in the Femoral Vein.

This Process covers the great Femoral Blood-vessels, and anterior Crural Nerves, 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 several of the Superficial Lymphatics of the Thigh 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 confusedly united by an intermixture of Tendinous and Cellular Substance.

Behind the Great Vessels and Nerves of the Thigh, part of the Pubal portion of the *Fascia* is continued down, to be fixed to the Os Femoris, as far as the place where the Femoral Artery perforates the Triceps Muscle.

#### OBLIQUUS DESCENDENS EXTERNUS,

*Vel Obliquus Externus Abdominis, vel Costo-Abdominalis.*

*Origin*: In a serrated manner, from the lower edge of the eight inferior Ribs, near their Cartilages. The Serræ intermix with the Indentations of the Serratus Major Anticus, and the Muscle is commonly connected with the Pectoralis Major, Intercostales, and Latissimus Dorsi; the last of which covers the edge of a portion of it, extending from the twelfth Rib to the Spine of the Os Ilium, from the Anterior half of which it has also part of its origin.

From these attachments the Fibres of the Muscles run obliquely downwards and forwards, and terminate (sometimes by distinct indentations) in a broad Tendon, or Aponeurosis, which, near its margin, is firmly connected with the Tendon of the two following Muscles, where it forms a curved line, called *Linea Semilunaris*. From this the Tendinous Fibres are continued in the same direction with the Fleishy Fibres, to the middle of the Abdomen.

*Insertion*: Into its fellow of the opposite side, by the medium of a Tendinous Line, Tab. XLI. Fig. 1. E, E, which extends from the Cartilago Ensiformis to the Pubis, and is known by the name of *Linea Alba*.

The *Linea Alba* is formed by the meeting of the Tendons of the Oblique and Transverse Muscles of the opposite sides of the Abdomen, and is perforated in the middle by the Umbilicus, originally a passage for the Umbilical Cord, and now formed into a Cicatrix. Tab. XLI. Fig. 1. F.

The Tendon of this Muscle is strengthened by other Tendons of a more delicate nature, lying upon its outer surface. These decussate it, in a curved direction, upwards and inwards, and are intimately connected with, or take their origin from, the under end of the Tendon of the Muscle.

The under part of the Tendon, thicker and stronger than the rest of it, extends from the Superior-anterior Spinous Process of the Os Ilium, over the Flexor Muscles and great Vessels and Nerves of the Thigh to the upper part of the Os Pubis, to which it is fixed. Tab. XLI. Fig. 1. g.

This part of the Tendon, which was formerly described by the name of *POUPART's*, or *FALLOPIUS's*, or *Inguinal Ligament*, forms a curve behind, but more especially over the Blood-vessels, and therefore is now known by the name of *Crural Arch*.

Somewhat higher, and farther out, than the Symphysis Pubis, or about an inch and a half in a full-sized Adult, *POUPART's* Ligament divides into an upper and under column.

The upper column is fixed to the Ligament of the Symphysis Pubis, and to the Os Pubis of the opposite side. The under one is twisted or doubled in, and inserted into the upper part of the Os Pubis, and Pubal portion of the *Linea Ilio-pectinea*, from the Femoral Vessels, as far as the Crest or Tuberosity of the Bone, and forms a firm sharp line towards the Abdomen, which constitutes the posterior edge of the Crural Arch, or forms the *Crural Ring* of GIMBERNAT, of late so frequently 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 is relaxed, so as to favour the return of the Bowels in the reduction of Crural Hernia.

The under column is looser and more slender in the Female than in the Male; and the space between the Femoral Vessels and the insertion of this part of the Ligament



Ligament is larger; in consequence of which, Protrusions of the Bowels happen here more frequently in Women.

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 about 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 Muscle*, or *Under Abdominal*, or *Spermatic*, or *Supra-pubial Ring*, Tab. XLI. Fig. 1. I, for the transmission of the Spermatic Cord in the Male, and the round Ligament of the Uterus in the Female, and where the Bowels protrude in Inguinal Hernia.

Surrounding the exit of the Cord, or the round Ligament from the Ring, there is a quantity of Cellular Substance, and some Tendinous Fibres, which assist in filling up that opening, and in preventing any communication between the outer and inner parts.

The place where the columns separate to form the Ring varies in different Subjects. In some, the separation is considerably farther out than the part already described, though more generally the division is directly at the outer part of the Ring. At this end of the Ring, the columns are joined by Tendinous Fibres, which arise from the Os Ilium, and from *POUPART'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 *Obliquus Internus* and *Transversalis Abdominis*, and by the *Fascia Transversalis*.

*Action* of the *Obliquus Externus*: To support and compress the Peritoneum and Bowels of the Abdomen; to assist in the evacuation of the Fæces and Urine, and in the exclusion of the Fœtus; to thrust the Diaphragm upwards, 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 Thorax is fixed.

#### OBLIQUUS ASCENDENS INTERNUS,

*Vel Obliquus Internus Abdominis, vel Ilio-abdominalis.*

*Origin*: From the back part of the Os Sacrum;—from the Spinous Processes of the three Lowest Lumbar Vertebrae, by a Tendon common to it and the *Serratus Posticus Inferior* and *Latissimus Dorsi*;—from the whole length of the Spine of the Os Ilium;—and from the inside of *POUPART'S* Ligament, at the middle of which it sends off the Cremaster. From these Origins the Fibres are disposed in a radiated manner; but the greater part of them run in a slanting direction upwards.

At the Linea Semilunaris, the Muscle becomes Ten-

dinous, and adheres firmly to the Tendon of the *Obliquus Externus*. Here its Tendon divides into two Layers: the anterior Layer, with the greater part of the inferior portion of the posterior Layer, joins the Tendon of the External Oblique, and goes over the Rectus, to be inserted into the Linea Alba. The posterior Layer joins the Tendon of the *Transversalis*, and goes behind the Rectus; and this union is continued down, till it reaches about half way between the Umbilicus and Os Pubis. Lower than this, only a few scattered Fibres of the Posterior Layer are to be found behind the Rectus; the principal part of it passing before that Muscle, to be inserted into the Linea Alba.

*Insertion*: Into the Cartilages of all the False Ribs; into the Cartilago Ensiformis, and whole length of the Linea Alba. Tab. XLII. Fig. 1. Trunk, *f, i, k, l*.

*Action*: To assist the former Muscle. It bends the Body, however, in the same direction with the *Obliquus Externus* of the opposite side. So that these two may, in some respects, be considered as forming a double-bellied Muscle.

#### TRANSVERSALIS,

*Vel Transversus Abdominis, vel Lumbo-abdominalis.*

*Origin*: Fleishy 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 Lumbar Vertebrae; from the whole inner edge of the Spine of the Os Ilium; and anterior to this, it is connected to the under edge of the *Obliquus Externus*. At the Linea Semilunaris, the Muscle changes into Tendon, which is continued across, adhering to the *Obliquus Internus* in the manner already mentioned.

*Insertion*: Into the Cartilago Ensiformis and Linea Alba. Tab. XLIII. Fig. 1. Trunk, C, D, E.

*Action*: To support, and immediately to compress the Abdominal Bowels.

From the inside of the Crural Arch, and from the Spine of the Ilium, a Tendinous Aponeurosis, termed *Iliac Fascia*, is sent off, which is reflected over the *Iliacus Internus*, and *Psoas Magnus*, which it braces and protects. It descends afterwards between the *Psoas* and External Iliac Vessels, to give a lining to the Bones, Muscles, and Ligaments, at the inner side of the Pelvis. It is firmly attached to the Linea Ilio-pectinea, and behind the Origin of the Crural Vessels, is incorporated with the Pubal part of the *Fascia Lata*, in such a manner, that the one may in a great measure be considered as a continuation of the other.

From the Crural Arch, from the Iliac Portion of the Linea Ilio-pectinea, and reflected also from the under part of the Expansion covering the *Iliacus Internus*, another Aponeurotic Expansion, of a thin and delicate nature, the *Fascia Transversalis* of *MR COOPER*, is sent upwards,



upwards, which lines the under part of the inner side of the Transversalis, lies between it and the Peritoneum, and vanishes in its ascent in the Abdomen.

The Angle of reflection between these two Expansions being formed of strong Tendinous Fibres, the Abdomen at this place is fortified, and the Bowels are prevented from protruding between the Spine of the Ilium and Iliac Blood-vessels.

Besides these Expansions, others are mentioned by late Authors, as being sent down to inclose the Femoral Vessels at the upper part of the Thigh, so as to form what is called the *Crural Sheath*.

The beginning of the Crural Sheath, or that part next the Cavity of the Pelvis, is formed anteriorly by the Fascia Transversalis, Crural Arch, and Cellular Substance blended together, posteriorly by the conjoined Fascia Iliaca, Pubal part of the Fascia Lata, and Cellular Substance. The anterior and posterior portions of the Fascia uniting together at the sides of the Blood-vessels, form the lateral parts of the Sheath.

Lower than the Crural Arch, and extending as far as the Perforation in the Tendon of the Great Adductor Muscle of the Thigh, the Artery is covered before by the Fascia Lata, behind by the deep part, or Pubal portion of that Fascia, and laterally by the two Fasciæ conjoined by Cellular Substance.

The Sheath and Vessels it incloses, at the upper part of the Thigh, with the External Iliac Vessels also at the inner part of the Pelvis, are strengthened by some Tendinous Slips, which run between, and also at the sides of the Vessels, uniting them together, to the Crural Arch before, and to the Bones behind, over which they pass.

Within the Fasciæ, the Vessels are closely connected together, as the Great Vessels in the Neck are, by a Vagina of Cellular Substance condensed, and which may be considered as the *proper Sheath* of the Great Vessels situated in the Thigh.

Between the inner part of the External Iliac Vein, and the Insertion of the under column of *POUPART'S* Ligament into the Os Pubis, and having the Os Pubis behind, covered by its Ligament, a triangular space is left, at the outer part of which there is a small Aperture, which forms the *Crural Foramen* of *GIMBERNAT*. The triangular Cavity and Aperture are more considerable in the Female than in the Male, on account of the greater width of the Pelvis. Through this Foramen the Bowels protrude in Femoral Hernia. 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 beginning of the Crural Sheath, and situated within it, and is commonly occupied by Absorbent Glands; or sometimes by the Trunks of the Absorbents themselves, coming from the Thigh; or now and then by a cross Stratum of Ligamentous Matter; in consequence of which, when the parts are prepared, there may be either a Foramen, or

a Cribriform appearance, or an Impervious Septum in the Crural Ring. In this last case, the Absorbents are found to creep along the Coats of the Blood-vessels, in their course to the Abdomen.

Half way between the Spine of the Ilium and Symphysis Pubis, the Fascia Transversalis leaves an opening for the passage of the Spermatic Cord, or for the round Ligament of the Uterus; the beginning of which passage may be considered as the *Internal* or *Superior Abdominal Ring*.

The under part of this opening is formed by *POUPART'S* Ligament, the upper by the Transverse and Internal Oblique Muscles.

From this opening there is no direct passage outwards, the part being shut by the Tendon of the Obliquus Externus.

The inner Ring is of the same form and size with the outer Ring, and is directed in the same manner with it.

Between the Internal and External Abdominal Rings, the passage is oblique, and is about an inch in length. It has also a quantity of Cellular 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 Sterno-pubialis.

*Origin*: Tendinous from the fore and upper part of the Symphysis Pubis. It soon becomes Fleishy, and runs upwards in form of a flat Band, the whole length of, and parallel to, the Linea Alba. Between its upper Extremity and the Umbilicus, it is divided into three nearly equal portions, by as many transverse Tendinous Intersections, and there is generally a half Intersection some way below the Umbilicus. These seldom penetrate through the whole thickness of its Substance. They adhere firmly to the anterior part of the Sheath which incloses the Muscle, so as to render its separation difficult, but slightly to the posterior Layer.

*Insertion*: Into the Cartilages of the three inferior True Ribs, and extremity of the Sternum. It frequently intermixes with the under edge of the Pectoralis Major. Tab. XLII. Fig. 1. D, D.

*Action*: To compress 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 means of its Sheath and Tendinous Intersections, it is kept in its place, and allowed to act more equally.

#### PYRAMIDALIS, vel Pubio-sub-umbilicalis.

*Origin*: By a broad Base, from the Crest of the Os Pubis, and from the upper part of the Symphysis Pubis. It runs upwards within the same Sheath with the Rectus, tapering to a point in its ascent.

*Insertion*:



*Insertion* : Into the Linea Alba and inner edge of the Rectus, less than half-way between the Pubis and Umbilicus. Tab. XLI. Fig. 1. *p.*

*Action* : To assist the under part of the Rectus in

drawing down the Ribs, or to compress the under part of the Abdomen.

It is frequently wanting in both sides, and then the under end of the Rectus is larger, thus in some measure supplying its place.

## MUSCLES OF THE MALE PARTS OF GENERATION, AND OF THE ANUS.

### CREMASTER, vel *Musculus Testis vel Scroti.*

*Origin* : From the under edge of the Obliquus Internus Abdominis. Passing through the Ring of the Obliquus Externus, it surrounds the Spermatic Cord as far as the Testicle, where the Fibres separate and expand.

*Insertion* : Into the Tunica Vaginalis Testis and Cellular Substance of the Scrotum. Tab. XLI. Fig. 1: K.

*Action* : To contract the Scrotum, to suspend and elevate, and to compress and evacuate the Testicle.

### ERECTOR PENIS,

Vel *Ischio cavernosus*, vel *Ischio-sub-penialis*:

*Origin* : Tendinous from the inner side of the Tuberosity of the Os Ischium.—It runs upwards, Fleishy, increasing in breadth, and embracing the whole inner part of the Crus Penis.

*Insertion* : By a thin Tendon into the elastic Membrane which covers the Corpora Cavernosa Penis, as far as the union of the Crura. Tab. LVI. Fig. 6. *d.*

*Action* : To compress the Crus Penis, by which means the Blood is pushed from it into the fore part of the Corpora Cavernosa, and the Penis thereby more completely distended. In the distension of the Penis, the Erector is assisted by the Levator Ani, Sphincter Ani, and Transversus Perinei.

### ACCELERATOR URINÆ,

Vel *Ejaculator Seminis*, vel *Bulbo-urethralis*.

*Origin* : Fleishy from the Sphincter Ani, and Membranous part of the Urethra; and Tendinous from the Crus and beginning of the Corpus Cavernosum Penis.—In its course it forms a thin Fleishy Layer, the inferior Fibres of which run more transversely than the superior, which descend in an oblique direction; the Muscles on the opposite sides completely inclosing the Bulb of the Urethra.

*Insertion* : Into its fellow by a Tendinous line running longitudinally on the middle of the Bulb. Tab. LVI. Fig. 6. *a.*

*Action* : To propel the Urine or Semen forwards, and by compressing the Bulb, to push the Blood into, and

thereby distend, the Corpus Cavernosum Urethrae and Glans Penis.

### TRANSVERSUS PERINEI,

Vel *Transversalis Urethrae*, vel *Ischio-perinealis*.

*Origin* : From the inside of the Tuberosity of the Os Ischium, close to the Erector Penis; running transversely, though sometimes in an oblique direction upwards.

*Insertion* : Into the back part of the Accelerator Urinae, and adjoining part of the Sphincter Ani. Tab. LVI. Fig. 6. *b.*

*Action* : To dilate the Bulb of the Urethra for the reception of the Semen or Urine; and to assist the Levator Ani in retracting the Anus, after the discharge of the Faeces.

There is frequently another Muscle, termed *Transversalis Perinei Alter*, running along with the former, and having nearly the same Origin, Insertion, and Action, but going more obliquely upwards.

### SPHINCTER ANI.

*Origin* : By a Ligamentous Substance, from the extremity of the Os Coccygis; running 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 extremity of the Intestinum Rectum.

*Insertion* : By a narrow point, into the Acceleratores Urinae and Transversi Perinei. Tab. LVI. Fig. 9. *a.*

*Action* : To shut the Anus, and thereby retain the contents of the Rectum, and also to pull down the Bulb of the Urethra, by which it assists in ejecting the Urine and Semen. It is assisted by the *Sphincter Internus* of some Authors, which is merely the circular Muscular Coat of the end of the Rectum.

### LEVATOR ANI, vel *Sub-pubio-coccygeus*.

*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



under and inner portion of the Pelvis. Its fibres 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 Sphincter Ani, Accelerator Urinæ, and under and fore part of the Os Coccygis.—It surrounds the extremity of the Rectum, Neck of the Bladder, Membranous Portion of the Urethra, Prostate Gland, and part of the Vesiculæ Seminales. Tab. LVI. Fig. 9. *b*.

*Action:* To support the contents of the Pelvis; to retract the end of the Rectum, after the evacuation of the Fæces; and to assist in the evacuation of the Rectum, Bladder, Vesiculæ Seminales, and Prostate Gland.—It is likewise considered by some as a principal agent

in the distension of the Penis, by pressing upon its Veins.

Part of the Levator Ani, which arises from the Os Pubis, between the lower part of the Symphysis and the upper part of the Foramen Ovale, and assists in inclosing the Prostate Gland, is called by SOEMMERRING *Compressor Prostatæ*.

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, but apparently without any distinct Muscular Fibres, closely surrounding this Canal, which has been described by MR WILSON, in the Medico-Chirurgical Transactions of London for 1809, as a distinct *Compressor Urethræ*.

## MUSCLES OF THE FEMALE PARTS OF GENERATION, AND OF THE ANUS.

### ERECTOR CLITORIDIS, vel *Ischio-sub-clitorideus*.

*Origin:* As in the Erector Penis in the Male, but the Muscle smaller.

*Insertion:* Into the Crus and Body of the Clitoris. Tab. CXXI. N.

*Action:* To draw the Clitoris downwards and backwards; and by pushing the Blood into it from its Crus, the Muscle may render the Body of the Clitoris more tense.

### SPHINCTER VAGINÆ, vel *Perineo-clitorideus*.

*Origin:* From the Sphincter Ani, and, near the Perineum, from the posterior side of the Vagina. It passes along the outer end of the Vagina, covers the Corpus Cavernosum Vaginæ; going behind the Nymphæ.

*Insertion:* Into the union of the Crura Clitoridis. Tab. CXXI. M.

*Action:* To contract the external Orifice of the Vagina, by compressing its Corpus Cavernosum, from which it likewise pushes the Blood into the Nymphæ and Clitoris.

### TRANSVERSUS PERINEI.

*Origin:* As in the Male.

*Insertion:* Into the upper part of the Sphincter Ani, the adjacent parts of the Sphincter Vaginæ, and into

a tough white Substance in the Perineum. Tab. CXXI. L.

*Action:* Upon the Perineum and Anus, as in the Male.

When a Transversus Perinei Alter is present, it has the same relation to the former Muscle as in the Male.

### SPHINCTER ANI.

*Origin and course as in the Male.*

*Insertion:* Into the Sphincter Vaginæ, and tough white Substance in the Perineum. Tab. CXXI. K.

*Action:* To shut the Anus, and, by pulling down the Perineum, to assist in contracting the external Orifice of the Vagina.

### LEVATOR ANI.

*Origin:* As in the Male. In its descent, it embraces the inferior parts of the Vagina, Urethra, and Rectum.

*Insertion:* Into the Perineum, Sphincter Ani, extremity of the Vagina, and Rectum. Tab. CXXI. H.

*Action:* Upon the Bladder, Urethra, and Rectum, as in the Male.—It also assists in supporting and contracting the Vagina, and may, by pressing upon the Veins, contribute to the distension of the Cells of the Clitoris and Corpus Cavernosum Vaginæ.

## MUSCLES OF THE OS COCCYGIS.

### COCCYGEUS, vel *Ischio-coccygeus*.

*Origin:* By a narrow point, from the Spinous Process of the Os Ischium.—In its passage, it gradually

expands, and covers the inside of the posterior Sacro-ischiatic Ligament.

*Insertion:* Into the whole length of the side of the Os Coccygis. Tab. LVI. Fig. 3.

*Action:*



*Action:* To move the Os Coccygis forwards, by which it assists the Levator Ani in supporting or raising the end of the Rectum.

*CURVATOR COCCYGIS, vel Sacro-coccygeus.*

*Origin:* From the under and forepart of the Os Sacrum.

*Insertion:* Into the fore and under part of the Os Coccygis.

*Action:* To assist the Coccygeus in bending the Os Coccygis.

The Curvator Coccygis was formerly considered as part of the Coccygeus.

## MUSCLES SITUATED WITHIN THE CAVITY OF THE ABDOMEN.

### DIAPHRAGM.

The Diaphragm forms a Fleishy and Tendinous Partition, which separates the Cavity of the Abdomen 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 above; the middle of it reaching as high within the Thorax as the fourth pair of Ribs. Above, it is covered by the Pleura, and below, by the Peritoneum; and is commonly divided into two portions, called *Superior* or *Larger*, and *Inferior* or *Smaller* Muscles of the Diaphragm.

#### SUPERIOR, or Greater Muscle of the Diaphragm.

*Origin:* By Fleishy Indentations, from the Cartilago Ensiformis, and from the Cartilages of the Seventh, and of all the inferior Ribs on both sides. From these different Origins, the Fibres run in a radiated manner.

*Insertion:* Into a Cordiform Tendon, placed in the middle of the Diaphragm, in which the Fibres of the opposite sides are interlaced.—Towards the right side, the Tendon is perforated by a triangular Hole for the passage of the Vena Cava Inferior; and to the upper convex part of it, the Pericardium and Mediastinum are connected.

#### INFERIOR, or Lesser Muscle, or Appendix of the Diaphragm.

*Origin:* By four pair of Heads, of which one Pair in the middle, commonly called its Long, or Tendinous *Crura*, is the longest. The long *Crura* arise from the fore part of the fourth Lumbar Vertebra, and adhere to the Bodies of all the Vertebrae of the Loins above this, by the intervention of the Ligamentum Commune Anterior 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 Fibres run upwards, and form, in the middle, two Fleishy Columns, or *Crura*, which decussate, and leave an Opening for the passage of the Esophagus.

*Insertion:* By strong Fleishy Fibres, into the posterior Edge of the Cordiform, or middle Tendon. Tab. LVI. Fig. 2.

*Action of the Diaphragm:* To enlarge the Cavity of the Thorax during Inspiration, by its Fleishy part contracting, and bringing its two sides down from a convex to a plain Surface; the Abdominal Muscles at the same time yielding, but the Tendinous part of the Diaphragm remaining nearly in the same situation. In Expiration, the Diaphragm is replaced, chiefly by the action of the Abdominal Muscles. It is the Antagonist of the Abdominal Muscles in Inspiration, but acts in concert with them in Dejection and in Vomiting; though, with respect to this last circumstance, the action begins in the Diaphragm.

### QUADRATUS LUMBORUM, vel Ilio-Costalis.

*Origin:* Broad, Tendinous, and Fleishy, from the Posterior half of the Spine of the Os Ilium, and from a Ligament extended between it and the Transverse Process of the last Lumbar Vertebra.

*Insertion:* Into the Transverse Processes of all the Lumbar Vertebrae; into the last Rib, near the Spine; and, by a small Tendon, into the side of the last Dorsal Vertebra. Tab. XLIV. Trunk, D.

*Action:* To move the Loins to one side, to pull down the last Rib in laborious Expiration, and, when both act, to bend the Loins forwards.

### PSOAS PARVUS, vel Prelumbo-pubialis.

*Origin:* Fleishy, from the side of the last Vertebra of the Back, and from that of one or two of the upper Vertebrae of the Loins. It sends off a slender Tendon, which runs down by the inner side of the Psoas Magnus, and an Aponeurosis, which expands upon the neighbouring Muscles.

*Insertion:* Into the Linea Ilio-pectinea of the Pubis, at the joining of that Bone with the Ilium. Tab. XLIV. Fig. 1. C, S.

*Action:* To assist in bending the Spine upon the Pelvis, and, in particular positions, in raising the Pelvis.

This Muscle is frequently wanting.

PSOAS



**PSOAS MAGNUS, vel Prelumbo-Trochantineus.**

*Origin* : From the side of the Bodies, and from the Transverse Processes of the last Dorsal, and of all the Lumbar Vertebrae, by an equal number of Flethy Slips, which uniting, form a thick strong Muscle, that bounds the upper part of the side of the Pelvis; passing down over the Os Pubis, behind *POUPART'S Ligament*.

*Insertion* : Tendinous and Flethy, into the Trochanter Minor, and part of the Body of the Os Femoris. Tab. XLIV. Fig. 1. D.

*Action* : To bend the Thigh, and turn it a little outwards, or, when the Inferior Extremity is fixed, to assist in bending the Body.

**ILIACUS INTERNUS, vel Ilio-trochantineus.**

*Origin* : Flethy, from the Transverse Process of the last Lumbar Vertebra; from all the inner Edge of the Spine of the Os Ilium; from the Edge of that Bone, between its anterior-superior Spinous Process and the Acetabulum; from the most hollow part of the Os Ilium, and also from the Aponeurosis termed *Iliac Fascia*, which covers the Muscle. It joins the Psoas Magnus, where that Muscle begins to become Tendinous, on the Os Pubis.

*Insertion* : Along with the Psoas Magnus. Tab. XLIV. Fig. 1. B.

*Action* : To assist the Psoas in bending the Thigh.

**MUSCLES SITUATED UPON THE ANTERIOR AND LATERAL PARTS OF THE THORAX.****PECTORALIS MAJOR, vel Pectoralis, vel Sterno-Humeralis.**

*Origin* : From the Sternal half of the Clavicle: from the fore part of the edge of almost the whole length of the upper and middle Bone of the Sternum, the Muscle is connected with its fellow; and from the Cartilages of the fifth and sixth Ribs, where it mixes with the Obliquus Externus. The Fibres from thence converge towards the Axilla, where they decussate, and send off a flat twisted Tendon.

*Insertion* : Into the Ridge at the outer edge of the Groove for lodging the Tendon of the long Head of the Biceps. Tab. XLI. Fig. 1. A.

*Action* : To draw the Arm downwards and forwards, or in a direction towards the Sternum.

Between the Portions of the Muscle arising from the Clavicle and Sternum, there is a slight separation, in consequence of which these Portions have been considered by some Authors as two distinct Muscles.

**PECTORALIS MINOR,****Vel Serratus Minor Anticus, vel Costo-coracoidalis.**

*Origin* : Tendinous and Flethy, in a serrated manner from the third, fourth, and fifth Ribs, near their Cartilages. Passing obliquely outwards, it becomes gradually narrower.

*Insertion* : Tendinous, into the point of the Coracoid Process of the Scapula. Tab. XLII. Fig. 1. B.

*Action* : To bring the Scapula downwards and forwards, or, in laborious Inspiration, to raise the Ribs.

**SUBCLAVIUS, vel Costo-clavicularis.**

*Origin* : Tendinous, from the Cartilage of the first Rib. It soon becomes Flethy, and runs outwards, under the Clavicle, increasing in breadth.

*Insertion* : Into the under Surface of the Clavicle, from near its Head, extending outwards as far as the Coracoid Process of the Scapula. Tab. XLII. Fig. 1. A.

*Action* : To pull the Clavicle, and with it the Scapula, downwards and forwards.

**SERRATUS MAGNUS,****Vel Serratus Major Anticus, vel Costo-scapularis.**

*Origin* : From the nine superior Ribs, by an equal number of Flethy Digitations. It runs obliquely upwards and backwards upon the side of the Thorax, and between it and the Subscapularis.

*Insertion* : Flethy, into the whole length of the Base of the Scapula, and in a manner folded round it, between the Insertion of the Rhomboideus and the Origin of the Subscapularis. Tab. XLII. Fig. 1. C, C. Tab. XLVIII. Fig. 1. E.

*Action* : To move the Scapula forwards or downwards, according to the direction of its different Digitations; and when the Scapula is forcibly raised, as in violent Inspiration, to assist in dilating the Thorax, by elevating the Ribs; or if the Scapula be much depressed, the Serratus may then become a Muscle of Expiration.

**MUSCLES**



## MUSCLES SITUATED 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 discontinued; that place being occupied by an Aponeurosis.

*Insertion*: Into the upper Edge of each Rib, immediately below that from which they take their respective Origins. Tab. XLIII. Fig. 13. B, &c.

Portions of the Intercostales Externi, which arise from the Transverse Processes of the Vertebrae, and terminate in the Ribs immediately below, are termed by ALBINUS, *Levatores Costarum Breviares*. Other portions, which arise in the same manner, but pass over one Rib, and terminate in the next below it, are named by the same Author, *Levatores Costarum Longiores*. Tab. L. Fig. 1. D, D.

## INTERCOSTALES INTERNI.

*Origin*: The same with that of the Externi; but they begin at the Sternum, and run downwards and backwards, decussating the former Muscles like 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 manner as the Externi. Tab. L. Fig. 1. a, &c.

Portions of the Intercostales Interni, near the under part of the Thorax, which pass over one Rib, and terminate in the next below it, are called, by DOUGLAS, *Costarum Depressores Proprii* COWPERI. Tab. LVII. Fig. 8. L, L.

*Action* of the Intercostales Interni, as well as of the Externi: To enlarge the Cavity of the Thorax, by elevating the Ribs in the time of Inspiration; and the obliquity of the one set, balancing that of the other, allows them to be raised more directly upwards.

From the obliquity of their Fibres, they are found to

possess a greater power in raising the Ribs, than Fibres going in a perpendicular direction.

The Intercostales Externi end near the Sternum, and the Interni near the Spine, to admit the ready motion of the Ribs; for, had the former been continued to the Sternum, and the latter to the Spine, the parts of these Muscles supposed to be thus fixed, would of course have become Antagonists to the rest.

The Portions called *Levatores* and *Depressores Costarum*, assist in raising the Ribs, in the same manner as the rest of the Intercostales.

STERNO-COSTALIS, vel *Triangularis Sterni*.

*Origin*: From the Edges of the Cartilago Ensiformis, and lower half of the middle Bone of the Sternum, within the Thorax. It runs upwards and outwards, behind the Cartilages of the Ribs.

*Insertion*: Generally by three Angular Terminations into the Cartilages of the third, fourth, and fifth Ribs, and sometimes also by a fourth termination into the corresponding part of the Cartilage of the second or sixth Rib, near the union of the Cartilaginous with the Osseous part of the Ribs. Tab. XLVI. Fig. 1. i, i, &c.

*Action*: To depress the Ribs into which they are fixed, and, of course, to assist in contracting the Cavity of the Thorax during Expiration.

MUSCLES used in dilating the Thorax during INSPIRATION.—Diaphragma, Intercostales Externi et Interni. In violent Inspiration, the Serrati Postici Superiores, Pectorales Minores, Scaleni Antici, Medii, et Postici, and Serrati Magni, are also brought into action.

MUSCLES used in contracting the Thorax during EXPIRATION.—Obliqui Externi, Obliqui Interni, Transversales, Recti et Pyramidales Abdominis, Sterno-Costales, Serrati Postici Inferiores. In violent Expiration, the above are assisted by the Sacro-Lumbales, Longissimi Dorsi, and Quadrati Lumborum.

## MUSCLES CONTIGUOUS TO THE ANTERIOR PART OF THE VERTEBRÆ OF THE NECK.

LONGUS COLLI, vel *Predorso-atloideus*.

*Origin*: Tendinous and Fleshy, from the side of the Bodies of the three superior Vertebrae of the Back, and from the Transverse Processes of the four inferior Vertebrae of the Neck.

*Insertion*: Into the fore part of the Bodies of all the

Vertebrae of the Neck, by as many small Tendons, which are covered with flesh. Tab. LVII. Fig. 8. D, E.

*Action*: To bend the Neck forwards, and to one side, or, when both Muscles act, to bend the Neck directly forwards.

RECTUS



**RECTUS CAPITIS ANTERIOR MAJOR,**  
Vel *Rectus Anterior Longus*, vel *Trachelo-sub-occipitalis Major*.

*Origin*: From the fore part of the Transverse Processes of the third, fourth, fifth, and sixth Vertebrae of the Neck. It runs upwards, and a little inwards, covering the outer edge of the Longus Colli.

*Insertion*: Into the Cuneiform Process of the Occipital Bone, near its joining with the Os Sphenoides. Tab. LVII. Fig. 8. C.

*Action*: To bend the Head forwards.

**RECTUS CAPITIS ANTERIOR MINOR,**  
Vel *Rectus Anterior Minor*, vel *Trachelo-sub-occipitalis Minor*.

*Origin*: From the fore part of the Atlas, opposite to

its superior Oblique Process. It runs obliquely inwards behind, and a little to the outside of the former Muscle.

*Insertion*: Into the Cuneiform Process of the Occipital Bone, immediately before the Condyles. Tab. LVII. Fig. 8. B.

*Action*: To assist the Rectus Major.

**RECTUS CAPITIS LATERALIS,** vel *Atloldo-sub-occipitalis*.

*Origin*: From the anterior part of the Transverse Process of the Atlas.—It goes obliquely outwards.

*Insertion*: Into the Occipital Bone at the outside of the Condyle, and directly behind the Jugular Fossa. Tab. LIII. Fig. 4. C.

*Action*: To incline the Head a little to one side.

### MUSCLES SITUATED UPON THE POSTERIOR PART OF THE TRUNK.

**TRAPEZIUS,** vel *Cucullaris*, vel *Dorso-super-acromialis*.

*Origin*: From the middle of the great arched Ridge of the Occipital Bone; from its fellow over the Spinous Processes of the Cervical Vertebrae, by the intervention of a strong Tendon, called *Ligamentum Nuchæ*, vel *Colli*; from the Spinous Processes of the two Inferior Vertebrae of the Neck, and from all those of the Back, adhering Tendinous to its fellow the whole length of its Origin.

*Insertion*: Flethy, into the Scapular half of the Clavicle: Tendinous and Flethy, into the Acromion, and Spine of the Scapula. Tab. XLVII. Fig. 1. I, I.

*Action*: To move the Clavicle and Scapula, according to the directions of its different Fibres. The superior Fibres descending, raise the Shoulder; the middle running transversely, pull it backwards; and the inferior Fibres ascending, depress it. The whole acting together, bring it directly back.—When the Scapula is fixed, the Muscle assists in moving the Head backwards.

**LATISSIMUS DORSI,** vel *Lumbo-humeralis*.

*Origin*: By a broad Tendinous Expansion, from the posterior part of the Spine of the Os Ilium; from all the Spinous Processes of the Vertebrae extending between the under end of the Os Sacrum and sixth Dorsal Vertebra, and, by three or four Tendinous or Flethy Slips, from an equal number of inferior Ribs. The Tendon by degrees changes into a Muscle of great breadth, the inferior Fibres of which run upwards and outwards, and the superior transversely over the under Angle of the Scapula, receiving a small Slip from that Bone 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.

*Insertion*: By a strong thin Tendon, into the inner Edge of the Groove for lodging the Tendon of the long Head of the Biceps. Tab. XLVII. Fig. 1. K, K.

*Action*: To pull the Arm downwards and backwards, 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 same time with this Muscle, the Arm is brought directly down towards the Trunk.

The Latissimus Dorsi and Pectoralis Major form the Axilla, in which the great Vessels and Nerves, and likewise the Glands lie, which belong to the Arm.

**SERRATUS POSTICUS INFERIOR,** vel *Lumbo-costalis*.

*Origin*: By the same common Tendon with the Latissimus Dorsi, from the two inferior Dorsal, and from the three superior Lumbar Vertebrae.

*Insertion*: By four Flethy Slips, into the same number of inferior Ribs, near their Cartilages. Tab. XLVIII. Fig. 1. Trunk, D.

*Action*: To depress the Ribs into which it is inserted, and thereby, during Expiration, to assist in contracting the Cavity of the Thorax.

**RHOMBOIDEUS,** vel *Dorso-scapularis*.

*Origin*: Tendinous, from the Spinous Processes of the four or five superior Dorsal, and of the three inferior Cervical Vertebrae, and from the Ligamentum Nuchæ; descending obliquely.

*Insertion*: Into the whole length of the Base of the Scapula. Tab. XLVIII. Fig. 1. Trunk, A, B.

*Action*: To draw the Scapula upwards and backwards.

This



This Muscle is frequently divided by an indistinct Line into two unequal Portions: The part arising from the Dorsal Vertebrae, and fixed to the Base of the Scapula under the Spine, is commonly called *Rhomboides Major*, and the other part of the Muscle, *Rhomboides Minor*.

#### SPLenius,

*Vel Cervico-mastoideus et Dorso-cervicalis.*

*Origin:* Tendinous, from the Spinous Processes of the four Superior Dorsal; and Tendinous and Fleshy, from those of the five inferior Cervical Vertebrae. It adheres firmly to the Ligamentum Nuchae, and at the third Cervical Vertebra it recedes from its fellow, so that part of the Complexus is seen.

*Insertion:* By as many Tendons into the five superior Transverse Processes of the Cervical Vertebrae, and by a Tendinous and Fleshy Portion, into the posterior part of the Mastoid Process, and into the Os Occipitis, where it joins with that Process. Tab. XLVIII. Fig. 1. Neck, C.

*Action:* To antagonize the Sterno-mastoideus, by bringing the Head, and upper Cervical Vertebrae, obliquely 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 *Splenius Colli*, or that which arises from the Back, and is fixed to the Neck.

#### SERRATUS POSTICUS SUPERIOR, vel Dorso-costalis.

*Origin:* By a broad thin Tendon, from the Ligamentum Nuchae, over the Spinous Processes of the three last Cervical, and two uppermost Dorsal Vertebrae; going obliquely downwards.

*Insertion:* By four Fleshy Slips, into the second, third, fourth, and fifth Ribs, under the upper and back part of the Scapula. Tab. XLIX. Fig. 1. Trunk, c.

*Action:* To elevate the Ribs, and thus to dilate the Thorax in violent Inspiration.

#### SACRO-LUMBALIS, vel Sacro-costalis.

*Origin:* In common with the Longissimus Dorsi, Tendinous without, and Fleshy within, from the side and all the Spinous processes of the Os Sacrum; from the posterior part of the Spine of the Os Ilium; and from all the Spinous and Transverse Processes of the Lumbar Vertebrae. The common Head fills up the space between the Os Ilium and Os Sacrum, and also the Hollow of the Loins. At the under part of the Thorax, the Muscle begins to send off Tendons, which are of considerable length, and lie flat upon the Ribs.

*Insertion:* Into the angles of all the Ribs, by an equal number of Tendons. Tab. L. Fig. 1. Trunk, C.

From six or eight of the Lower Ribs arise an equal

number of Fleshy Portions, which terminate in the inner side of this Muscle, and get the name of *Musculi Accessorii*, vel *Additamentum ad Sacro-lumbalem*.

*Action:* To assist in raising and keeping the Trunk of the Body erect. It also assists the Serratus Inferior, and Quadratus Lumborum, in depressing the Ribs during laborious Expiration.

From the upper part of this Muscle, a Fleshy Slip, called *Cervicalis Descendens*, runs up to be fixed to the Transverse Processes of the fourth, fifth, and sixth Cervical Vertebrae, by three distinct Tendons. It turns the Neck obliquely backwards and to one side. Tab. XLIX. Fig. 1. Neck, L.

#### LONGISSIMUS DORSI, vel Sacro-spinalis.

*Origin:* In common with the Sacro-lumbalis. It forms a large, thick, and strong Muscle, which fills the hollow between the Spine, and angles of the Ribs; becoming gradually smaller in its ascent.

*Insertion:* Into the Transverse Processes of all the Dorsal Vertebrae, chiefly by small double Tendons; and, by a Tendinous and Fleshy Slip, into the lower Edge of each of the Ribs, excepting the two inferior, near their Tubercles. Tab. XLIX. Fig. 1. Trunk, B.

*Action:* To extend the Trunk, and keep it erect; the outer part may assist in depressing the Ribs during laborious Expiration.

From the upper part of this Muscle, a round Fleshy Slip runs up to join the Cervicalis Descendens.

#### SPINALIS DORSI.

*Origin:* By five Tendinous Slips, from the Spinous Processes of the two upper Lumbar, and the three lower Dorsal Vertebrae. In its ascent, it is incorporated with the Longissimus Dorsi.

*Insertion:* Into the Spinous Processes of the eight or nine uppermost Dorsal Vertebrae, excepting the first, by as many Tendons. Tab. XLIX. Fig. 1. Trunk, A.

*Action:* To fix the Vertebrae, and to assist in extending the Trunk, and in keeping it erect.

#### COMPLEXUS, vel Trachelo-occipitalis.

*Origin:* By distinct Tendons, from the Transverse Processes of the seven superior Dorsal, and four inferior Cervical Vertebrae, and, by a Fleshy Slip, from the Spinous Process of the first Dorsal Vertebra. In its passage upwards, it is intermixed with Tendinous and Fleshy parts.

*Insertion:* Into a Depression, under the middle of the large arched Ridge of the Occipital Bone. Tab. XLIX. Fig. 1. Neck, c, d.

*Action:* To draw the Head backwards, and to one side; and when both act, to draw the Head directly backwards.

The long Portion of the Muscle, which lies next the Spinous



Spinous Processes, is more loose than the rest, and has a roundish Tendon in the middle of it, with a Fleishy Belly at each end, on which account it is called by ALBINUS, *Biventer Cervicis*.

#### TRACHELO-MASTOIDEUS,

*Vel Complexus Minor, vel Mastoideus Lateralis.*

*Origin* : From the Transverse Processes of the three uppermost Dorsal, and five lowest Cervical Vertebrae, where it is connected to the *Transversalis Cervicis*, by as many thin Tendons, which unite into a slender Belly, and run up under the Splenius.

*Insertion* : Into the posterior Margin of the Mastoid Process of the Temporal Bone, by a thin Tendon. Tab. XLIX. Fig. 1. Neck, C.

*Action* : To assist the Complexus; but pulling the Head more laterally.

#### LEVATOR SCAPULÆ,

*Vel Levator Proprius, vel Musculus Patientiæ, vel Trachelo-scapularis.*

*Origin* : From the Transverse Processes of the five superior Cervical Vertebrae, by the same number of distinct Heads, which soon unite to form a flat Muscle, running downwards and outwards.

*Insertion* : Into the superior Angle of the Scapula. Tab. XLVIII. Fig. 1. A, d.

*Action* : To pull the Scapula upwards, and a little forwards, as in shrugging the Shoulder; and when the Scapula is fixed, to pull the Neck a little to one side.

#### SEMI-SPINALIS DORSI, vel Transverso-spinalis Dorsi.

*Origin* : From the Transverse Processes of the seventh, eighth, ninth, and tenth Dorsal Vertebrae, by as many distinct Tendons, which soon grow Fleishy, and then again become Tendinous.

*Insertion* : Into the Spinous Processes of the six or seven uppermost Dorsal, and two lowest Cervical Vertebrae, by as many Tendons. Tab. L. Fig. 1. A, A.

*Action* : To extend the Spine obliquely backwards.

#### MULTIFIDUS SPINÆ,

Formerly described as three distinct Muscles, viz. *Transverso-spinalis Lumborum, Transverso-spinalis Dorsi, and Transverso-spinalis Colli.*

*Origin* : From the side of the Spinous Processes of the Os Sacrum, and from that part of the Os Ilium which joins with the Sacrum; from all the Oblique and Transverse Processes of the Lumbar Vertebrae; from all the Transverse Processes of the Dorsal, and of the four inferior Cervical Vertebrae, by as many distinct

Tendons, which soon become Fleishy, and run obliquely upwards and inwards.

*Insertion* : By distinct Tendons, into all the Spinous Processes of the Lumbar, Dorsal, and Cervical Vertebrae, excepting the Atlas. Tab. L. Fig. 1. Trunk, B, B.

*Action* : To extend the Spine obliquely, and pull it to a side. When both Muscles act, they draw the Spine directly backwards.

#### SEMI-SPINALIS COLLI,

*Vel Transverso-spinalis Colli.*

*Origin* : From the Transverse Processes of the six uppermost Dorsal Vertebrae, by an equal number of distinct Tendons, which run obliquely under the Complexus.

*Insertion* : Into the Spinous Processes of all the Cervical Vertebrae, except the first and last. Tab. L. right side of Neck, I, I.

*Action* : To extend the Neck obliquely backwards, and to a side.

#### TRANSVERSALIS COLLI.

*Origin* : From the Transverse Processes of the five uppermost Dorsal Vertebrae, by the same number of Tendinous and Fleishy Slips. It runs between the Trachelo-mastoideus, Splenius Colli, and Cervicalis Descendens.

*Insertion* : Into the Transverse Processes of all the Cervical Vertebrae, except the first and last. Tab. XLIX. Fig. 1. Neck, I, I.

*Action* : To turn the Neck obliquely backwards, and a little to one side.

#### RECTUS CAPITIS POSTICUS MINOR,

*Vel Rectus Minor, vel Atloldo-occipitalis.*

*Origin* : Tendinous, close to its fellow, from a small Protuberance which is instead of the Spinous Process of the first Cervical Vertebra; spreading out in its ascent.

*Insertion* : Fleishy, into a Depression between the middle of the smaller Arch and Foramen Magnum of the Occipital Bone. Tab. L. Fig. 1. A.

*Action* : To assist the following Muscle in drawing the Head backwards.

#### RECTUS CAPITIS POSTICUS MAJOR,

*Vel Rectus Major, vel Axoido-occipitalis.*

*Origin* : Fleishy, from the external part of the Spinous Process of the second Cervical Vertebra. It becomes gradually broader, and goes obliquely upwards and outwards.

*Insertion* :



*Insertion*: Tendinous and Fleishy, into the Os Occipitis, at the outside of the Insertion of the Rectus Minor, part of which it covers. Tab. L. Fig. 1. B.

*Action*: To pull the Head backwards, and to assist a little in its rotation.

**OBLIQUUS CAPITIS INFERIOR, vel Axoido-atloideus.**

*Origin*: Fleishy, from the Spinous Process of the second Cervical Vertebra, at the outside of the Rectus Major. It forms a thick Belly, which runs upwards and outwards.

*Insertion*: Into the Transverse Process of the first Cervical Vertebra. Tab. L. Fig. 1. D.

*Action*: To roll the Head.

**OBLIQUUS CAPITIS SUPERIOR,  
Vel Atloido-sub-mastoideus.**

*Origin*: From the Transverse Process of the first Cervical Vertebra, passing upwards and a little inwards.

*Insertion*: Into the occipital Bone, at the outer part of the Insertion of the Rectus Major. Tab. L. Fig. 1. C.

*Action*: To assist in drawing the Head backwards, and a little to one side.

**SCALENUS ANTICUS, vel Costo-cervicalis Anticus.**

*Origin*: Tendinous and Fleishy, from the upper part of the first Rib, near its Cartilage.

*Insertion*: Into the Transverse Processes of the fourth, fifth, and sixth Cervical Vertebrae, by as many Tendons. Tab. XLIII. Fig. 1. L.

**SCALENUS MEDIUS, vel Costo-cervicalis 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 Cervical Vertebrae, by as many strong Tendons. Tab. XLIV. Neck, M, N.

The Subclavian Artery, and the Nerves which form the Brachial Plexus, pass between this and the former Muscle.

**SCALENUS POSTICUS, vel Costo-cervicalis Posticus.**

*Origin*: From the upper edge of the second Rib, near the Spine.

*Insertion*: Into the Transverse Processes of the fifth and sixth Cervical Vertebrae. Tab. XLIX. Fig. 1. Neck, E.

*Action of the three Scaleri*: To bend the Neck to one side; or, when the Neck is fixed, to raise the Ribs,

and assist in dilating the Thorax, as in violent Inspiration.

**INTERSPINALES COLLI.**

The spaces between the Spinous Processes of the Cervical Vertebrae, most of which are forked, are occupied by double Fleishy Portions.

*Origin*: From the upper part of each Spinous Process.

*Insertion*: Into the under part of each Spinous Process, immediately above that from which it takes its origin. Tab. L. Neck, G, G.

*Action*: To draw these Processes nearer to each other, and of course the Neck a little backwards.

**INTERTRANSVERSALES COLLI.**

The spaces between all the Transverse Processes of the Cervical Vertebrae, which are also forked, are filled up in like manner with double Fleishy Portions.

*Action*: To draw these Processes towards each other, and turn the Neck a little to one side. Tab. XLIV. Neck, f, f.

**INTERSPINALES ET INTERTRANSVERSALES DORSI.**

These are rather small Tendons than Muscles, serving to connect to each other the Spinous and likewise the Transverse Processes. Tab. L. Trunk, c, c, d, d.

**INTERSPINALES LUMBORUM.**

They are of the same nature with the Interspinales and Intertransversales Dorsi.

**INTERTRANSVERSALES LUMBORUM.**

These are five distinct Muscles, which occupy the Spaces between the Transverse Processes of the last Dorsal, and of all the Lumbar Vertebrae, and serve to draw them a little towards each other. Tab. L. Loins, H, H.

**MOTIONS of the HEAD and TRUNK.**

The HEAD is moved upon the Atlas,—*forwards*, by the Recti Capitis Antiores Minores, and Recti Capitis Laterales; *backwards*, by the Recti Capitis Postici Minores, and Obliqui Capitis Superiores;—*laterally*, by the Anterior and Posterior Muscles of the corresponding side.

The HEAD and NECK are moved together,—*forwards*, partly through the medium of the Lower Jaw, by the Platysmae Myoides, Digastrici, Mylo-hyoidei, Genio-hyoidei, Genio-hyo-glossi;—*directly forwards*, by the Sterno-mastoidei, Recti Capitis Antiores Majores;—*forwards*, through the medium of the Larynx, by



by the Omo-hyoidei, Sterno-hyoidei, Sterno-thyroidei, and Thyro-hyoidei:—*backwards*, by the upper portion of the Trapezii, the Splenii Capitis, Complexi, Recti Capitis Postici Majores, and Trachelo-mastoidei;—*laterally*, by the Opponent, or Anterior and Posterior Muscles of the corresponding side acting together. By a succession of these motions, the Head is enabled to describe a Circle.

The ROTATION of the HEAD, or of the Atlas, upon the Vertebra Dentata, is performed by the following Muscles, acting exclusively of their fellows; viz. on one side, the Sterno-mastoideus, and upper portion of the Trapezius, and on the other side, and acting at the same time with these two Muscles, the Platysma Myoides, upper part of the Splenius, the Trachelo-mastoideus, Complexus, Obliquus Inferior, and Rectus Major.

The NECK, from the Vertebra Dentata downwards, is moved—*forwards*, by the Longi Colli;—*backwards*, by the Rhomboidei Minores, Serrati Postici Superiores, Splenii Colli, Cervicales Descendentes, Transversales, Semi-spinales et Interspinales Colli, and upper part of the Multifidi Spinæ;—*laterally*, by the Muscles upon the anterior and posterior parts of the Neck acting on one side, and these assisted by the following, which are chiefly situated upon the lateral parts of the Neck, viz. the Levator Scapulæ, Scaleni Anticus, Medius, et Posticus, and Intertransversales Colli.

The TRUNK is moved, and chiefly at the Loins,—*forwards*, by the Psoæ Magni et Parvi, Quadrati Lumborum, by the Recti, Pyramidales, Obliqui Externi, Obliqui Interni, et Transversales Abdominis;—*backwards*, by the Sacro-lumbales, Longissimi, Spinales et Semi-spinales Dorsi, Multifidi Spinæ, Interspinales Lumborum;—*laterally*, by the Muscles mentioned above, upon the anterior and posterior parts of the Trunk acting upon one side, and these assisted by the Quadratus et Intertransversales Lumborum;—*twisted*, by the Obliquus Externus Abdominis, Serratus Posticus Inferior, Semi-spinalis Dorsi, by the Dorsal and Lumbar part of the Multifidi Spinæ, on one side, assisted by the Obliquus Internus Abdominis, Sacro-lumbalis, and Longissimus Dorsi of the other side;—*kept erect*, by the Muscles upon the fore and back parts of the Trunk, acting as antagonists to each other.

By making the Head, or the upper part of the Trunk, the fixed point, the same motions may be performed, and by the same Muscles, as when the Pelvis is fixed, or when the lower part of the Trunk is in its natural situation; but the Muscles draw the moveable parts in direct opposition to those formerly moveable; and the Muscles which in the natural situation rolled the Head, with the Atlas, on the Vertebra Dentata, or twisted the other parts of the Spine, act now also in a contrary direction. The same circumstances hold good with respect to the Extremities.

## MUSCLES OF THE SUPERIOR EXTREMITY.

PECTORALIS Major, see p. 133.—Pectoralis Minor, see p. 133.—Subclavius, see p. 133.—Serratus Magnus, see p. 133.—Trapezius, see p. 153.—Latissimus Dorsi, see p. 135.—Rhomboideus, see p. 153.—Levator Scapulæ, see p. 137.

### MOTIONS OF THE SCAPULA.

The Scapula is moved—*upwards*, by the Trapezius, Levator Scapulæ, Rhomboideus, and Omo-hyoideus;—*downwards*, by the Trapezius, Serratus Magnus, Pectoralis Minor, Subclavius, and occasionally, through the medium of the Humerus, by the Latissimus Dorsi, and Pectoralis Major;—*forwards* and *downwards*, by the Serratus Magnus, Pectoralis Minor, Subclavius,

and occasionally by the Pectoralis Major;—*backwards*, by the Trapezius, Rhomboideus, and occasionally the Latissimus Dorsi;—*moved obliquely upwards or downwards*, by the above Muscles, according to their different situations.—By a succession of these motions, the Scapula is *rolled*, as in a Circle, upon the Thorax, through the medium of the Clavicle;—or it can roll in a manner upon an *axis* put through its middle, its upper end going forwards and downwards, chiefly by means of the Pectoralis Minor, the under end at the same time moving upwards and backwards, principally by the Rhomboideus Major; or the reverse of this motion is produced by the upper part of the Trapezius and the under portion of the Serratus Magnus acting together.



## MUSCLES ARISING FROM THE SCAPULA.

## SUPRA-SPINATUS,

*Vel Super-scapulo-trochitereus Parvus.*

*Origin:* Fleishy, 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 Ligament of the Joint.

*Insertion:* Tendinous, into the fore part of the large Tubercle on the Head of the Os Humeri. Tab. XLVIII. Shoulder, B.

*Action:* To raise the Arm, and at the same time to pull the Capsular Ligament from between the Bones, so as to prevent it from being pinched.

## INFRA-SPINATUS,

*Vel Super-scapulo-trochitereus Magnus.*

*Origin:* Fleishy, from all that part of the Dorsum Scapulæ which is below its Spine; and from the Spine itself, as far as the Cervix Scapulæ. The Fibres run obliquely towards a Tendon in the middle of the Muscle, which goes forwards, and adheres to the Capsular Ligament.

*Insertion:* By a flat thick Tendon, into the upper and outer part of the large Protuberance on the Head of the Os Humeri. Tab. XLVIII. Shoulder, C.

*Action:* To roll the Os Humeri outwards; to assist in raising, and in supporting it when raised; and to pull the Ligament from between the Bones.

These two Muscles are covered by an Aponeurosis, which extends between the Costæ and edges of the Spine of the Scapula, and gives rise to many of the Muscular Fibres.

## TERES MINOR,

*Vel Super-scapulo-trochitereus Minimus.*

*Origin:* Fleishy, from the inferior Costa of the Scapula. It ascends along the under edge of the Infra-spinatus, and adheres to the Capsular Ligament.

*Insertion:* Tendinous into the back part of the large Protuberance on the Head of the Os Humeri, a little below the Infra-spinatus. Tab. XLVIII. Shoulder, D.

*Action:* To roll the Os Humeri outwards, to draw it backwards, and to prevent the Ligament from being pinched between the Bones.

TERES MAJOR, *vel Scapulo-humeralis.*

*Origin:* Fleishy, from the Dorsal side of the inferior Angle of the Scapula, and from a small part of its in-

ferior Costa. It is situated at the under part of the Teres Minor, and sends off a broad flat Tendon, which accompanies that of the Latissimus Dorsi.

*Insertion:* Along with the Latissimus Dorsi, into the Ridge at the inner side of the Groove for lodging the Tendon of the Long Head of the Biceps. Tab. XLVIII. Shoulder, E.

*Action:* To roll the Humerus inwards, and to draw it backwards and downwards.

DELTOIDES, *vel Sub-acromio-humeralis.*

*Origin:* Fleishy, from all the outer part of the Clavicle unoccupied by the Pectoralis Major, from which it is separated by a small Fissure; Tendinous and Fleishy, from the Acromion and lower Margin of almost the whole Spine of the Scapula, opposite to the insertion 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 Fissures; viz. from the Clavicle outwards, from the Acromion downwards, and from the Spine of the Scapula forwards; and is composed of a number of Fasciculi, forming a strong Fleishy Muscle, which covers the joint of the Os Humeri.

*Insertion:* Below that of the Pectoralis Major, 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 Externus. Tab. XLVII. 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:* Tendinous and Fleishy, from the fore part of the Coracoid Process of the Scapula, in common with the short Head of the Biceps, to which it adheres through the greater part of its length.

*Insertion:* Tendinous and Fleishy, into the internal part of the Os Humeri, near its middle, where it sends down an Aponeurosis to the internal Condyle of that Bone. Tab. XLIII. Arm, C.

*Action:* To bring the Arm obliquely upwards and forwards.

SUBSCAPULARIS, *vel Sub-scapulo-trochineus.*

*Origin:* Fleishy, from the three Costæ and whole inner Surface of the Scapula. It is composed of a number of Tendinous and Fleishy portions, which run in



in a radiated manner, and make prints on the Bone; in its passage outwards, adhering to the Capsular Ligament. Tab. XLIV. Shoulder, A.

*Insertion*: Tendinous, into the upper part of the internal Protuberance at the Head of the Os Humeri.

*Action*: To roll the Arm inwards, to draw it to the side of the Body, and to prevent the Capsular Ligament from being pinched.

The Humerus is raised by the Deltoides, Supra-Spinatus, Coraco-Brachialis, Biceps Flexor Cubiti;—and these assisted by the Infra-Spinatus, Subscapularis, and upper portion of the Pectoralis Major, in elevating the Arm to its utmost extent;—*depressed*, by the Pectoralis Major, Latissimus Dorsi, and Teres Major acting together, and assisted by the under portion of the Sub-

scapularis, anterior and posterior parts of the Deltoides, Teres Minor, and long Head of the Triceps Extensor Cubiti;—drawn *forwards*, by the Pectoralis Major, anterior Portion of the Deltoides, Coraco-Brachialis, and Biceps Flexor Cubiti;—pulled *backwards*, by the Latissimus Dorsi, Teretes Major et Minor, posterior Portion of the Deltoides, and long Head of the Triceps Extensor Cubiti; by a succession of these motions, the Elbow is made to move in a circle;—*rolled round its axis inwards*, by the Subscapularis, anterior Portion of the Deltoides, Latissimus Dorsi, Teres Major, and occasionally by the Pectoralis Major;—*rolled outwards* by the Infra-spinatus, Teres Minor, posterior Portion of the Deltoides, and occasionally by the Coraco-Brachialis.

### MUSCLES SITUATED CHIEFLY ON THE ARM, SERVING FOR THE MOTION OF THE FORE-ARM.

#### APONEUROSIS OF THE SUPERIOR EXTREMITY.—Tab. XL. Fig. 1, 2.

The greater part of the Superior Extremity is covered by a Tendinous Membrane or Aponeurosis, which arises from the different 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 already mentioned.

On the Humerus, it incloses the Flexor and Extensor Muscles of the Fore-arm, and is connected to the Ridges and Condyles at the under end of the Os Humeri.

At the bending of the Elbow, it is attached to the ends of the Radius and Ulna, and receives considerable additions from the Tendons of the Biceps and Triceps of the Fore-arm, where the Fibres from the opposite sides decussate each other.

It becomes thicker and stronger on the Fore-arm, and forms a firm covering to the Muscles 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 Ulna. The Membrane is at length lost insensibly upon the Hand.

It is thicker and stronger on the back than upon the fore side of the Extremity, particularly on the Fore-arm, at the under and back part of which it forms a thick and strong Band, that, running transversely, gets the name of *Ligamentum Carpi Annulare Posterius*.

The use of this Aponeurosis, like that in other parts of the Body, is to form a kind of Bandage to brace the Muscles, and keep them in their proper place while in action, and to give Origin to many of the Muscular Fibres which lie immediately under it.

#### BICEPS FLEXOR CUBITI, Vel Biceps, vel Scapulo-radialis.

*Origin*: By two Heads: The outer one, called its

*Long Head*, begins by a slender Tendon from the upper edge of the Glenoid Cavity of the Scapula, passes over the Ball of the Os Humeri 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 a Ligament which proceeds from the Capsular one and adjacent Tendons: The inner one, called its *Short Head*, arises, Tendinous and Flethy, from the Coracoid Process of the Scapula, in common with the Coraco-Brachialis. A little below the middle of the fore part of the Os Humeri, the two Heads unite, and form a thick Flethy Belly.

*Insertion*: By a strong roundish Tendon, into the Tubercle at the upper and inner part of the Radius, and by a Tendinous Expansion, into the Aponeurosis of the Fore-arm, which it likewise assists in forming. Tab. XLII. Arm, A.

*Action*: To bend the Fore-arm, and to assist the Supinator Muscles in rolling the Radius outwards, and, of course, to turn the Palm of the Hand upwards. It also assists in stretching the Aponeurosis.

Sometimes this Muscle has a third Head, which it derives from the Os Humeri.

#### BRACHIALIS INTERNUS, vel Humero-cubitalis.

*Origin*: Flethy, from the middle of the Os Humeri, at each side of the Insertion of the Deltoides, covering all, and attached to most, of the under and fore part of the Bone. It runs over the Joint, adhering firmly to the Capsular Ligament.

*Insertion*: By a strong short Tendon, into the Coronoid Process of the Ulna. Tab. XLIII. Arm, D.

*Action*: To bend the fore-arm, and to prevent the Ligament of the Joint from being pinched.

#### TRICEPS EXTENSOR CUBITI, Vel Scapulo-humero-olecraneus.

*Origin*: By three Heads: The first, or *long Head*, broad



broad and Tendinous, from the Inferior Costa of the Scapula, near its Cervix: The second, or *short* Head, acute, Tendinous, and Fleshy, from the outer and back part of the Os Humeri, a little below its upper extremity: The third, formerly called *Brachialis Externus*, arises by an acute beginning, from the inner and back part of the Os Humeri, near the insertion of the Teres Major. The three Heads unite about the middle of the Humerus, and cover the whole posterior part of that Bone, adhering to it in their descent.

*Insertion*: Into the upper and outer part of the Olecranon of the Ulna, and partly into the Condyles of the Os Humeri, adhering closely to the Ligament. Tab. XLVIII. Arm, F, g, h, i.

*Action*: To extend the Fore-arm.

ANCONÆUS, vel *Epicondilo-cubitalis*.

*Origin*: Tendinous, from the posterior part of the external Condyle of the Os Humeri. It descends under a triangular form, soon becomes Fleshy, and part of its Flesh is likewise continued from the third Head of the Triceps.

*Insertion*: Fleshy and thin, into a Ridge on the outer and back part of the Ulna, a little below the Olecranon. Tab. XLVIII. Fore-arm, I.

*Action*: To assist the Triceps in extending the Fore-arm.

### MUSCLES ON THE FORE-ARM AND HAND, SERVING FOR THE MOTION OF THE HAND AND FINGERS.

To prevent confusion in the application of the terms *Outer* and *Inner*, when the Muscles are described in the prone state of the Hand,—the Arm is here supposed to be placed by the side of the Body, with the Hand in a state of supination; so that the Radius and Thumb are upon the outer, and the Ulna and Little Finger upon the inner side.

PALMARIS LONGUS, vel *Epitrochlo-palmaris*.

*Origin*: Tendinous, from the internal Condyle of the Os Humeri; soon becoming Fleshy, and sending off a long slender Tendon.

*Insertion*: Into the Ligamentum Carpi Annulare Anterior, and into the Aponeurosis Palmaris. Tab. XLIV. Fore-arm, B, a.

*Action*: To stretch the Aponeurosis Palmaris, and assist in bending the Hand.

This Muscle is frequently wanting, but the Aponeurosis is always to be found.

APONEUROSIS PALMARIS.

This Tendinous Expansion is situated directly under the Integuments of the Palm of the Hand. It begins at the Ligamentum Carpi Annulare Anterior; and, after spreading out and covering the greater part of the Palm, is fixed to the Roots of all the Fingers by an equal number of double Slips. Tab. XLVIII. Fig. 1.

It binds down and braces the Muscles in the Palm, and protects the Blood-vessels and Nerves in their course to the Fingers.

PALMARIS BREVIS, vel *Palmaro-cutaneus*.

*Origin*: By small Bundles of Fleshy Fibres, from the Ligamentum Carpi Annulare Anterior, and Aponeurosis Palmaris; and passing across, it has its

*Insertion* into the Skin and Fat which cover the Abductor Minimi Digiti, and into the Os Pisiforme. Tab. XLVIII. Fig. 1. o.

*Action*: To assist in contracting the Palm of the Hand.

FLEXOR CARPI RADIALIS,

Vel *Radialis Internus*, vel *Epitrochlo-metacarpeus*.

*Origin*: Tendinous and Fleshy, from the inner Condyle of the Os Humeri, and from the fore and upper part of the Ulna, between the Pronator Radii Teres and Flexor Sublimis, to which it firmly adheres. It forms a long Tendon, which passes down near the Radius, goes through a Fossa in the Os Trapezium, and becomes flat at its inferior extremity.

*Insertion*: Into the fore and upper part of the Metacarpal Bone which sustains the Fore-finger. Tab. XLV. Arm, z, a.

*Action*: To bend the Wrist, and to assist in the pronation of the Hand.

FLEXOR CARPI ULNARIS,

Vel *Ulnaris Internus*, vel *Cubito-carpeus*.

*Origin*: Tendinous, from the Internal Condyle of the Os Humeri; and, by a small Fleshy beginning, from the corresponding side of the Olecranon. It passes along the inner side of the Ulna, from which also it derives part of its origin for a considerable way down. A number of its Fleshy Fibres likewise arise from the Aponeurosis of the Fore-arm.

*Insertion*: By a strong Tendon, into the Os Pisiforme, which serves as a Pulley to the Muscle. Tab. XLV. Right Arm, a.

*Action*:



*Action* : To assist the former Muscle in bending the Wrist.

EXTENSOR CARPI RADIALIS LONGIOR,

*Vel Radialis Externus Longior, vel Humero-super-metacarpeus.*

*Origin* : Broad, thin, and Fleshy, directly below the Supinator Longus, from the lower part of the Ridge of the Os Humeri, above its external Condyle. It sends off a long flat Tendon, which passes down, first upon the outer, and then upon the back part of the Radius, descending in a Groove there, and going under the Ligamentum Carpi Annulare Posterius.

*Insertion* : Into the upper, back, and outer part of the Metacarpal Bone of the Fore-Finger. Tab. LII. Right Arm, F.

*Action* : To extend the Wrist, and bring the Hand backwards.

EXTENSOR CARPI RADIALIS BREVIOR,

*Vel Radialis Externus Brevior, vel Epicondilo-super-metacarpeus.*

*Origin* : Tendinous, in common with the Extensor Longior, but farther down; from the External Condyle of the Os Humeri, and from the Ligament 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 Extensor Longior.

*Insertion* : Into the upper and back part of the Metacarpal Bone of the Middle Finger. Tab. LII. Right Arm, F.

*Action* : To assist the former Muscle in extending the Wrist; or with it and the Flexor Carpi Radialis, to draw the Hand to the side next the Thumb.

EXTENSOR CARPI ULNARIS,

*Vel Ulnaris Externus, vel Cubito-super-metacarpeus.*

*Origin* : Tendinous, from the external Condyle of the Os Humeri; and in its progress Fleshy, from the middle of the Ulna, 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 Ulna.

*Insertion* : Into the posterior and upper part of the Metacarpal Bone of the Little Finger. Tab. LI. Right Arm, Q.

*Action* : To assist the two former Muscles in extending the Wrist; or, with the assistance of the Flexor Ulnaris, to draw the Hand towards the side next the Little Finger.

FLEXOR DIGITORUM SUBLIMIS, vel PERFORATUS,

*Vel Epitrochlo-phalangeus Communis.*

*Origin* : Tendinous and Fleshy, from the internal Condyle of the Os Humeri; Tendinous, from the Root of the Coronoid Process of the Ulna; and Membranous and Fleshy, from the middle of the fore part of the Radius. Its Fleshy Belly sends off four round Tendons before it passes under the Ligamentum Carpi Annulare Anterius. In their course, they are connected to those of the following Muscle by fine Membranous Webs, and upon the Fingers are inclosed in strong Tendinous Sheaths.

*Insertion* : Into the anterior and upper part of the second Phalanx of the Fingers, being, near the under part of the first Phalanx, split and twisted to form a passage, and at the same time a kind of Sheath, for the Tendons of the Flexor Profundus. Tab. XLV. Left Arm, z, A.

*Action* : To bend the second, and then the first Phalanx of the Fingers.

FLEXOR DIGITORUM PROFUNDUS, vel PERFORANS,

*Vel Cubito-phalangeus Communis.*

*Origin* : Fleshy, from the external side and upper part of the Ulna, for some way down; and from a large share of the Interosseous Ligament. It descends behind the Flexor Sublimis, and, like it, splits into four Tendons, a little before it passes under the Ligamentum Annulare, and these go through the Slits in the Tendons of the Flexor Sublimis. Tab. XLVI. Left Arm, V, W, X.

*Insertion* : Into the anterior and upper part of the third Phalanx of the Fingers.

*Action* : To bend the last Joint of the Fingers, and with the assistance of the former Muscles, to make the Fingers approach each other.

LUMBRICALES, vel Palmo-phalangei.

These consist of four small Muscles somewhat resembling Earth-worms, from which they derive their name.

*Origin* : Thin and Fleshy, from the outside of the Tendons of the Flexor Profundus, a little above the lower edge of the Ligamentum Carpi Annulare. At the under ends of the Metacarpal Bones, each sends off a slender Tendon.

*Insertion* : Into the outer sides of the broad Tendons of the Interossei Muscles, about the middle of the first Phalanx. Tab. XLVIII. Fig. 3. m, &c.

*Action* : To bend the first Phalanx, and increase the Flexion of the Fingers, while the long Flexors are in full



full action, and to assist the Radial Interossei in drawing the Fingers outwards.

**EXTENSOR DIGITORUM COMMUNIS,**

*Vel Epicondilo-super-phalangeus 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-arm, and before it goes under the Ligamentum Carpi Annulare Posterius, it splits into three or four Tendons, some of which may be subdivided. Upon the back of the Metacarpal Bones, the Tendons become broad and flat, and, near the Heads of these Bones, send Aponeurotic Expansions to each other.

*Insertion:* Into the posterior part of all the Bones of the four Fingers, by a Tendinous Expansion, which is thick and strong at the sides of the Joints, but thin at their back part to facilitate their motions. Tab. LII. Right Arm, S, T.

*Action:* To extend all the Joints of the Fingers, and to assist in making them diverge from each other.

A Slip of this Muscle going to the Little Finger, is called by some Authors *Extensor Proprius Minimi Digiti*.

**SUPINATOR RADII LONGUS, vel Humero-super-radialis.**

*Origin:* By an acute Fleshy beginning, from the Ridge of the Os 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 Fore-arm sends a tapering Tendon along the edge of the Radius.

*Insertion:* Into the outer side of the under end of the Radius. Tab. XLV. Fore-arm, W.

*Action:* To roll the Radius outwards, and, of course, to turn the Palm forwards.

**SUPINATOR RADII BREVIS, 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 Ulna, and from the Interosseous Ligament. It passes over the external edge of the Radius.

*Insertion:* Into the upper and back part of the Radius. Tab. LI. Fore-arm, O.

*Action:* To assist the Supinator Longus.

**PRONATOR RADII TERES, vel Epitrochlo-radialis.**

*Origin:* Fleshy from the internal Condyle of the Os Humeri, and Tendinous from the Coronoid Process of the Ulna. It goes obliquely across the upper end of

the Flexor Muscles of the Wrist, and is of a tapering form.

*Insertion:* Thin, Tendinous, and Fleshy, into the middle of the posterior part of the Radius. Tab. XLI. Fore-arm, G.

*Action:* To roll the Radius inwards, by which it turns the Palm of the Hand backwards.

**PRONATOR RADII QUADRATUS, vel Cubito-radialis.**

*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. XLVIII. Fig. 4. a.

*Action:* To assist the Pronator Teres.

**FLEXOR LONGUS POLLICIS MANUS,**

*Vel Flexor Tertii Internodii, vel Radio-phalangeus Pollicis.*

*Origin:* By an acute, Fleshy beginning, from the fore part of the Radius and Interosseous Ligament, the Origin extending from the Tubercle of the Bone, as far as the Pronator Quadratus. It has frequently another Origin, by a distinct Fleshy Slip, from the internal Condyle of the Os Humeri.

*Insertion:* Into the last Joint of the Thumb, after its Tendon has passed under the Ligamentum Carpi Annulare Anterius. Tab. XLI. Left Fore-arm  $\alpha$ ,  $\beta$ .

*Action:* To bend the last Joint of the Thumb.

**FLEXOR BREVIS POLLICIS,**

*Vel Flexor Secundi Internodii, vel Carpo-phalangeus Pollicis.*

*Origin:* From the Ossa Trapezoides, Magnum, et Unciforme. It is divided into two Portions, which form a Groove for the Tendon of the Flexor Longus Pollicis.

*Insertion:* Into the Ossa Sesamoidea, and base of the first Bone of the Thumb. Tab. XLVIII. Fig. 2. m, n.

*Action:* To bend the first Joint of the Thumb.

**OPPONENS POLLICIS,**

*Vel Flexor Ossis Metacarpi Pollicis, vel Flexor Primi Internodii, vel Carpo-Metacarpeus Pollicis.*

*Origin:* Fleshy, From the Os Trapezium and Ligamentum Carpi Annulare Anterius. It lies immediately under the Abductor Pollicis. Tab. XLVIII. Fig. 2. l.

*Insertion:* Tendinous and Fleshy, into the under and fore part of the Metacarpal Bone of the Thumb.

*Action:* To bring the Thumb inwards, so as to make it oppose the Fingers; from which circumstance it has derived its name.

**EXTENSOR**



**EXTENSOR OSSIS METACARPI POLLICIS,***Vel Cubito-super-metacarpeus Pollicis.*

*Origin:* Fleishy, from the middle of the posterior parts of the Ulna, Radius, and Interosseous Ligament. It runs obliquely over the Radius, sending one, or more frequently two Tendons, through an Annular Sheath.

*Insertion:* Into the Os Trapezium, and upper and back part of the Metacarpal Bone of the Thumb. Tab. LI. Right Fore-arm, *i.*

*Action:* To extend the Metacarpal Bone of the Thumb, and draw it from the Fingers.

**EXTENSOR PRIMI INTERNODII POLLICIS,***Vel Extensor Minor, vel Cubito-super-phalangeus Primus Pollicis.*

*Origin:* Fleishy, from the back part of the Ulna, and from the Interosseous Ligament, near the former Muscle, by the side of which it runs.

*Insertion:* Tendinous, 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. LI. Left Fore Arm, *h.*

*Action:* To extend the first Joint of the Thumb.

**EXTENSOR SECUNDI INTERNODII,***Vel Extensor Major, vel Cubito-super-phalangeus Secundus Pollicis.*

*Origin:* By an acute, Tendinous, and Fleishy beginning, from the middle of the back part of the Ulna, and from the Interosseous Ligament. Its Tendon runs through a small Groove at the under, inner, and back part of the Radius.

*Insertion:* Into the last Bone of the Thumb. Tab. LI. Right Arm, *R.*

*Action:* To extend the last Joint of the Thumb.

**ABDUCTOR POLLICIS,***Vel Carpo-super-phalangeus Pollicis.*

*Origin:* Broad, Tendinous, and Fleishy, from the Ligamentum Carpi Annulare, and from the Os Trapezium. It lies immediately under the Skin, and over the Opponens Pollicis.

*Insertion:* Tendinous, into the outer side of the root of the first Bone of the Thumb. Tab. LVIII. Fig. 1. *i.*

*Action:* To draw the Thumb from the Fingers.

A particular portion on the inner side of this Muscle is called by ALBINUS, *Abductor Brevis Alter.*

**ADDUCTOR POLLICIS, vel Metacarpo-Phalangeus Pollicis.**

*Origin:* Fleishy, from almost the whole length of the

Metacarpal Bone of the Middle Finger; going across the Metacarpal Bone of the Fore Finger, its Fibres converge, and send off a short Tendon.

*Insertion:* Into the inner part of the root of the first Bone of the Thumb. Tab. XLVI. Fig. 1. Right Arm, *g.*

*Action:* To pull the Thumb towards the Fingers.

**INDICATOR,***Vel Extensor Indicis Proprius, vel Cubito-super-phalangeus Primus Indicis.*

*Origin:* By an acute Fleishy beginning, from the middle of the posterior part of the Ulna, at the inner side of the Extensor Secundi Internodii Pollicis. Its Tendon passes under the same Ligament with the Extensor Digitorum Communis.

*Insertion:* Along with part of the Extensor Digitorum Communis, into the posterior part of the Fore-Finger. Tab. LI. Left Fore-arm, *T.*

*Action:* To assist the Extensor Communis in extending all the joints of this Finger, as in pointing at any thing, hence called *Indicator.*

**ABDUCTOR INDICIS.**

*Origin:* From the Os Trapezium, and from the upper part and inner side of the Metacarpal Bone of the Thumb.

*Insertion:* By a short Tendon, into the outer and back part of the first Bone of the Fore Finger. Tab. LVIII. Fig. 6. *i.*

*Action:* To bring the Fore Finger towards the Thumb.

**FLEXOR PARVUS MINIMI DIGITI,***Vel Carpo-phalangeus Secundus.*

*Origin:* From the Uncus of the Os Unciforme, and adjacent part of the Annular Ligament. It passes obliquely over the under end of the following Muscle.

*Insertion:* By a roundish Tendon, into the inner part of the Base of the first Bone of the Little Finger. Tab. LVIII. Fig. 2. *u.*

*Action:* To bend the Little Finger, and assist the Adductor.

**ABDUCTOR MINIMI DIGITI,***Vel Carpo-phalangeus Minimi Digiti.*

*Origin:* Fleishy from the Os Pisiforme, and from that part of the Ligamentum Carpi Annulare Anterior next it; going nearly straight down at the inner side of the Hand.

*Insertion:* Tendinous, into the inner side of the Base of

of



of the first Bone of the Little Finger. Tab. LVIII. Fig. 2. v.

*Action* : To draw the Little Finger from the rest.

#### ADDUCTOR MINIMI DIGITI,

*Vel Metacarpeus, vel Carpo-metacarpeus Minimi Digiti.*

*Origin* : Fleishy from the edge of the Hook-like Process of the Os Unciforme, and from that part of the Ligamentum Carpi Annulare next it.

*Insertion* : Tendinous into the inner side, and anterior or under extremity, of the Metacarpal Bone of the Little Finger. Tab. LVIII. Fig. 2. w.

*Action* : To bend the Metacarpal Bone, and bring this Finger towards the rest.

#### INTEROSSEI,

*Vel Metacarpo-phalangei Laterales.*

*Origin* : From the sides of the Metacarpal Bones. They fill up the spaces between these, and are something similar to the Lumbricales, but larger.

*Insertion* : By slender Tendons, along with those of the Lumbricales, into the sides of the Tendinous Expansions of the Extensor Digitorum Communis. Tab. LVIII. Fig. 4. e.—l. Fig. 5. 6. 7.

*Action* : To give the Fingers their lateral motions, and to assist a little, according to the situations into which they may be brought by the other Muscles, in bending or extending the first Phalanx of the Fingers.

Of the Interossei, four, seen in the Palm of the Hand, arise with single Heads, and are called *Interni vel Palmares*; and three on the back of the hand, with double Heads, termed *Externi*, vel *Bicipites*, vel *Dorsales*. Part of the Externi, however, are also seen in the Palm of the Hand.

#### INTEROSSEI INTERNI.

##### PRIOR INDICIS.

*Origin* : From the outer or Radial side of the Metacarpal Bone of the Fore Finger.

*Insertion* : Into the outside of the Tendon on the back of the Fore Finger.

*Action* : To draw the Finger outwards, towards the Thumb.

##### POSTERIOR INDICIS.

*Origin* : From the Inner or Ulnar 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.

##### PRIOR ANNULARIS.

*Origin* : From the outside of the Metacarpal Bone of the Ring Finger.

*Insertion* : Into the outside of the Tendon on the back of the Ring Finger.

*Action* : To draw the Ring Finger outwards.

##### INTEROSSEUS AURICULARIS.

*Origin* : From the outside of the Metacarpal Bone of the little Finger.

*Insertion* : Into the outside of the Tendon on the back of the Little Finger.

*Action* : To draw the Little Finger outwards.

#### INTEROSSEI EXTERNI.

##### PRIOR MEDII DIGITI.

*Origin* : From the corresponding sides of the Metacarpal Bones of the Fore and Middle Fingers.

*Insertion* : Into the outside of the Tendon on the back of the Middle Finger.

*Action* : To draw the Middle Finger outwards.

##### POSTERIOR MEDII DIGITI.

*Origin* : From the corresponding sides of the Metacarpal Bones of the Middle and Ring Fingers.

*Insertion* : Into the inside of the Tendon on the back of the Middle Finger.

*Action* : To draw the middle Finger inwards.

##### POSTERIOR ANNULARIS.

*Origin* : From the corresponding sides of the Metacarpal Bones of the Ring and Little Fingers.

*Insertion* : Into the inside of the Tendon on the back of the Ring Finger.

*Action* : To draw the Ring Finger inwards.

The FORE-ARM is bent by the Biceps Flexor Cubiti and Brachialis Internus, the following Muscles, on account of their attachments to the under end of the Os Humeri, assisting, though only in a small degree, viz. Palmaris Longus, Flexor Carpi Radialis, Flexor Carpi Ulnaris, Flexor Digitorum Sublimis, Supinator Radii Longus, et Pronator Radii Teres;—extended, by the Triceps Extensor Cubiti, and Anconeus.

The Hand, which is here supposed to be placed by the side of the Body, with the Palm forwards, is bent by the Flexores Carpi Radialis et Ulnaris, assisted by the Palmaris Longus, Flexores Digitorum Sublimis et Profundus, and Flexor Longus Pollicis;—moved backwards, by the Extensores Carpi Radialis Longior et Brevior, Digitorum Communis, et Secundi Internodii Pollicis, and Indicator;—moved laterally outwards, by the



the Flexor Carpi Radialis, Extensores Carpi Radialis Longior et Brevior, assisted by the Extensores Primi et Secundi Internodii Pollicis;—*moved laterally inwards*, by the Flexor et Extensor Carpi Ulnaris, assisted by the Flexores Digitorum Sublimis et Profundus, and Extensor Digitorum Communis. By a succession of the above motions, the hand can move in a Circle.

The *Supination* of the Hand is performed by the Supinator Radii Brevis, and Biceps Flexor Cubiti, assisted by the Supinator Radii Longus, and Extensor Secundi Internodii Pollicis;—and the *Pronation* by the Pronatores Radii Teres et Quadratus, assisted by the Palmaris Longus, Flexor Carpi Radialis, et Flexor Digitorum Sublimis.

The *Fingers* are bent, at the FIRST JOINT, by the Lumbricales, Interossei, Flexores Digitorum Sublimis et Profundus, et Brevis Minimi Digiti;—at the SECOND JOINT, by the Flexor Digitorum Sublimis, and in the Little Finger, by the Flexor Minimi Digiti;—at the THIRD JOINT, by the Flexor Digitorum Profundus.—*Extended in all the Joints*, by the Extensor Digitorum

Communis, assisted in the Index by the Indicator; and when the Fingers are moved beyond a straight line with the Metacarpal Bones, the Interossei and Lumbricales then act with the common Extensor;—*moved laterally*, by the Interossei, assisted in the Index by the Abductor Indicis, and in the Little Finger by the Abductor Minimi Digiti;—*moved in a Circle*, at the first Joint, by a succession of the above motions.

The THUMB, at the root of the Metacarpal Bone, is brought towards the middle of the Palm, by the Opponens Pollicis;—*from the Palm*, by the Extensores Ossis Metacarpi, et Primi Internodii Pollicis;—*moved towards the Fore Finger* by the Adductor,—and in the *contrary direction*, by the Abductor Pollicis. By a succession of the above motions, the Thumb performs, at this Joint, its *Rotation*.

At the *first Joint*, the Thumb is bent by the Flexor Brevis Pollicis;—*extended*, by the Extensor Primi Internodii Pollicis. At the *second Joint*, bent by the Flexor Longus Pollicis;—and *extended* by the Extensor Secundi Internodii Pollicis.

## MUSCLES OF THE INFERIOR EXTREMITIES.

### MUSCLES ON THE PELVIS AND THIGH, SERVING FOR THE MOTION OF THE THIGH AND LEG.

#### APONEUROSIS OF THE INFERIOR EXTREMITY.

PREVIOUS to the description of the Muscles of the Inferior Extremity, it is proper to take notice of the *Fascia Lata*, or Tendinous Expansion, which, as in the Superior Extremity, forms a general Covering to the Muscles, and sends off Partitions between them, to be connected to the Ridges and Processes of the Bones.

It is thick and strong on the outside of the Thigh and Leg, but towards the inner side of both, particularly on the former, it gradually becomes thinner, and has rather the appearance of Cellular Membrane.

It descends from the Processes and other Projections on the outside of the Bones of the Pelvis, but more especially from the Tendons of the External Layers of the Muscles of the Loins and Abdomen.—See the description of the upper part of this Fascia in p. 126.

A little below the Trochanter Major, it is intimately connected to the Linea 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 Heads of the Tibia and Fibula. In the Leg, it is firmly fixed to the Spines or Ridges of these Bones, and at the under end, to those

of the Ankle, where part of it, thicker and stronger than the rest, is extended anteriorly from the Malleolus Internus and Os Naviculare, to the Malleolus Externus, and adjacent part of the Os Calcis, to form the Ligamentum Tarsi Annulare. It vanishes at last upon the Foot.

It serves the same general purposes with the Aponeurosis of the Superior Extremity.

PSOAS MAGNUS.

ILIACUS INTERNUS.

} See p. 133.

PECTINALIS, vel *Pectineus*, vel *Super-pubio-femoralis*.

*Origin*: Broad and Fleshy, from the upper and fore part of the Os Pectinis vel Pubis, between the upper part of the Foramen Thyroideum and Brim of the Pelvis. It runs downwards and outwards at the inner side of the Psoas Magnus.

*Insertion*: By a flat and short Tendon, into the Linea Aspera of the Os Femoris, a little below the Trochanter Minor. Tab. XLI. Thigh, E.

*Action*: To pull the Thigh upwards and inwards, and



and to give it, and of course the Foot, a degree of rotation outwards.

#### TRICEPS ADDUCTOR FEMORIS.

Under this appellation are comprehended three distinct Muscles, viz. *Adductor Longus*, *Adductor Brevis*, and *Adductor Magnus*.

##### ADDUCTOR LONGUS, vel *Pubio-femoralis*.

*Origin*: By a strong roundish Tendon, from the upper and fore part of the Os Pubis, and Ligament of the Synchrondrosis, at the inner side of the Pectinalis: It runs downwards and outwards.

*Insertion*: By a broad flat Tendon, into the middle of the Linea Aspera. Tab. XLV. Thigh, c.

##### ADDUCTOR BREVIS, vel *Sub-pubio-femoralis*.

*Origin*: Tendinous, from the Os Pubis, at the side of its Symphysis, below and behind the former Muscle; it runs obliquely outwards.

*Insertion*: By a short flat Tendon, into the inner and upper part of the Linea Aspera, from a little below the Trochanter Minor, to the beginning of the Insertion of the Adductor Longus. Tab. XLVI. Left Thigh, c.

##### ADDUCTOR MAGNUS, vel *Ischio-femoralis*.

*Origin*: From the side of the Symphysis Pubis, a little lower than the former. The Origin is continued downwards along the Crus and Tuberosity of the Os Ischium. The Fibres run outwards and downwards, spreading out, and forming a Muscle of great magnitude.

*Insertion*: Into the whole length of the Linea Aspera; the under part of the Muscle extending along the Ridge which leads to the inner Condyle of the Os Femoris. It is also fixed by a roundish Tendon, into the upper part of that Condyle, a little above which, the Femoral Artery, in its course towards the Ham, passes between the Tendon of this Muscle and the Bone. Tab. XLIV. Fig. 1. Thigh, D. Fig. 2. A, B, C.

*Action of the three Adductors*: To bring the Thigh inwards and upwards, according to the different directions of their Fibres, and to assist a little in rolling it outwards.

#### OBTURATOR EXTERNUS,

Vel *Sub-pubio-trochantereus Externus*.

*Origin*: On the outer side of the Pelvis, by a semi-circular Margin, from the Parts of the Ossa Pubis and Ischium, which form the anterior half of the Foramen

Thyroideum, and from the Membrane which fills up that Foramen. The Fibres run like rays towards a centre, and pass outwards over the back part of the Cervix of the Os Femoris.

*Insertion*: By a strong round Tendon into the Cavity at the inner and back part of the Root of the Trochanter Major, adhering in its course to the Capsular Ligament of the Thigh-bone. Tab. XLIV. Fig. 1. Thigh, C.

*Action*: To roll the Thigh-bone obliquely outwards, and to prevent the Capsular Ligament from being pinched.

##### GLUTEUS MAXIMUS, vel *Sacro-femoralis*.

*Origin*: Fleshy, from the back part of the Spine of the Os Ilium; from the under and outer part of the Os Sacrum; from the Os Coccygis; and from the posterior Sacro-sciatic Ligaments, over which part of the inferior edge hangs in a Flap. The Fibres are collected into coarse Fasciculi, which run obliquely forwards and a little downwards. The upper part of it covers almost the whole of the Trochanter Major, and it is intimately connected with the broad Tendon of the Tensor Vaginae Femoris. This Muscle is the largest of the Body, and composes the principal part of the Buttock.

*Insertion*: 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 down. Tab. XLVII. Pelvis and Thigh, A, A.

*Action*: To extend the Thigh, and pull it backwards 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 carried forwards, as in walking.

##### GLUTEUS MEDIUS, vel *Ilio-trochantereus Magnus*.

*Origin*: Fleshy, from all that part of the Spine of the Os Ilium which is unoccupied by the Gluteus Maximus; from the upper part of the Dorsum of that Bone; and from an Aponeurosis which covers the Muscle, and joins the Fascia of the Thigh. It sends off a broad Tendon, which has its

*Insertion*: Into the outer and back part of the Trochanter Major. Tab. XLVIII. Pelvis, A.

*Action*: To pull the Thigh outwards, and a little backwards. The fore part of the Muscle assists in rolling it inwards.

##### GLUTEUS MINIMUS, vel *Ilio-trochantereus Parvus*.

*Origin*: Fleshy, from the lower half of the Dorsum of the Os Ilium. Its Origin is continued from the superior-anterior Spinous Process, along a rising of the Bone,



Bone, as far as the great Sciatic Notch; and the Muscle runs in a radiated manner to a strong flat Tendon.

*Insertion:* Into the fore and upper part of the Trochanter Major. Tab. XLIX. Pelvis, A.

*Action:* To assist the former in pulling the Thigh outwards, and a little backwards; and, along with other Muscles, in rolling it inwards.

*PYRIFORMIS, vel Sacro-trochantereus.*

*Origin:* By three Tendinous and Fleshy Heads, from the anterior Surface of the second, third, and fourth pieces of the Os Sacrum; and, becoming round and tapering, it passes out of the Pelvis, along with the Sciatic Nerve, through the great Notch of the Ilium, from which it receives the addition of a few Fleshy Fibres.

*Insertion:* By a roundish Tendon, into the upper part of the Cavity at the inner side of the root of the Trochanter Major. Tab. XLVIII. Pelvis, B.

*Action:* To assist in the Abduction of the Thigh, and in its rotation outwards.

*GEMINI, vel Gemelli, vel Ischio-trochantereus.*

*Origin:* By two distinct Heads; the superior from the Spinous Process, and the inferior from the Tuberosity of the Os Ischium, and from the Sacro-sciatic Ligament. The two Heads are united by a Tendinous and Fleshy Membrane, and form a Sheath for the reception of the Tendon of the Obturator Internus.

*Insertion:* Tendinous and Fleshy, into the Cavity at the inner side of the root of the Trochanter Major, on each side of the Tendon of the Obturator Internus, to which they firmly adhere. Tab. XLVIII. Pelvis, C.

*Action:* To roll the Thigh outwards, and to prevent the Tendon of the Obturator Internus from starting out of its place while the Muscle is in action.

*OBTURATOR INTERNUS,*

*Vel Marsupialis, vel Sub-pubio-trochantereus Internus.*

*Origin:* Within the Pelvis, by a semicircular Fleshy margin, from the anterior half of the Foramen Thyroideum, and, in part, from the Obturator Ligament. Its Fibres converge, and send off a round Tendon, which passes over the Os Ischium, between the Spine and Tuber of that Bone, as a rope passes over a pulley. — Where it goes over the Capsular Ligament of the Thigh-bone, it is inclosed in the Sheath of the Gemini.

*Insertion:* By a round Tendon, along with the Gemini, into the large Pit at the root of the Trochanter Major. Tab. XLIX. Fig. 1. Pelvis and Inferior Extremity, B.

*Action:* To roll the Thigh obliquely outwards.

*QUADRATUS FEMORIS, vel Ischio sub-Trochantereus.*

*Origin:* Tendinous and Fleshy, from the outer side of the Tuberosity of the Os Ischium; running transversely outwards.

*Insertion:* Fleshy, into a rough Ridge continued from the root of the great to that of the small Trochanter. Tab. XLVIII. Pelvis, E.

*Action:* To roll the Thigh outwards.

This Muscle is occasionally wanting.

The Pyriformis, Gemini, Quadratus, and Obturator, which are the Rotators of the Thigh when it is in a line with the Body, become its Abductors when it is in the bended state.

*TENSOR VAGINÆ FEMORIS,*

*Vel Ilio-aponeuroso-femoris.*

*Origin:* By a narrow, Tendinous, and Fleshy beginning, from the external part of the anterior-superior Spinous Process of the Os Ilium. It goes downwards, and a little backwards, forming a thick Fleshy Belly, which is inclosed in a doubling of the Aponeurosis or Vagina of the Thigh.

*Insertion:* A little below the Trochanter Major, into the inner Surface of the Aponeurosis which covers the outside of the Thigh. Tab. XLI. Thigh, A.

*Action:* To stretch the Aponeurosis, and to assist in the Abduction of the Thigh, and in its rotation inwards.

*SARTORIUS, vel Ilio-pretibialis.*

*Origin:* Tendinous, from the superior-anterior Spinous Process of the Os Ilium, at the inner side of the Tensor Vaginæ Femoris. It soon becomes Fleshy, runs obliquely downwards over the Muscles situated upon the fore and inner side of the Thigh, 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. XLV. Right Inferior Extremity, g, q.

*Action:* To bend the Knee, and bring one Leg obliquely inwards across the other, as tailors do at their work, from which circumstance the Muscle obtains its name.

*GRACILIS, vel Rectus Internus, vel Sub-pubio-pretibialis.*

*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



the Sartorius. Tab. XLIII. Fig. 1. Thigh, G. Fig. 2. D.

*Action* : To assist the Sartorius in making the full Flexion of the knee, after it has been bent to a certain degree by the Flexors on the back part of the Thigh.

*RECTUS, vel Gracilis Anterior, vel Ilio-rotuleus.*

*Origin* : Fleshy, from the inferior-anterior Spinous Process of the Os Ilium ; and Tendinous, from the Dorsum of that Bone, a little above the Acetabulum. It runs down over the anterior part of the Capsular Ligament which incloses the Cervix of the Os Femoris, and, in its passage along the fore part of the Thigh, becomes gradually larger as far 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 Fleshy Fibres run off like the plumage of a feather ; the Tendon itself being most conspicuous behind.

*Insertion* : Tendinous, into the upper part of the Patella. Tab. XLI. Fig. 2. A.

*Action* : To extend the Leg.

*CRURALIS, vel Crureus, or Middle of the Tri-femoro-rotuleus.*

*Origin* : Fleshy, from between the two Trochanters of the Os Femoris, but nearer the Minor ; and from the fore part of the Thigh-bone to near its under extremity. Its sides are intimately connected to both Vasti Muscles ; anteriorly, it is covered by the Rectus, the Tendon of which it joins near the lower part of the Thigh.

*Insertion* : Into the upper and back part of the Patella, behind the Rectus. Tab. XLII. Fig. 2. A.

*Action* : To assist in the extension of the Leg.

*VASTUS EXTERNUS,*

*Or Outer Part of the Tri-femoro-rotuleus.*

*Origin* : Broad, Tendinous, and Fleshy, from the outer part of the Root of the Trochanter 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 Fibres, which form the principal part of the outer portion of the Thigh, and run obliquely forwards to a middle Tendon, where they terminate.

*Insertion* : Into the upper and outer part of the Patella, at the edge of the Tendon 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 continued to the Leg. Tab. XLII. Fig. 2. C.

*Action* : To extend the Leg.

*VASTUS INTERNUS,*

*Or Inner Part of the Tri-femoro-rotuleus.*

*Origin* : Tendinous and Fleshy, from between 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 running obliquely forwards and downwards, which occupy the under and inner side of the Thigh.

*Insertion* : Tendinous, at the side of the Crureus, with which it is connected, into the upper and inner edge of the Patella, continuing Fleshy lower than the Vastus Externus. Part of it likewise ends in an Aponeurosis, which is fixed to the Head of the Tibia, and afterwards is continued to the Leg. Tab. XLII. Fig. 2. B.

*Action* : To assist the three former Muscles in extending the Leg ; then the Patella, fixed to the Tubercle 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 Ischium. Its Fleshy Belly runs down the back part of the Thigh, and sends off a long roundish Tendon, which, passing by the inner side of the Knee, afterwards becomes flat.

*Insertion* : Into the inside of the Ridge of the Tibia, a little below the Tubercle, and connected to the under edge of the Gracilis. Tab. XLVIII. Thigh, E.

*Action* : To bend the Leg, and, when bent, to roll it inwards.

*SEMIMEMBRANOSUS, vel Ischio-poplito-tibialis.*

*Origin* : By a broad flat Tendon, from the upper and back part of the Tuberosity of the Os Ischium. It is situated behind the Semitendinosus. The Fibres composing its Fleshy Belly form a semi-penniform Muscle, by running in an oblique direction towards a flat Tendon at its inner and under part.

*Insertion* : Into the inner and back part of the Head of the Tibia. Tab. XLIX. Thigh, C.

*Action* : To bend the Leg, and bring it directly backwards.

*BICEPS FLEXOR CRURIS,*

*Vel Ischio-femoro-peronealis.*

*Origin* : By two distinct Heads. The first, or *Long Head*, arises in common with the Semitendinosus, from the



the upper and back part of the Tuberosity of the Os Ischium. The second, or *Short Head*, arises from the Linea Aspera, a little below the termination of the Gluteus Maximus, by a Fleshy acute beginning, which soon grows broader, as it descends to join the First Head a little above the external Condyle of the Os Femoris.

*Insertion*: By a strong Tendon, into the upper and outer part of the Head of the Fibula. Tab. XLVIII. Thigh, *b, c*.

*Action*: To bend the Leg, and, when the Leg is bent, to roll it outwards.

The Semitendinosus and Semimembranosus form the inner *Ham-string*, and the Biceps the outer *Ham-string*; between these are situated the great Vessels and Nerves which run to the Leg.

POPLITEUS, vel Femoro-poplito-tibialis.

*Origin*: By a small round Tendon, from the outer and under part of the External Condyle of the Os Femoris, and from the back part of the Capsular Ligament of the Joint. In passing the Joint, it becomes Fleshy, and spreads out, the Fibres running obliquely inwards and downwards, covered by a Tendinous Membrane.

*Insertion*: Thin and Fleshy, into a Ridge at the upper and inner part of the Tibia, a little below its Head. Tab. XLIX. Leg, *G*.

*Action*: To assist in bending the Leg, and, when the Leg is bent, to roll it inwards. The Muscle also prevents the Capsular ligament from being pinched.

#### MOTIONS OF THE THIGH AND LEG.

The THIGH is moved forwards, by the Psoas Magnus and Iliacus Internus, assisted by the Pectinalis, Adductor Longus, Adductor Brevis, and upper Portion of the

Adductor Magnus Femoris, by the Tensor Vaginæ Femoris, Sartorius, Gracilis, and Rectus Femoris;—*backwards*, by the Glutei Maximus, Medius, et Minimus, under Portion of the Triceps Adductor Magnus, by the Semitendinosus, Semimembranosus, and long Head of the Biceps Flexor Cruris;—*inwards*, by the Psoas Magnus, Iliacus Internus, Pectinalis, Triceps Adductor Femoris, Sartorius, Gracilis, Semitendinosus, Semimembranosus, Quadratus Femoris, Obturatores Externus et Internus;—*outwards*, by the Glutei Maximus, Medius, et Minimus, and Tensor Vaginæ Femoris. In the bent state, the Pyriformis, Gemini, Obturatores Externus et Internus, and Quadratus Femoris, become *Abductors*. By a succession of the motions mentioned above, the Knee can move in a Circle.—The Thigh is rolled inwards, by the fore part of the Gluteus Medius, Gluteus Minimus, Tensor Vaginæ Femoris, Sartorius, Gracilis, and Semitendinosus;—and rolled outwards, by the Pyriformis, Gemini, Obturatores Externus et Internus, and Quadratus Femoris, assisted by the Psoas Magnus, Iliacus Internus, and Gluteus Minimus. In the bent state, the Muscles which were formerly the Abductors, now become the Rotators outwards.

When the Leg is made the fixed point, the different Muscles which formerly moved the Thigh, now move the Trunk and Pelvis upon the Thigh.

The LEG is bent, by the Semitendinosus, Semimembranosus, Biceps Flexor Cruris, and Popliteus, assisted by the Sartorius, Gracilis, Gastrocnemius Externus, and Plantaris;—*extended*, by the Rectus Femoris, Cruralis, Vasti Externus et Internus. The Gluteus Maximus, and Tensor Vaginæ Femoris, from their connexions with the Fascia Lata Femoris, assist a little both in the flexion and extension of the Knee. In the bended state of the Leg, the Semitendinosus, Semimembranosus, Gracilis, and Popliteus, perform *rotation inwards*,—and the Biceps Flexor Cruris, *rotation outwards*.

#### MUSCLES SITUATED ON THE LEG AND FOOT, SERVING FOR THE MOTION OF THE FOOT AND TOES.

GASTROCNEMIUS EXTERNUS, vel Gemellus, vel Bifemoro-calcaneus.

*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 meet in a middle Tendon, the union behind giving the appearance of a longitudinal Raphè. Below the middle of the Tibia, the Muscle sends off a broad thin Tendon, which, becoming gradually narrower, joins that of the Gastrocnemius Internus, a little above the Ankle. Tab. XLVII. Leg, *K, K, M*.

GASTROCNEMIUS INTERNUS,

Vel Soleus, vel Tibio-calcaneus.

*Origin*: By two Heads. The first from the back of the Head, and upper and back part of the Body of the Fibula: The other from the back of the Tibia, running inwards along the under edge of the Popliteus, towards the inner part of the Bone, from which it receives Fleshy Fibres for some way down, and forms a Muscle, which is of the compound Penniform kind. This is covered by the Tendon of the Gastrocnemius Externus, and descends, Fleshy, nearly as far as the extremity of the Tibia, a little above which, the Tendons of both Gastrocnemii unite, and form a strong round



round Cord, called *Tendo ACHILLIS*, or simply *Heel Tendon*. Tab. XLVIII. Leg. H, L.

*Insertion*: Into the upper and back part of the Os Calcis, by the projection of which the *Tendo ACHILLIS* is enabled to act more powerfully upon the Foot.

*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 Femoro-calcaneus Parvus.*

*Origin*: Thin and Fleishy, from the upper and back part of the external Condyle of the Os Femoris, 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 ACHILLIS*, to which it is so closely connected, as to be sometimes overlooked.

*Insertion*: Into the inside of the posterior part of the Os Calcis, below the *Tendo ACHILLIS*. Tab. XLVIII. Leg. I, f.

*Action*: To assist the *Gastrocnemii*, though in a small degree only, and to pull the Capsular Ligament of the Knee from between the Bones. It likewise agitates a Fatty substance belonging to the *Bursa Mucosa*, at the insertion of the *Tendo ACHILLIS*.

This muscle is sometimes, though very rarely, wanting.

*TIBIALIS ANTICUS, vel Tibio-super-tarseus.*

*Origin*: Tendinous, from the upper and fore part of the Tibia, between its Tubercle and Articulation with the Fibula. It then runs down, Fleishy, on the outside of the Tibia, adhering to it and to the upper part of the Interosseous Ligament. Towards the inferior part of the Leg, it sends off a strong round Tendon, which passes under the *Ligamentum Tarsi Annulare*, near the inner Ankle, and, running over the *Astragalus* and Os Naviculare, it has its

*Insertion*: Tendinous, into the middle of the Os Cuneiforme Internum and Base of the Metatarsal Bone of the Great Toe. Tab. XLI. Leg. G, e.

*Action*: To bend the Foot.

*TIBIALIS POSTICUS, vel Tibio-sub-tarseus.*

*Origin*: Fleishy, from the upper and fore part of the Tibia, under the process which joins it to the Fibula; then, passing through a Fissure in the upper part of the Interosseous Ligament, it continues its Origin from the back part of the Fibula, next the Tibia, and from near one half of the upper part of the last-named Bone, as also from the Interosseous Ligament. The Fibres run towards a middle Tendon, which, in its descent, be-

comes round, and passes in a Groove behind the Malleolus Internus.

*Insertion*: Tendinous, chiefly into the upper and inner part of the Os Naviculare, and partly into the under Surface of the Tarsal Bones, by separate Slips, the last of which goes to the root of the Metatarsal Bone of the middle Toe. Tab. L. Leg. B.

*Action*: To extend the Foot, and, with the assistance of the *Tibialis Anticus*, to turn the Toes inwards, and the outer edge of the Foot downwards.

*PERONEUS LONGUS,*

*Vel Primus, vel Peroneo-sub-tarseus.*

*Origin*: Tendinous and Fleishy, from the fore part of the Head of the Fibula; and Fleishy from the outer part of that Bone, down to within a hand-breadth of the Ankle. The Fibres run in a penniform manner towards a long Tendon, which becomes round, and, inclosed in a Sheath passes through a channel behind the Malleolus Externus. It is then reflected to the Sinuosity of the Os Calcis, runs along a Groove in the Os Cuboides, and goes obliquely across the Bones in the middle of the Sole.

*Insertion*: Tendinous, into the outside of the root of the Metatarsal Bone of the Great Toe, and partly into the Os Cuneiforme Internum. Tab. XLIX. Leg. L, b.

*Action*: To extend the Foot a little, to draw it outwards, and to turn the inner edge of it downwards.

*PERONEUS BREVIS,*

*Vel Secundus, vel Peroneo-metatarsus Magnus.*

*Origin*: Fleishy, from the outer part of the Fibula, beginning some way above the middle height of the Bone, and continuing its adhesion as far as the Malleolus externus. The Fibres run, like those of the former Muscle, to an external Tendon, which becomes round, passes behind the outer Ankle, where it is included in the same Sheath with the Tendon of the preceding Muscle, and there crossing behind that Tendon, runs forward in a Sheath proper to itself.

*Insertion*: Tendinous, into the root and external part of the Metatarsal Bone of the Little Toe. Tab. XLIX. Leg. M, C. Tab. L. Leg. C.

*Action*: To assist the former Muscle in pulling the Foot outwards, its outer edge upwards, and to extend it in a small degree.

*EXTENSOR LONGUS DIGITORUM,*

*Vel Peroneo-super-phalangeus Communis.*

*Origin*: Tendinous and Fleishy, from the upper and outer part of the Head of the Tibia, and from the Head,



Head, and almost the whole length of the anterior Spine of the Fibula. It arises, also, Flethy, from the Aponeurosis which covers the upper and outer part of the Leg, and from the Interosseous Ligament. Under the Ligamentum Tarsi Annulare, it splits into four round Tendons, which pass along the upper part of the Foot.

*Insertion*: Into the Base of the First Phalanx of the four small Toes, by flat Tendons, which are afterwards expanded over the upper side of the Toes as far as the root of the last Phalanx. Tab. XLII. Leg. *k, b*.

*Action*: To extend all the Joints of the four small Toes, and to assist in the flexion of the Ankle.

PERONEUS TERTIUS of ALBINUS,

Vel *Peroneo-metatarsus Minor*,

Is a Portion of the former Muscle.

*Origin*: From the middle of the Fibula, in common with the Extensor Longus Digitorum. It continues down to near the Malleolus Externus, and sends its Flethy Fibres forwards to a Tendon which passes under the Ligamentum Annulare.

*Insertion*: Into the root of the Metatarsal Bone of the Little Toe. Tab. LIII. Left Leg, *W, V*.

*Action*: To assist in bending the Foot.

EXTENSOR BREVIS DIGITORUM,

Vel *Calco-super-phalangeus Communis*.

*Origin*: Flethy and Tendinous, from the outer and fore part of the Os Calcis; soon forming a Flethy Belly, which is divided into four Portions. These send off an equal number of Tendons, which pass over the upper part of the Foot, crossing under those of the former Muscle.

*Insertion*: By four slender Tendons, into the Great Toe, and Tendinous Expansion continued from the Long Extensors of all the Small Toes, excepting the little one. Tab. XLIII. Foot, *O*.

*Action*: To assist in the extension of the Toes.

APONEUROSIS 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 Tuberosity at the under and back part of the Os Calcis, and is divided into three Portions, which run forwards, to be 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 Tendons of the Flexor Muscles. Tab. LVIII. Fig. 8. *a, b, c*.

Besides serving the general purpose of Aponeuroses,

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it performs the office of a ligament, by binding the two ends of the arch of the Foot together.

FLEXOR BREVIS DIGITORUM,

Vel *Flexor Sublimis*, vel *Flexor Perforatus*, vel *Calco-sub-phalangeus Communis*.

*Origin*: Narrow and Flethy, from the inferior-anterior part of the Tuberosity of the Os Calcis, and from the Aponeurosis Plantaris. It forms a thick Flethy 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. LVIII. Fig. 9. *a*.

*Action*: To bend the first and second Joints of the Toes, but particularly the second.

The Tendon of the Little Toe is frequently wanting.

FLEXOR LONGUS DIGITORUM,

Vel *Flexor Profundus*, vel *Flexor Perforans*, vel *Tibio-phalangeus Communis*.

*Origin*: By an acute Tendon, which soon becomes Flethy, from the back part of the Tibia, at the under edge of the Popliteus; and this Origin is continued down the inner edge of the Bone, by short Flethy Fibres ending in a large Tendon. It arises also by Tendinous and Flethy Fibres, from the outer edge of the Tibia; and between this double order of Fibres, the Tibialis Posticus lies inclosed. After going under two Annular Ligaments behind the inner Ankle, it passes through a Sinuosity at the inside of the Os Calcis; and about the middle of the Sole, receives a Tendon from the Flexor Longus Pollicis. It then divides into four Tendons, which run through the Slits of the Perforatus.

*Insertion*: Into the Base of the third Phalanx of the four smaller Toes; the Tendons of this, as well as of the Flexor Brevis, being inclosed upon the Toes by Annular Ligaments. Tab. XLIX. Leg. I. Tab. LVIII. Fig. 10. *a, f, f*.

*Action*: To bend the different Joints, particularly the last one, of the Toes.

FLEXOR DIGITORUM ACCESSORIUS,

Vel *Massa Carnea JACOBI SYLVII*.

*Origin*: By two Portions; the inner Flethy, from the Sinuosity of the Os Calcis; the outer Tendinous, but soon becoming Flethy, from the fore and outer part of that Bone.

*Insertion*: Into the Tendon of the Flexor Longus Digitorum, before it divides into smaller Tendons. Tab. LVIII. Fig. 10. *b, c, d*.

*Action*: To assist the Flexor Longus.

LUMBRICALES



LUMBRICALES, vel *Planto-sub-phalangeus*.

*Origin* : By four Tendinous and Fleshy beginnings, from the Tendon of the Flexor Profundus, just before its division. They run forwards, under the same general appearance with those in the Hand, but are somewhat smaller.

*Insertion* : By four slender Tendons, at the inside of the first Joint of the four small Toes, into the Tendinous Expansion sent from the Extensors to cover the upper part of the Toes. Tab. LVIII. Fig. 10. *g, h, i, k*.

*Action* : To increase the flexion of the Toes, and to draw them inwards.

## EXTENSOR PROPRIUS POLLICIS,

Vel *Extensor Longus*, vel *Peroneo-super-phalangeus Pollicis*.

*Origin* : By an acute, Tendinous, and Fleshy beginning, 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. XLII. Leg. *d, e, f*.

*Action* : To extend the Great Toe, and assist in bending the Ankle.

## FLEXOR LONGUS POLLICIS,

Vel *Peroneo-sub-phalangeus Pollicis*.

*Origin* : Tendinous and Fleshy, from the back part of the Fibula, some way below its Head; being continued down the same Bone, almost to its under end, by a double order of oblique Fleshy Fibres. Its Tendon passes under an Annular Ligament behind the inner Ankle, then through a Fossa in the Astragalus.

*Insertion* : Into the last Joint of the Great Toe. Tab. XLIX. Leg. *H*.

*Action* : To bend the Great Toe, particularly the last Joint.

## FLEXOR BREVIS POLLICIS,

Vel *Tarso-sub-phalangeus Pollicis*.

*Origin* : Tendinous, from the under and fore part of the Os Calcis, and from the Os Cuneiforme 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. Tab. LVIII. Fig. 11. *i, k*.

*Action* : To bend the first Joint of the Great Toe.

ABDUCTOR POLLICIS, vel *Calcio-sub-phalangeus Pollicis*.

*Origin* : Fleshy, from the anterior and inner part of the Protuberance of the Os Calcis, and Tendinous from the same Bone, where it joins with the Os Naviculare.

*Insertion* : Tendinous, into the internal Os Sesamoideum, and root of the first Bone of the Great Toe. Tab. LVIII. Fig. 9. *c*.

*Action* : To pull the Great Toe from the rest.

## ADDUCTOR POLLICIS,

Vel *Metatarso-sub-phalangeus Pollicis*.

*Origin* : By a long thin Tendon, from the under part of the Os Calcis, from the Os Cuboides, from the Os Cuneiforme Externum, and from the root of the Metatarsal Bone of the Second Toe. The Muscle is divided into two Fleshy Portions.

*Insertion* : Into the external Os Sesamoideum, and root of the Metatarsal Bone of the Great Toe. Tab. LVIII. Fig. 11. *g, h*.

*Action* : To pull the Great Toe towards the rest.

## ABDUCTOR MINIMI DIGITI,

Vel *Calcio-sub-phalangeus Minimi Digiti*.

*Origin* : Tendinous and Fleshy, from the edge of a Cavity on the under part of the Protuberance of the Os Calcis, and from the root of the Metatarsal Bone of the Little Toe.

*Insertion* : Into the outer part of the root of the first Bone of the Little Toe. Tab. LVIII. Fig. 9. *d, e*.

*Action* : To draw the Little Toe outwards.

## FLEXOR BREVIS MINIMI DIGITI,

Vel *Tarso-sub-phalangeus Minimi Digiti*.

*Origin* : Tendinous, from the Os Cuboides, near the Groove for lodging the Tendon of the Peroneus Longus; and Fleshy, from the outer and back part of the Metatarsal Bone of the Little Toe.

*Insertion* : Into the anterior extremity of the Metatarsal Bone, and root of the first Bone of the Little Toe. Tab. XLII. Fig. 11. *f*.

*Action* : To bend this Toe.

## TRANSVERSALIS,

Vel *Metatarso-sub-phalangeus Transversalis Pollicis*.

*Origin* : Tendinous, from the under and fore part of the Metatarsal Bone of the Great Toe, and from the external Os Sesamoideum of the first Joint. It forms a Fleshy Belly, which runs transversely between the Metatarsal Bones and Flexor Muscles of the four Small Toes.

*Insertion* : Tendinous, into the under and outer part of the anterior extremity of the Metatarsal Bone of the Little Toe, and Ligament of the Toe next it. Tab. LVIII. Fig. 11. *l*.

*Action* : To contract the Foot, by bringing the roots of the outer and inner Toes towards each other.

INTEROSSEI,



## INTEROSSEI,

Vel *Metatarso-phalangei Laterales*.

The Interossei arise Tendinous and Fleishy from, and fill the spaces between, the Metatarsal Bones. Three, called *Interni*, vel *Plantares*, arise with single Heads, and are placed in the Sole; and four, termed *Externi*, vel *Bicipites*, vel *Dorsales*, arise with double Heads, and appear on both sides of the Foot.

The Insertion of all the Interossei is, by slender Tendons, into the Expansion sent off from the Tendons of the Lumbricales, and of the Extensor Muscles of the Toes.

## INTEROSSEI INTERNI.

Tab. LVIII. Fig. 12.

PRIOR, vel *Abductor Medii Digiti*.

*Origin*: From the inside of the Metatarsal Bone of the Middle Toe.

*Insertion*: Into the inside of the root of the first Bone of the Middle Toe.

*Action*: To pull the Middle Toe inwards.

PRIOR, vel *Abductor Tertii Digiti*.

*Origin*: From the inner and under part of the Metatarsal Bone of the third of the Small Toes.

*Insertion*: Into the inside of the root of the first Bone of the third of the small Toes.

*Action*: To pull the third of the small Toes inwards.

PRIOR, vel *Adductor Minimi Digiti*.

*Origin*: From the inside of the Metatarsal Bone of the Little Toe.

*Insertion*: Into the inside of the root of the first Bone of the Little Toe.

*Action*: To pull the Little Toe inwards.

INTEROSSEI EXTERNI, vel *Bicipites*.

Tab. LVIII. Fig. 12. Tab. XLIV. 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 Metatarsal Bones of the Fore Toe, and second of the small Toes.

*Insertion*: Into the outside of the root of the first Bone of the Fore Toe.

*Action*: To pull the Fore Toe outwards.

POSTERIOR, vel *Adductor Medii Digiti*.

*Origin*: From the contiguous sides of the Metatarsal Bones of the second and third of the small Toes.

*Insertion*: Into the outside of the root of the first Bone of the second of the small Toes.

*Action*: To pull this Toe outwards.

POSTERIOR, vel *Adductor Tertii Digiti*.

*Origin*: From the contiguous sides of the Metatarsal Bones of the third and fourth of the small Toes.

*Insertion*: Into the outside of the root of the first Bone of the third of the small Toes.

*Action*: To pull this Toe outwards.

## MOTIONS OF THE FOOT AND TOES.

The FOOT is *bent*, or its fore part *raised*, by the Tibialis Anticus, Extensor Digitorum Longus, Peroneus Tertius, and Extensor Proprius Pollicis;—*extended*, by the Gastrocnemii Externus et Internus, and Plantaris, assisted by the Tibialis Posticus, Peronei Longus et Brevis, Flexores Longus Digitorum et Pollicis;—the fore part *turned inwards*, by the Tibialis Anticus et Posticus, assisted by the Extensor Pollicis Proprius, Flexores Longus Digitorum et Pollicis;—*turned outwards*, by the Peronei Longus, Brevis, et Tertius, and Extensor Longus Digitorum. The inner edge *turned upwards*, by the Tibiales Anticus et Posticus;—the outer edge *raised*, by the Peronei Longus et Brevis. By being bent, extended, and moved laterally, the Foot performs its circular motion.

The TOES are *bent* at the *first Joint*, by the Lumbricales, Interossei, Flexores Digitorum Brevis et Longus, assisted, in the Little Toe, by the Flexor Brevis, et Abductor Minimi Digiti;—*extended*, by the Extensor Longus et Brevis Digitorum; and when the Toes are moved beyond a straight line with the Metatarsal Bones, the Lumbricales and Interossei assist the Extensors;—*moved laterally*, by the Interossei, according as they happen to be placed upon the Tibial or Fibular side of the Toes, and these assisted in the Little Toe by the Abductor Minimi Digiti;—*bent* at the *second Joint*, by the Flexor Brevis, and at the *third Joint*, by the Flexores Profundus et Accessorius Digitorum;—*extended*, by the Extensores Longus et Brevis Digitorum. The *Great Toe* is *bent*, by the Flexores Longus et Brevis Pollicis, assisted occasionally by the Adductor and Abductor;—*extended*, by the Extensores Proprius Pollicis et Brevis Digitorum;—*moved inwards*, by the Abductor,—and *outwards*, by the Adductor Pollicis, and Transversalis Pedis.

TABLE



## T A B L E XL.

Represents the APONEUROSSES or TENDINOUS MEMBRANES, which appear upon removing the Common INTEGUMENTS, and which cover the MUSCLES of the EXTREMITIES.

FIG. 1.

*Gives a View of the APONEUROSIS which covers the MUSCLES on the Fore Part of the SUPERIOR EXTREMITY.*

- A, The deltoid muscle.
- B, The aponeurosis sent off from the tendons of the muscles on the shoulder to cover the flexor muscles of the fore-arm.
- C, The aponeurosis continued from the fore-side of the arm, joined to a thicker and stronger one sent off from the tendon of the biceps flexor cubiti, to cover the muscles on the anterior part of the fore-arm.
- D, The continuation of this aponeurosis, covering the tendons of the flexor muscles of the hand and fingers, which, on account of its thinness, are seen shining through it.
- E, The aponeurosis palmaris, which is connected above, chiefly to the tendon of the palmaris longus, and to the anterior transverse ligament of the wrist, and below, to the roots of the four fingers by an equal number of double slips.
- F, The musculus abductor pollicis.
- G, The palmaris brevis.

FIG. 2.

*Shews the APONEUROSIS upon the Back Part of the SUPERIOR EXTREMITY.*

- A, The deltoid muscle.
- B, An aponeurosis covering the infra-spinatus, similar to one which covers the supra-spinatus.
- C, The aponeurosis which covers the back part of the arm, sent down from the tendons 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 aponeurosis on the back part of the fore-arm, continued from that which covers the posterior portion of the upper arm, and likewise from the tendon of the triceps extensor cubiti; many of the fibres intermixing with, and decussating each other, at the opposite sides of the fore-arm.
- E, A thick and strong portion of the aponeurosis on the

back part of the fore-arm, forming the ligamentum carpi annulare posterius.

The tendinous sheaths which cover the fingers are here but faintly represented.

FIG. 3.

*Gives a View of the APONEUROSIS upon the Fore Part of the INFERIOR EXTREMITY.*

- A, The thick and strong aponeurosis at the fore and outer part of the thigh, sent down from the muscles about the pelvis, and from the under end of the external oblique 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 attachment of the aponeurosis of the thigh to the head of the tibia.
- D, The aponeurosis of the inside of the thigh, fixed to the corresponding side of the tibia.
- E, F, The aponeurosis sent from the fascia of the thigh, and from the extensors of the leg, to cover the muscles on the fore part of the latter. This aponeurosis, like that on the thigh, is thick and strong at the outer, and becomes gradually thinner towards the inner part of the leg.
- G, H, Parts of this aponeurosis thicker and stronger than the rest, forming the superior and inferior ligaments of the tarsus.

FIG. 4.

*APONEUROSIS on the Back Part of the INFERIOR EXTREMITY.*

- A, The gluteus magnus.
- B, The aponeurosis of the back part of the thigh, arising from the tendons of the glutei, and from those of the loins, fixed to the linea aspera of the os femoris.
- C, The continuation of this aponeurosis covering the muscles, vessels, and nerves of the ham.
- D, That portion of the aponeurosis which covers the gemelli. From this part, the aponeurosis is continued down, and lost upon the foot.



TAB. 40.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.







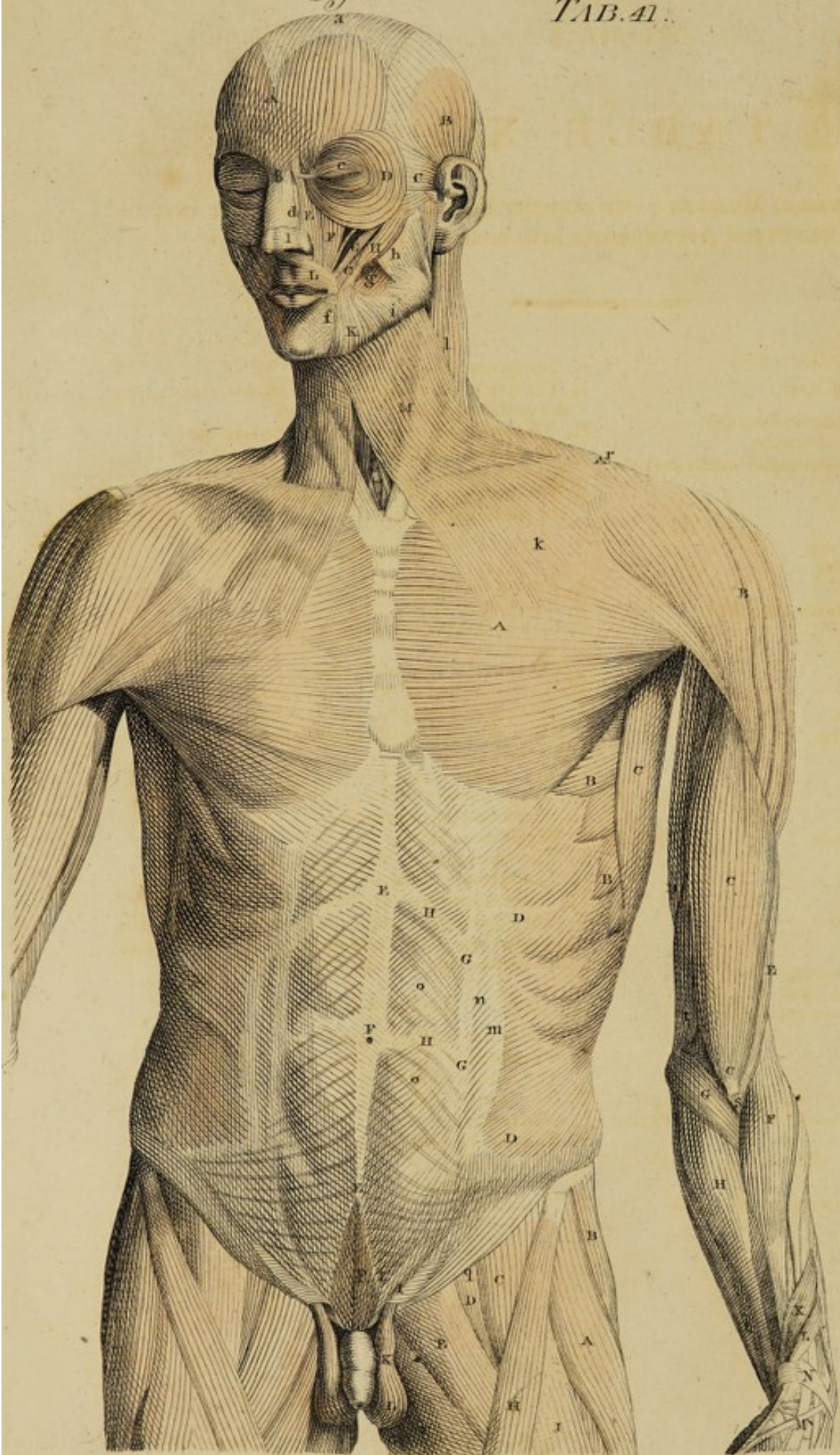






Fig 1

Fig 2





## TABLE XLI.

A VIEW of the First LAYER of MUSCLES on the Anterior Part of the BODY, after the INTEGUMENTS and APONEUROSES have been removed.

## FIG. 1.

## HEAD and NECK.

- A, The frontal part of the occipito-frontalis.
- a, The tendon of the occipito-frontalis.
- b, A fleshy slip sent from the occipito-frontalis over the root of the nose.
- B, The attollens aurem.
- C, The anterior auris.
- D, The orbicularis palpebrarum.
- c, The ciliary part of the orbicularis.
- d, The compressor naris.
- E, F, The levator labii superioris alæque nasi.
- G, The zygomaticus minor.
- H, The zygomaticus major.
- e, The levator anguli oris.
- I, The cartilage of the nose.
- K, The depressor anguli oris.
- f, The depressor labii inferioris.
- g, The buccinator.
- L, The orbicularis oris.
- h, The masseter.
- M, The platysma myoides.
- i, The upper end of that muscle.
- k, The under end.
- l, The sterno-cleido-mastoideus.

## TRUNK.

- A, The pectoralis major.
- B, B, Part of the serratus magnus.
- C, The edge of the latissimus dorsi.
- D, D, The obliquus descendens externus.
- E, E, The linea alba.
- F, The umbilicus.
- G, G, The linea semilunaris.
- m, The tendon at the outer side of the linea semilunaris.
- n, The obliquus internus, shining through the tendon of the obliquus externus.
- o, o, The rectus abdominis, also shining through the tendon.
- H, H, The tendinous intersections of the rectus.

- p, The pyramidalis.
- I, The ring of the external oblique muscle, transmitting the spermatic cord.
- K, The cremaster, covering the spermatic cord.
- L, The under end of that muscle, covering the tunica vaginalis testis.
- q, The lower edge of the external oblique muscle, called Poupart's Ligament.

## SUPERIOR EXTREMITY.

- A, Part of the trapezius.
- B, The deltoides.
- C, C, The biceps flexor cubiti; at the lower C, the aponeurosis cut off.
- s, The round tendon of the biceps.
- D, The long head of the triceps extensor cubiti.
- E, The edge of the brachialis internus.
- t, The third head of the triceps extensor cubiti, called Brachialis Externus.
- F, The supinator longus.
- G, The pronator radii teres.
- H, The flexor carpi radialis.
- I, The flexor sublimis.
- K, The extensor ossis metacarpi pollicis.
- L, The extensor primi internodii.
- M, The extensor secundi internodii.
- N, The ligamentum carpi annulare posterius crossing the extensors of the hand and fingers.—See the muscles on the hand in Tab. XLII. Fig. 1.

## INFERIOR EXTREMITY.

- A, The tensor vaginae femoris.
- B, The anterior edge of the gluteus maximus.
- C, The lower end of the iliacus internus.
- D, The lower end of the psoas magnus.
- E, The pectinalis.
- F, The adductor longus femoris.
- G, The gracilis.
- H, The sartorius.
- I, The rectus.

FIG.



FIG. 2.

- A, Continuation of the rectus femoris,  
 B, ——— of the sartorius,  
 C, ——— of the adductor longus femoris,  
 D, ——— of the gracilis,  
 E, ——— of the vastus externus, and,  
 F, ——— of the vastus internus.  
 a, Part of the patella.  
 b, The ligament fixing the patella to the tibia.  
 c, The tendons of the sartorius, gracilis, and semimembranosus.  
 d, The under end of the biceps flexor cruris.  
 G, The tibialis anticus;

- e, Its tendon.  
 H, The peroneus longus.  
 I, The extensor longus digitorum pedis.  
 f, The tendons of the extensor longus digitorum.  
 g, The extensor proprius pollicis.  
 K, The gastrocnemius externus.  
 L, L, The gastrocnemius internus.  
 M, The flexor longus digitorum pedis.  
 h, The tibialis posticus.  
 i, The tendo ACHILLIS and tendon of the plantaris.  
 N, N, The upper and under portions of the ligamentum tarsi annulare.  
 k, The ligaments retaining the tendons at the inner ankle.  
 O, O, The abductor pollicis.



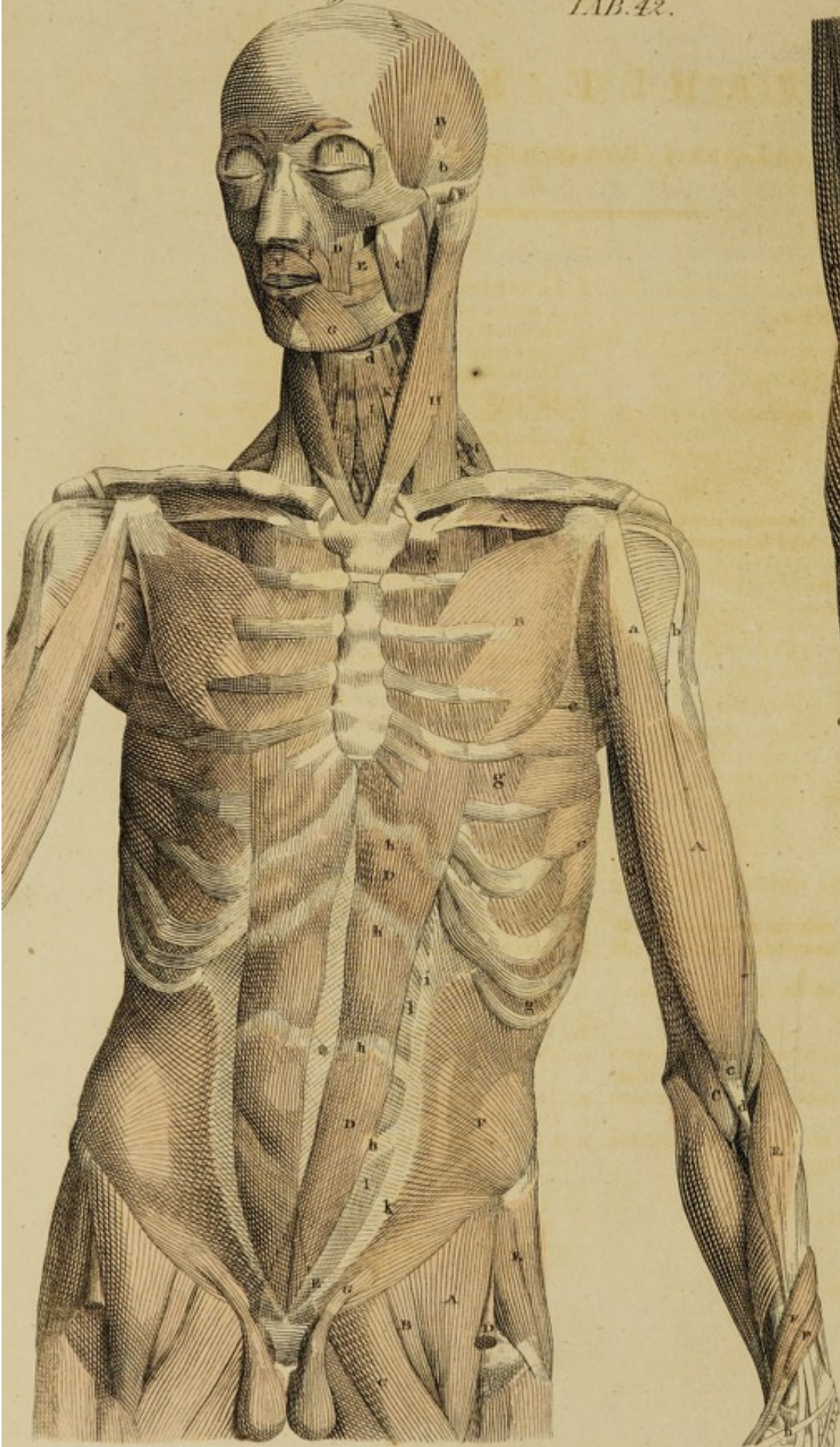




Fig 1

TAB. 42.

Fig 2





## TABLE XLII.

A VIEW of the Second LAYER of MUSCLES on the Anterior Part of the BODY.

## FIG. 1.

## HEAD and NECK.

- A, The corrugator supercilii.
- a, The levator palpebræ 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 oris.
- f, The nasalis labii superioris, at the upper side of which is a portion of the depressor labii superioris alæque nasi.
- G, The depressor labii inferioris.
- H, The sterno-cleido-mastoideus.
- I, The sterno-hyoideus.
- c, The trachea seen obscurely.
- K, The omo-hyoideus.
- L, The hyo-thyroideus.
- d, The os hyoides.
- M, The levator scapulæ.
- e, The scalenus medius.

## TRUNK.

- A, The subclavius.
- B, The pectoralis minor.
- C, C, The serratus magnus.
- g, &c. Intercostales interni, the tendinous fascia being removed.
- D, D, The rectus abdominis, with the tendon of the obliquus internus covering its outer edge;—on the right side it is entirely exposed.
- h, h, Tendinous intersections of the rectus abdominis.
- E, The pyramidalis.
- F, The obliquus internus.
- i, k, The tendon of the obliquus internus. Between i and k, the tendon splits into two layers, which inclose the rectus; from k to the pubis, the whole tendon goes before the rectus.
- l, l, A portion of the tendon of the obliquus internus remaining upon the outer edge of the rectus.
- G, The cremaster testis.

## SUPERIOR EXTREMITY.

- A, The biceps flexor cubiti.
- a, Its short head.

- b, Its long head.
- c, A section of the aponeurotic tendon of the biceps;
- d, Its round tendon.
- B, the coraco-brachialis.
- e, The subscapularis of the right side.
- f, The teres major of the right side.
- C, The under end of the brachialis internus.
- D, The long head of the triceps extensor cubiti.
- g, That part of the triceps called Brachialis Externus.
- E, Extensores carpi radiales, longior et brevior.
- Upper F, Extensor ossis metacarpi pollicis.—Lower F, Extensor primi internodii.
- h, Extensor secundi internodii pollicis.
- G, Flexor sublimis perforatus.

See also Tab. XLII. Fig. 2.

## PELVIS and INFERIOR EXTREMITY.

- A, The under end of the iliacus internus.
- B, The under end of the psoas magnus.
- C, The pectinalis.
- D, The cut end of the rectus femoris.
- E, The anterior edge of the gluteus medius.

## FIG. 2.

- A, The cruralis, with its tendinous fascia.
- B, The vastus internus.
- C, ——— externus.
- D, The cut tendon of the rectus fixed to the patella.
- E, The adductor longus femoris.
- F, The gracilis.
- G, The tendons of the gracilis and semitendinosus.
- H, The tendon of the biceps flexor cruris.
- I, The peroneus longus.
- a, The peroneus brevis.
- K, The extensor longus digitorum pedis.
- b, The tendons of the extensor longus digitorum.
- c, The peroneus tertius.
- d, The extensor proprius pollicis.
- e, The tendon of the extensor proprius pollicis.
- f, A branch of the tendon of the extensor proprius pollicis, not always found.
- L, The edge of the gastrocnemius internus.
- M, The edge of the flexor longus digitorum pedis.
- N, The tendons of the tibialis posticus, and flexor longus digitorum pedis.
- O, The flexor brevis digitorum pedis.



## T A B L E XLIII.

A VIEW of the Third LAYER of MUSCLES on the Anterior part of the Body.

FIG. 1.

## HEAD and NECK.

- A, The insertion of the abductor oculi.
- a, The adductor oculi of the right side.
- B, The insertion of the levator oculi.
- C, The trochlea, and part of the tendon of the obliquus superior.
- D, The obliquus inferior oculi, immediately above which is the insertion of the depressor oculi.
- E, The depressor labii superioris alæque nasi.
- F, The orbicularis oris.
- G, The buccinator.
- H, The levator labii inferioris.
- b, Part of the pterygoideus externus.
- c, Part of the pterygoideus internus.
- I, The sterno-thyroideus.
- K, The thyro-hyoideus.
- d, The os hyoides.
- e, The thyroid cartilage.
- f, The cricoid cartilage, with the two crico-thyroid muscles arising from it.
- g, The trachea.
- h, Part of the pleura.
- L, The scalenus anticus.
- M, N, The scalenus medius.
- i, A portion of the trachelo-mastoideus.
- O, The rectus capitis anterior major.
- k, The longus colli.
- l, The constrictor pharyngis inferior.

## TRUNK.

- A, A, &c. Anterior portions of the intercostales externi.
- B, B, &c. Anterior part of the intercostales interni.
- C, The fleshy part of the transversalis abdominis.
- F, Its tendon.
- D, D, The cut edge of that part of the tendon of the transversalis muscle which joins the obliqui, and passes before the rectus and pyramidalis.
- E, E, That part of the tendon which passes behind the rectus, and is covered by
- G, G, The posterior layer of the tendon of the obliquus internus.
- m, m, The remains of the tendons of the oblique muscles, forming the linea alba.
- H, The umbilicus.
- I, The spermatic vessels passing under the edge of the transverse muscle.
- n, The peritoneum.

- o, o, A print of the two umbilical arteries, and
- p, Of the urachus upon the peritoneum.
- y, The penis cut across, in which are seen the corpora cavernosa penis et urethræ.

## SUPERIOR EXTREMITY.

- A, The subscapularis;
- a, Its tendon.
- B, The teres major of the right side;
- b, Its tendon.
- C, The coraco-brachialis.
- D, H, The brachialis internus.
- E, The brachialis externus.
- F, The extensor carpi radialis breviar.
- G, The extensor carpi radialis longior.
- I, The flexor digitorum profundus.
- K, The flexor longus pollicis.
- L, The flexor brevis pollicis.

See also Tab. LVIII. Fig. 3.

## PELVIS, and INFERIOR EXTREMITY.

- A, The gluteus minimus.
- B, The iliacus internus.
- C, The psoas magnus.
- D, The obturator externus.
- E, The adductor brevis.
- F, The adductor magnus.
- G, The gracilis.

FIG. 2.

- A, The adductor brevis.
- B, C, The adductor magnus.
- D, The gracilis.
- a, The semimembranosus;
- b, Its insertion into the tibia.
- E, The under end of the biceps flexor cruris.
- F, F, The os femoris.
- G, The patella.
- H, The tubercle of the tibia.
- I, I, The edges of the semilunar cartilages.
- K, The peroneus longus.
- c, The peroneus brevis.
- L, The tibialis posticus.
- M, The flexor longus digitorum pedis.
- N, The tendon of the tibialis posticus.
- d, The tendon of the flexor longus digitorum pedis.
- e, The flexor digitorum accessorius.
- O, The extensor brevis digitorum pedis.



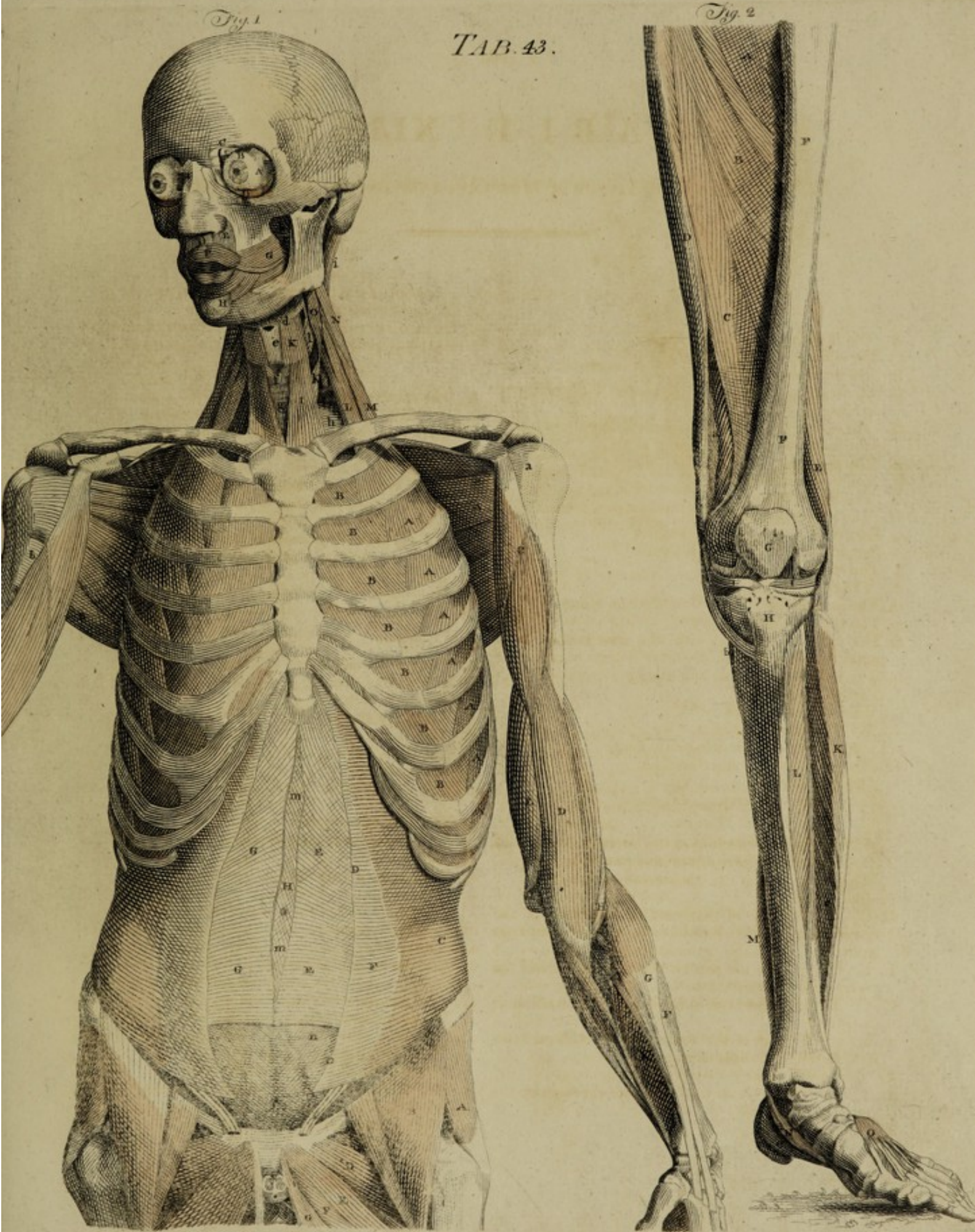








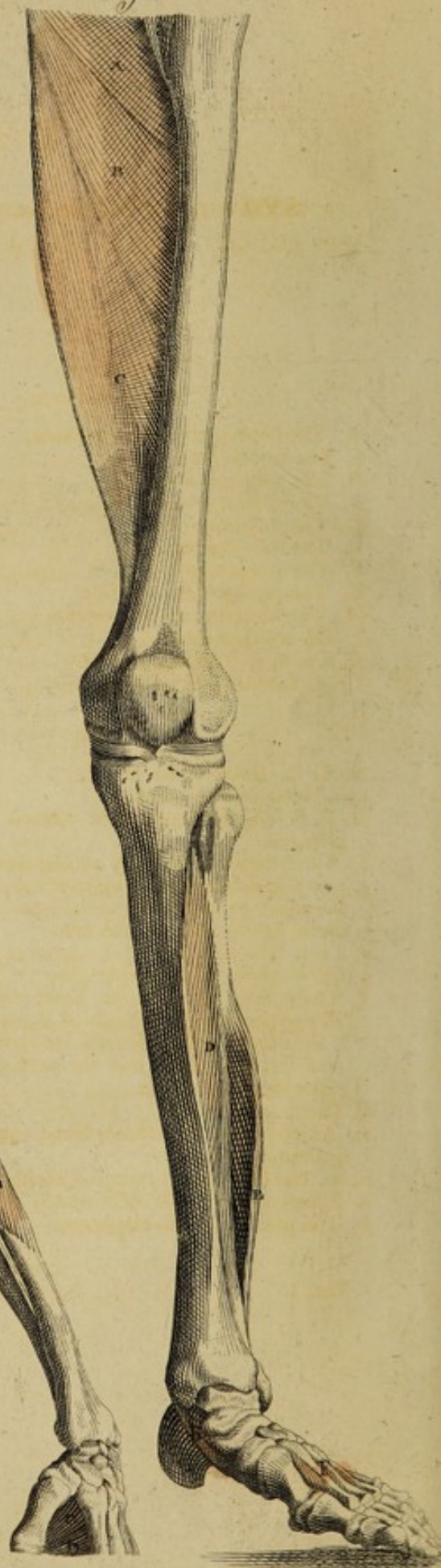
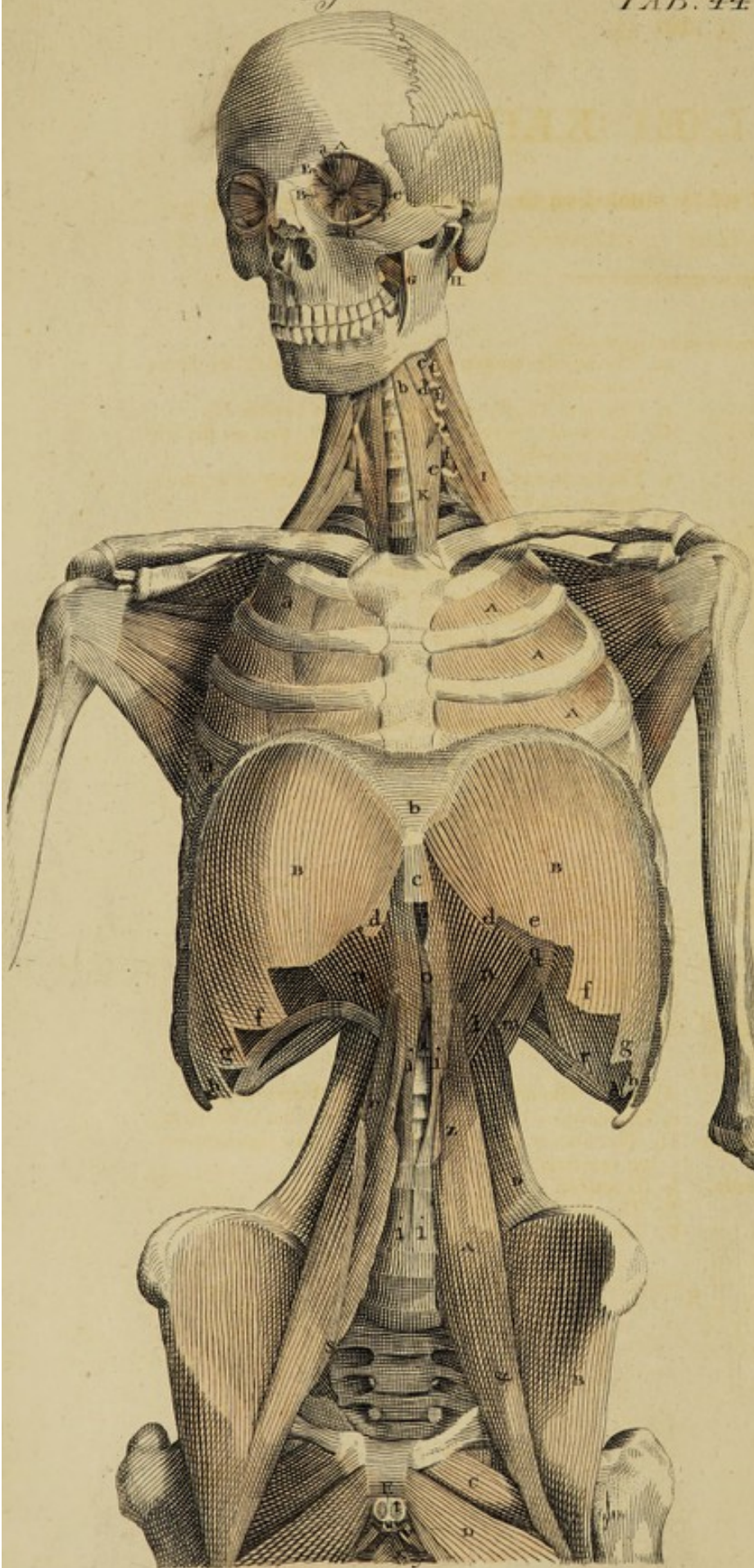




Fig. 1

TAB. 44.

Fig. 2





## TABLE XLIV.

and A VIEW of the Fourth LAYER of MUSCLES situated on the Anterior Part of the Body.

---

FIG. 1.

## HEAD and NECK.

- A, The levator palpebræ superioris.
- a, The levator oculi.
- B, The adductor oculi.
- C, The abductor oculi.
- D, The depressor oculi.
- E, The obliquus superior.
- F, The obliquus inferior.
- G, The pterygoideus internus.
- H, The obliquus superior capitis.
- I, The scalenus medius.
- K, b, c, d, e, The longus colli.
- f, f, f, Intertransversales colli.

## TRUNK.

- A, A, A, Intercostales interni.
- a, a, Intercostales externi.
- B, B, b, The convex part, or thoracic side of the diaphragm;
- b, The anterior point of its middle tendon.
- c, d, e, f, g, h, The fleshy origins of the diaphragm, from the cartilago ensiformis, peritoneum, seventh, eighth, ninth, tenth, and eleventh ribs.
- i, i, i, i, The first heads, or tendinous crura of the inferior muscle of the diaphragm;
- k, 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 ends of the first heads and the psoæ muscles, but are not represented here.
- l, The fourth head;
- m, Another head, sometimes found connected with the quadratus lumborum;
- n, n, The fleshy crura from the joining of these heads.
- o, Fibres crossing each other under,
- p, The passage for the esophagus.

- q, The middle tendon on the left side, with its fibres decussating.
- r, Origin of the diaphragm, from the twelfth rib.
- C, The psoas parvus on the right side, that on the left being removed.
- s, The tendon of the psoas parvus passing down to be fixed to the brim of the pelvis.
- D, The quadratus lumborum.
- E, A section of the penis.
- t, The corpus cavernosum penis of the left side.
- u, The corpus cavernosum urethræ.
- v, The erector penis.
- w, The accelerator urinæ.
- x, The sphincter ani.
- y, The transversalis perinei.

## SUPERIOR EXTREMITY.

- A, The subscapularis.
- B, The supinator brevis.
- C, The flexor brevis pollicis.
- D, The adductor pollicis.

See also Tab. LVIII. Fig. 4.

## PELVIS, and INFERIOR EXTREMITY.

- A, The psoas magnus.
- z, Its origin, chiefly from the lumbar vertebræ.
- §, Its passage out of the abdomen, along with,
- B, The iliacus internus.
- C, The obturator externus.
- D, The upper part of the adductor magnus.

FIG. 2.

- A, B, C, The continuation of the adductor magnus.
- a, The insertion of the psoas magnus and iliacus internus.
- D, The tibialis posticus, the interosseous ligament being removed;
- b, Its tendon.
- E, The peroneus brevis.
- F, The interossei externi.



# TABLE XLV.

Represents the Common 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 Anterior Part of the Body.

FIG. 1.

*A HAIR, viewed with a Microscope.*

- A, The root.
- B, The bearded body.
- C, The small extremity.

FIG. 2.

*The Cuticle of the Hand, with the Nails adhering to it.*

FIG. 3.

*A Toe, with the Cuticle taken off, to shew the Villous appearance of the Exterior Surface of the Skin.*

FIG. 4.

*A Piece of Skin, according to RUYSCH, with the Papillæ Pyramidales, as they appear to the naked Eye.*

FIG. 5.

*The Piece of Skin, Fig. 4. seen with a Microscope.*

FIG. 6.

*The Corpus Reticulare of the Skin, seen with the naked Eye.*

FIG. 7.

*The Corpus Reticulare, Fig. 6. viewed with a Microscope.*

FIG. 8.

*The MUSCLES, GLANDS, &c. of the Left Side of the FACE and NECK, after the Common INTEGUMENTS and PLATYSMA MYOIDES have been removed.*

- a, The frontal muscle.
- b, The temporal muscle, on which the larger branches of the temporal artery are seen.
- c, c, The orbicularis palpebrarum.
- d, The orbicularis oris.

- e, The levator labii superioris.
- f, The levator anguli oris.
- g, The zygomaticus major.
- h, The depressor anguli oris.
- i, The depressor labii inferioris.
- k, The buccinator.
- l, The masseter.
- m, The parotid gland;
- n, Its duct.
- o, o, The facial artery.
- p, p, The facial vein.
- q, The anterior heads of the digastrici.
- r, The inferior maxillary gland.
- s, The sterno-hyoidei.
- t, t, The omo-hyoideus.
- u, Continuation of the facial vein.
- v, The sterno-mastoideus.
- w, The trapezius.
- x, The levator scapulæ.
- y, The scalenus medius.
- z, The scalenus anticus.
- α, One of the nerves of the superior extremity.

FIG. 9.

*On the RIGHT SIDE, the MUSCLES immediately under the Common Integuments, on the Anterior Part of the BODY, are represented; on the LEFT SIDE, the MUSCLES are seen, which come in view when the Exterior Set have been removed.*

For the Explanation of these Muscles, see Tab. XLI. and XLII. to which add here the First Layer of Muscles on the

## RIGHT FORE-ARM AND HAND.

- W, The supinator radii longus;
- X, Its tendon.
- Y, The pronator radii teres.
- Z, The flexor carpi radialis;
- α, Its tendon.
- β, The palmaris longus;

γ, Its







FIG. 8.



FIG. 9.

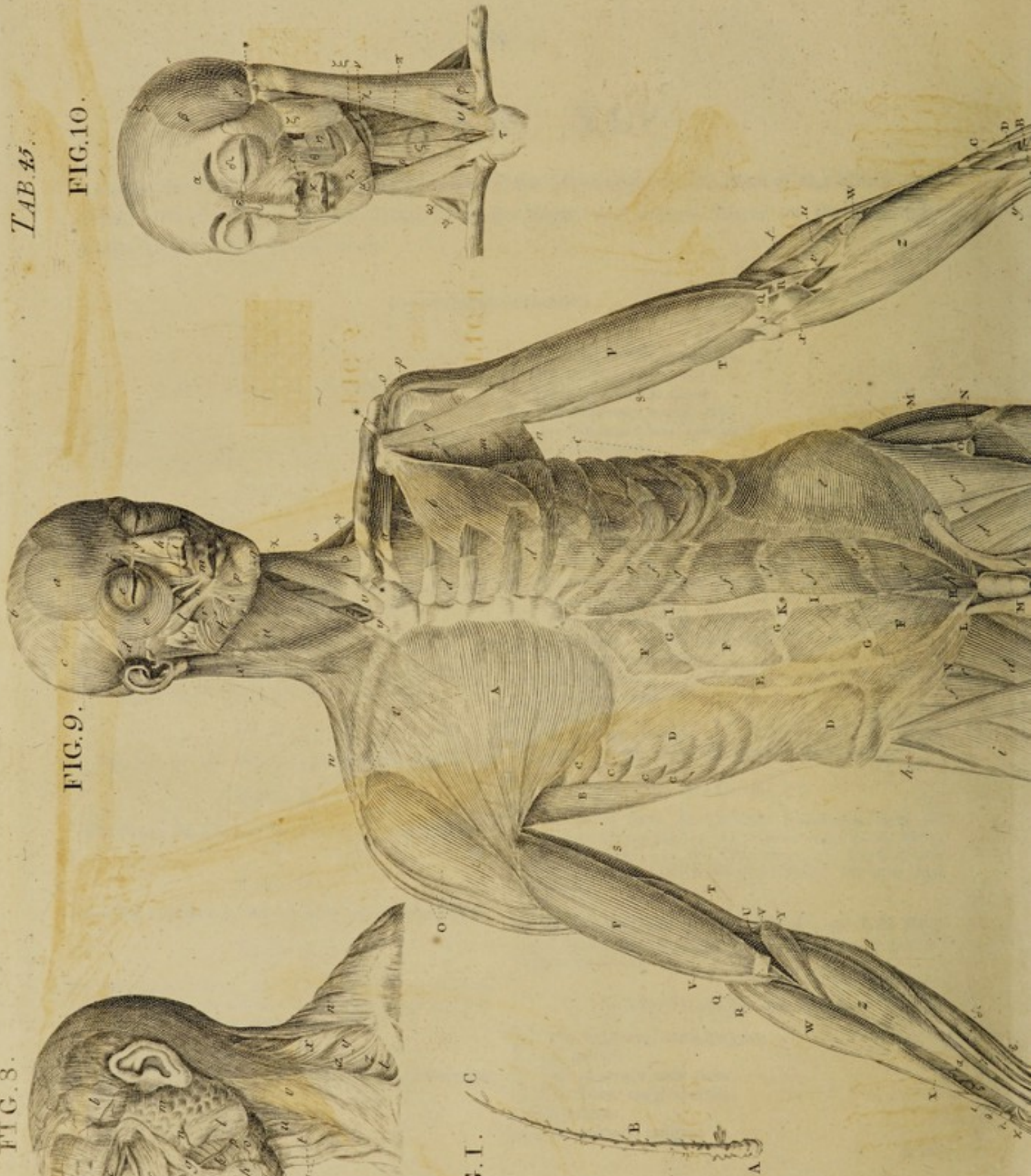


FIG. 1.

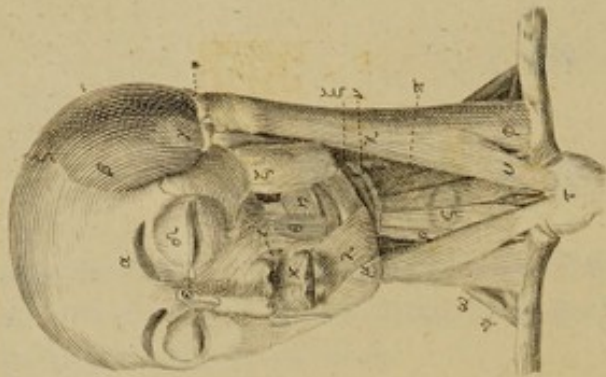






FIG. 2.



FIG. 3.



FIG. 4.



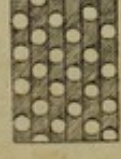
FIG. 6.



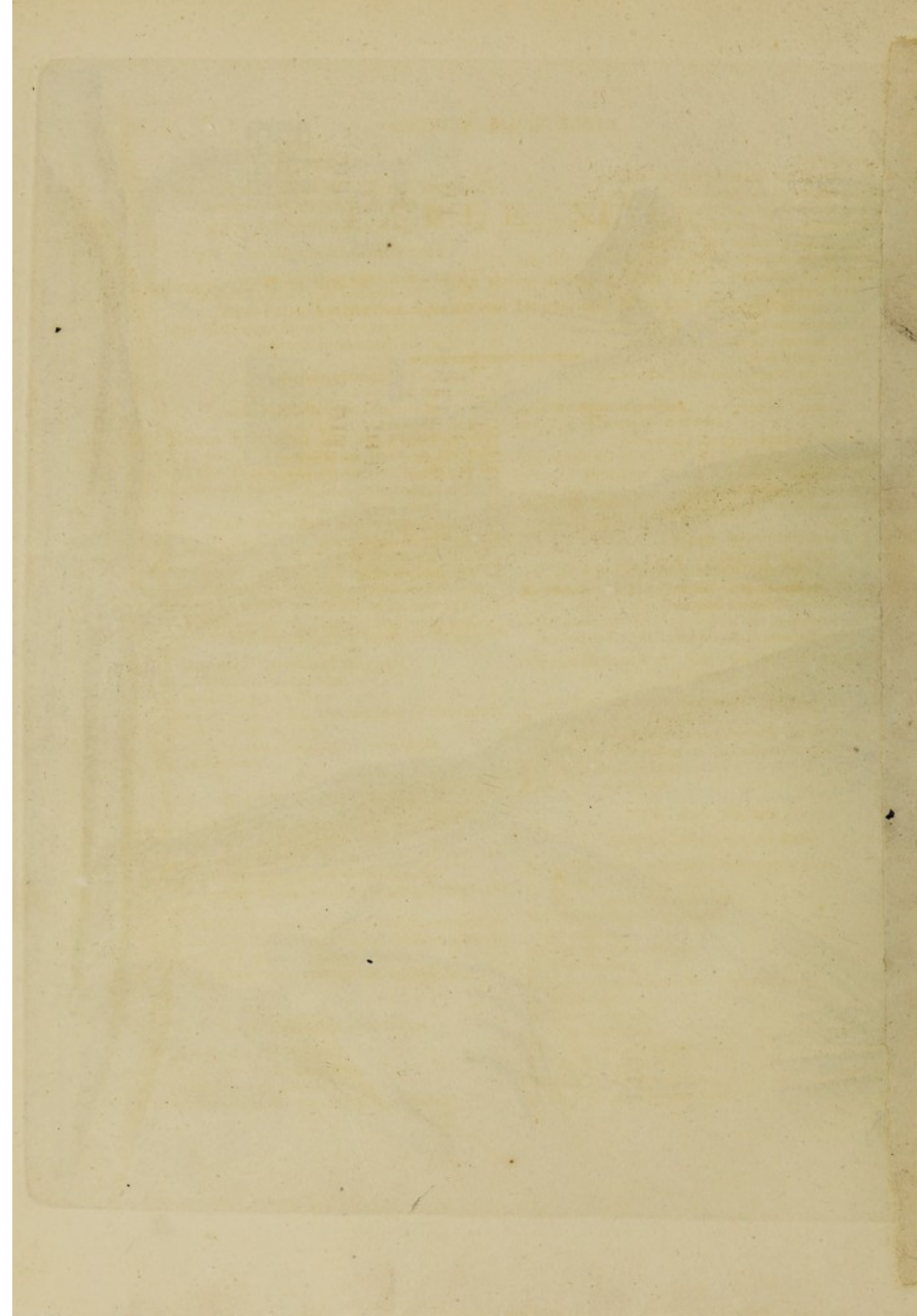
FIG. 5.



FIG. 7.









## FIG. 10.

*The Second LAYER of MUSCLES of the FACE and NECK, after the First has been removed.*

See them described Tab. XLII.

## LEFT FORE-ARM AND HAND of Fig. 9.

- γ, Its tendon.
- δ, δ, Parts of the flexor digitorum sublimis.
- ε, The tendon of the flexor carpi ulnaris.
- ζ, The flexor longus pollicis;
- η, Its tendon, inserted into the last joint of the thumb.
- θ, Part of the pronator radii quadratus.
- ι, Part of the extensor primi et secundi internodii pollicis;
- κ, Their tendons;
- λ, Their annular ligament.
- μ, The tendinous aponeurosis of the palm.
- ν, The transverse ligament of the wrist.
- ξ, The palmaris brevis.
- ο, Part of the flexor primi internodii pollicis.
- π, The abductor pollicis;
- ρ, Its tendon, forming an aponeurosis with the extensors.
- σ, Part of the flexor secundi internodii.
- τ, The annular sheath of the tendon of the flexor longus pollicis.
- υ, Part of the adductor pollicis.
- φ, The tendon of the adductor indicis, and first lumbricalis.
- χ, The abductor minimi digiti.
- ψ, The flexor brevis minimi digiti.
- 1. 2. 3. The annular sheaths of the tendons of the flexors of the fore-finger. These ligaments are also represented in the other fingers.
- 4. The tendons of the lumbricales and interossei, which may also be seen on the sides of the other fingers.

- ι, The extensor carpi radialis longior.
- υ, Part of the extensor carpi radialis brevior.
- ν, The supinator radii brevis.
- ω, The cut extremity of the pronator radii teres.
- ξ, Part of the flexor carpi ulnaris;
- γ, Its tendon.
- z, The flexor digitorum sublimis;
- A, Its tendons.
- B, Part of the pronator radii quadratus.
- C, The extensors of the thumb.
- D, The flexor pollicis longus;
- E, Its tendon, near its insertion.
- F, The flexor ossis metacarpi pollicis.
- G, The flexor brevis pollicis.
- H, The flexor parvus minimi digiti.
- I, The abductor minimi digiti.
- K, K, The first and second lumbricales; the third and fourth are also in view, but unlettered.
- L, The tendons of the lumbricales and interossei, which may also be seen on the sides of the other fingers.
- M, The tendons of the flexor digitorum sublimis, divided near their insertion, for the passage of the tendons of the flexor profundus, marked N.

X 2



# T A B L E XLVI.

Represents the Parts situated under those shewn in Fig. 9. Tab. XLV. together with the  
EYE-LIDS, LACRYMAL GLAND and DUCTS, and MUSCLES of the EYE.

## FIG. 1.

THE Muscles represented here are explained Tab. XLIII. and XLIV. excepting those on the right side of the Trunk, and on the under part of the Fore-arms and Hands.

### LEFT FORE-ARM AND HAND.

- S, The extensor carpi radialis longior.
- T, Part of the extensor carpi radialis brevior.
- U, The supinator radii brevis.
- V, The flexor digitorum profundus;
- W, Its tendons;
- X, X, Their insertions into the last joint of each of the fingers.
- Z, The transverse ligament of the wrist.
- y, y, y, y, The four lumbricales.
- α, The flexor longus pollicis;
- β, Its tendon, inserted into the last joint of the thumb.
- γ, The flexor brevis pollicis.
- ι, The adductor ossis metacarpi minimi digiti.
- ζ, The os pisiforme.

### RIGHT SIDE OF THE TRUNK.

- A, A, The intercostales externi.
- B, B, The intercostales interni.
- θ, The mammary artery and vein.
- i, i, i, i, The triangularis, vel sterno-costalis.
- κ, κ, The surface of the lungs appearing through the pleura.
- λ, λ, λ, The peritoneum, through which the bowels appear obscurely.—Between this and the linea alba, the vestige of the epigastric artery is seen.
- μ, The spermatic cord, coming out behind the peritoneum.

### RIGHT FORE-ARM AND HAND.

- c, The supinator radii brevis.
- d, The pronator radii quadratus.
- e, The flexor brevis pollicis.
- f, The sesamoid bones into which it is inserted.

- g, The adductor pollicis.
- h, i, k, l, The seven interossei.

## FIG. 2.

Described Tab. LXXXIII. Fig. 9.

*Shews the Lacrymal Canals, the Teguments and Bones being cut away.*

## FIG. 3.

Described Tab. LXXXIII. Fig. 8.

*Represents the Palpebræ inverted, to obtain a View of the Lacrymal Canals.*

## FIG. 4.

*The two EYE-LIDS cut from each other, at the exterior CANTHUS.*

- A, A, The interior membrane of the eye-lids.
- B, The caruncula lacrymalis.
- C, D, The edges of the eye-lids, with the small orifices of the excretory ducts of the sebaceous glands.
- E, The puncta lacrymalia.
- F, F, The eye-lashes.

## FIG. 5. 6. 7. 8. and 9.

*Shew the MUSCLES of the EYE.*

- A, A, The two optic nerves before they meet.
- B, These nerves conjoined.
- C, The nerve of the right eye.
- D, The attollens palpebram;
- d, Its tendon.
- E, The attollens oculum.
- F, The abductor.
- G, The obliquus superior, vel trochlearis;
- H, I, Its tendon.
- K, The adductor.
- L, The deprimens.
- M, The obliquus minor.
- Z, The ball of the eye.
- X, Part of the frontal bone.
- y, Part of the maxillary bone.



# TABLE III

Summary of the results of the experiments conducted during the year 1911.

## EXPERIMENT I

Investigation of the effect of temperature on the rate of reaction.

The rate of reaction was determined by measuring the volume of gas evolved at different temperatures. The results are shown in the following table:

Temperature (°C)	Volume of gas evolved (cc)
10	1.2
20	2.4
30	3.6
40	4.8
50	6.0

From these results it is seen that the rate of reaction increases with increasing temperature. This is in accordance with the general principle that the rate of a chemical reaction increases with increasing temperature.

The following table shows the effect of the concentration of the reactants on the rate of reaction.

Concentration of reactants	Rate of reaction
Low	Slow
High	Fast

It is evident that the rate of reaction is directly proportional to the concentration of the reactants. This is in accordance with the law of mass action.



FIG. 1.



FIG. 2.

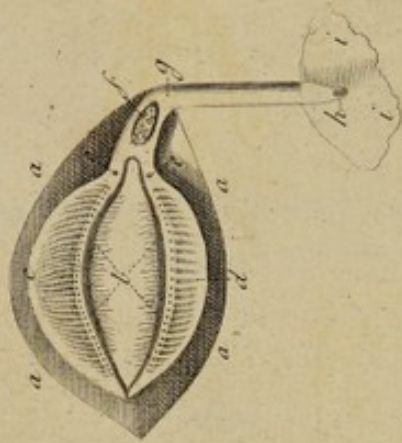


FIG. 3.

FIG. 4.

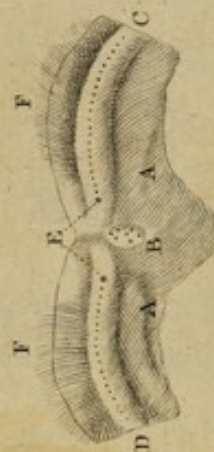


FIG. 8.

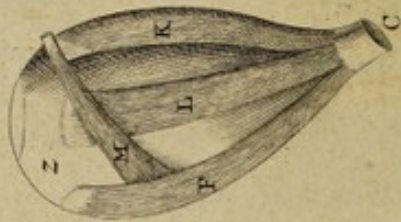






FIG. 5.

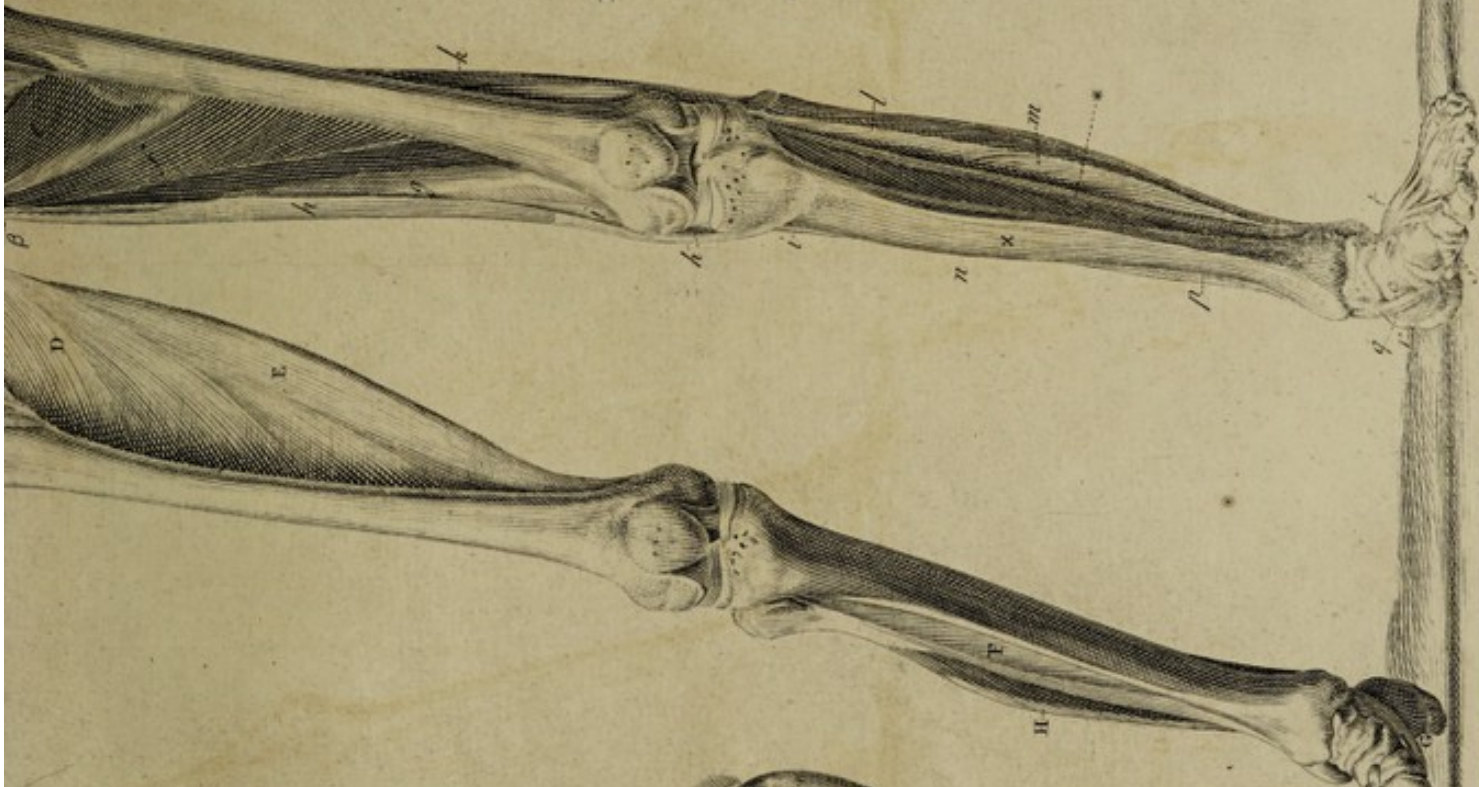
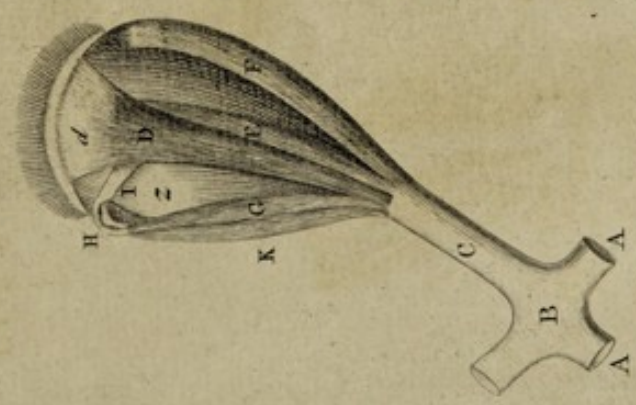


FIG. 6.

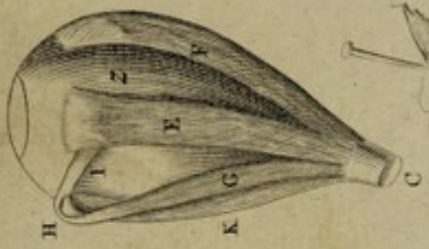


FIG. 7.

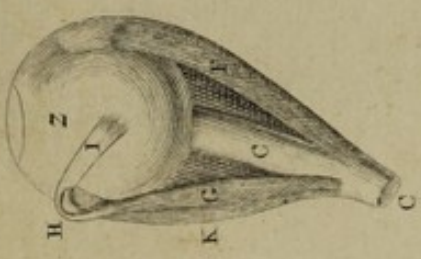
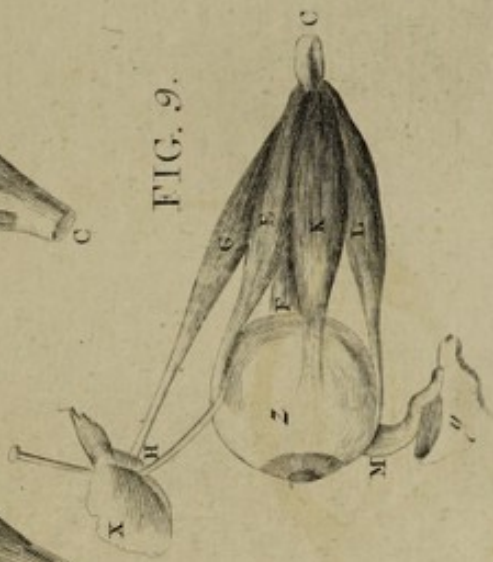


FIG. 9.









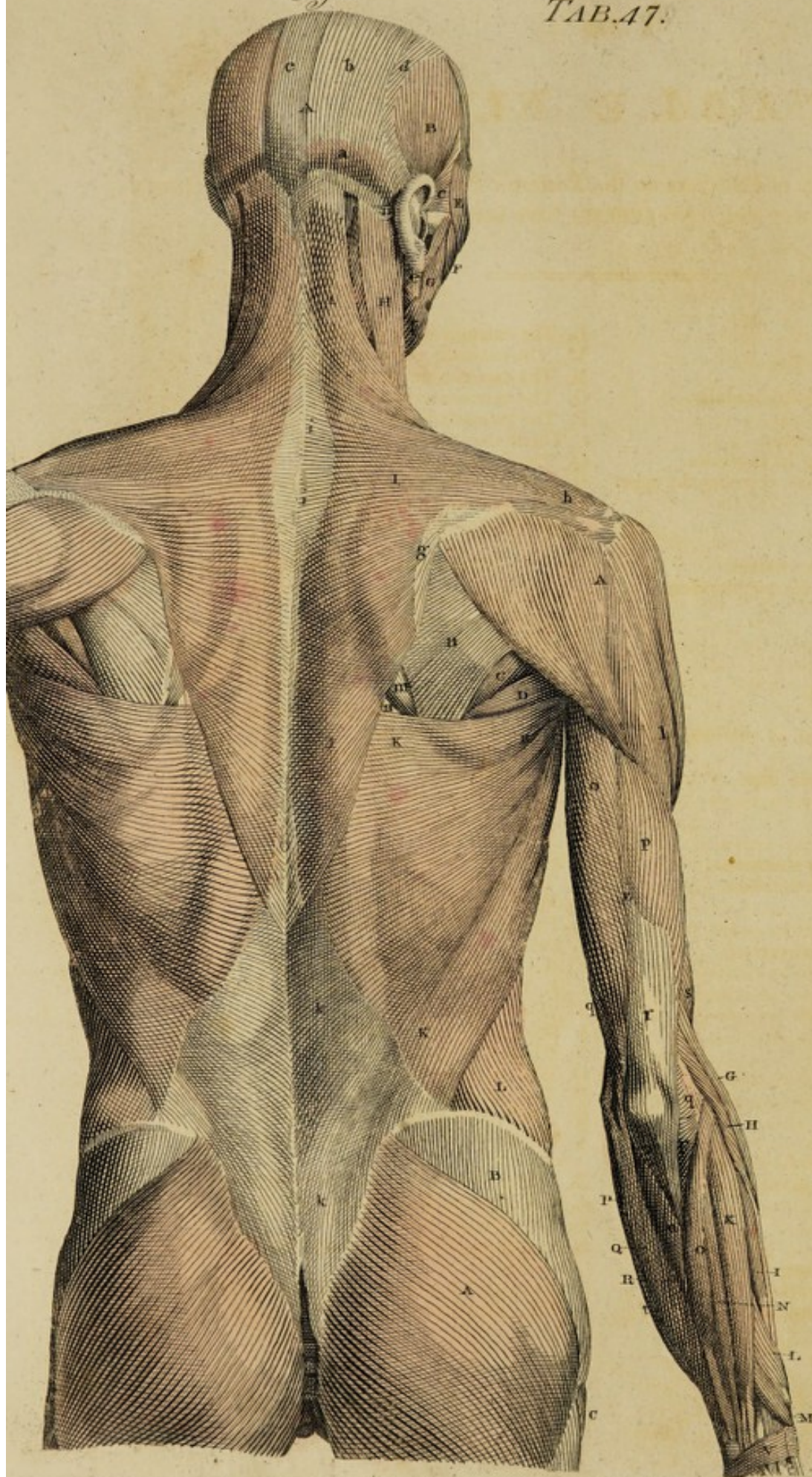




*Fig 1*

*TAB. 47.*

*Fig 2*





## T A B L E XLVII.

A VIEW of the FIRST LAYER of MUSCLES on the Posterior Part of the BODY, after the INTEGUMENTS and APONEUROSES have been removed.

FIG. 1.

## HEAD, NECK, and TRUNK.

- A, The occipital part of the occipito-frontalis;  
*a*, The fleshy,  
*b*, The tendinous part of this muscle;  
*c*, A tendinous membrane joining its two sides;  
*d*, Part of the tendinous membrane, covering the upper end of the temporal muscle.  
 B, The attollens aurem.  
 C, The anterior auris.  
 D, A small part of the retrahentes aurem.  
 E, The back part of the orbicularis palpebrarum.  
 F, The zygomaticus major.  
 G, The masseter.  
*e*, The pterygoideus internus.  
*f*, The platysma myoides.  
 H, The sterno-cleido-mastoideus.  
 I, I, I, The trapezius.  
*g*, *h*, Its insertion into the spine of the scapula and outer end of the clavicle.  
*i*, *i*, Its tendinous portion, in the nape of the neck, called *Ligamentum Nuchæ*.  
 K, K, K, The latissimus dorsi;  
*k*, *k*, Its tendon,  
 L, Part of the obliquus externus abdominis.  
*m*, Part of the insertion of the rhomboides.  
*n*, Part of the sacro-lumbalis.

## SUPERIOR EXTREMITY.

- A, The deltoides;  
*l*, Its insertion into the os humeri.  
 B, The infra-spinatus.  
 C, The teres minor.  
 D, The teres major.  
 E, The triceps extensor cubiti.  
*o*, The long,  
*p*, The short head of the triceps.  
*q*, The third head, called *Brachialis Externus*.  
*r*, The common tendon of these three heads.  
*s*, The brachialis internus.  
 F, The anconeus.  
 G, The supinator radii longus.  
 H, The extensor carpi radialis longior.  
 I, The extensor carpi radialis brevior.  
 K, The extensor digitorum communis.

- L, The extensor ossis metacarpi pollicis.  
 M, The extensor primi internodii pollicis.  
 N, The extensor proper to the little finger.  
 O, The extensor carpi ulnaris.  
 P, The palmaris longus.  
*t*, The flexor sublimis perforatus.  
 Q, The flexor carpi ulnaris.  
 R, *u*, Part of the flexor profundus perforans.  
*v*, The ligamentum carpi annulare posterius.  
 See the Muscles on the hand, Tab. LVIII. Fig. 5.

## PELVIS, and INFERIOR EXTREMITY.

- A, The gluteus maximus.  
 B, Part of the gluteus medius.  
 C, The edge of the tensor vaginæ femoris.

FIG. 2.

- A, The under end of the gluteus maximus.  
 B, The vastus externus.  
*a*, The adductor magnus femoris.  
 C, C, The gracilis.  
*b*, Part of the sartorius.  
 D, The long head of the biceps flexor cruris;  
 E, Its short head.  
*c*, The insertion of the biceps into the fibula.  
 F, The semitendinosus.  
 G, H, The semimembranosus.  
 I, The edge of the vastus internus.  
*d*, Part of the plantaris.  
 K, K, The gastrocnemius externus.  
 L, L, L, The edge of the gastrocnemius internus.  
 M, The tendo ACHILLIS.  
*e*, The tendon of the plantaris.  
 N, The peroneus longus.  
 O, The peroneus brevis.  
 P, The flexor longus pollicis pedis.  
 Q, The tendon of the peroneus brevis.  
*f*, The tendon of the peroneus longus passing into the sole.  
 R, The tendon of the extensor longus digitorum.  
*g*, The tendon of the peroneus tertius.  
 S, The abductor minimi digiti.  
*h*, The ligament common to the long and short peronei muscles.  
*i*, The ligament proper to each of these two muscles.  
*k*, The ligamentum tarsi annulare.



## T A B L E XLVIII.

## A VIEW of the SECOND LAYER of MUSCLES on the Posterior Part of the BODY.

FIG. 1.

## HEAD.

- A, The temporalis exposed, by removing its tendinous aponeurosis.  
 a, The tendon of the temporalis, passing under the zygoma.  
 b, The pterygoideus internus.  
 B, The masseter.  
 c, The mylo-hyoideus.

## NECK.

- A, d, The levator scapulæ.  
 C, The splenius capitis et colli.  
 D, The upper end of the complexus.

## TRUNK.

- A, e, The rhomboides major.  
 B, The rhomboides minor.  
 C, The serratus posticus superior of the left side.  
 D, f, The serratus posticus inferior.—f, The part from which the latissimus dorsi was cut.  
 E, The under part of the serratus magnus.  
 F, Part of the sacro-lumbalis.  
 G, Part of the longissimus dorsi.  
 H, Part of the spinalis dorsi.  
 I, I, The broad tendon common to the latissimus dorsi and serratus posticus inferior.  
 K, The back part of the obliquus internus abdominis.  
 L, L, The intercostales externi.  
 M, The coccygeus.  
 N, The levator ani.  
 O, The sphincter ani.

## SUPERIOR EXTREMITY.

- B, The supra-spinatus.  
 C, The infra-spinatus.  
 D, The teres minor.  
 E, The teres major.  
 F, The triceps extensor cubiti;  
 g, Its long head;  
 h, Its short head.  
 G, G, Part of the third head, named *Brachialis Externus*.  
 i, The common tendon of the triceps, inserted into the olecranon.  
 H, Part of the brachialis internus.  
 I, The anconeus.

- K, The extensor carpi radialis longior.  
 L, The extensor carpi radialis brevior.  
 M, The supinator radii brevis.  
 N, The extensor ossis metacarpi pollicis.  
 O, The extensor primi internodii pollicis.  
 P, The extensor secundi internodii pollicis.  
 Q, The indicator.  
 R, The flexor profundus.  
 S, The flexor carpi ulnaris.  
 T, A small share of the flexor sublimis.

See also Tab. LVIII. Fig. 6.

## PELVIS, and INFERIOR EXTREMITY.

- A, The gluteus medius.  
 B, The pyriformis.  
 C, The gemini.  
 D, The tendon of the obturator internus, passing between the gemini.  
 E, The quadratus femoris.  
 F, The vastus externus.  
 G, G, The adductor magnus femoris.  
 H, The semitendinosus.  
 I, The gracilis.

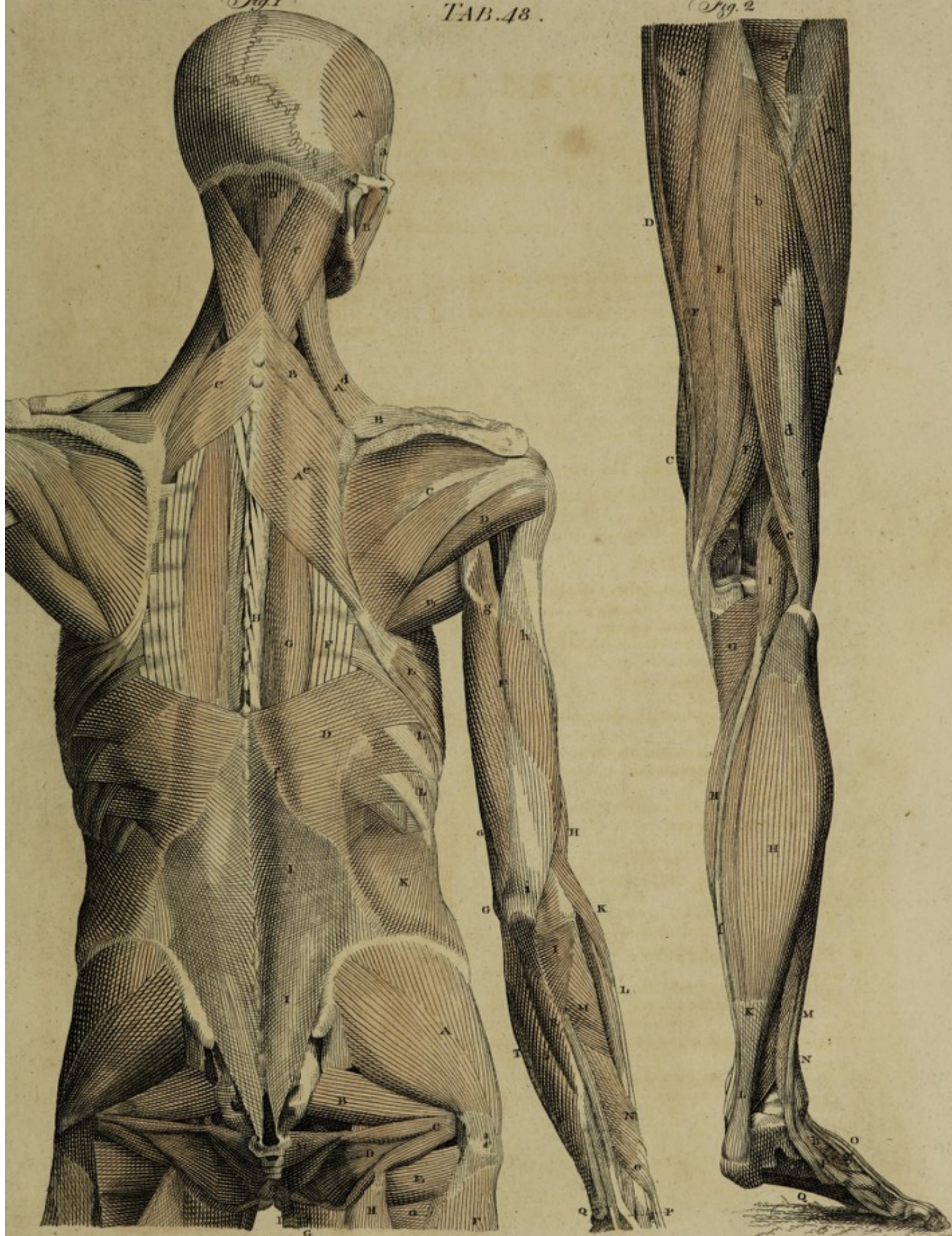
FIG. 2.

- a, a, The continuation of the adductor magnus femoris, and of,  
 A, A, The vastus externus.  
 B, The biceps flexor cruris;  
 b, Its long head;  
 c, c, Its short head.  
 d, The common tendon of the two heads.  
 C, A small portion of the vastus internus.  
 D, Continuation of the gracilis, and of,  
 E, The semitendinosus.  
 F, F, The semimembranosus.  
 e, e, The cut heads of the gastrocnemius externus.  
 G, The popliteus.  
 H, H, The soleus.  
 I, f, The plantaris;—f, Its tendon.  
 K, The cut tendon of the gastrocnemius externus.  
 L, The tendo ACHILLIS, with that of the plantaris adhering to it, fixed to the os calcis.  
 M, The peroneus longus passing to the sole.  
 N, The peroneus brevis.  
 O, The tendons of the extensor digitorum longus.  
 P, The tendon of the peroneus brevis.  
 g, The tendon of the peroneus tertius.  
 h, The extensor brevis digitorum.  
 Q, The flexor brevis digitorum.



Fig. 1

Fig. 2









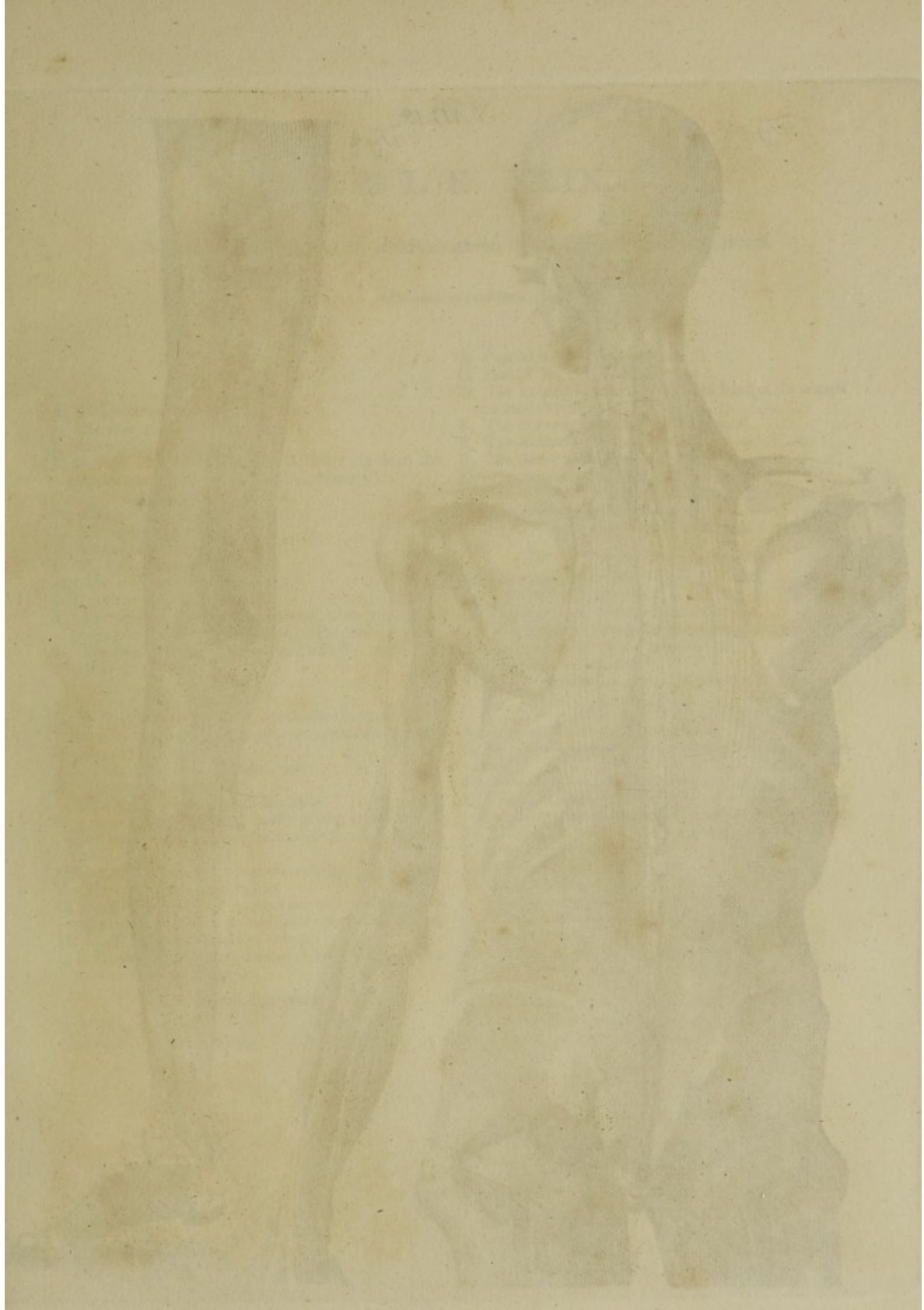
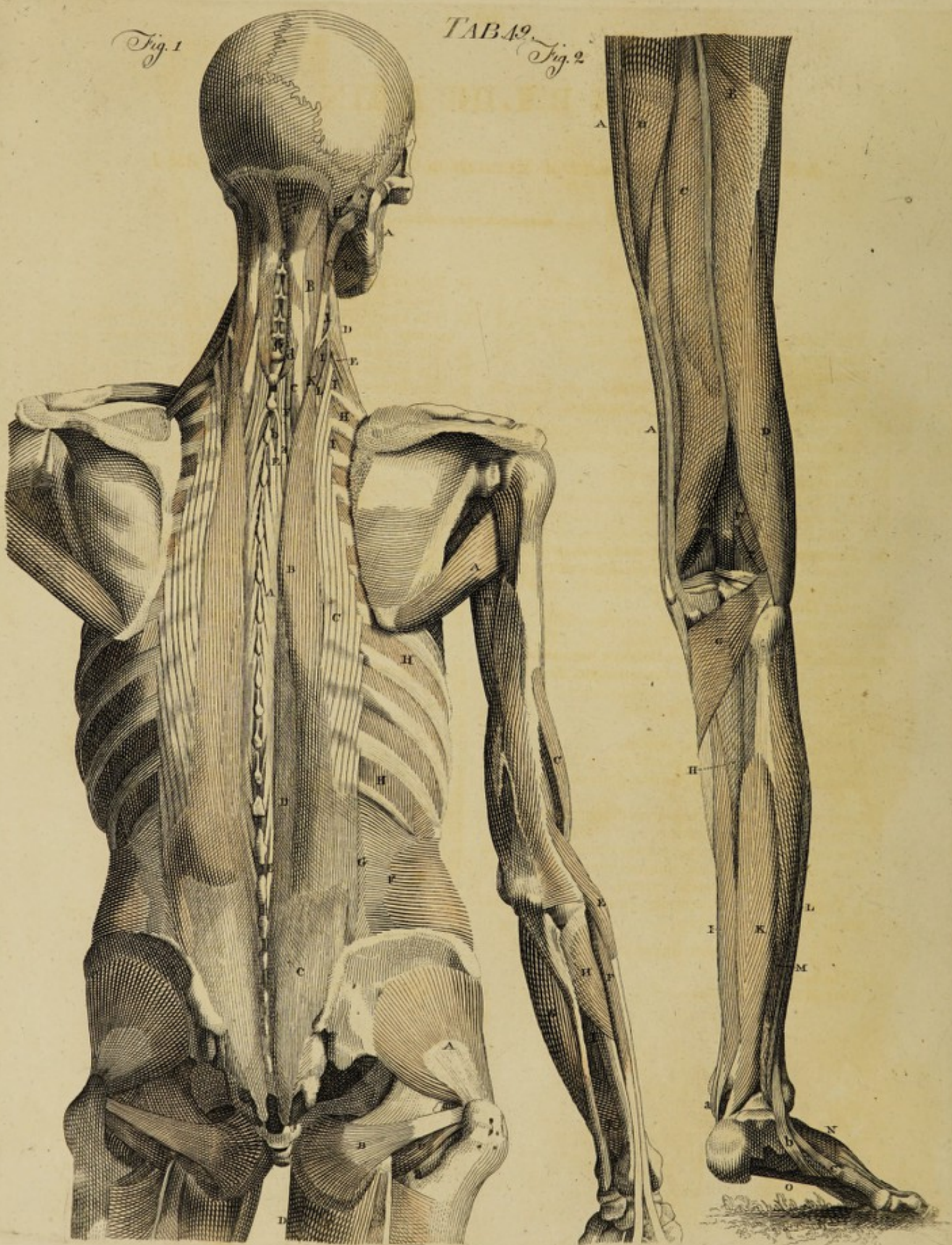




Fig. 1

TAB. 49. Fig. 2





## TABLE XLIX.

A View of the Third LAYER of MUSCLES on the Posterior Part of the Body.

## FIG. 1.

## HEAD and NECK.

- A, The back part of the buccinator.  
*a*, The pterygoideus internus.  
*b*, The mylo-hyoideus.  
 B, B, *c*, *d*, The complexus.—*d*, A fleshy slip from the spinous process of the first dorsal vertebra.  
 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 colli.  
 K, The upper end of the longissimus dorsi, joining the trachelo-mastoideus and cervicalis descendens.  
 L, The fleshy slip from the sacro-lumbalis, called *Cervicalis Descendens*.

## TRUNK.

- A, E, E, The spinalis dorsi.—Between the spinous processes of the dorsal and lumbar vertebræ, the interspinales muscles appear.  
*a*, *b*, Part of the semi-spinalis dorsi.  
 B, The longissimus dorsi.  
 C, The tendons of the sacro-lumbalis.  
*c*, A tendon covering, and partly giving origin to, the common head of the longissimus dorsi and sacro-lumbalis.  
 D, Part of this tendon running across the longissimus dorsi.  
 F, The transversalis abdominis.  
 G, the inner layer of the aponeurosis common to the serratus posticus inferior, and obliquus internus abdominis.  
 H, H, H, The intercostales externi.  
 I, I, Portions of the intercostales externi, called by ALBINUS *Levatores Costarum*.

## SUPERIOR EXTREMITY.

- A, The teres major.  
*a*, Part of the subscapularis.

- B, Part of the coraco-brachialis.  
 C, Part of the brachialis internus.  
 D, The brachialis externus, or third head of the triceps extensor cubiti.  
 E, The extensor carpi radialis longior.  
 F, The extensor carpi radialis brevior.  
 G, The flexor profundus.  
 H, The supinator radii brevis.  
 I, Part of the flexor longus pollicis.  
 K, The pronator radii quadratus.

See also Tab. LVIII. Fig. 7.

## PELVIS, and INFERIOR EXTREMITY.

- A, The gluteus minimus.  
 B, The obturator internus.  
 C, The tendon of the obturator externus.  
*a*, The insertion of the iliacus internus and psoas magnus.  
 D, The upper end of the gracilis.  
 E, The semimembranosus.  
 F, F, The adductor magnus femoris.

## FIG. 2.

- A, A, A continuation of the gracilis.  
 B, B, ————— of the adductor magnus femoris, and, ————— of the semimembranosus.  
 C, ————— of the semimembranosus.  
 D, The short head of the biceps flexor cruris.—The letter is placed over the part from which the long head was cut.  
 E, E, The cut heads of the gastrocnemius externus.  
 F, The origin of the plantaris.  
 G, The popliteus.  
 H, The tibialis posticus.  
 I, The flexor longus digitorum pedis.  
 K, The flexor longus pollicis pedis.  
 L, The peroneus longus.  
*a*, The tendon of the tibialis posticus.  
*b*, The tendon of the peroneus longus passing to the sole.  
 M, The peroneus brevis.  
*c*, The tendon of the peroneus brevis.  
 N, The extensor brevis digitorum pedis.  
 O, Part of the flexor longus digitorum pedis.



## TABLE L.

A VIEW of the Fourth LAYER of MUSCLES on the Posterior Part of the Body.

FIG. 1.  
HEAD *and* NECK.

- A, The rectus capitis posterior minor.  
B, \_\_\_\_\_ major.  
C, The obliquus capitis superior.  
D, \_\_\_\_\_ inferior.  
E, The scalenus medius.  
F, The upper end of the multifidus spinæ.  
G, G, The interspinales colli.  
H, H, The intertransversales colli posteriores.  
I, I, I, The semispinalis colli.

TRUNK.

- A, A, The semispinalis dorsi.  
B, B, The multifidus spinæ.—On the left side of the neck and trunk, the semispinalis colli and semispinalis dorsi are raised, by which a full view of this muscle is obtained.  
C, C, &c. 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 pleura.

- c, c, c, The intertransversalis dorsii.  
d, d, d, The interspinales dorsii.  
F, F, F, The quadratus lumborum.  
G, G, G, The intertransversales lumborum.  
H, H, H, The interspinales lumborum.

SUPERIOR EXTREMITY.

- A, The subscapularis.  
B, The supinator radii brevis.  
C, The pronator radii quadratus.

INFERIOR EXTREMITY.

- A, The iliacus internus.  
a, The psoas magnus.  
B, The obturator externus.  
C, The tendon of the iliacus internus and psoas magnus.  
D, D, The adductor magnus femoris.

FIG. 2.

- A, A, A, The continuation of the adductor magnus femoris.—The shaded part in the middle of the muscle represents the impression made by the semimembranosus.  
B, The tibialis posticus.  
C, The peroneus brevis.



Fig. 1

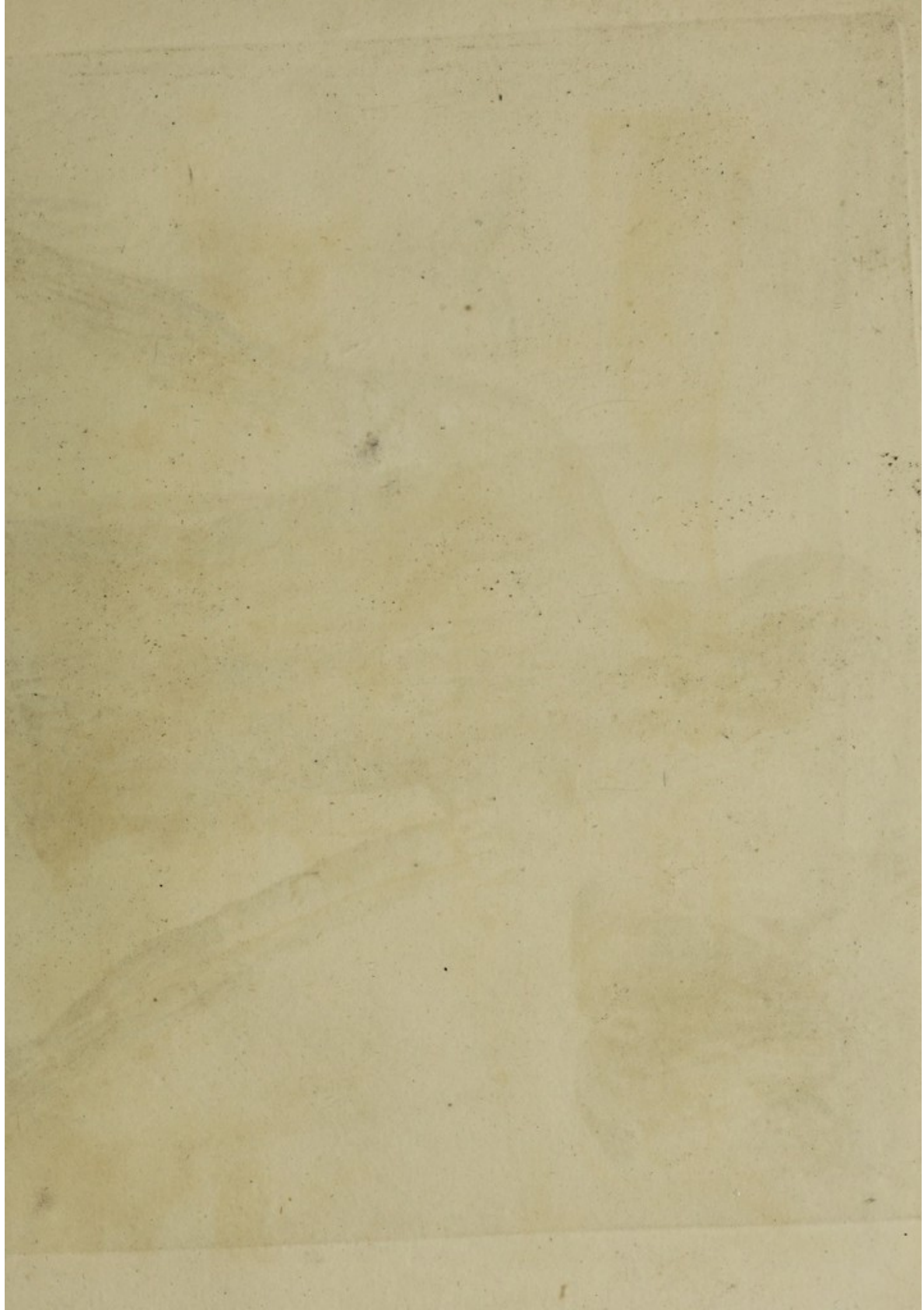
TAB 50. Fig. 2











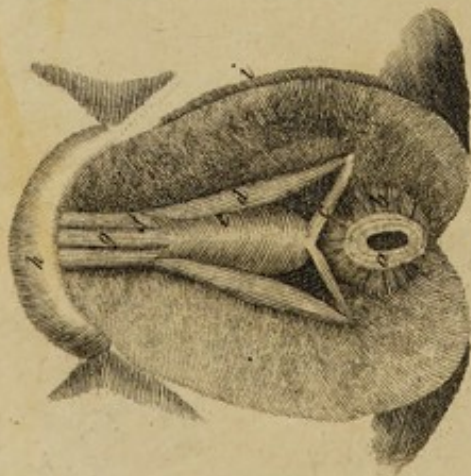


TAB. II.

FIG. I.



FIG. 2.





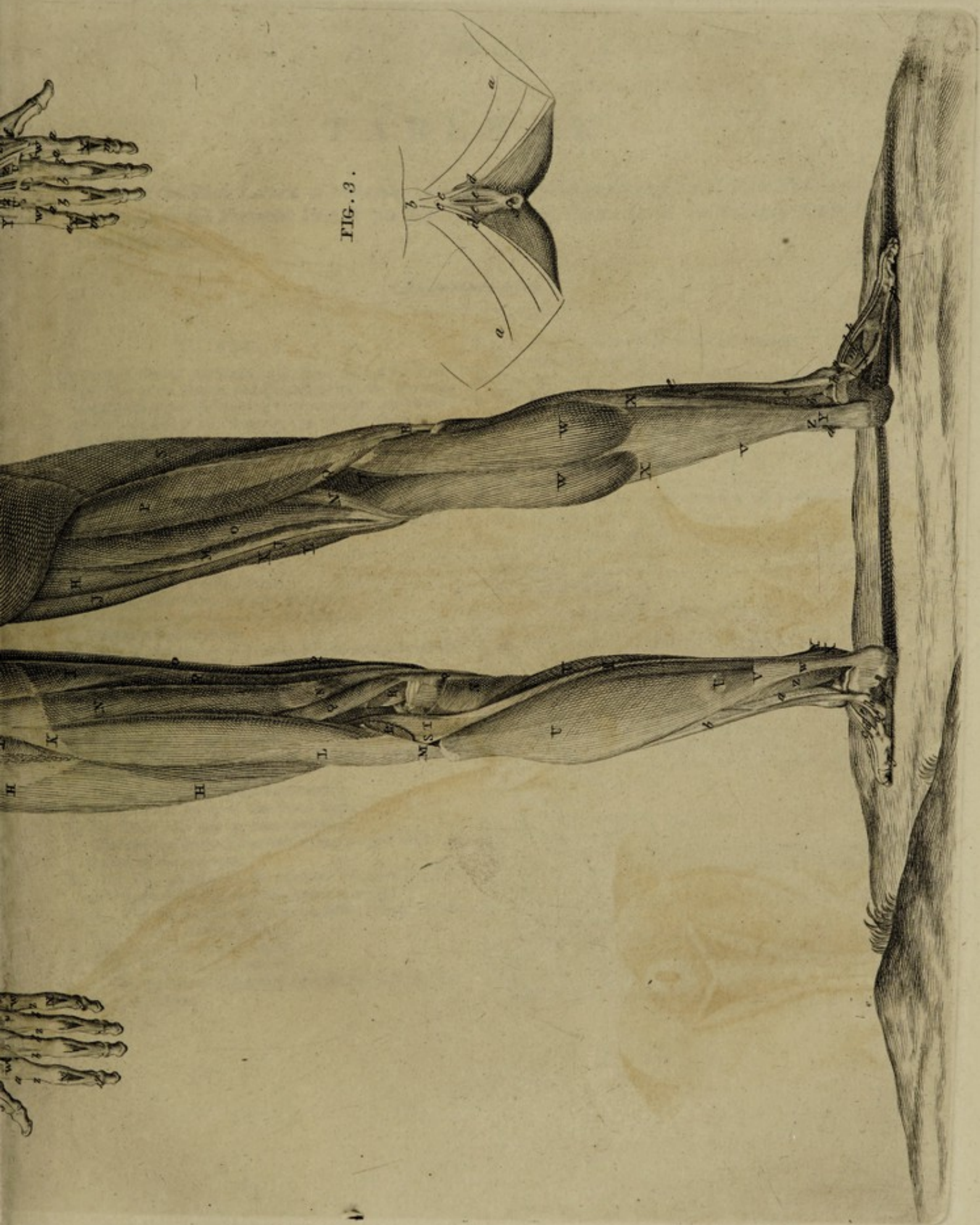


FIG. 3.



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## TABLE LI.

A VIEW of the First LAYER of MUSCLES on the Right, and Second LAYER of MUSCLES 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 Posterior Part of the TRUNK and EXTREMITIES, the MUSCLES immediately under the Common INTEGUMENTS are shewn; on the Left Side of the Posterior Part of the TRUNK and EXTREMITIES, are seen the MUSCLES which come in View when the Exterior Set has been removed.*

All the Muscles represented in this Figure are explained in Tab. XLVII. and XLVIII. excepting those on the under parts of the Fore-arm, and on the Hand.

## RIGHT FORE-ARM and HAND.

- H, The supinator radii longus.
- I, The extensor carpi radialis longior.
- K, ————— brevior.
- L, Part of the anconeus.
- M, Part of the flexor profundus which comes from the ulna.
- N, Part of the palmaris longus.
- O, Part of the flexor sublimis.
- P, The flexor carpi ulnaris.
- Q, The extensor carpi ulnaris.
- R, The tendons of the extensor digitorum communis, belonging to the little finger.
- S, The extensor digitorum communis;
- T, Its tendons, going to the other fingers;
- U, U, Their joinings by cross tendons.
- V, The tendon of the indicator, going to join with the tendon of the extensor.
- W, W, The tendons of the extensor communis, joined with those of the lumbricales and interossei;
- X, X, The extremities of these tendons, joined to the bones of the second phalanx.
- Y, The abductor minimi digiti.
- Z, Z, Z, The interossei externi.
- a, a, The tendons of the anterior interossei, joining with the lumbricales.

VOL. I.

- b, b, b, The tendons of the posterior interossei.
- c, The abductor indicis.
- d, The tendon of the extensor secundi internodii pollicis.
- e, The annular ligament of the wrist.
- f, The ligament of the extensor carpi ulnaris.
- g, A ligament for the extensores ossis metacarpi, et primi internodii pollicis.
- h, The extensor primi internodii pollicis.
- i, The extensor ossis metacarpi pollicis.
- k, The tendons of the three extensors of the thumb.
- l, The adductor pollicis.
- m, m, The tendons of the interossei and lumbricales, after joining with the tendons of the extensor digitorum communis, and receiving additions from it, fixed to the third phalanx.

## LEFT FORE-ARM and HAND.

- L, L, The extensor carpi radialis longior.
- M, M, ————— brevior.
- N, The anconeus.
- O, The supinator radii brevis.
- P, The extensor ossis metacarpi pollicis.
- Q, ————— primi internodii pollicis.
- R, ————— secundi internodii pollicis.
- S, The conjoined tendons of the extensors, fixed to the last bone of the thumb.
- T, The indicator.
- U, The flexor profundus perforans.
- V, The flexor carpi ulnaris.
- W, W, The tendons of the extensor communis, cut off where they are about to join with those of the lumbricales and interossei.
- X, X, The tendons of the extensor communis, fixed to the second phalanx.
- Y, The abductor minimi digiti.
- Z, Z, Z, The tendons of the anterior interossei, joining with those of the lumbricales.
- a, The tendon of the first lumbricalis.

Y

b, b, b, The



- b, b, b*, The tendons of the posterior interossei.  
*c, c, c*, The interossei.  
*d*, The prior indicis.  
*e*, The abductor indicis.  
*f*, The adductor pollicis.  
*g, g*, The tendons of the interossei and lumbricales, after joining with the tendons of the extensor communis, fixed to the third phalanx.

FIG. 2.

MUSCLES about the Root of the PENIS and Under End of the INTESTINUM RECTUM of a CHILD.

These Muscles are described in Tab. LVI. Fig. 9.

FIG. 3.

MUSCLES of the External Parts of GENERATION, &c. in the FEMALE.

- a, a*, A section of the thighs.  
*b*, The clitoris.  
*c, c*, The crura clitoridis.  
*d, d*, The erectores clitoridis.  
*e, e*, The sphincter vaginae.  
*f*, The sphincter ani, connected with the sphincter vaginae.

See also the Muscles in a Lateral View of the Female Parts of Generation, Vol. II.



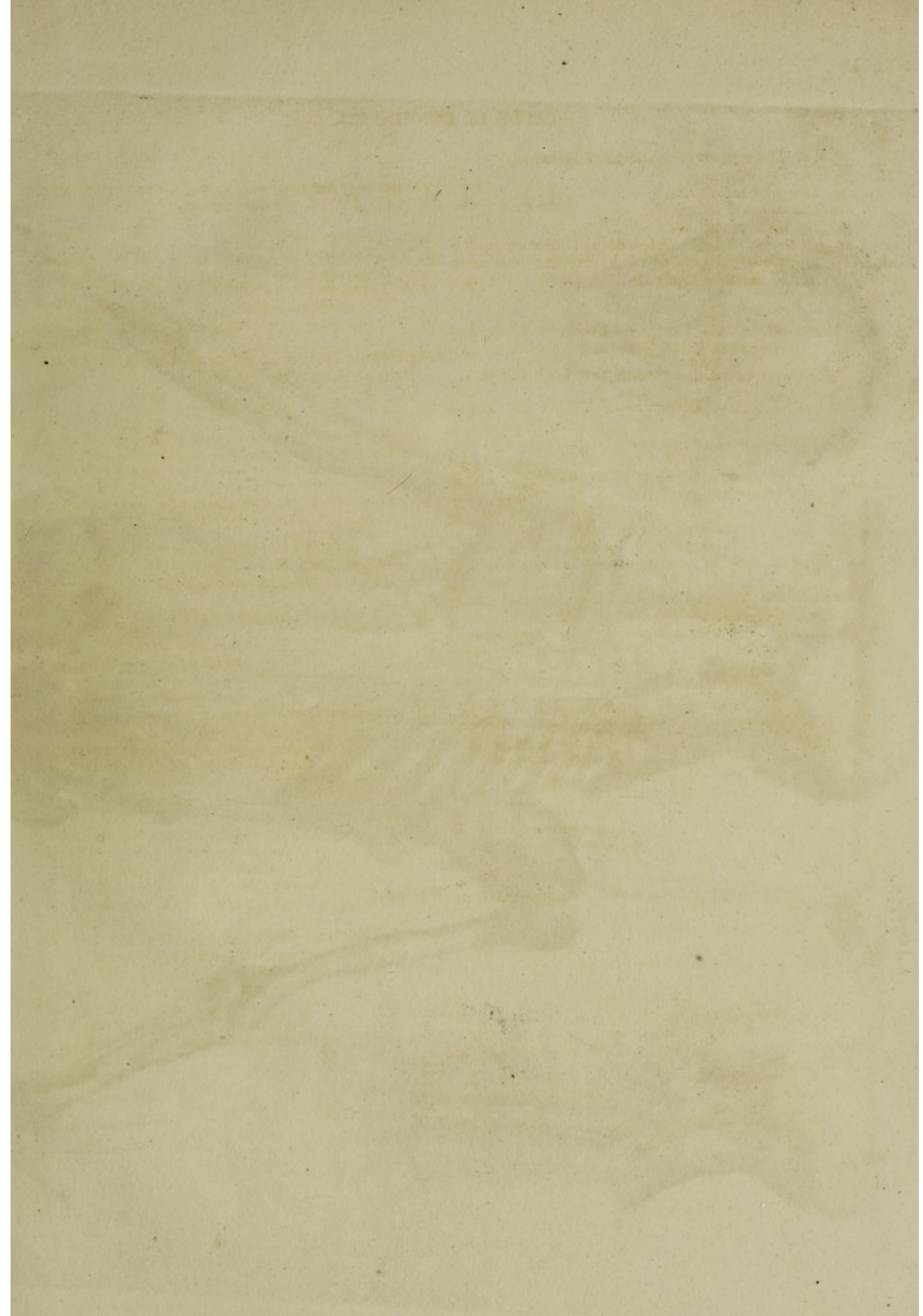




FIG. 1. *TAB. 52.*

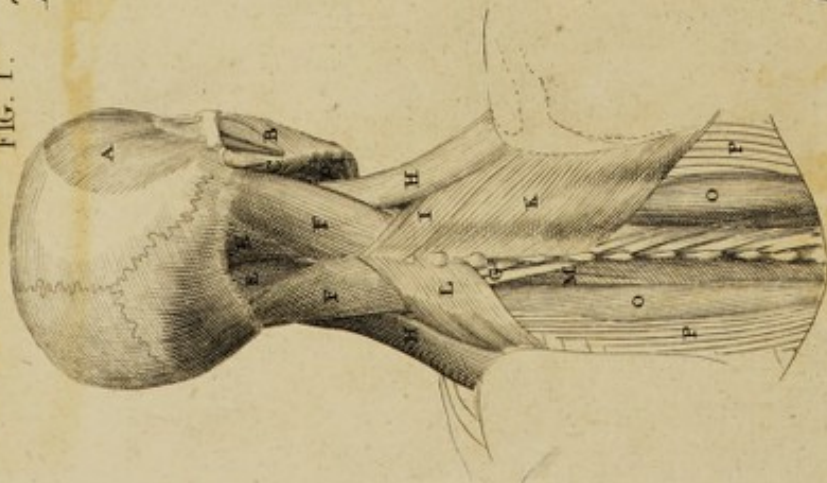


FIG. 2.



FIG. 3.







FIG. 6.



FIG. 5.



FIG. 8.



FIG. 9.



FIG. 7.



FIG. 4.









## TABLE LII.

Represents the Second Layer of MUSCLES upon the HEAD, NECK, and Upper Part of the TRUNK;—the Third Layer of MUSCLES on the Right, and Fourth Layer of MUSCLES on the Left Side of the Posterior Part of the BODY, with the MUSCLES on the SOLE of the FOOT.

FIG. 1.

MUSCLES 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. XLVIII.

FIG. 2.

The Third LAYER of MUSCLES on the Right, and Fourth LAYER of MUSCLES on the Left Side of the Posterior Part of the BODY.

See Tab. XLIX. and L.—To which add here, the Muscles on the Fore-arms and Hands.

### RIGHT FORE-ARM and HAND.

- F, The extensor carpi radialis longior.
- G, brevior.
- H, The flexor profundus perforans.
- I, The supinator radii brevis.
- K, The flexor longus pollicis.
- L, The pronator radii quadratus.
- M, M, The tendons of the extensors cut off.
- N, The flexor brevis pollicis.
- O, The adductor pollicis.
- P, The prior indicis.
- Q, The posterior indicis.
- R, The prior medii digiti.
- S, The posterior medii digiti.
- T, The prior annularis.
- U, The posterior annularis.
- V, The prior auricularis.

### LEFT FORE-ARM and HAND.

- B, The supinator radii brevis.
- C, The pronator radii quadratus.
- D, The flexor brevis pollicis.
- E, E, The adductor pollicis.

FIG. 3.

View of the MUSCLES upon the Under and Back Part of the HEAD, and on the Back Part of the NECK.

See Tab. XLVII.—L. where the Muscles of these parts are more properly represented.

FIG. 4.

MUSCLES, and other Parts deeply seated, on the Side and Back Part of the HEAD and NECK.

- a, a, The rectus capitis posticus minor, on each side.
- b, The rectus capitis lateralis.
- c, The ligament between the first and second cervical vertebræ.
- d, d, The interspinales colli.
- e, e, The intertransversales colli.
- f, The palate, covered with its glandular membrane.
- g, The glands, appearing after the uvula is cut off.
- h, The septum narium next the fauces.

FIG. 5. 6. 7. 8. 9.

The APONEUROSIS, and different LAYERS of MUSCLES, with some of the LIGAMENTS on the SOLE, after removing the Common Integuments.

For the explanation of which, see Tab. LVIII.

Fig. 8.—12.



## T A B L E LIII.

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. LIV.

## FIG. 18.

*A View 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 retrahentes aurem.
- a, The helix major.
- b, ——— minor.
- c, The tragus.
- d, The anti-tragus.
- F, The orbicularis palpebrarum.
- G, The zygomaticus major.
- H, The buccinator.
- I, The masseter.
- K, The depressor anguli oris.
- L, The pterygoideus internus.
- M, The platysma myoides.
- N, The sterno-cleido-mastoideus.
- O, The complexus.
- P, The splenius.
- Q, The scalenus medius.
- R, The levator scapulæ.
- S, S, T, The trapezius.
- U, The teres minor.
- W, ——— major.
- X, X, Y, The latissimus dorsi.
- Z, The pectoralis minor.
- a, a, b, The pectoralis major.
- c, c, c, The serratus magnus.
- d, d, e, e, The obliquus externus abdominis ;—d, d, The fleshy ; e, e, The tendinous parts.
- f, The cremaster testis.

## LEFT SUPERIOR EXTREMITY.

- A, The deltoides.
- B, The biceps flexor cubiti.
- C, The brachialis internus.

- D, The triceps extensor cubiti.
- E, The flexor carpi ulnaris.
- F, The supinator radii longus.
- G, The flexor carpi radialis.
- H, H, The extensor carpi radialis longior.
- I, ——— brevior.
- K, The extensor carpi ulnaris.
- L, The extensor digitorum communis ;
- M, Its tendon.
- N, The extensor ossis metacarpi pollicis ;
- O, Its tendon.
- P, The extensor primi internodii pollicis ;
- Q, Its tendon.
- R, The tendo secundi internodii.
- S, The ligamentum carpi annulare posterius.
- T, The ligament confining the tendons of the extensor ossis metacarpi, and extensor primi internodii 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 brachialis 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.
- O, The palmaris brevis, and, on the outside of it, the abductor minimi digiti.
- P, The tendons of the extensor digitorum communis ;
- Q, The aponeuroses of these tendons, stretched over the back of the four fingers.

## LEFT INFERIOR EXTREMITY.

- A, The adductor longus femoris.
- B, The pectinalis and psoas magnus.

C, The



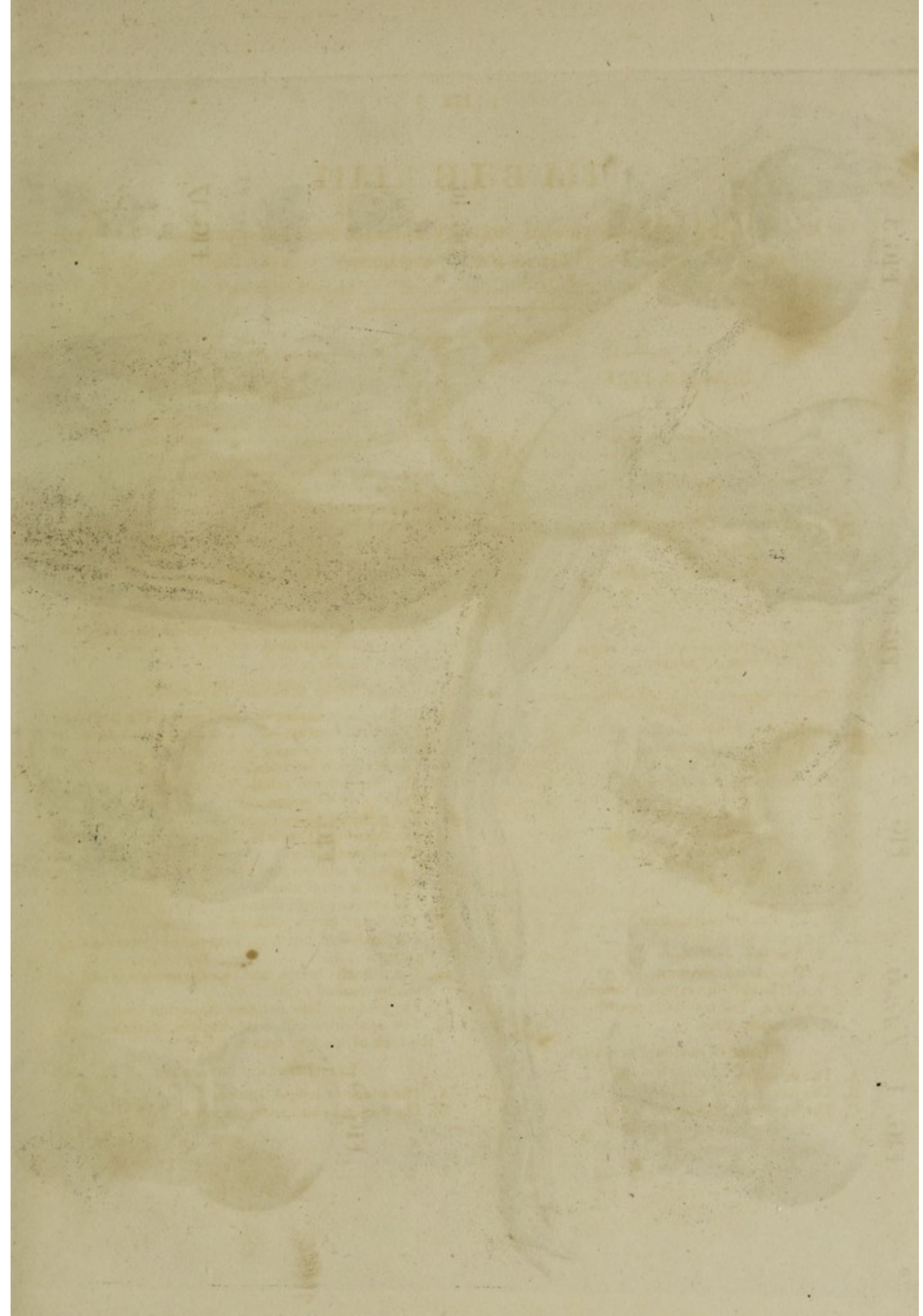




FIG. 1. *TAB. 53.*

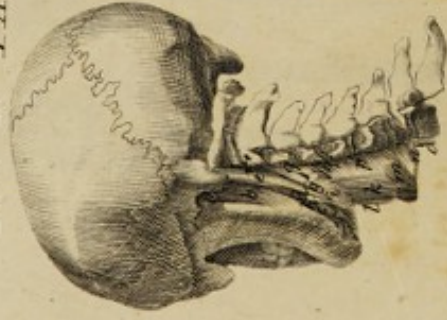


FIG. 2.



FIG. 18.

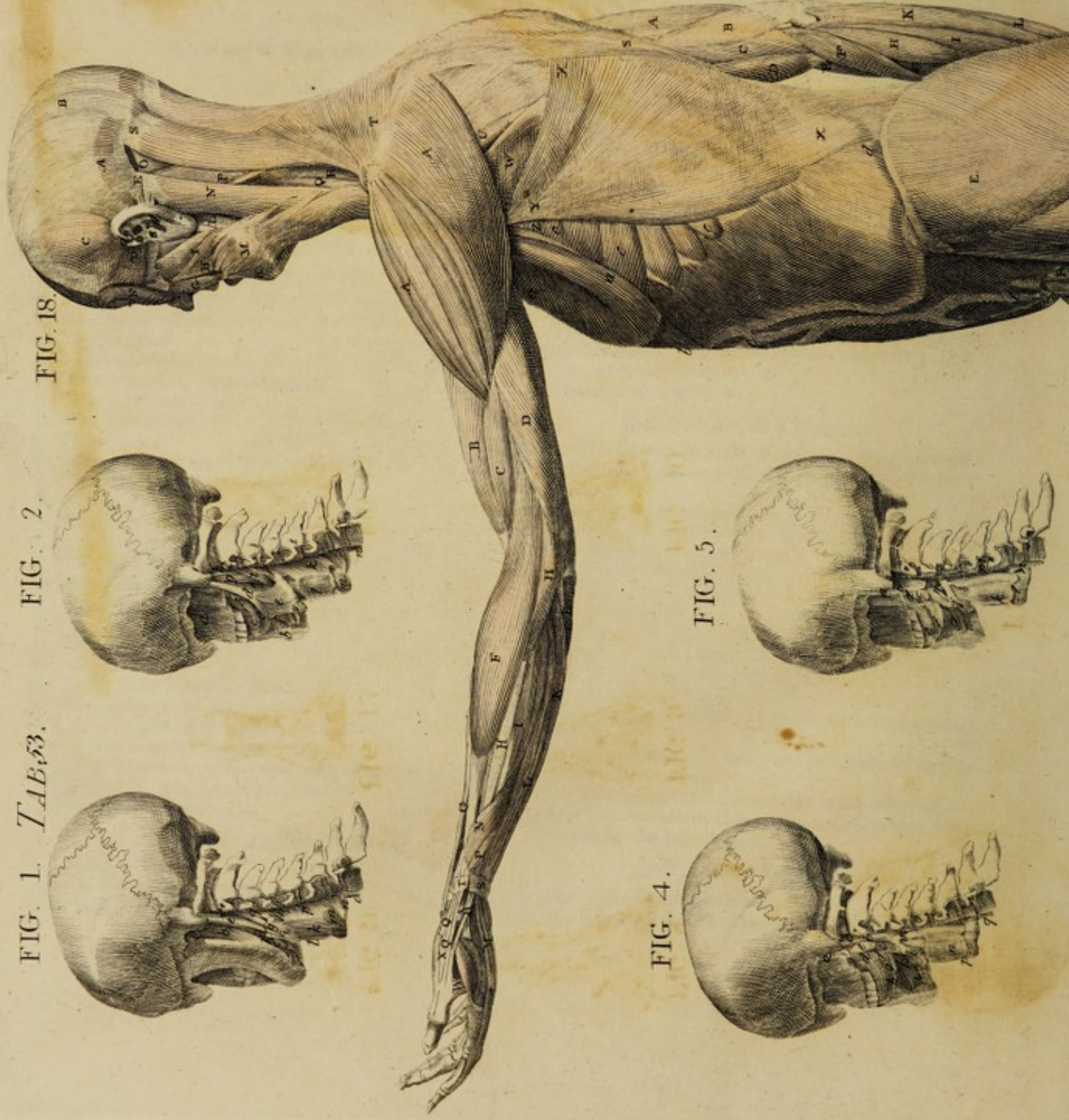


FIG. 3.



FIG. 16.



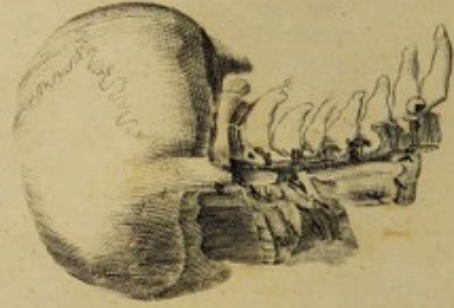
FIG. 17.



FIG. 4.



FIG. 5.





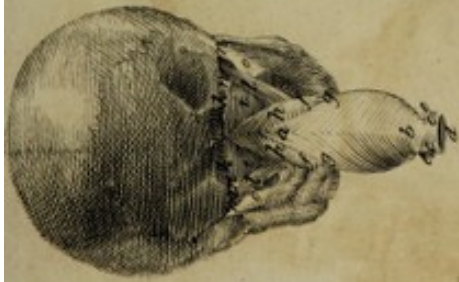


FIG. 7.

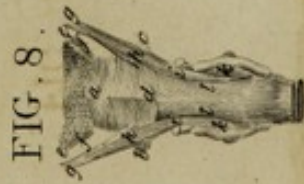


FIG. 8.



FIG. 9.



FIG. 10.



FIG. 11.



FIG. 12.



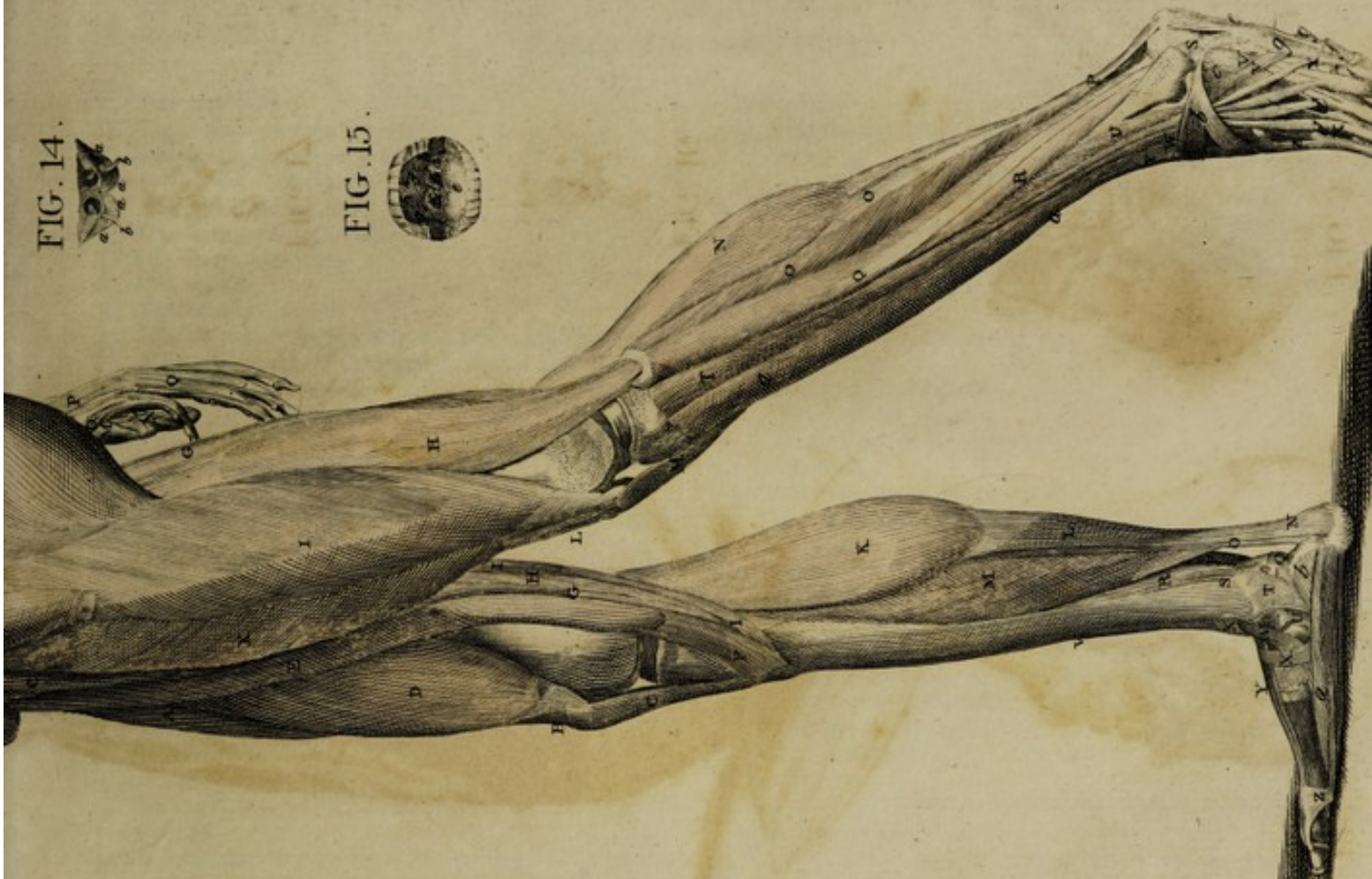
FIG. 13.



FIG. 15.



FIG. 14.









- C, The sartorius.  
 D, The tensor vaginæ femoris.  
 E, The gluteus medius.  
 F, ——— maximus.  
 G, The semitendinosus.  
 H, The biceps flexor cruris.  
 I, The vastus externus.  
 K, The rectus.  
 L, The vastus internus.  
 M, The ligament connecting the patella to the tibia.  
 N, The outer head of the gastrocnemius externus.  
 O, O, The gastrocnemius internus.  
 P, The tendo ACHILLIS.  
 Q, The peroneus longus.  
 R, The peroneus brevis.  
 S, Ligaments binding the tendons of the peronei.  
 T, The extensor longus digitorum, inseparably connected with,  
 U, The peroneus tertius.  
 V, The tendon of the peroneus tertius, inserted into the metatarsal bone of the little toe.  
 W, The tendon of the extensor longus, splitting into four smaller tendons;  
 X, X, Their insertion into the toes.  
 Y, The extensor proprius pollicis;  
 Z, Its tendon.  
 a, a, The tibialis anticus.  
 b, The upper and under portions of the ligamentum tarsi annulare.  
 c, The extensor brevis digitorum pedis; its tendons are inserted into all the toes, excepting the smallest.  
 d, d, Part of the interossei pedis externi.  
 e, The abductor minimi digiti pedis;

- f, Its tendon.  
 g, g, The flexor brevis minimi digiti pedis.

## RIGHT INFERIOR EXTREMITY.

- A, The rectus;  
 B, Its insertion into the patella.  
 C, The ligament which fixes the patella to the tibia.  
 D, The vastus internus.  
 E, The sartorius;  
 F, Its tendon, fixed to the tibia.  
 G, The gracilis.  
 H, The semimembranosus.  
 I, I, The semitendinosus.  
 K, The gastrocnemius externus.  
 L, Its tendon.  
 M, The gastrocnemius internus.  
 N, The tendo ACHILLIS.  
 O, The tendon of the plantaris.  
 P, The flexor proprius pollicis pedis.  
 Q, The ligament binding the tendon of the flexor longus.  
 R, The flexor longus digitorum pedis.  
 S, The tendon of the tibialis posticus.  
 T, The ligament covering the tendon of the flexor longus digitorum pedis, and tibialis posticus.  
 U, The ligament which retains the tibialis posticus.  
 V, The tibialis anticus;  
 W, Its tendon.  
 X, 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 tendon.  
 a, The abductor pollicis pedis.  
 b, The flexor digitorum accessorius.



## T A B L E L I V.

## MUSCLES seated about the THROAT.

FIG. 1.

*Presents a Lateral View of the MUSCLES seated under the HEAD, and before the VERTEBRÆ of the NECK.*

- a*, The pterygoideus externus.
- b*, \_\_\_\_\_ internus.
- c*, The mylo-hyoideus.
- d*, The stylo-hyoideus.
- e, f*, The digastricus.
- g, h*, The hyo-glossus.
- i*, The os hyoides.
- k*, The thyro-hyoideus.
- l*, The thyroid cartilage.
- m*, The crico-thyroideus.
- n*, The cricoid cartilage.
- o*, A section of the esophagus.
- p, p*, The constrictor pharyngis inferior.
- q*, \_\_\_\_\_ medius.
- r*, \_\_\_\_\_ superior.

FIG. 2.

*Represents the MUSCLES under those shewn in the preceding Figure, which, together with the Right Side of the LOWER JAW, are here removed.*

- a*, The upper jaw.
- b*, A section of the lower jaw.
- c*, The tongue.
- d*, The stylo-glossus.
- e*, The hyo-glossus.
- f*, The genio-glossus.
- g*, The stylo-pharyngeus.
- h, h*, The constrictor pharyngis superior.
- i*, \_\_\_\_\_ medius.
- k, k*, \_\_\_\_\_ inferior.
- l*, The thyroid cartilage.
- m*, The cricoid cartilage.
- n*, A section of the esophagus.

FIG. 3.

*Represents the next Order of MUSCLES, the outermost of those in the preceding Figure being removed.*

- a*, The under half of the stylo-glossus, the upper half being removed.
- b, c*, The genio-glossus.
- d*, The constrictor pharyngis superior.
- e*, \_\_\_\_\_ medius.
- f*, \_\_\_\_\_ inferior.

- g*, The os hyoides.
- h*, The thyroid cartilage.
- i*, The cricoid cartilage.
- k*, A section of the esophagus.

FIG. 4.

*Represents the next Order of MUSCLES, after the outermost of Fig. 3. are removed.*

- a*, The circumflexus palati, immediately behind which is the levator palati.
- b*, The stylo-pharyngeus.
- c, c*, The palato-pharyngeus, covering a part of the membrane of the pharynx.
- d*, The constrictor isthmi faucium.
- e*, The tonsil.
- f*, The stylo-glossus, where it joins the tongue.
- g*, A section of the hyo-glossus.
- h*, The lingualis.
- i, k*, The genio-hyo-glossus;—*i*, Its origin from the lower jaw.
- l*, The os hyoides.
- m*, The ligament which joins the cornu of the os hyoides and thyroid cartilage.
- n*, The body of the thyroid cartilage.
- o*, The cricoid cartilage.
- p*, The ligament by which the thyroid and cricoid cartilages are joined together.
- q*, A section of the esophagus.

FIG. 5.

*In this Figure, some of the Outer MUSCLES shewn in the Fourth are removed, the PHARYNX is laid open longitudinally, and the Right Part of it cut off, to shew its Cavity, with the Root of the TONGUE and EPIGLOTTIS.*

- a*, The circumflexus palati.
- b*, The levator palati.
- c*, The tonsil.
- d*, The constrictor isthmi faucium.
- e*, The tongue.
- f*, The under part of the lingualis.
- g*, The genio-hyo-glossus.
- h*, The epiglottis.
- i*, The os hyoides.
- k*, The thyroid cartilage.
- l*, The cricoid cartilage.
- m*, The pharynx laid open.
- n*, The upper part of the esophagus.

FIG.



TAB. 54.

Fig. 3.

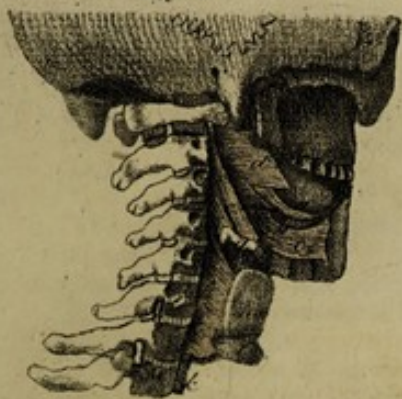


Fig. 2.



Fig. 1.

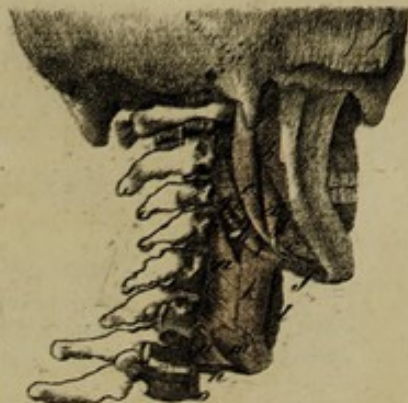


Fig. 6.

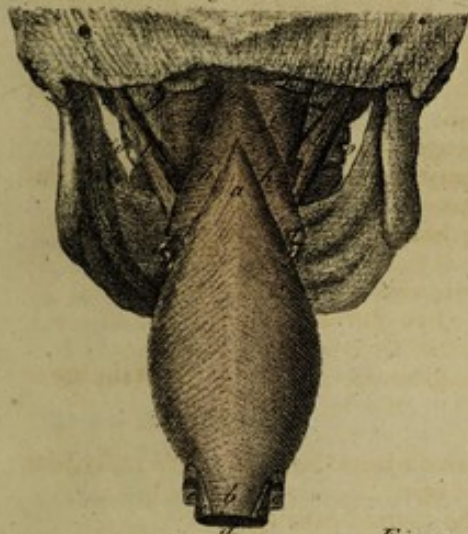


Fig. 5.

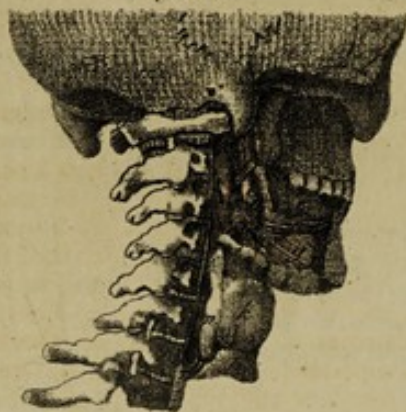


Fig. 4.

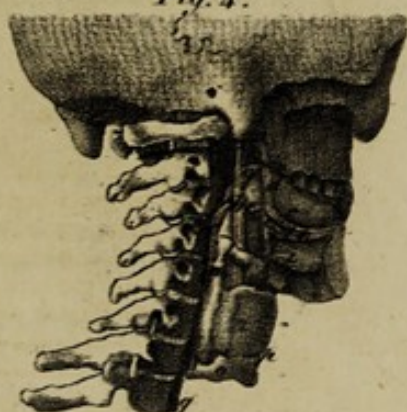


Fig. 8.

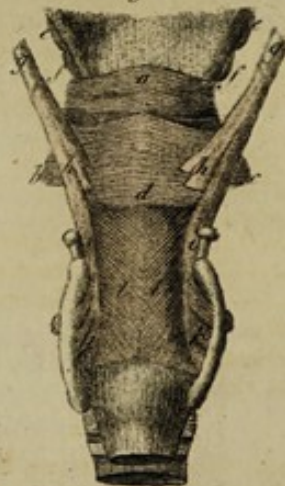


Fig. 7.

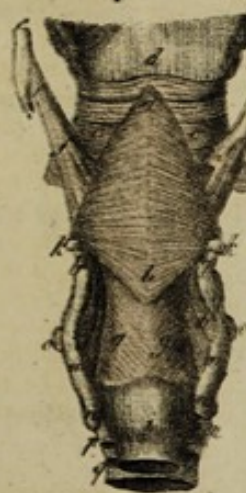


Fig. 10.



Fig. 11.

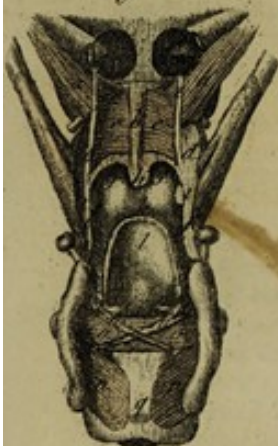


Fig. 9.



Fig. 13.

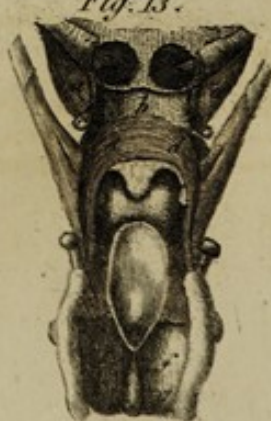


Fig. 12.

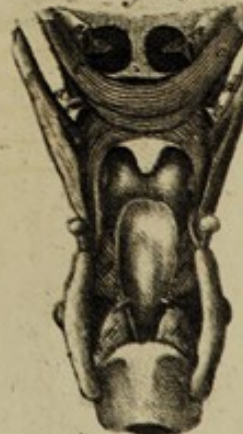


Fig. 15.



Fig. 14.



Fig. 16.



Fig. 17.





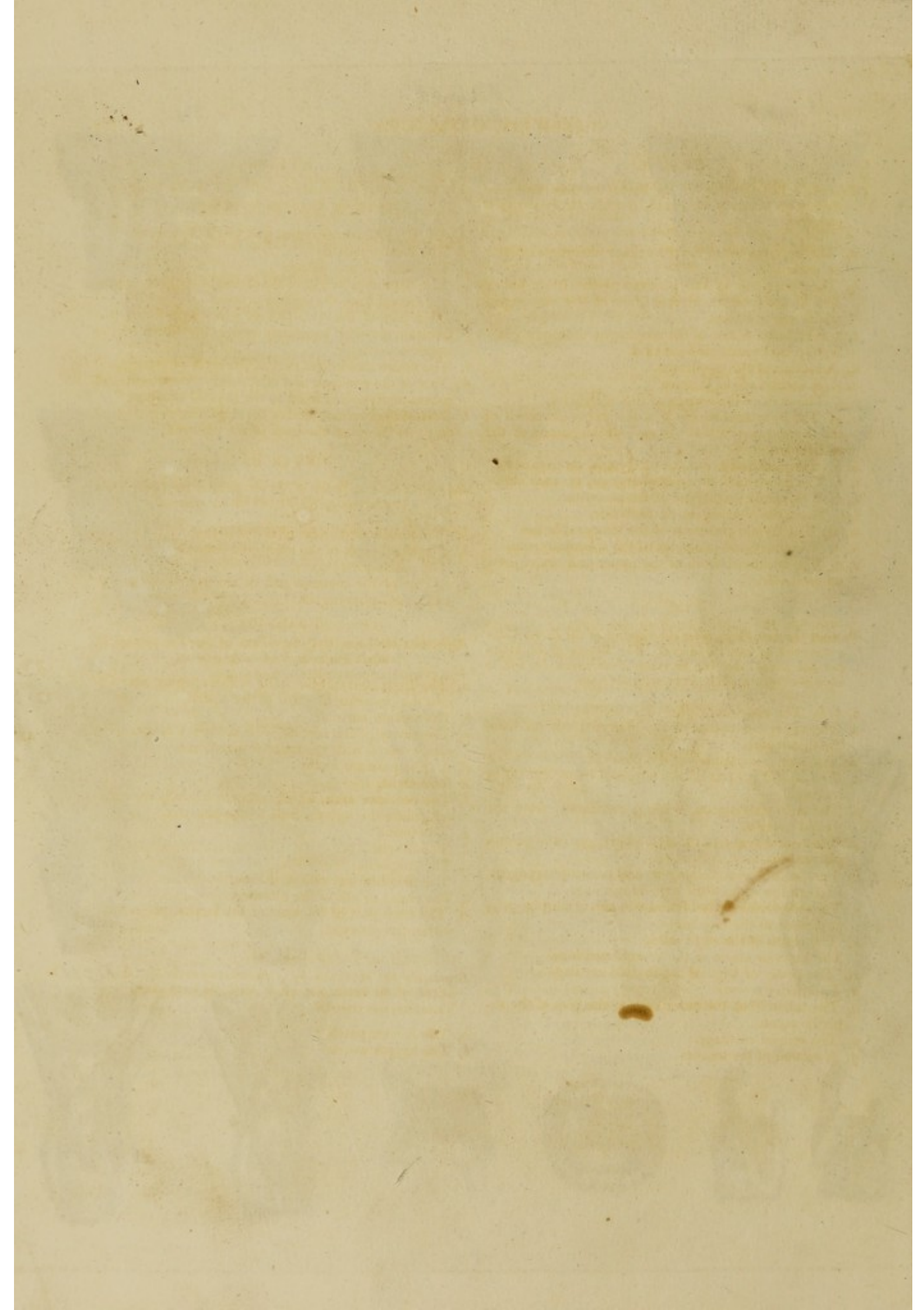




FIG. 6.

*Presents a Posterior View of the PHARYNX, and the Under Part of the BONES of the HEAD, to which the PHARYNX is connected.*

- a*, The upper point of the constrictor pharyngis inferior on each side.
- b*, The under end of the pharynx;—the letter points also at the inner transverse fibres of the esophagus, which are laid bare.
- c, c*, The outer fibres of the esophagus descending obliquely backwards on each side.
- d*, A section of the esophagus.
- e, 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 cornua of the os hyoides.
- h, h*, The constrictor medius pharyngis, on each side.
- i, i*, The constrictor superior pharyngis, on each side.
- k, k*, The naked membrane of the pharynx.
- l, l*, The stylo-pharyngeus on each side.
- m, m*, The styloid processes of the temporal bones.
- n, n*, The pterygoid processes of the sphenoid bone.
- o, o*, The backmost tooth of the upper and under jaws, on each side.

FIG. 7.

*Presents the next View, after the removal of the Lower CON-STRIC-TORS of the PHARYNX. The BONES of the HEAD are not added; but the STYLOID PROCESSES are left, to shew the ORIGIN of the STYLO-PHARYNGEI.*

- a, b, k*, The constrictor pharyngis medius.
- c*, The upper constrictor of the pharynx, cut off from the buccinator.
- d*, The naked membrane of the pharynx.
- e*, The styloid process of the temporal bone, cut off at its root.
- f*, The stylo-pharyngeus, arising, tendinous, from the styloid process.
- g*, The common end of the stylo-pharyngeus and palato-pharyngeus.
- h*, Part of the stylo-pharyngeus and palato-pharyngeus, fixed to the edge of the thyroid cartilage.
- i*, The naked membrane of the lower part of the pharynx, continued to the esophagus.
- k*, The cornu of the os hyoides.
- l*, The superior cornu of the thyroid cartilage.
- m*, The posterior edge of the thyroid cartilage;
- n*, Its inferior cornu.
- o*, The tubercle on the outer side, at the root of the superior cornu.
- p*, The cricoid cartilage.
- q*, A section of the trachea.

FIG. 8.

*The next View of the MUSCLES, after the Middle CON-STRIC-TORS of the PHARYNX are removed.*

- a, c, b, d*, The constrictores pharyngis superiores.
- e*, The levator palati.
- f*, The circumflexus palati.
- g*, The tendinous origin of the stylo-pharyngeus, where it is cut off from the styloid process.
- h*, That part of the stylo-pharyngeus which forms two fasciculi, passing separately under the fibres of the upper constrictor.
- i*, The under and larger part of the stylo-pharyngeus.
- k*, Part of the common end of the stylo-pharyngeus and palato-pharyngeus, fixed to the thyroid cartilage.
- l*, Part of the common end of the stylo-pharyngeus joined to its fellow on the back of the pharynx.

FIG. 9.

*Represents the next Order of MUSCLES, after the Upper CON-STRIC-TORS of the PHARYNX are removed.*

- a*, The naked membrane of the pharynx.
- b*, The small hook of the pterygoid process.
- c*, The palato-pharyngeus.
- d, e*, Part of the common end of the stylo-pharyngeus and palato-pharyngeus.

FIG. 10.

*Represents the Inner and Fore Part of the PHARYNX, the whole Posterior Part being removed.*

- a*, The EUSTACHIAN tube;—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 spongiosum, covered with the mucous membrane.
- d, d*, The palatum molle.
- e*, The uvula.
- f*, The posterior arch, which descends laterally from the soft palate through the side of the pharynx.
- g*, The tonsil.
- h*, The tongue.
- i*, The epiglottis.
- k*, The membranous side of the glottis.
- l*, The rima, or slit of the glottis.
- m*, The back part of the tube of the larynx, projecting within the pharynx.

FIG. 11.

*Represents the MUSCLES lying immediately under the MEMBRANE of the PHARYNX, which, with the ESOPHAGUS and TRACHEA, are removed.*

- a*, The levator palati.
- b*, The azygos uvulæ.



- c, The palato-pharyngeus;
- d, The part which afterwards passes under the levator palati.
- e, Part of the palato-pharyngeus, called by ALBINUS, *Salpingo-Pharyngeus*.
- f, Part of the common end of the palato-pharyngeus and stylo-pharyngeus.
- g, The posterior edge of the velum palati.
- h, The uvula.
- i, The tonsil, projecting before the palato-pharyngeus.
- k, The tongue.
- l, The epiglottis.
- m, The point of the arytenoid cartilage.
- n, The arytenoideus obliquus.
- o, o, ——— transversus.
- p, The crico-arytenoideus posticus.
- q, The cricoid cartilage.

FIG. 12.

*Represents the MUSCLES deeper seated than those shewn in the former Figure.*

- a, The EUSTACHIAN tube opening laterally into the posterior foramen of the nostril.
- b, The os spongiosum inferius, covered with the mucous membrane.
- c, The levator palati.
- d, The circumflexus.
- e, The small hook of the pterygoid process.
- f, Part of the palato-pharyngeus, which passes through the soft palate, under the end of the levator.
- g, Part of the common end of the stylo-pharyngeus and palato-pharyngeus, produced more particularly from the stylo-pharyngeus.
- h, h, The arytenoid cartilage.

FIG. 13.

*Represents the MUSCLES which appear upon the Removal of the LEVATORES PALATI, the ANNULAR and ARYTENOID CARTILAGES, and their Appendages.*

- a, The circumflexus palati.
- b, The aponeurosis of the circumflexi.
- c, The hook-like process of the pterygoid plate.
- d, The palato-pharyngeus.
- e, Part of the stylo-pharyngeus inserted into the thyroid cartilage.
- f, The thyroid cartilage.
- g, A prominence upon the inner side of the thyroid cartilage.
- h, The under end of the epiglottis, fixed to the thyroid cartilage.

FIG. 14.

*MUSCLES of the PALATE, viewed on the Under Side.*

- a, The levator palati.
- b, c, The circumflexus palati;—c, Its tendon, passing over the hook-like process of the pterygoid plate.
- d, The membrane of the palate.
- e, The EUSTACHIAN tube.
- f, f, f, The circumference, from which the membrane of the palate is cut off.

FIG. 15.

*The MOUTH and FAUCES open, to shew the MUSCLES of the PALATUM MOLLE, on the Under and Fore Side: the investing MEMBRANE being removed.*

- a, The posterior arch, and,
- b, The anterior arch of the palate.—Between this and the posterior arch a, is the seat of the amygdala.
- c, The edge of the soft palate.
- d, The uvula.
- e, The tongue.
- f, f, The fauces.
- g, The constrictor isthmi faucium.
- h, The palato-pharyngeus.

FIG. 16.

*Shews the LARYNX, with its Posterior MUSCLES, and those at the Side of the THYROID CARTILAGE, the Right Part of which is removed.*

- a, The crico-arytenoideus posticus.
- b, ——— lateralis.
- c, e, f, The thyro-epiglottideus.
- d, g, The thyro-arytenoideus.
- h, The arytenoideus transversus.
- i, ——— obliquus, with its continuation to the epiglottis.

FIG. 17.

*Represents the same VIEW of the CARTILAGES of the LARYNX with the preceding Figure, but wholly freed from the MUSCLES and MEMBRANES.*

- a, b, c, The inside of the left half of the thyroid cartilage.
- d, The superior cornu of the thyroid cartilage.
- f, The cricoid cartilage.
- g, The right arytenoid cartilage.
- h, The left arytenoid cartilage.
- i, k, The epiglottis;—k, Its concave part.



*[Faint, illegible text visible through the paper, likely bleed-through from the reverse side. The text appears to be organized into paragraphs and possibly a list or table structure.]*



Fig. 1.

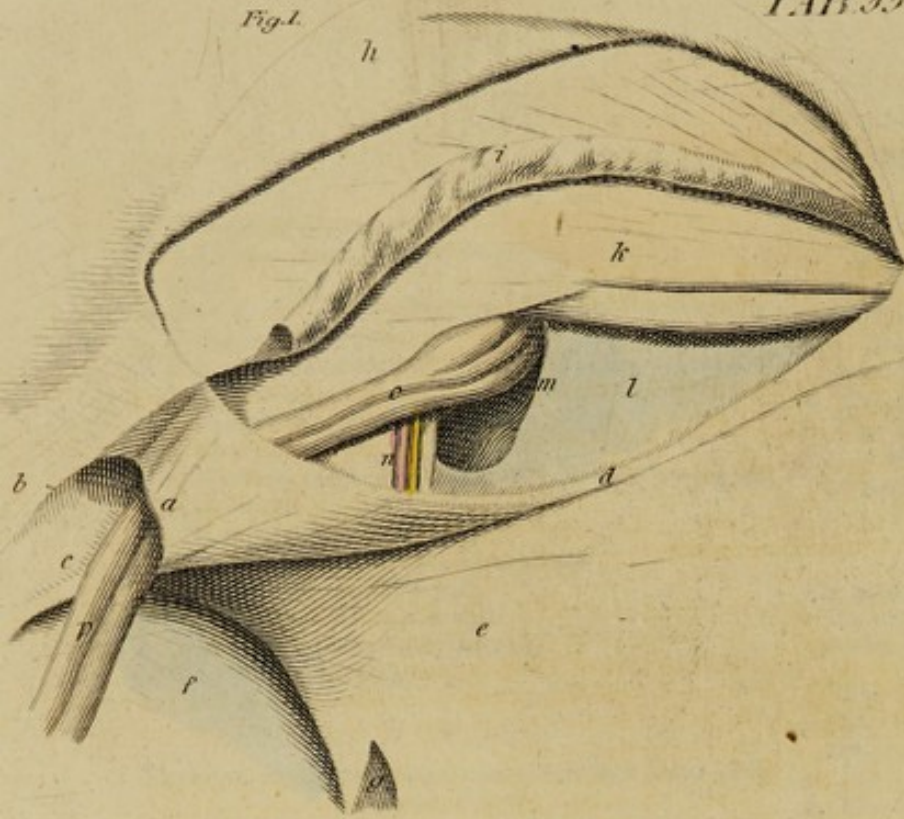


Fig. 3.



Fig. 5.

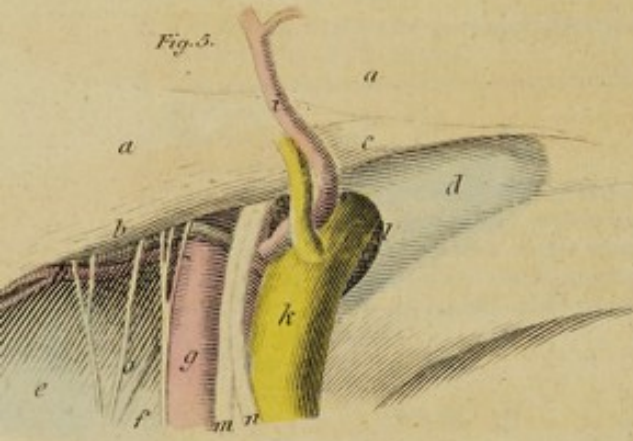


Fig. 6.

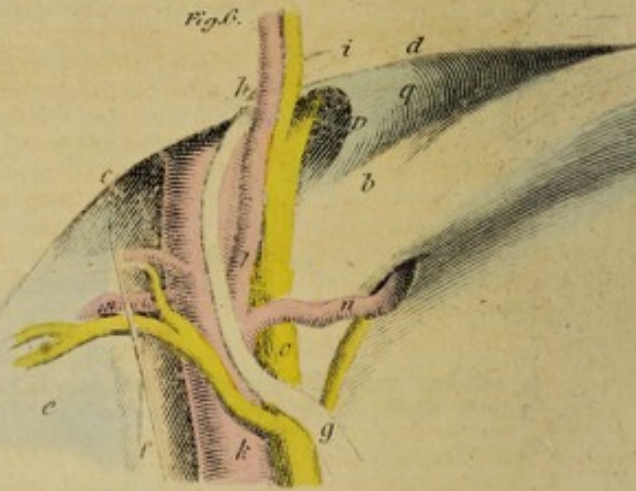


Fig. 4.

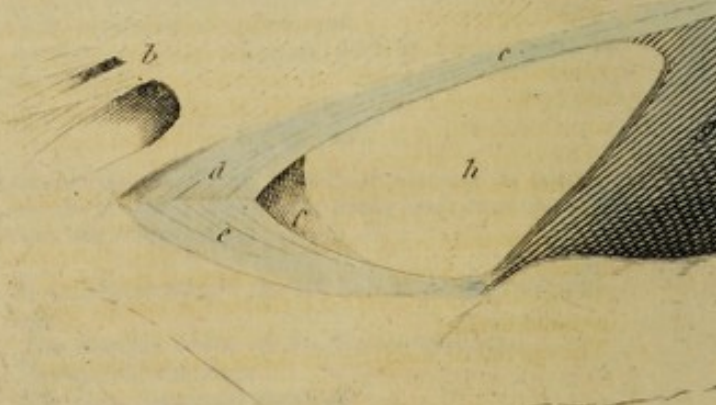


Fig. 2.



Fig. 7.

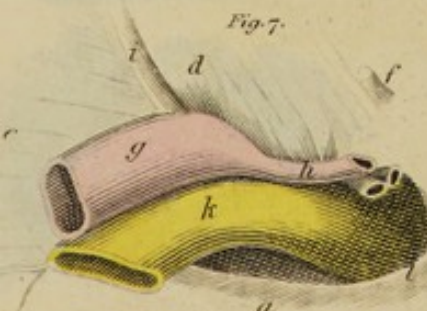
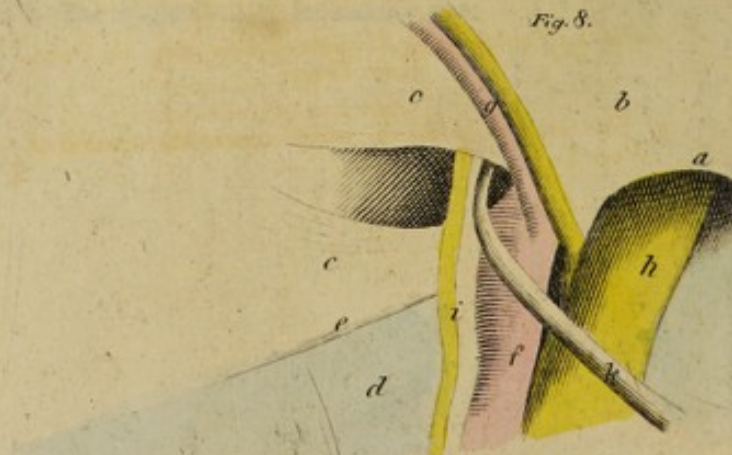


Fig. 8.





## T A B L E LV.

This Plate contains the Anatomy of the PARTS about the GROIN in both Sexes, or of the Parts concerned in INGUINAL and CRURAL HERNIA.—All the Figures, excepting the Third, belong to the Left Side of the Body.

FIG. 1.

*Shews the Formation of the Abdominal Rings in the Male, the Course of the Spermatic Cord through these, and the Form and Situation of some of the Fasciæ.*

- a, The external 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 POUPART, 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.
- h, The tendon of the external oblique muscle, cut and reflected, to shew parts deeper seated.
- i, The lower edge of the internal oblique muscle, cut from the crural arch, and also reflected.
- k, The transversalis, the lower edge of which is cut and turned up.
- l, The transverse fascia, running up from the crural arch to line the back part of the transverse muscle and its tendon, thereby preventing crural hernia from happening between the external iliac blood-vessels and the superior-anterior spinous process of the os ilium.
- m, The internal abdominal ring.
- n, The epigastric blood-vessels, passing first at the inner side of, and then behind the spermatic cord.
- o, The spermatic cord, descending through the abdominal rings, shewing at the same time the length of the inguinal canal, and the course the bowels take in inguinal hernia.
- p, The spermatic cord, in its descent to the testicle.

FIG. 2.

*Exhibits a Portion of the Tendinous Fasciæ about the Groin, in the Female.*

- a, The superficial fascia, which covers the tendon of

- the external oblique muscle of the abdomen, cut from the ligament of POUPART, and turned 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 external oblique muscle, forming the ligament of POUPART.
- d, The round ligament of the uterus, passing through the external abdominal ring.
- e, The fascia lata femoris, descending from the under edge of POUPART's ligament.
- f, The crescentic or falciform edge of this fascia.
- g, The vena saphena, passing through a notch in the fascia, to terminate 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 herniæ happen.

FIG. 3.

*Represents the External Abdominal Ring, and the Falciform Ligament, or Semilunar Edge of the Fascia Lata Femoris, in the Female.*

- a, The symphysis of the pubis.
- b, The external abdominal ring, with the upper and under columns by which it is formed.
- c, The crural arch.
- d, e, The fascia lata of the thigh; d, the ilial, and, e, the pubal portion of this fascia.
- f, f, The semilunar or falciform edge of the fascia.
- g, The crural sheath.
- h, The vena saphena.
- i, The place where the bowels protrude in femoral hernia.

FIG. 4.

*Shews the Insertions of the Tendon of the External Oblique Muscle into the Os Pubis: the Iliac Fascia, and the Orifice of the Crural Sheath, in the Female.*

- a, The pubis.

- b, The



- b*, The external abdominal ring, with two orifices in it, which happens occasionally.
- c*, The anterior surface of the crural arch: above the letter is seen the direction of the fibres of the tendon of the external oblique muscle, and curved tendinous lines decussating that tendon.
- d*, The third insertion of the tendon of the external oblique muscle, or that part of the tendon which is fixed to the upper part and spine of the pubis.
- e*, The ligament covering the os pubis, into which the third insertion of this tendon is fixed.
- f*, A portion of the fascia transversalis, and tendon of the rectus, passing behind the insertion of the external oblique muscle.
- g*, The fascia iliaca, passing 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.
- g, h, i*, The round ligament of the uterus; *h*, the place where it passes through the fascia transversalis; *i*, the ligament descending towards the groin.
- k*, The external iliac artery.
- l*, The epigastric artery.
- m*, The circumflex artery of the os ilium.
- n*, The obturator artery, in this subject arising from the external iliac.
- o*, The external iliac vein, receiving branches corresponding with those sent off from the iliac artery.
- p*, The crural ring.
- q*, The third insertion of *POUPART's* ligament.

FIG. 7.

*Sketch of the Inner Side of that Part of the Parietes of the Abdomen which separates this Cavity from the Thigh, and of the Iliac Blood-vessels passing through the Crural Ring, in the Female.*

FIG. 5.

*Gives a View 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 abdominal muscles reflected.
- b, c, d*, The posterior, or inner part of the crural arch;
- d*, A portion of this arch, forming the third insertion of the external oblique muscle, and which is broader than in the female.
- e*, The iliac fascia, covering the internal iliac muscle.
- f*, Part of the large psoas muscle.
- g*, The external iliac artery, sending off,
- h*, The internal circumflex artery of the os ilium, and,
- i*, The epigastric artery.
- k*, The external iliac vein, receiving the circumflex and epigastric veins.—The circumflex artery and vein are seen in the place where the iliac joins the transverse fascia.
- l*, The crural ring, where femoral hernia occurs.
- m*, The spermatic blood-vessels.
- n*, The vas deferens, departing from the blood-vessels, to get into the pelvis.
- a, a*, The symphysis of the pubis.
- b*, The rectus abdominis, inserted into the symphysis of the pubis.
- c*, The fascia iliaca.
- d, e*, The fascia transversalis; *e*, that part of it which passes from the pubis to join the tendon of the rectus.
- f*, The round ligament of the uterus, passing through the fascia transversalis to get into the inguinal canal.
- g*, The iliac artery.
- h*, The beginning of the epigastric artery, with its associate vein.
- i*, The circumflex artery.
- k*, The iliac vein.
- l*, The crural space or ring, through which femoral hernia descend.

FIG. 8.

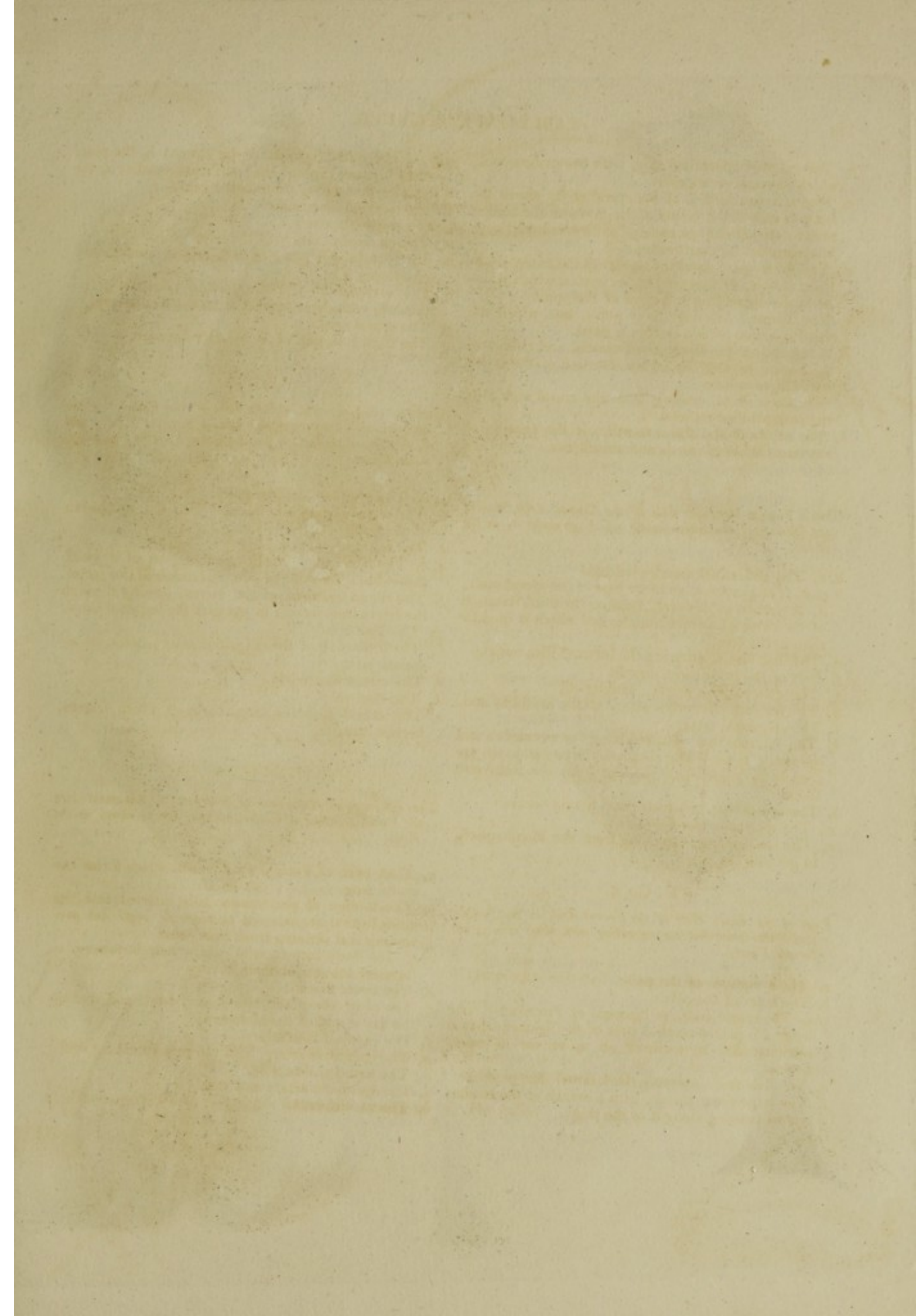
*The Semicircular Insertion of POUPART's Ligament into the Pubis, forming a Portion of the Crural Ring, in the Male.*

FIG. 6.

*View of the Inner Side of the Crural Arch in the Female, and Parts somewhat corresponding with those seen in the former Figure.*

- a*, The symphysis of the pubis.
- b*, The brim of the pelvis.
- c, d*, The crural arch, 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*, The iliac fascia covering the internal iliac muscle.
- f*, The large psoas muscle, with a branch of the lumbar nerves running along it to the thigh.
- a*, That part of *POUPART's* ligament which forms the crural ring.
- b*, The tendon of the transversalis inserted into the pubis behind the external abdominal ring, and preventing that opening from being seen.
- c, c*, The fascia transversalis, which here separates, to form the internal abdominal ring.
- d*, The fascia iliaca.
- e*, The place where the two fasciæ meet, and shut up the under end of the abdomen.
- f*, The external iliac artery.
- g*, The epigastric artery, with the corresponding vein.
- h*, The external iliac vein.
- i*, The spermatic artery and vein.
- k*, The vas deferens.







## T A B L E LVII.

Represents the SALIVARY GLANDS, Parts about the THROAT, and certain deep-seated MUSCLES, in the Interior Part of the BODY, not sufficiently shewn in former FIGURES.

FIG. 1.

*Part of the MUSCLES of the Os HYOIDES, together with the SUBMAXILLARY GLAND.*

- a*, Part of the masseter.
- b*, The posterior head of the digastricus ;
- c*, Its anterior head.
- d*, The stylo-hyoideus, through which the tendon of the digastricus passes.
- e, e*, The sterno-hyoidei.
- f*, The omo-hyoideus.
- g*, The pharynx.
- h*, The submaxillary gland.

FIG. 2.

*MUSCLES deeper seated than the former, and the SUBMAXILLARY GLAND raised.*

- a, a*, The mylo-hyoidei.
- b*, The hyo-glossus.
- c*, The sterno-thyroideus.
- d*, The thyro-hyoideus.
- e*, The submaxillary gland raised from its place behind the angle of the lower jaw.
- f*, The stylo-glossus.
- g*, The stylo-pharyngeus.
- h*, The pharynx.

FIG. 3.

*MUSCLES deeper seated than the former.*

- a*, The genio-hyoideus.
- b*, The genio-hyo-glossus.
- c*, The stylo-glossus.
- d*, The stylo-pharyngeus.
- e*, The submaxillary gland raised, by which its duct is seen in its passage under the tongue, to its termination at the side of the frænum linguæ.
- f*, The sublingual gland.
- g*, The os hyoides.
- h*, The thyroid cartilage.
- i*, The cricoid cartilage, with the crico-thyroidei.
- k*, The thyroid gland.
- l*, The trachea.
- m*, The pharynx.

FIG. 4.

*The Inferior 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*, The hyo-glossus.
- d*, The stylo-glossus.
- e*, The tip of the tongue pinned out, at each side of which the papillæ appear.
- f, f*, The basis, or root of the tongue.
- g*, The membrane, with its mucous glands, continued from the tongue to the epiglottis.

FIG. 5.

*Shews the TONGUE, Os HYOIDES, and LARYNX, separated from the Left Side of the HEAD, and turned over upon the Right,—the HEAD being inverted.*

- a*, The inner side of the lower jaw.
- b*, Part of the glandulæ palatinæ.
- c*, The uvula, with its muscle hanging over the openings into the back part of the nose.
- d*, The right side of the pharynx remaining entire.
- e*, The tongue, at the anterior edge of which the papillæ are seen.
- f*, The salivary glands of the tongue.
- g*, One of the amygdalæ.
- h*, The os hyoides, with its left cornu joined to the left superior cornu of the thyroid cartilage.
- i*, The thyroid cartilage.
- k*, The back part of the cricoid cartilage.
- l, l*, The arytenoid cartilages.
- m*, The epiglottis.
- n*, The cartilages of the trachea.
- o*, The membranous part of the trachea.

FIG. 6.

*The Back Part of the PHARYNX, and its Connexions with the LARYNX.*

- A*, The cartilages of the trachea.
- B*, The membranous back part of the trachea.
- C, C*, That part of the pharynx which arises from the pterygoid processes, levatores palati, and os occipitis.
- D, D*, Parts



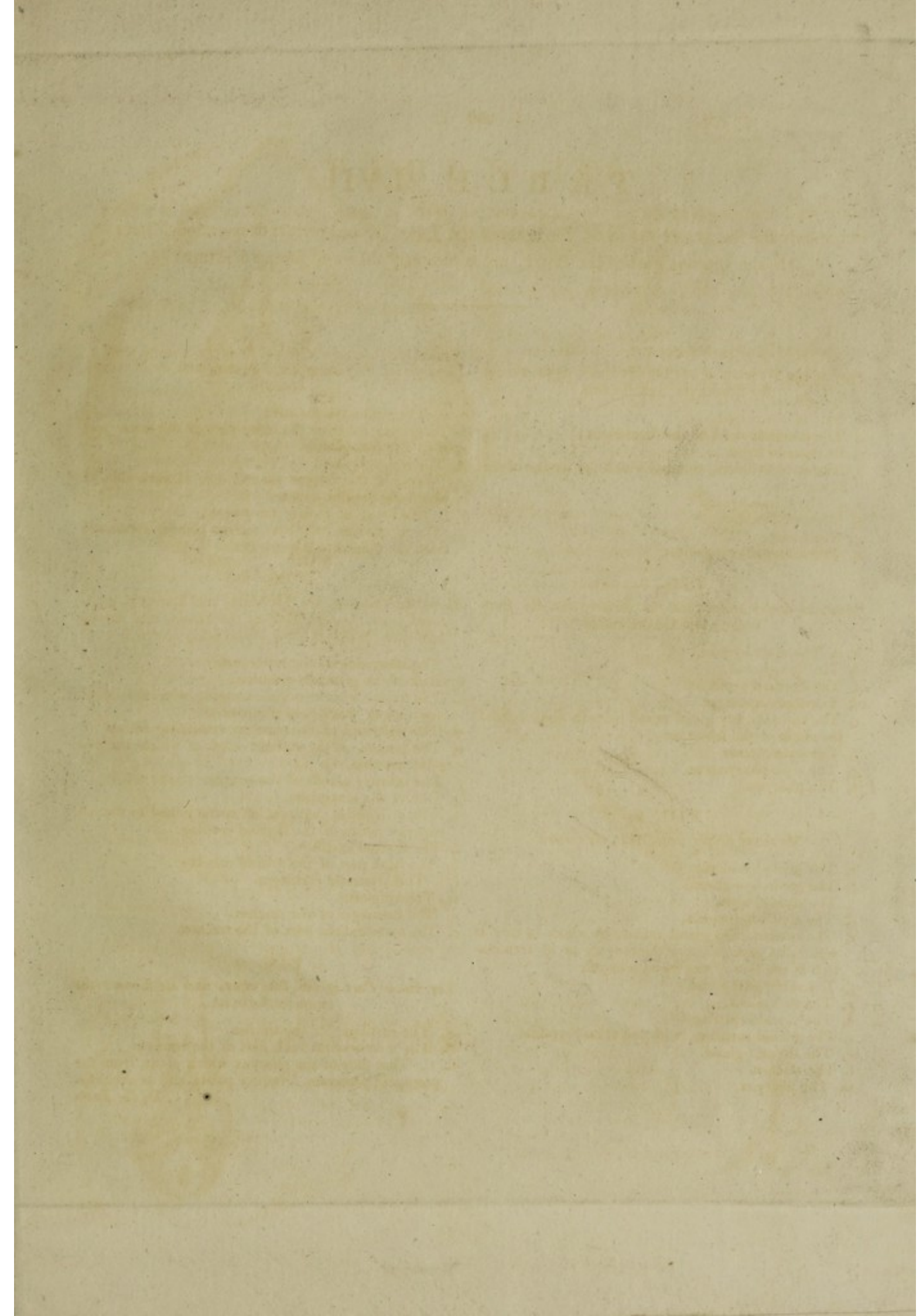




FIG.1. TAB.57.



FIG.2.



FIG.3.



FIG.6.



FIG.5.



FIG.4.

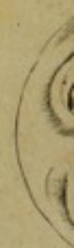


FIG.7.



FIG.9.

FIG.8.





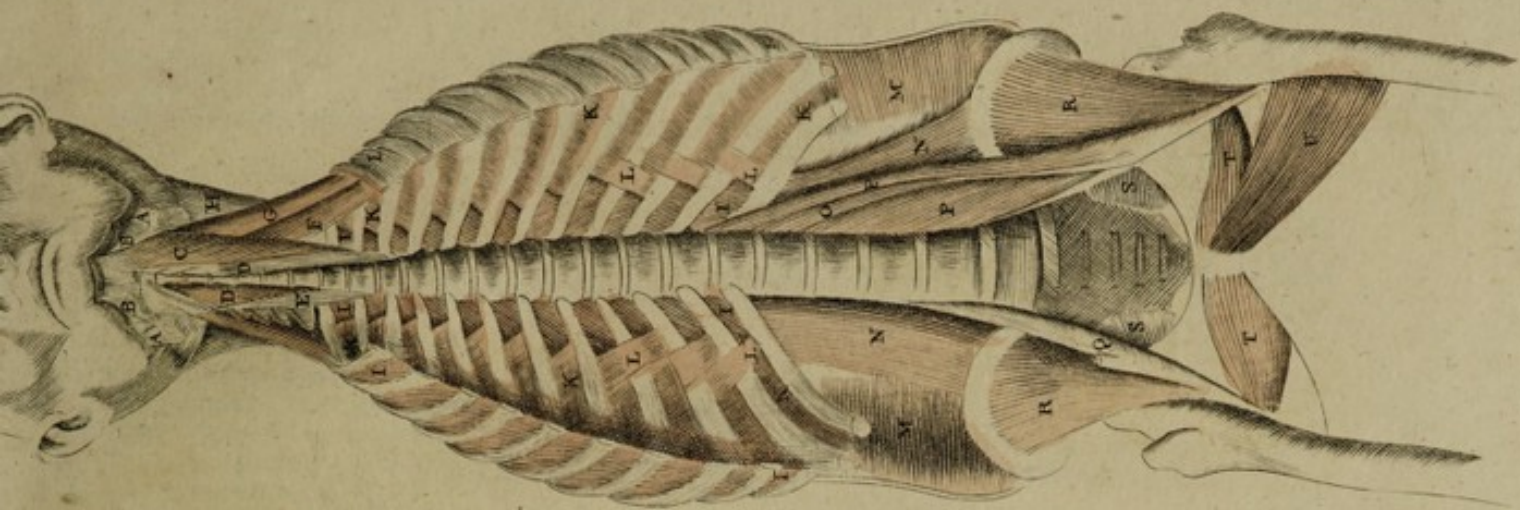


FIG. 10.













## T A B L E LVIII.

The different Orders of MUSCLES on the Under Part of the FORE-ARM and HAND, and on the SOLE of the Foot.

FIG. 1.

*The First Order of MUSCLES on the Under and Anterior Part of the FORE-ARM and on the PALM.*

- a*, The tendon of the supinator longus.
- b*, ————— flexor carpi radialis.
- c*, ————— palmaris longus.
- d*, ————— flexor sublimis, and,
- e*, ————— flexor carpi ulnaris.
- f*, The flexor longus pollicis.
- g*, The ligament under which the extensores ossis metacarpi et primi internodii pollicis pass.
- h*, The flexor ossis metacarpi pollicis.
- i*, The abductor pollicis.
- k*, The tendon of the extensor primi internodii pollicis.
- l*, Part of the flexor brevis pollicis.
- m*, The tendon of the flexor longus pollicis bound by ligaments.
- n*, The aponeurosis palmaris, slightly distinguished into four portions, the extremities of which afterwards become more distinct, and are strengthened by transverse tendinous fibres.
- o*, The palmaris brevis.
- p*, The abductor minimi digiti.
- q*, The adductor metacarpi minimi digiti.
- r*, The flexor parvus minimi digiti.
- s, t, u*, Three small annular ligaments, which retain the tendons of the sublimis and profundus in their places on the fore-finger.
- v, w, x*, The tendon 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, u, v, w, 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 sublimis.
- c, c, d*, The tendons of that muscle passing behind the anterior annular ligament of the wrist.

- e*, The flexor pollicis longus ;
- f*, Its tendon.
- g, h*, The extensor ossis metacarpi pollicis.
- i*, ————— primi internodii pollicis.
- k*, The ligamentum carpi annulare anterius.
- l*, The flexor ossis metacarpi pollicis.
- m, n*, The anterior and posterior portions of the flexor brevis pollicis, with the tendon of the flexor longus pollicis between them.
- o*, The abductor pollicis.
- p*, The abductor indicis.
- q, q, &c.* The lumbricales.
- r*, The tendon of the flexor sublimis, perforated by that of the flexor profundus, and inserted into the second bone of the fore-finger.
- s*, The tendon of the flexor profundus.
- t*, The insertion of the flexor profundus into the third bone of the fore-finger. The tendons of the flexor sublimis and profundus are seen on the other fingers also.
- u*, The flexor parvus minimi digiti.
- v*, The abductor minimi digiti.

FIG. 3.

*The Third Order of MUSCLES on the Under and Fore Part of the FORE-ARM and on the PALM.*

- a*, The flexor longus pollicis ;
- b*, Its tendon.
- c, d, e*, The flexor profundus.
- f*, The tendon of the flexor profundus to the fore-finger. A tendon of that muscle is also sent 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 adductor pollicis.
- m, m, &c.* The lumbricales.
- n*, The prior indicis.

FIG. 4.

*The Fourth Order of MUSCLES on the Under and Fore Part of the FORE-ARM and on the PALM.*

- a, a*, The pronator radii quadratus.

*b, c*, The



Fig. 1.



Fig. 2.



TAB. 58.

Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.



Fig. 10.



Fig. 11.



Fig. 12.





- d, e*, The abductor minimi digiti, composed of two parts, and fixed by a common tendon to the first bone of the little toe.  
*f*, The flexor brevis minimi digiti.

FIG. 10.

*The Second Order of MUSCLES in the SOLE.*

- a*, The tendon of the flexor longus digitorum.  
*b, c, d*, The flexor digitorum pedis accessorius;—*b, c*, Its two heads arising from the os calcis;—*d*, Its insertion into the tendon of the flexor longus digitorum pedis.  
*e*, The connexion between the tendons of the flexor longus digitorum and flexor longus pollicis.  
*f, f*, The insertion of the tendons of the flexor longus digitorum into the last bone of the small toes.  
*g, h, i, k*, The lumbricales.  
*l*, The tendon of the flexor longus pollicis.  
*m*, The insertion of the flexor longus pollicis into the last joint of the great toe.  
*n*, The insertion of the tibialis posticus.  
*o*, ———— anticus.  
*p, q*, The two parts of the flexor brevis pollicis.  
*r*, The insertion of the peroneus brevis.  
*s*, The tendon of the peroneus longus passing to the sole.  
*t, 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.*

- a*, 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 calcis, and giving origin to muscles.  
*f*, The flexor brevis minimi digiti.  
*g, h*, The adductor pollicis.  
*i, k, m*, The flexor brevis pollicis pedis;—*k*, Its tendinous origin from the os calcis and os cuneiforme externum;—*i*, Its connexion with the adductor pollicis;—*m*, Its connexion 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 peroneus brevis.  
*b*, The tendon of the peroneus longus joined to the metatarsal bone of the great toe, and sending tendons to the os cuneiforme internum.  
*c*, The insertion of the tibialis anticus.  
*d—i*, The interossei.  
*d*, The abductor, and,  
*e*, The adductor indicis pedis.  
*f*, The abductor and adductor medii digiti.  
*g*, The abductor, and,  
*h*, The adductor tertii digiti.  
*i*, ———— minimi digiti.



OF THE BURSE MUCOSÆ IN GENERAL

## PART III.

OF THE

BURSÆ MUCOSÆ;

AND OF THE

LIGAMENTS

AND

OTHER PARTS OF THE JOINTS.



## BURSÆ MUCOSÆ OF THE HEAD AND NECK.

THE Bursæ of the Head and Neck are small when compared with those of the Extremities. The following have lately been described by Authors, viz.

A Bursa between the Tendon of the Superior Oblique Muscle of the Eye and its Trochlea.

A Bursa belonging to the Tendon of the Digastric Muscle, where it is fixed to the Os Hyoides.

A Bursa belonging to the Tendon of the Circumflexus Palati, where it plays upon the inner Plate of the Pterygoid Process of the Sphenoid Bone.

A Bursa under the Masseter.

A Bursa under the upper end of the Sterno-hyoideus.

## BURSÆ MUCOSÆ OF THE SUPERIOR EXTREMITIES.

### *BURSÆ about the JOINT of the SHOULDER.*

A SMALL Bursa sometimes found between the Tendon of the Subclavius and Cartilage of the first Rib.

A Bursa under the Clavicle, where it plays upon the Coracoid Process of the Scapula.

A large Bursa between the Acromion Scapulæ and Ligament joining it to the Coracoid Process, and the Capsular Ligament of the Humerus.

A small Bursa between the point of the Coracoid Process and Capsular Ligament of the Humerus. This is sometimes wanting.

A Bursa between the Tendon of the Subscapularis Muscle and Capsular Ligament of the Humerus, which frequently communicates with the Cavity of the Joint.

A small Bursa under the Tendon of the Infra-Spinatus.

A Bursa, not constant, between the Origin of the Coraco-brachialis and short Head of the Biceps Muscle, and Capsular ligament of the Humerus.

A Bursa between the Tendon of the Teres Major and the Os Humeri, and upper part of the Tendon of the Latissimus Dorsi.

A small Bursa between the Tendon of the Latissimus Dorsi and Os Humeri.

A Bursa between the Tendon of the long Head of the Biceps Flexor Cubiti and Body of the Humerus.

### *BURSÆ about the JOINT of the ELBOW.*

A Bursa, with a Peloton or Mass of Fat, between the Tendon of the Biceps and a Cartilage which incrusts the Tubercle of the Radius.

A small Bursa between the Tendon common to the Extensor Carpi Radialis Brevior, Extensor Digitorum Communis, and Round Head of the Radius.

A small Bursa, not very constant, between the Tendon of the Triceps Extensor Cubiti and Olecranon.

A small Bursa between the Head of the Radius and the Anconeus.

Between the Integuments of the Elbow, and Olecra-

non of the Ulna, a Sac is found, especially in an old person, which is sometimes filled with a Glairy Fluid.

### *BURSÆ upon the Under Part of the FORE-ARM and the HAND.*

A very large Bursa surrounding the Tendon of the Flexor Pollicis Longus.

Four long Bursæ lining the Sheaths which inclose the Tendons of the Flexors upon the Fingers.

Four short Bursæ on the fore part of the 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 Capsular Ligament of the Wrist.

These two last-mentioned Bursæ are sometimes found to communicate with each other.

A Bursa between the Tendon of the Flexor Carpi Radialis and Os Trapezium.

An inconstant Bursa between the Tendon of the Flexor Carpi Ulnaris and Os Pisiforme.

A Bursa between the Tendon of the Extensor Ossis Metacarpi Pollicis and Radius.

A large Bursa common to the Extensores Carpi Radiales, where they cross behind the Extensor Ossis Metacarpi Pollicis.

Another Bursa common to the Extensores Carpi Radiales, where they cross behind the Extensor Secundi Internodii Pollicis.

A third Bursa at the Insertion of the Tendon of the Extensor Carpi Radialis Brevior.

A Bursa for the Tendon of the Extensor Secundi Internodii Pollicis, which communicates with the second Bursa common to the Extensores Carpi Radiales.

Another Bursa between the Tendon of the Extensor Secundi Internodii Pollicis and Metacarpal Bone of the Thumb.



A Bursa between the Tendons of the Extensor of the Fore, Middle, and Ring Fingers, and Ligament of the Wrist.

A Bursa for the Tendons of the Extensor of the Little Finger.

A Bursa between the Tendon of the Extensor Carpi Ulnaris and Ligament of the Wrist.

Sometimes minute Bursae are found between the Tendons of the Lumbricales and Interossei, at the Roots of the Fingers.

## BURSAE MUCOSÆ OF THE INFERIOR EXTREMITIES.

### BURSAE upon the PELVIS and upper Part of the THIGH.

A very large Bursa between the Iliacus Internus and Psoas Magnus, and Capsular Ligament of the Thigh-bone. This is sometimes found communicating with the Cavity of the Joint, particularly in an old person.

A Bursa between the Tendon of the Pectinalis and Thigh-bone, and sometimes,

A small Bursa between the Tendon of the Psoas Magnus, Iliacus Internus, and Trochanter Minor.

A small Bursa between the Gluteus Medius and Trochanter Major, and before the Insertion of the Tendon of the Pyriformis.

A Bursa between the Tendon of the Gluteus Minimus and Trochanter Major.

A small Bursa between the Obturator Internus, Geminus Inferior, and Gluteus Maximus.

A large Bursa between the Gluteus Maximus and Vastus Externus.

A Bursa between the Gluteus Medius and Pyriformis.

A Bursa between the Obturator Internus and Os Ischium.

An oblong Bursa continued a considerable way between the Obturator Internus and Gemini, and Capsular Ligament of the Thigh-bone.

A small Bursa at the Head of the Semimembranosus and Biceps Flexor Cruris.

A small Bursa between the Origin of the Semitendinosus and that of the two former Muscles.

A large Bursa between the Tendon of the Gluteus Maximus and root of the Trochanter Major.

Two small Bursae between the Tendon of the Gluteus Maximus and Thigh-bone.

### BURSAE about the JOINT of the KNEE.

A superficial Bursa frequently found between the Periosteum covering the fore part of the Patella, and the Tendinous Expansion over it.

A large Bursa behind the Tendon of 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 Ligament and the Bursa intimately connected; but in old people, it very frequently communicates with the Joint by a large Opening.

A Bursa behind the Ligament which joins the Patella to the 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 Bursa between the Tendons of the Semimembranosus, Gastrocnemius Externus, and Ligament of the Knee. This Bursa contains a small one within it, from which there is a passage leading into the Cavity of the Joint.

A Bursa between the Tendon of the Semimembranosus and the internal Lateral Ligament of the Knee, from which also there is a passage leading into the Joint.

A Bursa under the Popliteus, likewise communicating with the Cavity of the Knee-joint.

### BURSAE about the ANKLE.

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 Pollicis Pedis, and the Tibia, and Capsular Ligament of the Ankle.

A Bursa between the Tendons of the Extensor Digitorum Longus and Ligament of the Ankle.

A large Bursa common to the Tendons of the Peronei Muscles.

A Bursa proper to the Tendon of the Peroneus Brevis.

A Bursa between the Tendo ACHILLIS and Os Calcis, into the Cavity of which a *Peloton* of Fat projects.

A Bursa between the Os Calcis and Flexor Pollicis Longus.

A Bursa between the Flexor Digitorum Longus, and the Tibia and Os Calcis.

A Bursa between the Tendon of the Tibialis Posticus, and the Tibia and Astragalus.

### BURSAE in the SOLE of the FOOT.

A second Bursa for the Tendon of the Peroneus Longus, with an oblong *Peloton* of Fat within it.

A Bursa common to the Tendon of the Flexor Pollicis Longus, and that of the Flexor Digitorum Profundus, at the upper end of which a Fatty Substance projects.

A Bursa for the Tendon of the Tibialis Posticus.

A Bursa lining the Sheath of each of the Tendons of the Flexors upon the Toes.

TABLE



# TABLE LIX.

Represents the BURSÆ MUCOSÆ of the SUPERIOR EXTREMITIES.

*The BURSÆ MUCOSÆ of this and the succeeding Table are all represented as slit open, and several of them inflated.*

FIG. 1.

*The BURSÆ MUCOSÆ on the Fore Part of the Right SUPERIOR EXTREMITY.*

- A, The clavicle.
- B, The acromion scapulæ.
- 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 ligaments which tie the clavicle to the coracoid process.
- G, The head of the os humeri.
- H, The body of that bone.
- I, 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 between the acromion and ligament J, and the capsular ligament of the humerus.
- L, A small bursa, sometimes absent, between the point of the coracoid process and capsular 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.
- O, A bursa, not constant, between the origin of the coraco-brachialis and short head of the biceps, and capsular ligament of the humerus.
- P, The tendon of the teres major turned outwards.
- Q, A bursa between the tendon of the teres major and the os humeri, and upper part of the tendon of the latissimus dorsi.
- R, The tendon of the latissimus dorsi turned outwards.
- S, A small bursa between the tendon of the latissimus dorsi and os humeri.
- T, A bursa between the tendon of the long head of the biceps flexor cubiti and the body of the humerus.
- U, The radius.
- V, The ulna.
- W, The tendon of the biceps flexor cubiti turned inwards.

- X, A bursa, with a *peloton* of fat, between the tendon of the biceps and tubercle of the radius.
- Y, The origin of the extensor carpi radialis longior.
- Z, A small bursa, between the tendon common to the extensor carpi radialis brevior, extensor digitorum communis, and the round head of the radius.
- a, The sheath of the flexor longus pollicis, slit open.
- b, ————— flexors of the fore-finger, entire.
- c, The thick part of the sheath of the tendons of the flexors of the middle finger.
- d, The sheath of the tendons of the flexors of the ring-finger, slit open.
- e, The sheath of the tendons of the flexors of the little finger, slit open, and the tendons drawn forwards, to shew them fully. Each of the sheaths of the flexors of the fingers is lined with a bursa.
- f, A very large bursa surrounding the tendon of the flexor pollicis longus.
- g, h, i, k, Four short bursæ on the fore part of the tendon of the flexor sublimis digitorum in the palm.
- l, A probe introduced into a large bursa between the tendon of the flexor pollicis longus, and the fore part of the radius, and between the capsular ligament of the wrist and os trapezium.
- m, A probe put into a large bursa behind the tendons of the flexor digitorum profundus, and on the fore parts of the end of the radius, and capsular ligament of the wrist.
- n, A bursa between the tendon of the flexor carpi radialis and os trapezium.
- o, A bursa between the tendon of the flexor carpi ulnaris and os pisiforme.

FIG. 2.

*The BURSÆ MUCOSÆ on the Back Part of the Right SUPERIOR EXTREMITY.*

- A, The dorsum scapulæ.
- B, The cervix scapulæ.
- C, The acromion.
- D, The capsular ligament of the humerus.

E, The







FIG. 1.

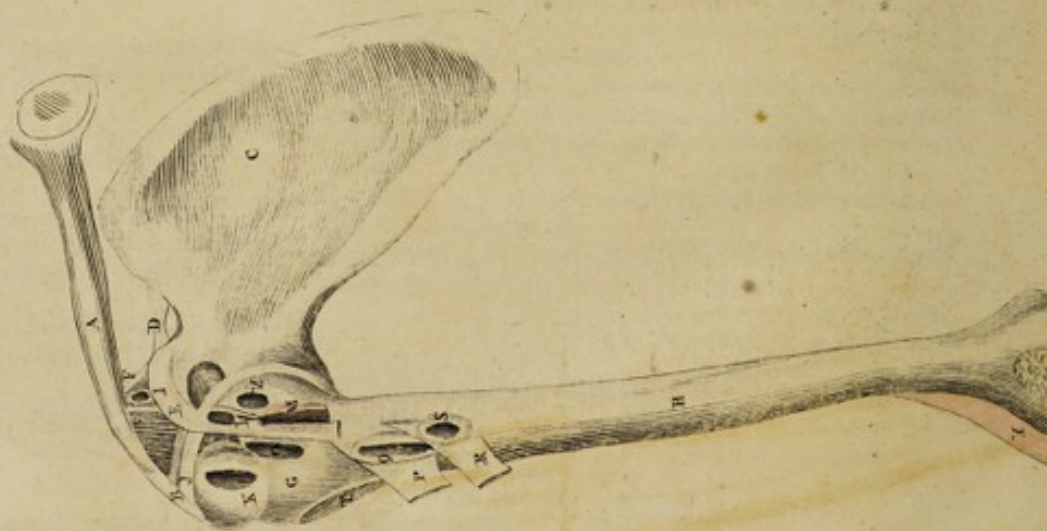
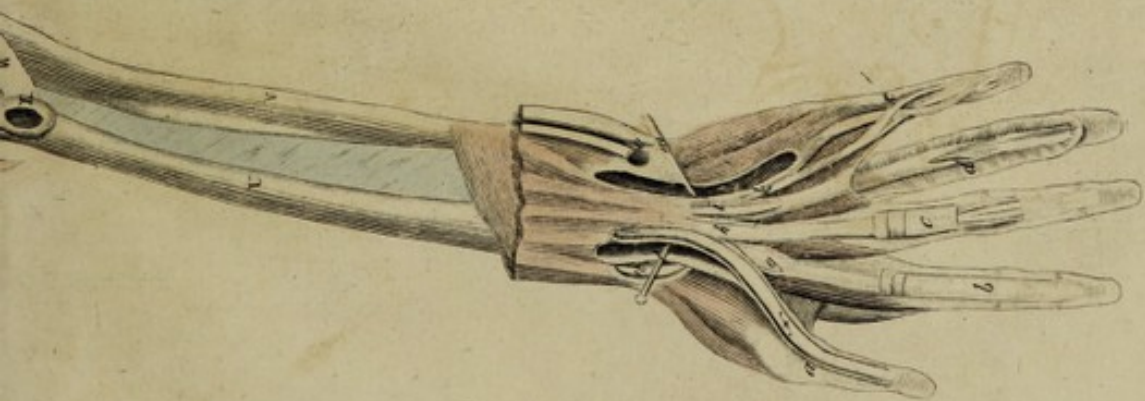


FIG. 2.













- E, The tendon of the infra-spinatus turned outwards.  
 F, The tendon of the teres minor turned outwards.  
 I, The os humeri.  
 J, The external, and,  
 K, The internal condyle of the humerus.  
 L, The radius.  
 M, The ulna.  
 N, The olecranon.  
 O, The tendon of the triceps extensor cubiti turned down.  
 P, A small bursa between it and the olecranon.  
 Q, A bursa between the tendon of the extensor ossis metacarpi pollicis and the radius.  
 R, R, A large bursa common to the extensores carpi radiales, where they cross behind the extensor ossis metacarpi pollicis.  
 S, S, Another bursa common to the extensores carpi

- radiales, where they cross behind the extensor secundi internodii pollicis.  
 T, A third bursa at the insertion of the tendon of the extensor carpi radialis brevior.  
 U, A bursa for the tendon of the extensor secundi internodii pollicis, which communicates with the bursa S, S.  
 V, Another bursa between the tendon of the extensor secundi internodii pollicis and metacarpal bone of the thumb.  
 W, The tendons of the extensor of the fore, middle, and ring fingers.  
 X, A bursa between these tendons and the ligament of the wrist.  
 Y, Another bursa for the extensor of the little finger.  
 Z, A bursa between the tendon of the extensor carpi ulnaris and ligament of the wrist.



# TABLE LX.

Represents the BURSÆ MUCOSÆ of the INFERIOR EXTREMITIES.

FIG. 1.

*The BURSÆ MUCOSÆ on the Fore Part of the Right INFERIOR EXTREMITY.*

- A, The spine of the os ilium.
- B, The inner side of the os ilium.
- C, The os pubis.
- D, The neck of the thigh-bone.
- E, The root of the great trochanter.
- F, The thigh-bone.
- G, The iliacus internus.
- H, The psoas magnus.
- I, The insertion of the iliacus internus and psoas magnus into the trochanter minor.
- K, A very large bursa mucosa, between these two muscles and the capsular ligament of the thigh-bone.
- L, The pectineus.
- M, A bursa between the tendon of the pectineus and thigh-bone.
- N, The adductor brevis femoris.
- O, The gluteus minimus.
- P, The tendinous part of the gluteus medius.
- Q, A small bursa between the gluteus medius and trochanter major. Behind it the tendon of the pyriformis is inserted.
- R, A bursa between the tendon of the gluteus minimus and trochanter major.
- S, Part of the gluteus maximus, which is joined to the gluteus medius.
- T, Part of the vastus externus.
- U, A bursa between the gluteus maximus and vastus externus.
- V, The patella.
- W, The capsular ligament of the knee.
- X, The tendon of the extensors of the leg, cut and turned up.
- Y, A large bursa behind the tendon of the extensors of the leg.
- Z, A communication frequently found between this bursa and the cavity of the knee-joint.
- a, a, The ligament which joins the patella to the tibia, cut and turned outwards;
- b, A bursa behind it.

- c, A fatty peloton projecting into the cavity of the bursa.
- d, The tibia.
- e, The fibula.
- f, The back part of the insertion of the sartorius, turned forwards.
- g, The tendon of the gracilis.
- h, \_\_\_\_\_ semitendinosus.
- i, A large bursa between the tendons of the sartorius, gracilis, semitendinosus, and tibia.
- k, The internal 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.
- m, A bursa between the tendon of the extensor proprius pollicis pedis, and the tibia and capsular ligament of the ankle.
- n, A bursa between the tendons of the extensor digitorum longus, and ligament of the ankle.

FIG. 2.

*The BURSÆ MUCOSÆ on the Back Part of the Right INFERIOR EXTREMITY.*

- A, The dorsum of the os ilium.
- B, The os sacrum.
- C, The os coccygis.
- D, The tuber of the os ischium.
- E, The large trochanter.
- F, The middle of the thigh-bone.
- G, The gluteus minimus.
- H, The pyriformis.
- I, A bursa mucosa between the gluteus medius and pyriformis.
- K, K, The obturator internus cut across.
- L, L, The gemini.
- M, A bursa between the obturator internus and os ischium.
- N, A probe put into a bursa, which is continued to a dotted line between the obturator internus, gemini, and capsular ligament of the thigh-bone.
- O, The quadratus femoris.
- P, The origin of the semimembranosus, and long head of the biceps flexor cruris.
- Q, A small bursa mucosa.
- R, The origin of the semitendinosus turned back.

S, A,



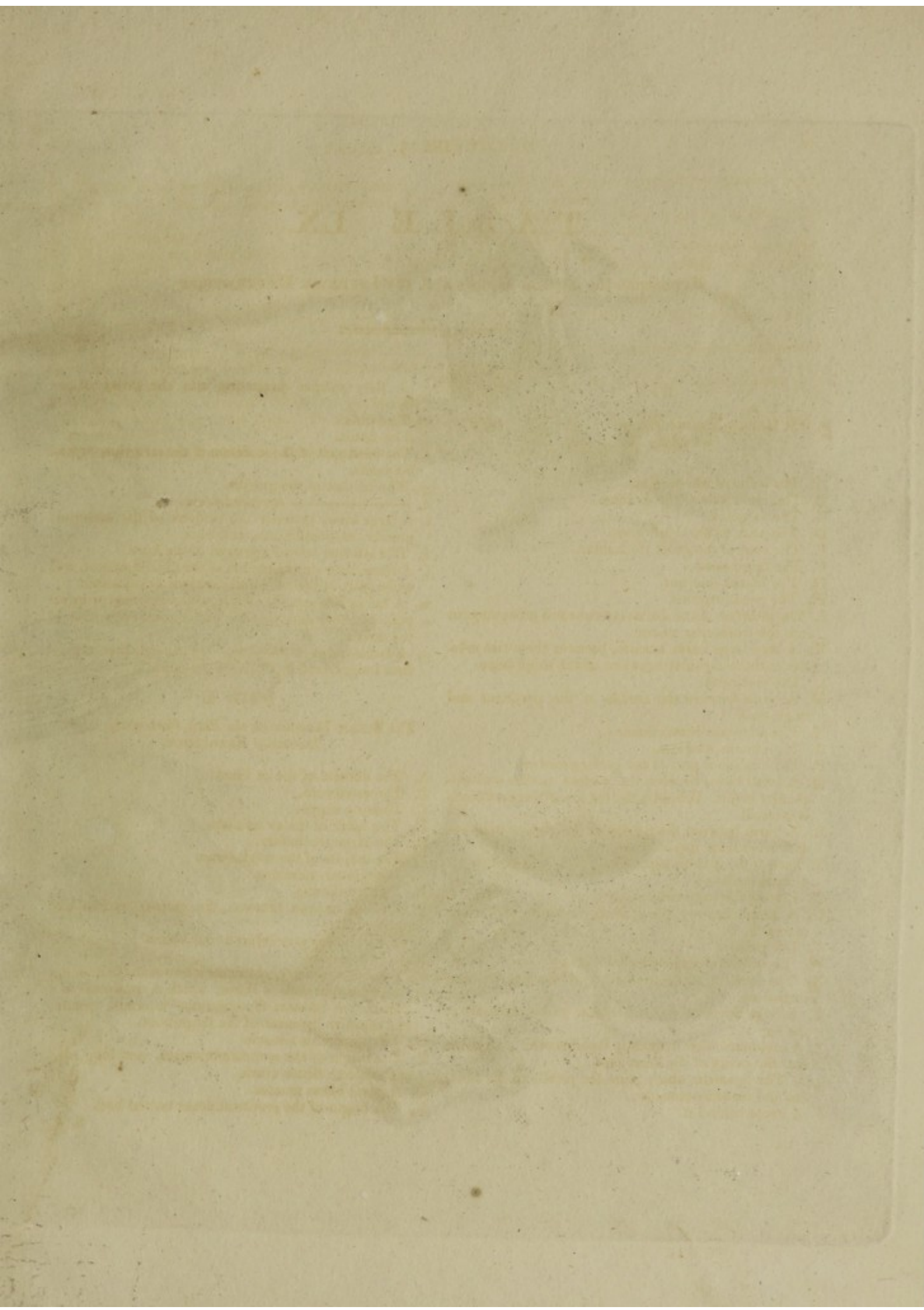




FIG. 1.



FIG. 3.

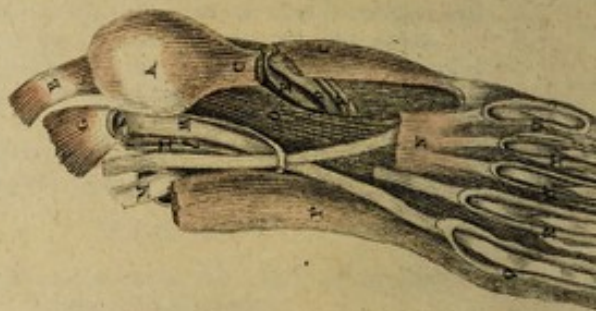
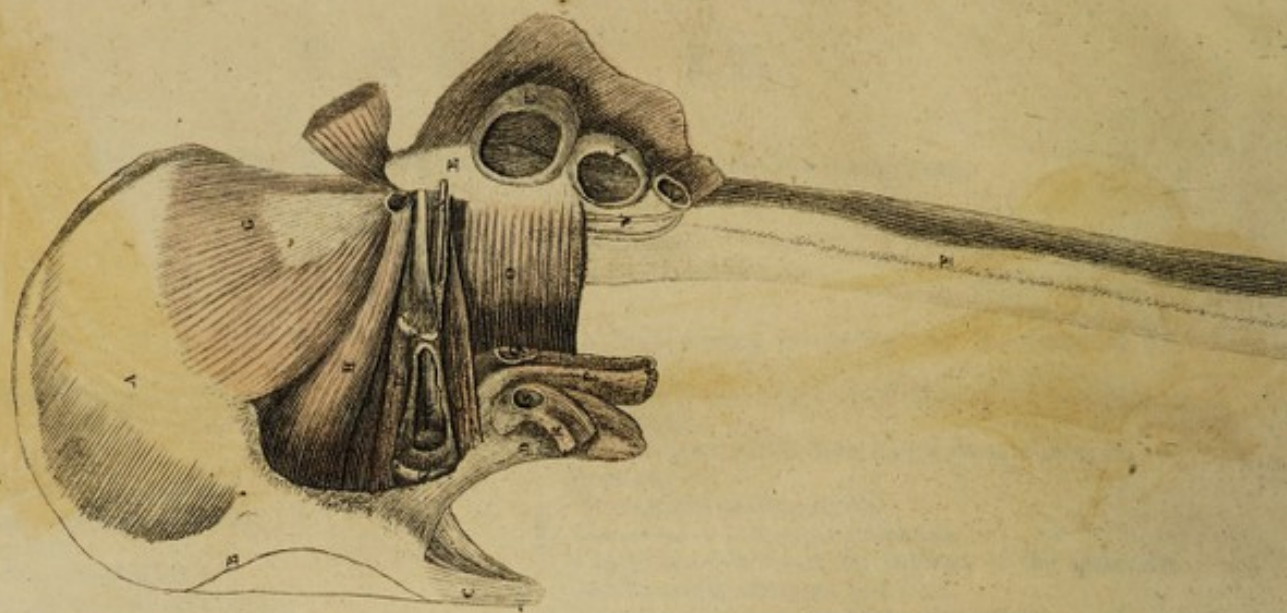
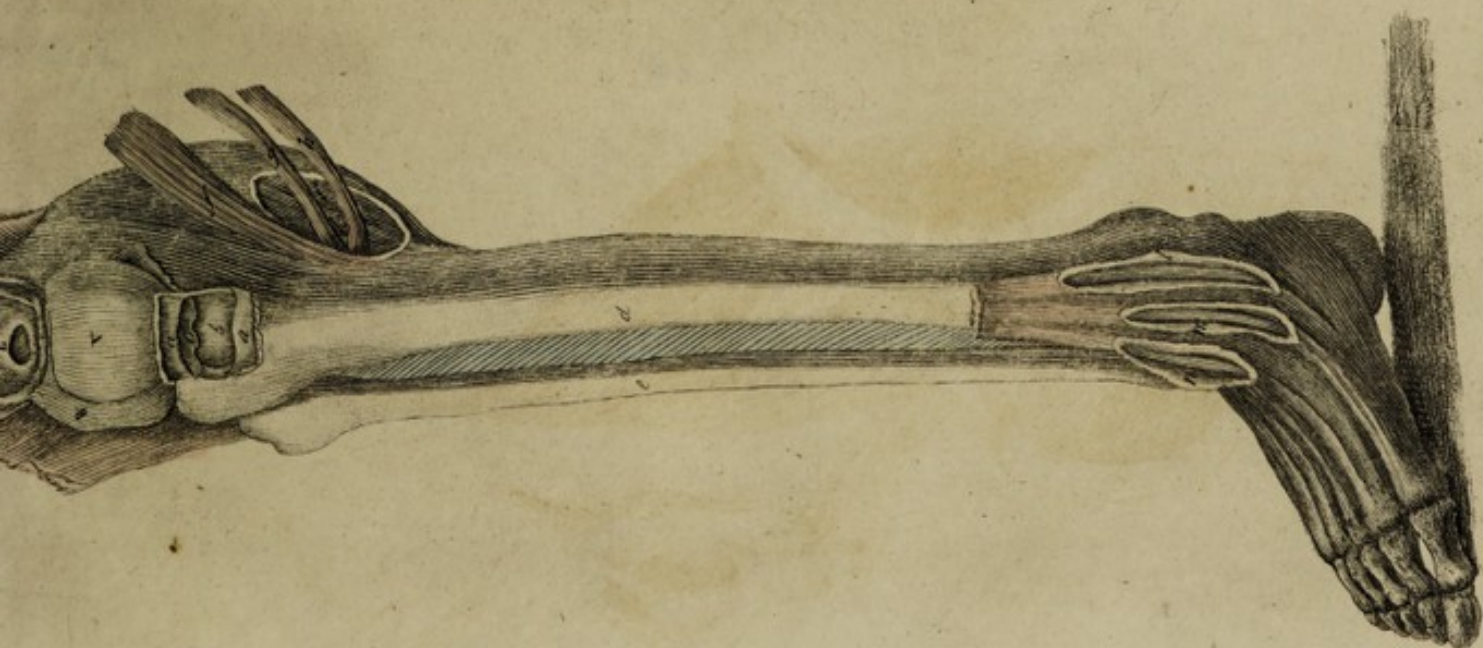
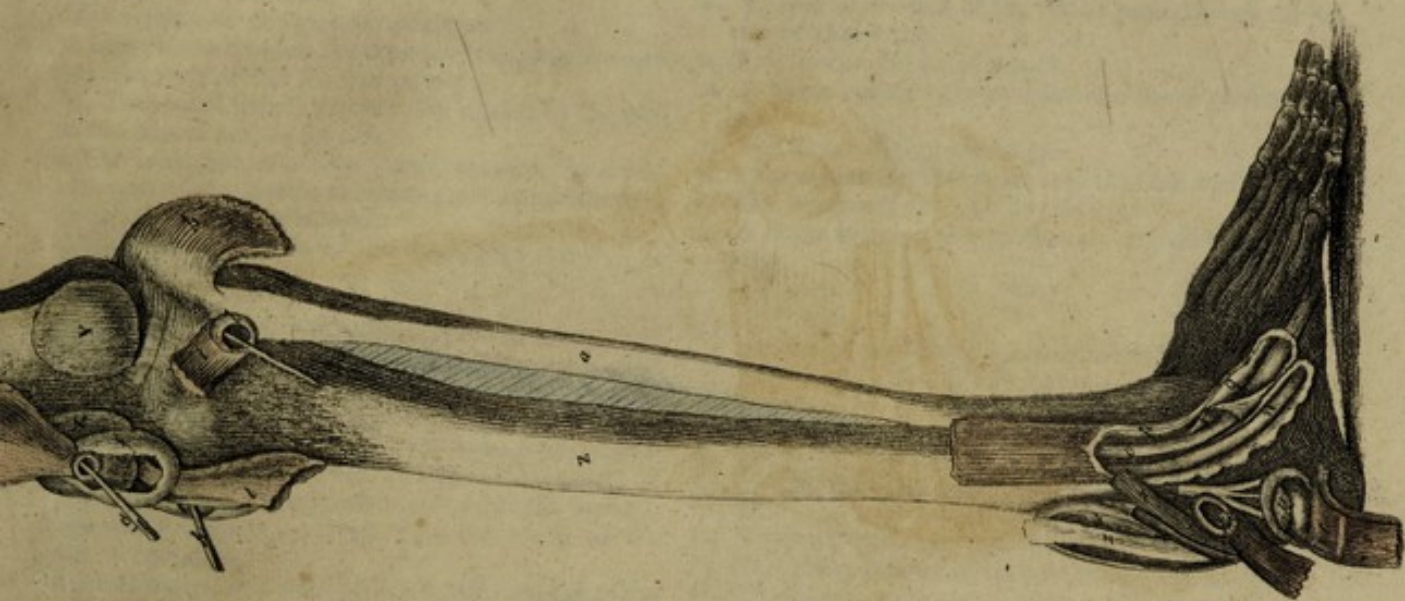


FIG. 2.













- S, A small bursa mucosa.  
 T, The tendon of the gluteus maximus.  
 U, A large bursa between the tendon of the gluteus maximus and root of the trochanter major.  
 V, V, Two small bursæ between 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 and vastus externus.  
 X, The internal condyle, and,  
 Y, The external condyle of the thigh-bone.  
 Z, The tibia.  
 a, The fibula.  
 b, The biceps flexor cruris turned downwards.  
 d, The inner head of the gastrocnemius externus turned up.  
 e, The semimembranosus turned down.  
 f, 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.  
 h, A probe passed into a bursa between the tendon of the semimembranosus and the internal lateral ligament of the knee, from which there is a passage communicating with the joint of the knee.  
 i, A small portion of the popliteus.  
 l, A bursa under it, communicating with the cavity of the joint of the knee.  
 n, The tendon of the peroneus longus.  
 o, ————— brevis.  
 p, A large bursa common to the tendons of the peronei.  
 q, A bursa proper to the tendon of the peroneus brevis.  
 r, A ligament which ties the fibula to the os calcis.  
 s, The tendo ACHILLIS turned down.  
 t, A bursa between the tendo ACHILLIS and os calcis.

- u, A *peloton*, or mass of fat, which projects into the cavity of that bursa.  
 v, The tendon of the plantaris.  
 w, A bursa between the os calcis and flexor pollicis longus.  
 x, The flexor digitorum longus.  
 y, A bursa between that flexor and the tibia and os calcis.  
 z, The tendon of the tibialis posticus.  
 &, A bursa between this tendon and the tibia and astragalus.

FIG. 3.

*A View of the BURSE MUCOSÆ in the SOLE of the RIGHT FOOT.*

- A, The os calcis.  
 B, The tendo ACHILLIS.  
 C, C, The abductor minimi digiti cut across.  
 D, The tendon of the peroneus longus.  
 E, A second bursa for that tendon.  
 F, An oblong *peloton* of fat within this bursa.  
 G, The fleshy, and,  
 H, The tendinous part of the flexor longus pollicis pedis.  
 I, A bursa common to this tendon, and the tendon of the flexor digitorum profundus.  
 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 the tibialis posticus in its bursa.  
 N, The place at which the flexor digitorum sublimis is cut off.  
 O, The massa carnea JACOBI SYLVII, or flexor tertius.  
 P, The abductor pollicis pedis cut off from the os calcis.  
 Q, R, S, T, U, The bursæ mucosæ of the flexor tendons slit open nearly their whole length.

VOL. I.

B b



## OF THE LIGAMENTS, &c. OF THE JOINTS.

LIGAMENTS are *white, strong, flexible* Substances, of an intermediate firmness to Cartilage and common Membrane.

They are *composed* of Fibres variously disposed; the greater part of them, however, running in a longitudinal direction.

The Ligaments 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 *Capsular*, from their forming a *Purse* or *Bag*, which includes the Joint.

Where *variety of motion* is allowed, the Capsular Ligament is nearly of equal strength round the whole circumference of the Joint; but, where the Joint is of the nature of a *Hinge*, the Ligaments are strongest at the sides of that Hinge, or are there strengthened by the addition of Ligamentous Slips, termed *Lateral Ligaments*, which assist in regulating the motion of the Joints.

The *outer* part of the Capsular Ligament is formed of a continuation of the *Periosteum*, which is connected to the surrounding parts by Cellular Substance; while the *inner* Layer,—remarkably thick and dense,—is reflected over the Bones and Cartilages which the Ligament includes; one part of it thus forming *Periosteum*, and the other *Perichondrium*.

In certain parts of the Body, besides the Ligaments mentioned above, there are others for the firm connexion of the Bones, or for confining the motion to one particular side; as the *Round Ligament* of the Thigh, or *Crucial*, or *Lateral* Ligaments of the Knee.

Wherever the Ligaments are few, long, and weak, the motions are more extensive; and, on the contrary, where the Ligaments are numerous, short, and strong, the motions are more limited.

Ligaments have numerous *Blood-vessels*, which can be readily injected.

Upon the inner Surface of the Capsular Ligaments, their *Arteries* secrete a Liquor which assists in the lubrication of the Joints.

The *Nerves* of Ligaments are very minute, but in some parts can be easily traced upon their Surface.

The *Sensibility* of Ligaments, in the sound state, is inconsiderable; when in a state of inflammation, however, they are found to occasion extreme pain.

*Use:* The Capsular Ligaments connect Bones together, assist in the secretion of the Synovia which they contain, and prevent the other parts in the Joint from being pinched.

The other Ligaments join Bones together, and preserve them in their proper situation.

In many parts, the Ligaments give attachment to Tendons, and in some they supply the place of Bone, and give Origin to Muscles, as in the Foramina Thyroidea of the Pelvis, and between the Bones of the Fore-Arms and Legs.

In some parts, they assist in connecting immoveable Bones, as at the *Os Sacrum* and *Os Innominatum*: In others, they form a Socket in which moveable Bones play, as where part of the *Astragalus* moves on the Ligament stretched between the *Os Calcis* and *Os Scaphoides*.

### SYNOVIAL ORGANS,

#### Commonly called GLANDS of the JOINTS.

These are *Masses of Fat* found in the greater number of the Joints, covered with a continuation of the inner Layer of the Capsular Ligament, and projecting in such a manner as to be gently pressed, but not bruised, by the motions of the Joint; and, in proportion as these motions are more or less frequent, the liquor which they secrete is discharged 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, from the numerous Blood-vessels dispersed upon them.

They have been generally considered as *Glands* lodged within masses of Fat; but, upon a minute inspection, no knotty or Glandular Bodies 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 nature of Glands.

From the edges of these Fatty Bodies, there are pendulous *Fimbriae*, which convey a lubricating Liquor, called *Synovia*, into the Cavity of the Joints.

From the extremities of these *Fringes*, the Liquor can be readily squeezed out by pressure; but their Cavities and Orifices are so minute, or are otherwise of such a nature, as to have hitherto eluded discovery.

The *Fimbriae* have been generally considered as *Excretory Ducts of Glands* within the Joints. DR MONRO, however, in his Work upon the Bursæ Mucosæ, supposes them to be of the nature of the *Follicles of the Urethra*, which prepare a Mucilaginous Liquor, without the assistance of any knotty or Glandular Organ.

The *Arteries* which supply these Bodies with Blood for their Secretion, and the *Veins* which return the Blood



Blood after the secretion has been performed, can be readily seen; but no *Nerves* can be traced in them; nor does it appear that they possess a higher degree of Sensibility than the other parts of the Joints already described, although, when they inflame and suppurate, they have in some instances been observed to occasion the most excruciating pain.

The *Synovia*, which is a thin Mucilaginous Liqueur, resembling the glair of an egg, appears to be furnished, not only by the substances already mentioned, 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.

Synovia is found to be composed of Water, mixed with a small proportion of Gelatin, Mucilage, Albumen, and common Salt.

## LIGAMENTS OF THE HEAD AND TRUNK.

### LIGAMENTS of the LOWER JAW.

The *Capsular Ligament* on each side, which arises from the whole Margin of the Articular Cavity of the Temporal Bone, and is inserted, first into the edge of the Interarticular Cartilage, formerly taken notice of, and afterwards round the Cervix of the Lower Jaw. This Ligament, like others which belong to Joints of the hinge kind, is thickest and strongest at the sides of the Joint, to confine the lateral motion of the Jaw. Tab. LXI. Fig. 1. *f.* Fig. 2. *d.* Tab. XXXV. Fig. 17. *r.* *t.* *t.*

By it the Jaw is allowed to move upwards, downwards, or a little forwards or backwards, or to either side; and the motions are rendered easier by the intervention of the Interarticular Cartilage, which follows the Condyle in its different motions.

The *Suspensory Ligament* of the Stylo-glossus, which is attached by one end 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;—serving to support the Stylo-glossus, and to give origin to part of it. Tab. LXI. Fig. 1. *k.*

The *Lateral Ligament*, which arises from the Margin of the Articular Cavity of the Temporal Bone, and is inserted into the inner Surface of the Angle of the Lower Jaw, near its posterior Foramen;—assisting to keep the Jaw in *situ*, and to prevent the inferior Maxillary Vessels and Nerve from being injured by the action of the Pterygoid Muscle. Tab. LXI. Fig. 1. *g.*

LIGAMENTS connecting the HEAD with the first and Second VERTEBRÆ of the NECK, and these two VERTEBRÆ with each other.

The two *Capsular Ligaments*, which arise from the margin of the superior articulating Processes of the Atlas, and are inserted into the Base of the Condyles of

the Occipital Bone, where the Head has its flexion and extension without rotation. Tab. LXI. 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 into the edge of the Foramen Magnum of the Occipital Bone. Tab. LXI. Fig. 3. *d.*

The two *Capsular Ligaments*, which fix the inferior oblique Processes of the Atlas to the superior oblique of the Vertebra Dentata, and admit of the rotation of the Head, with a small degree of flexion to either side. Tab. LXI. Fig. 3. *n.* *n.*

The *Perpendicular Ligament*, which fixes the Processus Dentatus of the Second Vertebra to the edge of the anterior part of the Foramen Magnum, between the Condylod Processes, and which is twisted in the rotation of the Head. Tab. XXXVI. Fig. 6. *q.*

The *Two Lateral, or Moderator Ligaments*, which arise each from the side of the Processus Dentatus, and run outwards and upwards, to be fixed to the inner part of the side of the Atlas, and to the inner edge of the Foramen Magnum at the fore part of the Condyles. Tab. XXXVI. Fig. 6. *p.* *p.* They are short, but of great strength, and prevent the Head from turning too far round.

The *Transverse Ligament*, which arises from the inner side of the Atlas, and, going across behind the Processus Dentatus, is fixed to the opposite side of the Atlas. Tab. XXXVI. Fig. 6. *o.*

The edges of this Ligament extend upwards and downwards, and form two Processes, called its *Appendices*, which are fixed to the Foramen Magnum and Processus Dentatus. 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 from injuring the Spinal Marrow in the different motions of the Head.

In persons who suffer Death from suspension by the Neck, this Ligament, and some of the others near 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 Marrow; but this is not a common occurrence.

### LIGAMENTS of the other VERTEBRÆ.

The *Anterior common Ligament* of the Vertebrae, which is a strong Tendinous band, extending along the convex or outer part of the Vertebrae, from the upper to the under region of the Spine. Tab. LXI. Fig. 4. *a.* *b.* It begins at the second Cervical Vertebra, and descends as far as the Os Sacrum, where it spreads out, becomes thinner, and vanishes about the under part of this bone.

It is much thicker upon the fore part than on the sides of the Vertebrae, by which the Bones are more firmly united anteriorly, and is thinnest in the Neck and



and Loins, where the motions of the Spine are greatest. Internally it is blended with the Periosteum, and, through its whole course, it sends off small Processes to be fixed to the Bodies of the Vertebrae, by which their connexion is made more secure. While it assists in binding the Vertebrae together, it prevents the Spine from being stretched too much backwards.

The *Crucial Intervertebral Ligaments*, which are numerous and short, but strong, situated behind the Ligamentum Commune Anterior, crossing each other obliquely. They join the Bodies of the Vertebrae together, upon the outer edges of the Intervertebral Substances, to which also they firmly adhere. Tab. LXI. Fig. 5. c, d.

The *Intervertebral Substances*, (already described along with the Bones), which join the Bodies of the Vertebrae together, and allow an yielding motion in all directions.

These Substances are so compressible as to yield to the weight of the upper part of the Body; so that, after having been in an erect posture through the course of the day, the height of a person of middle stature, and in the prime of life, is diminished from half an inch to an inch in the evening; but, after a night's rest in the usual attitude, it is completely restored.

The *Ligaments* which run from the edge of the Bony Arch and Spinous Process of one Vertebra to that of the next, so as to assist in filling up the Interstices, and in fixing the Vertebrae together.

A *Ligamentous Cord* which fixes the points of the Spinous Processes together. Tab. LXI. Fig. 9. f, f.

The *Cervical Ligament*, termed *Ligamentum Nuchæ*, vel *Colli*, which arises from the perpendicular Spine of the Occipital Bone, and descends on the back part of the Neck, adhering to the Spinous Processes of the Cervical Vertebrae, and giving Origin to part of the Trapezius.

*Ligaments* between the Transverse Processes of the Vertebrae of the Back, fixing these Processes to each other. Tab. L. c, c.

The *Capsular Ligaments*, which join the articulating Processes to each other.

The *Posterior* or *Internal Common Ligament* of the Vertebrae, somewhat similar to the anterior one. Tab. LXI. Fig. 6. 7.

It begins at the anterior edge of the Foramen Magnum, and passes along the inner or concave part of the Bodies of the Vertebrae, becoming broader over each of the Intervertebral Substances. It adheres firmly to the upper and under edges of the Bones, and terminates at the lower part of the Os Sacrum. It prevents the Spine from being too much bent forwards.

#### LIGAMENTS of the RIBS.

The *Capsular Ligaments of the Heads of the Ribs*, which arise from these Heads, and are fixed to the Circumference of the Pits in the sides of the Bodies of the

Vertebrae and Intervertebral Cartilages. The outer part of each Ligament sends off, or is connected with, radiated Fibres which are spread out upon the sides of the Vertebrae. Tab. LXI. Fig. 8. c, c.

The *Capsular Ligaments of the Tubercles of the Ribs*, which arise round the Articular Pits on the points of the Transverse Processes of the Vertebrae of the Back, and are fixed round the Tubercles of the Ribs.

The *Internal Ligaments of the back of the Ribs*, called *Ligamenta Transversaria Interna*, which arise from the inferior Surfaces of the Transverse Processes, and are fixed to the superior Margins of the Necks of the nearest Ribs. Tab. LXI. Fig. 8. d, d.

The *External Ligaments of the Necks of the Ribs*, called *Ligamenta Transversaria Externa*. They arise from the points of the Transverse Processes externally, and are fixed to the back part of the Necks of the Ribs. Tab. LXI. Fig. 9. c, c.

*Ligamenta Cervicis Costarum Externa*, or *External Ligaments of the Necks of the Ribs*, which arise from the External Margins of the inferior oblique Processes, and descend obliquely outwards, to be fixed to the upper and outer part of the Necks of all the Ribs. Tab. LXI. Fig. 9. e, e.

The Ligaments at this end of the Ribs, together with the situation of the Transverse Processes, admit of their motion upwards and downwards, but prevent them from moving in any other direction.

*Short Ligamentous Fibres*, which run from the Margins of the anterior extremities of the Ribs to the Margins of their corresponding Cartilages; the Cartilages and Ribs, which these Fibres inclose, being joined by a union of Substance. Tab. LXI. Fig. 13. d.

*Radiated Ligaments*, which go from the Sternal extremities of the Cartilages of the Ribs, over the external Surface of the Sternum. Tab. LXI. Fig. 12. d. Fig. 13. e.

Many of the Fibres of these Ligaments intermix with their fellows on the opposite side.

The *Capsular Ligaments of the Cartilages of the Ribs*, which arise from the Margins of the Articular Cavities of the Sternum, within the Radiated Ligaments, and are fixed round the extremities of the Cartilages of the seven True Ribs. Tab. LXI. Fig. 13. Within the Capsular Ligaments, the concave part of the Pits on the edges of the Sternum are connected to the ends of the Cartilages of the Ribs, by fine Cellular Substance, which allows the Cartilages to roll upon the Sternum.

The *Membrane proper to the Sternum*, which is a firm Expansion, composed of Tendinous Fibres running in different directions, but chiefly in a longitudinal one, and covering the anterior and posterior Surfaces of the Bone, the Membrane itself being confounded with the Periosteum. Tab. LXI. Fig. 12. a, b.

*Ligaments of the Cartilago Ensiformis*, Tab. LXI. Fig. 12. g, g, which are part of the proper Membrane of the Sternum, divided into strong Bands running obliquely from the under and fore part of the second Bone



Bone of the Sternum, and from the Cartilages of the seventh Pair of Ribs, to be fixed to the Cartilago Ensiformis.—The Ligaments covering the Sternum serve considerably to strengthen it.

*Thin Tendinous Expansions*, which run over the In-

tercostales at the fore part of the Thorax, and connect the Cartilages of the Ribs to each other. They are chiefly seated in the spaces unoccupied by the Intercostales Externi. Tab. LXI. Fig. 12. *f, f*.

## LIGAMENTS OF THE BONES OF THE PELVIS.

THE two *Transverse Ligaments of the Pelvis*, which arise from the posterior part of the Spine of the Os Ilium, and run transversely. The one is *superior*, and is fixed to the Transverse Process of the last Vertebra of the Loins; the other *inferior*, and is connected to the first Transverse Process of the Os Sacrum. Tab. LXI. Fig. 4. *p, q*.

The *Ilio-sacral Ligaments*, which arise from the posterior Spinous Process of the Os Ilium, descend obliquely, and are fixed to the first, third, and fourth spurious Transverse Processes of the Os Sacrum. Tab. LXI. Fig. 10. *f, g, h*.

These, with the two Transverse Ligaments, assist in binding the Bones together to which they are connected.

The *Capsular Ligament of the Symphysis of the Os Ilium and Sacrum*, which surrounds the Joint, and assists in connecting the two Bones to each other.

A *very thin Cartilage* within this Joint, which cements the two Bones strongly together, and which constantly adheres to the Os Sacrum when the Joint is opened. Tab. LXI. Fig. 11. *f*.

A *Ligamentous and Cellular Substance*, containing *Mucus*, which forms the back part of this Joint, also assisting to fix the two Bones to each other, in such a manner as to allow no motion; the Joint, however, along with its fellow, and that between the Ossa Pubis, being useful in diminishing the effects which might result from concussion. Tab. LXI. Fig. 11. *g*.

The two *Sacro-ischiatic Ligaments*, situated 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 Bone, and from the upper part of the Os Coccygis.

The first of these Ligaments, called the *Large, External, or Posterior Sacro-ischiatic Ligament*, descends obliquely to be fixed to the Tuberosity of the Os Ischium. Tab. LXI. Fig. 10. *k*. The other, called the *Small Internal, or Anterior Sacro-ischiatic Ligament*, runs transversely to be fixed to the Spinous Process of the Os Ischium. Tab. LXI. Fig. 10. *m*.

These two Ligaments assist in binding the Bones of the Pelvis, in supporting its contents, and in giving Origin to part of its Muscles. By the External, the Notch of the Ilium is formed into a Hole for the pas-

sage 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 passage of the Obturator Internus.

The two *Membranous Productions* which are connected with the large Sacro-ischiatic Ligament, termed by WEITBRECHT the *Superior and Inferior Appendices* of the large Sacro-ischiatic Ligament.

The *Superior Appendix*, which is Tendinous, arises from the back part of the Spine of the Os Ilium, and is fixed along the outer edge of the Ligament, which it increases in breadth. Tab. LXI. Fig. 10. *l*.

The *Inferior or Falciform Appendix* is situated within the Cavity of the Pelvis; the back part of it is connected with the middle of the large External Ligament, and the remainder is extended round the Curvature of the Os Ischium. Tab. LXI. Fig. 11. *n, n*.

These two Productions assist the large Sacro-ischiatic Ligament in furnishing a more commodious situation for, and attachment to, part of the Gluteus Maximus and Obturator Internus.

Besides the Ilio-sacral, and Sacro-ischiatic Ligaments, several other *Slips* are observed upon the back of the Os Sacrum, which descend in an irregular manner, and strengthen the connexion between that Bone and the Ossa Ilii. Tab. LXI. Fig. 10. *i, i*.

The large Holes upon the back part of the Os Sacrum are also surrounded with various *Ligamentous Expansions* projecting from one Tubercle to another, and giving Origin to Muscular Fibres, and protection to small Vessels and Nerves which creep under them. Tab. LXI. Fig. 10.

A *General Covering* sent down from the Ligaments of the Os Sacrum, which spreads over and connects the different pieces of the Os Coccygis together, allowing considerable motion, as already mentioned in the description of this Bone. Tab. LXI. Fig. 10.

*Longitudinal Ligaments of the Os Coccygis*, which descend from those upon the Dorsum of the Os Sacrum, to be fixed to the back part of the Os Coccygis. Tab. LXI. Fig. 10. *n*. The Ligaments of this bone prevent it from being pulled too much forwards by the action of the Coccygeus; and they restore the Bone to its natural situation, after that Muscle has ceased to act.

The



The *Inguinal*, or *POUPART's*, or *FALLOPIUS's Ligament*, or *Crural Arch*, which runs transversely from the anterior-superior Spinous Process of the Os Ilium to the Crest or Angle of the Os Pubis. It has been already described as the inferior Margin of the Tendon of the External Oblique Muscle of the Abdomen. Tab. XLI. Trunk, *q*.

A strong Ligamentous Tendon covering the upper part of the Os Pubis, projecting above the Linea Iliopectinea, and having part of the Ligament of *POUPART* fixed to it.

The *Capsular Ligament of the Symphysis of the Ossa Pubis*, which joins the two Bones to each other externally.

The *Ligamentous Cartilage*, Tab. LXI. Fig. 11. *u*,

which unites the two Ossa Pubis so firmly together as to admit of no motion, excepting in the state of Pregnancy, when it is frequently found to be so much thickened, as to be capable of yielding a little in the time of Delivery.

The *Obturator Membrane*, or *Ligament of the Foramen Thyroideum*, Tab. LXI. Fig. 11. *r*.—Tab. LXI. Fig. 1. *q*, *r*, *s*, *u*, *x*, which adheres to the Margin of the Foramen Thyroideum, and fills the whole of that Opening, excepting the Oblique Notch at its upper part for the passage of the Obturator Vessels and Nerve. It assists in supporting the contents of the Pelvis, and in giving origin to the Obturatores. By yielding a little in the time of Labour, it contributes in a small degree to an easier Delivery.

## LIGAMENTS OF THE SUPERIOR EXTREMITIES.

### LIGAMENTS of the CLAVICLE.

The *Radiated Ligaments*, which arise from the outer Surface of the inner end of the Clavicle, and are fixed round the edge of the corresponding Articular Cavity of the Sternum. Tab. LXII. Fig. 1. *f*.

The *Capsular Ligament*, which lies within the former. Tab. LXII. Fig. 2. *i*.

The *Inter-articular Cartilage*, which divides the Joint into two distinct Cavities, and accommodates the articulating Surfaces of the Clavicle and Sternum. Tab. LXII. Fig. 1. *f*.

The *Inter-clavicular Ligament*, joining the Clavicles together behind the top of the Sternum, and partly formed by a continuation of the Radiated Ligaments. Tab. LXII. Fig. 1. *b*. Tab. XXXVII. Fig. 1. *d*.

By the Ligaments of this Joint, with the assistance of the intervening Cartilage, the Shoulder is allowed to move in different directions, as upon a centre.

The *Ligamentum 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. LXII. Fig. 1. *g*.

The *Ligaments* which join the posterior extremity of the Clavicle to the Acromion, having a Capsular Ligament within, and sometimes an Inter-articular Cartilage. Tab. LXI. Fig. 5. *h*.

The *Ligamentum Conoideum*, which arises from the root of the Coracoid process, and is fixed to the Tubercle at the outer end of the Clavicle.

The *Ligamentum Trapezoideum*, which arises from the point of the Coracoid process, and is fixed to the under edge of the Clavicle. Tab. LXII. Fig. 5. *g*.

A thin *Ligamentous Slip*, which comes from the Ten-

don of the Subclavius, or from the Clavicle, and joins the Trapezoid Ligament. Tab. LXII. Fig. 3. *o*.

The Ligaments fixing the Clavicle to the Scapula are of such strength, as to allow only a small degree of motion, and that chiefly of a rolling or twisting nature.

### LIGAMENTS proper to the SCAPULA.

The *Proper Anterior Triangular Ligament of the Scapula*, which arises broad from the External Surface of the Coracoid Process, and becomes narrower where it is fixed to the posterior margin of the Acromion. Tab. LXII. Fig. 5. *f*.

This Ligament forms one continued Surface. It is thickest, however, on each side, and these thicker parts are united by a thin intermediate Ligamentous Membrane, which, when removed, gives to the Ligament the appearance of being double. Tab. XXXVII. Fig. 2. *n*. It confines the Tendon of the Supra-spinatus, and assists in protecting the upper and inner part of the Joint of the Humerus.

The *Proper Posterior Ligament of the Scapula*, which is sometimes double, and is stretched across the Semilunar Notch of the Bone, forming that Notch into one or two Holes for the passage of the superior-posterior Scapular Vessels and Nerve. Tab. LXII. Fig. 3. *g*.

### LIGAMENTS, &c. of the JOINT of the SHOULDER.

The *Capsular Ligament*, which arises from the Cervix of the Scapula, behind the Margin of the Glenoid Cavity, and is fixed round the Neck of the Os Humeri, loosely inclosing the Ball of the Bone. Tab. LXII. Fig. 3. *i*. Fig. 6. *d*.



A small *Fimbriated Organ* within the Capsular Ligament, for the Secretion of part of the Synovia. Tab. LXII. Fig. 7. e.

A *Sheath* sent down from the fore part of the Capsular Ligament, between the Tuberosities of the Os Humeri, which incloses the Tendon of the long Head of the Biceps Flexor Cubiti, and prevents it from starting out of its place. Tab. LXII. Fig. 5. r.

*Additional Ligamentous Bands* of the Capsular Ligament, which adhere to its anterior Surface. Tab. LXII. Fig. 5. m.

What gives most strength to this Joint, as well as to several other Joints of the Body, is the covering from the surrounding Muscles.

From the shallowness of the Glenoid Cavity, from the extent and looseness of the Capsular Ligament, and from the Structure of the other parts of the Joint, more extensive motion is allowed to the Os Humeri than to any other Bone of the Body; as it can not only move freely to every side, but also possesses a considerable degree of motion upon its own axis.

#### LIGAMENTS, &c. of the JOINT of the ELBOW.

The *Capsular Ligament*, which arises round the Margin of the Articular Surface, at the lower end of the Os Humeri, and is fixed about the edge of the Articular Surface of the Ulna, and also to the Coronary Ligament of the Radius. Tab. LXII. Fig. 8. l, l. Tab. XXXVII. Fig. 3.

The sides of the Elbow-Joint are strengthened by two *Ligamentous Bands*, which adhere so firmly to the outer Surface of the Capsular Ligament, that they appear to be part of its Substance, viz.

The *Brachio-Ulnar*, or *Internal Lateral Ligament*, which arises from the fore part of the inner Condyle of the Os Humeri, and spreads out, in a radiated manner, to be fixed to the inside of the Coronoid Process of the Ulna. Tab. LXII. Fig. 8. m. And,

The *Brachio-Radial*, or *External Lateral Ligament*, which is like the former, but larger, Tab. LXII. 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 firmness of Cartilage. It arises from one side of the small Semilunar Cavity of the Ulna, 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 part of the Capsular Ligament, while its under edge is fixed round the Neck of the Radius, allowing that Bone to move freely round its own axis, upon the Articular Surface of the Os Humeri, and in the small Semilunar Cavity of the Ulna. Tab. LXII. Fig. 8. m.

Besides the Ligaments already described, there are others which run in various directions upon the fore and

back parts of the Joint, contributing to its strength, and having the names of *Anterior* and *Posterior Accessory Ligaments*. Tab. LXII. Fig. 8. o, p. Fig. 9. l.

There are also two *Tendinous Substances*, termed *Inter-muscular Ligaments of the Os Humeri*, which extend along the under and lateral parts of the Bone, giving Origin to a portion of the Muscles situated at this part of the Arm.

The Ligaments and Bones of the Joint of the Elbow form a complete Hinge, which allows the Fore-arm to have free flexion and extension upon the Os Humeri, but no rotation when the Arm is in the extended state, though a small degree of it is perceptible when the Joint is moderately bent, and the Ligaments thereby relaxed.

Within the Capsular Ligament, and chiefly in the upper part of the Pit of the Os Humeri in which the Olecranon plays, the *Fatty Substance* is lodged for the lubrication of the Joint. Tab. LIX.

A *similar Substance*, but much smaller, is also found in the Depression in which the Coronoid Process of the Ulna moves.

#### LIGAMENTS between the Bodies, and between the Under Ends of the RADIUS and ULNA.

The *Interosseous Ligament*, which extends between the sharp Ridges of the Radius and Ulna, filling up the greater part of the space between these two Bones. It is broadest in the middle, in consequence of the Bones here being largest at their extremities, and is composed of small *Fasciculi*, which run obliquely downwards and inwards. Two or three of these Slips, however, go in the opposite direction; and one of them, termed *Oblique Ligament*, and *Chorda Transversalis Cubiti*, is stretched between the Tubercle of the Ulna and under part of the Tubercle of the Radius.

In different parts of the Interosseous Ligament, there are Perforations for the passage of Blood-vessels from the fore to the back part of the Fore-arm, and a large Opening is found at the upper edge of it, which is occupied by Muscles. Tab. LXII. 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 attachment 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 Ulna, allowing the Radius to turn upon the Ulna, in performing the different motions of the Pronation and Supination of the Hand. Tab. LXI. Fig. 10. e.

#### LIGAMENTS, &c. between the FORE-ARM and WRIST.

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 Head



Head of the Ulna, and is fixed to the Cartilaginous edges of the three first Bones of the Carpus. Tab. LXII. Fig. 11. *i*.

The *Inter-articular Cartilage*, placed between the Head of the Ulna and Os Cuneiforme, and which is a continuation of the Cartilage covering the end of the Radius. It is concave above and below, and is connected loosely to the end of the Styloid Process of the Ulna. Tab. LXII. Fig. 10. *c*.

The two *Lateral Ligaments*, one of which arises from the Styloid Process at the under end of the Radius, and is fixed to the Os Naviculare; and the other from the Styloid Process of the Ulna, and is fixed to the Cuneiform and Pisiform Bones.

The Ligaments of this Joint allow extensive motion forwards and backwards, and a considerable degree of it to either side.

The *Mucous Ligament*, which lies within the Joint, Tab. LXII. 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.

#### LIGAMENTS of the CARPUS.

The *Anterior, Annular, or Transverse Ligament*, which is stretched across from the projecting Points of the Ossa Pisiforme and Unciforme, to the Scaphoides and Trapezium, and forms an Arch which covers and preserves in their places the Tendons of the Flexor Muscles of the Fingers. Tab. XXXVII. Fig. 6. *e*.

The *Capsular Ligament*, which arises 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 a smaller degree than in the former Joint. Tab. LXI. Fig. 15. *k*.

The *Short Ligaments* of the Bones of the Carpus, which are *small Slips* running in various directions, joining the different Bones of the Carpus,—first of the same Row, then of the two Rows together. Tab. LXII. Fig. 12. 13. 14. They are termed *Oblique, Transverse, Capsular, and Proper Ligaments* of the Wrist, and admit only of a small degree of yielding between the different Bones in the same Row.

#### LIGAMENTS between the CARPAL and METACARPAL BONES.

The *Articular Ligaments*, 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. LXII. 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 Metacarpus.

#### LIGAMENTS between the Extremities of the METACARPAL BONES.

The *Interosseous Ligaments* at the Bases of the Metacarpal Bones. Tab. LXII. Fig. 12. 14. They are short Slips, which run transversely, and join these Bones to each other, obtaining the names of *Dorsal, Lateral, or Palmar*, according to their different situations.

The *Interosseous Ligaments* at the Heads of the Metacarpal Bones, which run transversely in the Palm, and connect the Heads of these Bones to each other. Tab. LXII. Fig. 12. *t*. Tab. XXXVII. Fig. 6. *λ*.

#### LIGAMENTS at the Base of the METACARPAL BONE of the THUMB, and at the First JOINT of the FINGERS.

These consist of the *Capsular Ligaments*, which inclose the Joints, and the *Lateral Ligaments*, which are situated at the sides of these, adhering to and strengthening them; the whole admitting of flexion, extension, and lateral motion. Tab. XXXVII. Fig. 6.

#### LIGAMENTS of the First and Second JOINTS of the THUMB, and Second and Third JOINTS of the FINGERS.

The *Capsular Ligaments* inclosing the Joints. Tab. LXII. Fig. 17. Tab. XXXVII. Fig. 6.

The *Lateral Ligaments* placed at the sides of the Joints, and adhering to the Capsular Ligaments, confining the motion to flexion and extension. Tab. LXII. Fig. 17. *e*.

#### LIGAMENTS retaining the TENDONS of the MUSCLES of the HAND and FINGERS in situ.

The *Anterior, Transverse, or Annular Ligament* of the Wrist—already described.

The *Vaginal Ligaments of the Flexor Tendons*, which are fine Membranous Webs connecting the Tendons of the Sublimis, first to each other, then to those of the Profundus, and forming, at the same time, *Bursæ Mucosæ*, which surround these Tendons. Tab. LIX. Fig. 1. *g—k*.

The *Vaginal or Crucial Ligaments of the Phalanges*, which arise from the Ridges on the concave side of the Phalanges, and run over the Tendons of the Flexor Muscles of the Fingers. Tab. LVIII. Fig. 1. *s, t, u*. Tab. LIX. Fig. 1. *b, c, d*. Upon the Body of the Phalanges, they are thick and strong, to bind down the Tendons while 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 Tendinous Fræna*, arising from the



the first and second Phalanges of the Fingers. They run obliquely forwards within the Vaginal Ligaments, terminate in the Tendons of the Two Flexor Muscles of the Fingers, and assist in keeping them in their places. Tab. LXII. Fig. 18. *f, g, h.*

The *External Transverse, or Posterior Annular Ligament of the Wrist*, which is part of the Aponeurosis of the Fore-arm, extending across the back of the Wrist, from the inner side of the extremity of the Ulna and Os Pisiforme, to the outer side of the extremity of the Radius. Tab. XL. Fig. 2. *E.* It is connected with the small Annular Ligaments which tie down the Tendons

of the Extensores Ossis Metacarpi et Primi Internodii Pollicis, and the Extensor Carpi Ulnaris. Tab. LVIII. Fig. 5. *i, l.*

The *Vaginal Ligaments*, which adhere to the former Ligaments, and serve as Sheaths and Bursæ Mucosæ to the Extensor Tendons of the Hand and Fingers. Tab. LIX. Fig. 2.

The *Transverse Ligaments of the Extensor Tendons*, which are Aponeurotic Slips running between the Tendons of the Extensor Digitorum Communis, near the Heads of the Metacarpal Bones, and retaining the Tendons in their places. Tab. LVIII. Fig. 5. *o.*

## LIGAMENTS OF THE INFERIOR EXTREMITIES.

LIGAMENTS, &c. connecting the Os FEMORIS 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 incloses the whole of its Cervix as far as the root or outer extremity, round which it is firmly connected. Tab. XXXVIII. Fig. 18. *E.*

The *outer part* of the Capsular Ligament is extended farther down than the *inner*, which is reflected back upon the Neck of the Bone, and in certain parts forms *Retinacula*. Tab. LXIII. 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 Iliacus Internus; and thinnest posteriorly, where the adjacent Quadratus is opposed to it.

It is strengthened on its outer Surface by various *Accessory or Additional Slips*, which run down from the Fascia Lata and surrounding Muscles; but the strongest of these Slips arises with diverging Fibres from the inferior-anterior Spinous Process of the Os Ilium. Tab. LXIII. Fig. 1. *m, n, o.*

The Capsular Ligament allows the Thigh-bone to be moved to every side; and when its Body is brought forwards or backwards, a small degree of rotation is performed by the Cervix of the Bone, round its own axis.

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 runs backwards and a little upwards, becoming gradually narrower and rounder, to be fixed to the Pit upon the inner Surface of the Ball of the Os Femoris. Tab. LXIII. Fig. 2. *g—k.*

The Round Ligament prevents the Bone from being dislocated upwards or inwards, and assists in agitating the Mucous Substance within the Joint.

A *Cartilaginous Ligament* surrounding the Brim of the Acetabulum, and thereby increasing the depth of the Cavity for the reception of the Head of the Thigh-bone. Tab. LXIII. Fig. 2. *c.*

A *Double Cartilaginous Ligament*, Tab. LXIII. Fig. 3. *d*, stretched from one end of the Breach in the under and fore part of the Acetabulum to the other, but leaving a Hole behind it for containing part of the Substance called *Gland of the Joint*, and for the passage of the Vessels of that Substance.

This Ligament allows the Thigh-bone to be moved inwards, and the Glandular-looking Substance to be agitated with safety.

The Substance called *Gland of the Joint*, covered with a Vascular Membrane, and lodged in a Depression in the under and inner part of the Acetabulum. Tab. LXIII. Fig. 2. *m.*

At the edges of this Substance *Fringes* are sent out, which furnish part of the Synovia for the lubrication of the Joint.

The edges of this Substance are fixed to those of the Pit in the Acetabulum, by small Ligamentous Bridles, termed *Ligamenta Mucosa, vel Ligamentula Massæ Adiposo-glandulosæ.*

LIGAMENTS, &c. of the JOINT of the KNEE.

The *Lateral Ligaments* which lie at the sides of the Joint, and adhere to the outer Surface of the Capsular Ligament.

The *Internal Lateral Ligament*, which is of considerable breadth, arising from the upper part and Tubercle of the Internal Condyle of the Os Femoris, and inserted into the upper and inner part of the Tibia; the Fibres passing obliquely forwards, till they have reached a little below the Head of the Bone. Tab. LXIII. Fig. 4. *k.*



The *Long External Lateral Ligament*, which is narrower, but thicker and stronger than the former, arising from the Tubercle above the external Condyle of the Os Femoris, and fixed to the Fibula, a little below its Head. Tab. LXIII. Fig. 5. *f.* Tab. XXXIX. Fig. 5. *g.*

Behind the long external Lateral Ligament, there is an *Expansion* attached nearly in the same manner as this Ligament, which has been termed the *External Short Lateral Ligament*. Tab. LXIII. Fig. 5. *g.*

These Ligaments prevent the lateral and rotatory motions of the Leg in the extended state, but admit of a small degree of both when the Limb is bent.

The *Posterior Ligament* of WINSLOW, Tab. LXIII. Fig. 5. *h.* formed of irregular Bands, which arise from the upper and back part of the external Condyle of the Os Femoris, and descend obliquely over the Capsular Ligament, to be fixed to the Tibia under the inner and back part of its Head. It prevents the Leg from being pulled farther forwards than to a straight line with the Thigh, and also furnishes a convenient situation for the beginnings 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 arises from a Depression behind the Apex of that Bone, and is fixed to the Tuberosity of the upper and fore part of the Tibia. Tab. XLI. Leg. *b.* Tab. XXXVII. Fig. 9. *i.* By the intervention of this Ligament, the Muscles inserted into the Patella are enabled to extend the Leg.

The *Capsular Ligament*, which arises from the whole Circumference of the under end of the Thigh-bone, some way above the Margin of the Articulating Cartilage, and above the posterior part of the great Notch between the Condyles. From this it descends to be fixed round the Head of the Tibia, and into the whole Margin of the Articulating Surface of the Patella, in such a manner that the Patella forms part of the Capsule of the Joint. Tab. LXIII. Fig. 6. *7.*

The Capsular Ligament is of itself remarkably thin, but so covered by the Ligaments already mentioned, by the general Aponeurosis of the Limb, and by the Tendons of Muscles which surround the Joint, as to acquire a considerable degree of strength.

The Capsular, with the other Ligaments of this Joint, admit 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 *Ligamentum Alare, Majus et Minus*, which are Folds of the Capsular Ligament, running like *Wings* at the sides of the Patella, to which, and to the Fatty Substance of the Joint, they are attached. Tab. LXIII. Fig. 6. *e. d.*

The *Ligamentum Mucosum*, continued from the joining of the Ligamenta Alaria to the Os Femoris, immediately above the Anterior Crucial Ligament. It preserves the Synovial Substance in its proper place,

during the various motions of the Joint. Tab. LXIII. Fig. 6. *c.*

The *two Crucial or Internal Ligaments*, which arise from the Semilunar Notch between the Condyles of the Os Femoris, and decussate each other within the Cavity of the Joint. Tab. XXXVII. Fig. 9. *f. f.*

The *Anterior Crucial Ligament* runs downwards and forwards, to be fixed to a Pit before the rough Protuberance in the middle of the Articulating Surface of the Head of the Tibia. Tab. LXIII. Fig. 8. *e.*

The *Posterior Crucial Ligament* descends to be fixed to a Pit behind the above-mentioned rough Protuberance. Tab. LXIII. Fig. 8. *f.* Tab. XXXVII. Fig. 8. *k.*

These Ligaments, in the extended state of the Leg, prevent it from going forward beyond a straight line with the Thigh. When the Knee is bent, they allow the Foot to be turned outwards, but not in a contrary direction.

The *two Inter-articular Cartilages*, called *Semilunar* from their shape like a Crescent, placed upon the top of the Tibia. Tab. LXIII. Fig. 9. *c. d.* Tab. XXXVII. Fig. 7. *c. c.*

The outer convex edge of each of these Cartilages is thick, while the inner concave edge becomes thin and sharp like a knife or sickle; and being concave above, the Sockets for the Condyles of the Os Femoris are rendered deeper, and this Bone and the Tibia are more accurately adapted to each other.

Each of these Cartilages is broad in the middle, their extremities becoming narrower and thinner as they approach one another. Each covers about two thirds of the Superficial Cavity of the top of the Tibia, leaving one third bare in the middle. The extremities are termed *Cornua*, and are fixed by Ligaments to the Protuberance of the Tibia. The anterior *Cornua* are joined to each other by a *Transverse Ligament*. Tab. LXIII. 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 Tibia, by which the motions of that Bone upon the Condyles of the Os Femoris are facilitated.

The *Mucous 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 chiefly round the edges of the Patella. Tab. LXIII. Fig. 13. *b, b, b.* They are covered by a fine Membrane reflected from the inner Surface of the Capsular Ligament.

*Fimbriae* project from the edges of these Fatty Substances, which discharge Synovia for the lubrication of the Joint. Tab. LXIII. 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 external Lateral Ligament of the Knee, and by the Tendon of the



the Biceps which is fixed to the Fibula. Tab. LXIII. Fig. 7. *i*. Fig. 8. *o*.

The *Interosseous Ligament*, one edge of which is fixed to the Ridge or Angle at the outer and back part of the Tibia, the other to the corresponding Ridge at the inner side of the Fibula. It fills the space between the Tibia and Fibula, like the Interosseous Ligament of the Fore-arm, and is of a similar structure, being formed of oblique 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 are in contact, and where Blood-vessels pass to the fore part of the Leg.

It serves chiefly for the Origin of part of the Muscles which belong to the Foot, and thereby supplies the place of Bone.

The *Ligaments* of the inferior extremity of the Fibula, which are called *Anterior-Superior*, and *Posterior-Superior*, 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. LXIII. Fig. 10. *h*. Fig. 11. *c*.

The Ligaments between the ends of the Tibia and Fibula join the two Bones so firmly together, as to admit of no sensible motion.

#### LIGAMENTS connecting the BONES of the TARSUS with those of the LEG.

The *Anterior Ligament of the Fibula*, which arises from the anterior part of the Malleolus Externus, and passes obliquely forwards, to be fixed to the upper and outer part of the Astragalus. Tab. LXIII. Fig. 10. *k*.

The *Middle, or Perpendicular Ligament* of the Fibula, which arises from the point of the Malleolus Externus, and descends almost perpendicularly, to be inserted into the outside of the Os Calcis. Tab. LXIII. Fig. 10. *i*.

The *Posterior Ligament* of the Fibula, which arises from the under and back part of the Malleolus Externus, and runs backwards, to be joined to the outer and posterior part of the Astragalus. Tab. LXIII. Fig. 11. *h*.

The *Ligamentum Deltoides* of the Tibia, which arises from the Malleolus Internus, and descends in a radiated form, to be attached to the Astragalus, Os Calcis, and Os Naviculare. Tab. LXIII. 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 Articular Cavity of the Tibia and Fibula, and is fixed round the edge of the Articular Surface of the Astragalus.

The Ligaments and the other constituent parts of the Ankle-joint form it into a complete Hinge, which allows flexion and extension, but no rotation nor lateral motion in the bended state of the Foot, though a small degree of each when it is fully extended.

#### LIGAMENTS of the TARSUS.

The *Capsular Ligament*, which joins the Articular Surface of the Os Calcis to that of the Astragalus.

A number of *Short Ligaments*, lying in the Fossa of the Astragalus and of the Os Calcis, and forming the *Ligamentous Apparatus* of the Sinuous Cavity, which assists in fixing the two Bones strongly together. Tab. LXIII. Fig. 10. *l, m*.

The *Capsular*, the *Broad Superior*, and the *Internal Lateral Ligaments*, connecting the Astragalus to the Os Naviculare, and admitting of the lateral and rotatory motions of the Foot. Tab. LXIII. Fig. 10.

The *Superior*, the *Lateral*, and the *Inferior Ligaments*, fixing the Os Calcis to the Os Cuboides, where a small degree of motion is allowed to every side. The inferior Ligaments consist of a *Long*, an *Oblique*, and a *Rhomboid Ligament*, which are the longest and strongest of the Sole. Tab. LXIII. Fig. 12.

The *Superior Superficial*, the *Interosseous*, and the *Inferior Transverse Ligaments*, which fix the Os Naviculare and Os Cuboides to each other. Tab. LXIII. Fig. 10. Fig. 12.

The *Superior Lateral*, and the *Plantar Ligaments*, which fix the Os Naviculare to the Os Cuneiforme. Tab. LXIII. Fig. 10. Fig. 12.

The *Superior Superficial*, and the *Plantar Ligaments*, which connect the Os Cuboides to the Os Cuneiforme Externum. Tab. LXIII. Fig. 10. Fig. 12.

The *Dorsal* and the *Plantar Ligaments*, which unite the Ossa Cuneiformia to each other. Tab. LXIII. Fig. 10. Fig. 12.

Besides the Capsular Ligaments of the Tarsus already mentioned, each of the other Joints of these Bones is furnished with its *proper Capsular Ligament*.

From the plainness of the Articulating Surfaces of the Bones of the Tarsus, and from the strength of the Ligaments which unite them to each other, no more motion is allowed than to prevent the effects of concussion in walking, leaping, &c.

#### LIGAMENTS between the TARSUS and METATARSUS.

The Bones of the Metatarsus are fixed to those of the Tarsus by *Capsular*, and numerous other *Ligaments*, which are called *Dorsal*, *Plantar*, and *Lateral*, according to their situations;—and *Straight*, *Oblique*, or *Transverse*, according to their directions. The nature of this Joint is the same with that between the Carpus and Metacarpus. Tab. LXIII. Fig. 10. Fig. 12.

#### LIGAMENTS connecting the METATARSAL BONES to each other.

The *Dorsal*, *Plantar*, and *Lateral Ligaments*, which connect the Bases of the Metatarsal Bones with each other. Tab. LXIII. Fig. 10. Fig. 12.



The *Transverse Ligaments*, which join the Heads of these Bones together.

LIGAMENTS of the PHALANGES of the TOES.

The *Capsular and Lateral Ligaments*;—resembling those of the Fingers.

LIGAMENTS and SHEATHS retaining the TENDONS of the MUSCLES of the FOOT and TOES, *in situ*.

The *Annular Ligament* of the Tarsus, which is a thickened part of the Aponeurosis of the Leg, splitting into superior and inferior portions, which bind down the Tendons of the Extensors of the Toes upon the fore part of the Ankle. Tab. XLI. Fig. 2. N, N.

The *Vaginal Ligament of the Tendons of the Peronei*, which, behind the Ankle, is common to both, but at the outer part of the Foot forms a Sheath for each Tendon, Tab. LX. Fig. 2. p, q; preserving it in its proper place, and forming the *Bursa* of that Tendon.

The *Lacinated Ligament*, which arises from the inner Ankle, and spreads in a radiated manner, to be

fixed, partly in the Cellular Substance and Fat, and partly to the Os Calcis, at the inner side of the Heel. Tab. XLI. Fig. 2. k. It incloses the Tibialis Posticus and Flexor Digitorum Longus.

The *Vaginal Ligament of the Tendon of the Extensor Proprius Pollicis*, which runs in a Crucial direction. Tab. XLV. Right Foot, C.

The *Vaginal Ligament of the Tendon of the Flexor Longus Pollicis*, which surrounds this Tendon in the hollow of the Os Calcis. Tab. LXII. Fig. 3. H.

The *Vaginal and Crucial Ligaments of the Tendons of the Flexors of the Toes*, which inclose these Tendons on the Surfaces of the Phalanges, and form their *Bursæ Mucosæ*. Tab. LXII. Fig. 3. Q, R, S, T, U. Tab. LVIII. Fig. 8.

The *Accessory Ligaments of the Flexor Tendons of the Toes*, which, as in the Fingers, arise from the Phalanges, and are included in the Sheaths of the Tendons in which they terminate.

The *Transverse Ligaments of the Extensor Tendons*, which run between these Tendons, and preserve them in their places behind the roots of the Toes.







Fig. 3.

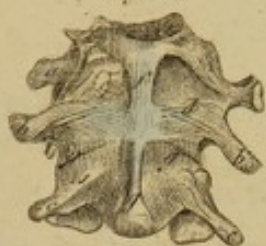


Fig. 2.



Fig. 4.



Fig. 7.



Fig. 6.



Fig. 5.

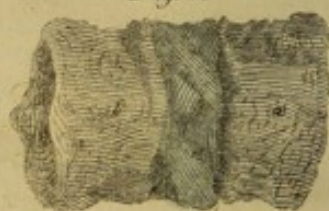


Fig. 9.



Fig. 1.

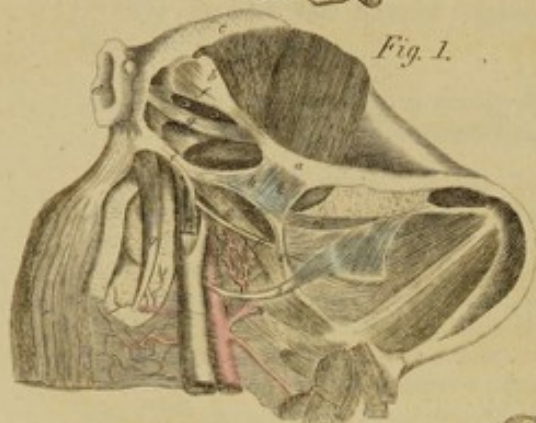


Fig. 8.

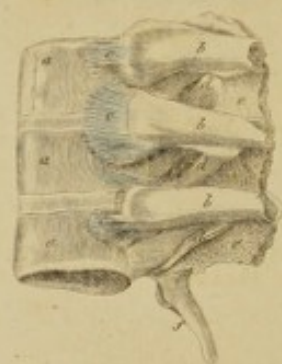


Fig. 10.

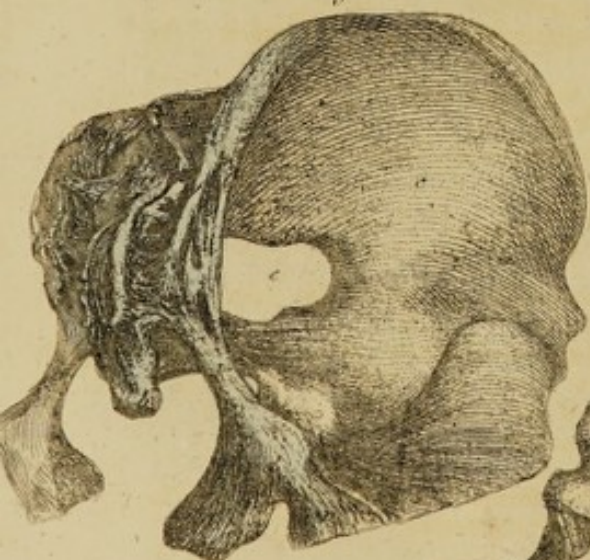


Fig. 12.

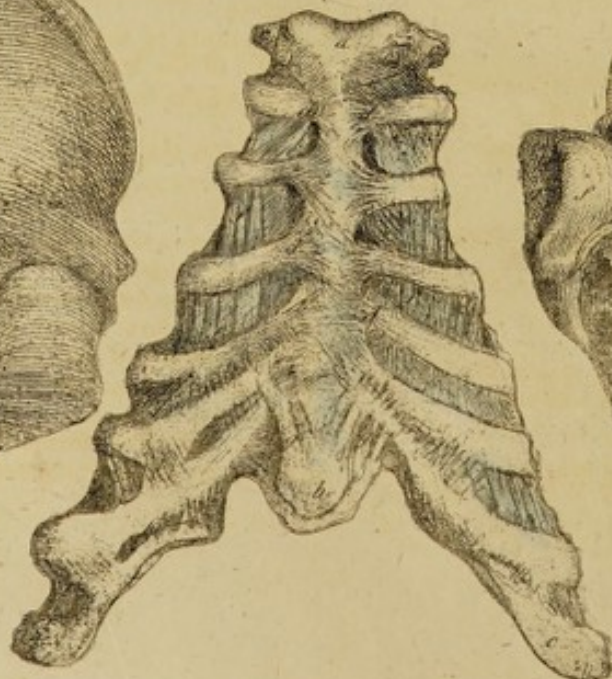


Fig. 11.

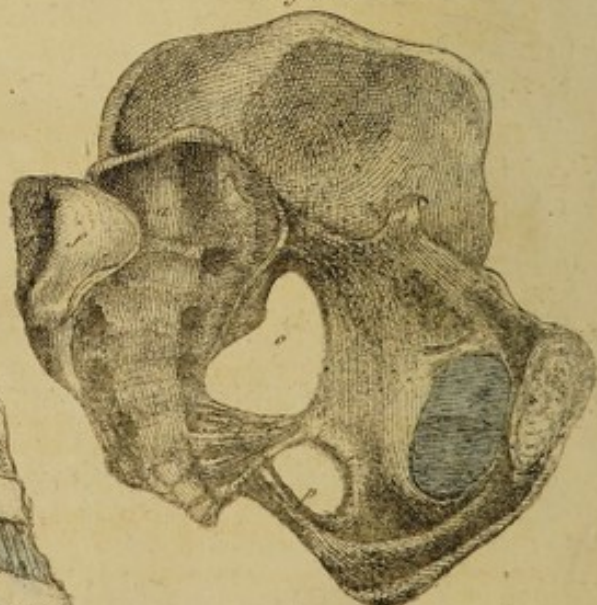


Fig. 13.



Fig. 14.





# T A B L E L X I.

## LIGAMENTS of the BONES of the HEAD and TRUNK.

FIG. 1.

LIGAMENTS 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.
- e, The styloid process.
- f, The capsular ligament of the lower jaw.
- g, The lateral ligament.
- h, The connexion of the suspensory ligaments of the os hyoides, and of the stylo-glossus, to the styloid process.
- i, The suspensory ligament of the os hyoides.
- k, ————— stylo-glossus.
- l, The masseter.
- m, 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, A section of the digastricus.
- r, The sterno-mastoideus.
- s, The lingual nerve.

FIG. 2.

The CAPSULAR LIGAMENT of the LOWER JAW, and  
Part of the TEMPORAL BONE.

- a, The zygomatic process of the temporal bone.
- b, The tubercle of that process.
- c, The glenoid or articular cavity.
- d, d, The capsular ligament surrounding the whole margin of the glenoid cavity.

FIG. 3.

An Anterior View of the CONNEXION of the Os OCCIPITIS with the First and Second VERTEBRÆ.

- a, A portion of the os occipitis.
- b, b, The transverse processes of the first vertebra;

- c, c, Those of the second.
- d, The capsular membrane of the last joint of the occipital bone.
- e, The membrane of the right joint cut open, to obtain a view of the joint, and,
- f, The distance of the origin of the membrane.
- g, The membrane which fills up the anterior opening between the occiput and first vertebra.
- h, A slip inserted into the middle of this membrane.
- i, The origin of this slip in the occipital bone.
- k, Its termination in the tubercle of the first vertebra.
- l, The slip which unites the first and second vertebra.
- m, The ligament proper to the first vertebra.
- n, The ligament of the articulation of the first vertebra with the second.

FIG. 4.

LIGAMENTS 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 vertebræ.
- c, d, ————— lumbar vertebræ.
- e, f, A section of the ribs.
- g, h, The anterior common ligament of the bodies of the vertebræ.
- i, i, The crura of the diaphragm.
- k, k, Part of the longi colli.
- l, l, Two of the transverse processes of the lumbar vertebræ.
- m, The psoas magnus.
- n, The quadratus lumborum.
- o, The os ilium.
- p, The superior transverse ligament of the pelvis, of a triangular form.
- q, The inferior transverse ligament, of a round form.
- r, The longitudinal ligamentous fibres, belonging to,
- s, The symphysis of the ilium with the os sacrum.
- t, The intestinum rectum.
- u, The vesica urinaria.
- v, A ligament which forms a sort of sac between the sides of the bladder and rectum.

FIG.



FIG. 5.

*The CRUCIAL INTERVERTEBRAL LIGAMENTS of two of the LUMBAR VERTEBRÆ, seen Anteriorly.*

- a*, The first,
- b*, The second lumbar vertebra.
- c, d*, The crucial intervertebral ligament, formed of different strata.

FIG. 6.

*The Posterior, or Internal Common LIGAMENT of the VERTEBRÆ, seen in the NECK, and beginning of the BACK. The CRURA of the SPINOUS PROCESSES are removed.*

- a, a, &c.* The transverse processes of the vertebræ.
- b, b*, The vertebral arteries.
- c, c, &c.* Sections of the crura of the spinous processes.
- d, d*, The whole breadth of the posterior or internal common ligament of the vertebræ.

FIG. 7.

*The CONTINUATION of the Posterior Common LIGAMENT in the LOINS.*

- a*, The first, and,
- b*, The second lumbar vertebra.
- c, c*, Vestiges of the crura of the spinous processes.
- d, d*, The posterior, or internal common ligament of the vertebræ.
- e, e*, Its expansion over the cartilaginous interstices.

FIG. 8.

*Three of the DORSAL VERTEBRÆ, with Portions of the three corresponding RIBS and their LIGAMENTS, seen within the THORAX.*

- a, a, a*, The bodies of the three vertebræ.
- 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 vertebræ.
- d, d, d*, The internal ligaments of the cervix of the ribs, by which they are fixed to the tuberosities of the next superior transverse processes.
- e, e*, Part of the intercostal muscles.
- f*, The spinous process.

FIG. 9.

*The same Parts shown in the preceding Figure, but viewed 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 internal ligaments of the cervix of the ribs.

- e, e*, The external ligaments of the cervix of the ribs.
- f, f*, A ligamentous cord between the apices of the spinous processes.

FIG. 10.

*LIGAMENTS on the Outer and Right Side of the PELVIS.*

- a*, The os sacrum.
- b*, ——— coccygis.
- c*, ——— ilium.
- d*, The tuber of the os ischium.
- e*, The notch of the os ilium, which, together with the ligaments, &c. under it, form the foramen magnum.
- f*, The posterior long ileo-sacral ligament.
- g*, The posterior short ileo-sacral ligament.
- h*, The posterior lateral ileo-sacral ligament.
- i, i*, The ligamenta accessoria vaga, on the back of the os sacrum.
- k*, The large sacro-ischiatic ligament.
- l*, The appendix, or superior membranous production.
- m*, The small sacro-ischiatic ligament.
- n*, The longitudinal ligaments of the os coccygis.
- o, p*, The origin of some of the muscles of the thigh.

FIG. 11.

*LIGAMENTS seen in the LEFT CAVITY of the PELVIS; the Right Os INNOMINATUM being removed.*

- a*, The os sacrum.
- b*, ——— coccygis.
- c*, ——— ilium.
- d*, ——— pubis.
- e*, ——— ischium.
- f*, The cartilaginous surface of the os sacrum, for the articulation with the os ilium.
- g*, A protuberance covered with ligamentous villi for the articulation with the os ilium.
- h*, The linea alba, which marks the articulation of the os ilium and sacrum.
- i*, The spinous process of the os ischium.
- k*, The small internal sacro-ischiatic ligament.
- l*, The remains of the coccygeus.
- m*, A portion of the large external sacro-ischiatic ligament.
- n, n*, The inferior falciform production of WINSLOW.
- o*, The foramen magnum, for the transmission of the pyriformis, &c.
- p*, The foramen minus, for the transmission of the obturator internus.
- q*, The superior oblique sinus of the foramen thyroideum.
- r*, The membrana obturans.
- s*, The transverse ligament of the membrana obturans.
- t*, The tendon of the psoas magnus.
- u*, The cartilago-ligamentous substance of the os pubis.

FIG.



FIG. 12.

LIGAMENTS connecting 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.
- d, d*, The ligaments of the cartilages of the ribs, distributed in the form of radii.
- e, e*, The intercostal muscles.
- f, f*, The tendinous ligaments of the cartilages of the ribs.
- g, g*, The ligaments of the cartilago ensiformis.

FIG. 13.

Represents an anterior view of the Connexion of the Osseous Part of a RIB with its CARTILAGE, and of the CARTILAGE with the STERNUM; the INVESTING MEMBRANES being removed.

- a*, The osseous,
- b*, The cartilaginous part of the rib.
- c*, A part of the sternum.
- d*, Short ligamentous fibres connecting the margin of the osseous and cartilaginous parts of the rib.
- e*, The capsular ligament which joins the cartilage of the rib to the sternum; the external radiated fibres of this joint being removed.

FIG. 14.

A SECTION of the Parts represented above, to shew their Internal Structure.

- a*, The cancelli of the rib.
- b*,                      sternum.
- c*, The connexion of the inner part of the rib with its cartilage by a firm union of substance.
- d*, The cavity of the joint formed between the cartilage and sternum.



# T A B L E LXII.

## LIGAMENTS of the Left SUPERIOR EXTREMITY.

FIG. 1.

LIGAMENTS of the Upper Part of the STERNUM, viewed Anteriorly.

- a, a*, Part of the clavicles.
- b*, The interclavicular ligament.
- c, c*, The insertions of the sterno-mastoidei into the clavicles.
- d, d*, The cartilages of the first ribs.
- e*, A section of the sternum.
- f, f*, Ligaments connecting the clavicles to the interclavicular ligaments, to the sternum, and to the cartilages of the first ribs.
- g, g*, The ligamentum rhomboides, on each side, connecting the clavicle to the cartilage of the first rib.

FIG. 2.

A View of the ARTICULATION between the STERNUM and CLAVICLES.

- a*, A section of the sternum.
- b*, The cartilage of the first rib.
- c*, The head of the right clavicle turned back.
- d*, The interclavicular ligament.
- e*, The articular sinus of the sternum.
- f, f*, The interarticular cartilage covering the articular sinus and head of the clavicle.
- g*, The part to which the head of the clavicle is fixed.
- h*, The prolongation of the interarticular cartilage.
- i, i*, The capsular ligament.

FIG. 3.

An Anterior View of the LIGAMENTS between the CLAVICLE, SCAPULA, and Os HUMERI.

- a*, The upper part of the scapula.
- b*, The point of the acromion.
- c*, ————— coracoid process.
- d*, A portion of the clavicle.
- e*, ————— os humeri.
- f*, The edge of the anterior proper ligament of the scapula.
- g, g*, The posterior proper ligament of the scapula.
- h*, A portion of the common conoid ligament.
- i, i*, The capsular ligament of the head of the os humeri.
- k*, The accessory membrane of the capsular ligament.
- l, l*, The edge of the oval hole in the capsular membrane, for the passage of,
- m*, The tendon of the subscapularis, which fills the hole, and makes part of the capsule.

- n*, The outer edge of the fleshy portion of this muscle.
- o*, A ligament which arises from the sheath of the subclavius.
- p*, The remains of the tendon of the pectoralis.
- q*, The tendon of the biceps.

FIG. 4.

A Posterior View of the LIGAMENTS between the CLAVICLE, SCAPULA, and Os HUMERI.

- a*, The dorsum;
- b*, The spine;
- c*, The upper edge;
- d*, The cervix, and,
- e*, 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.
- l, l*, The capsular ligament inclosing the head of the os humeri.

FIG. 5.

LIGAMENTS between the SCAPULA, CLAVICLE, and Os HUMERI, viewed Anteriorly.—Some of the Parts are twisted to one Side.

- a*, The upper edge of the scapula, twisted to one side.
- b*, The point of the acromion.
- c*, ————— coracoid process.
- d*, A section of the clavicle.
- e*, ————— os humeri.
- f*, The anterior proper triangular ligament of the scapula.
- g*, The common trapezoid ligament of the scapula.
- h*, Ligaments connecting the clavicle with the acromion.
- l*, The capsular ligament of the head of the os humeri;
- m*, Its appendix.
- n*, The edge of the oval hole, for the transmission of,
- o*, The tendon of the subscapularis.
- p*, The remains of the tendon of the supra-spinatus.
- q*, The tendon of the biceps.
- r*, Part of the sheath of the tendon.

FIG. 6.

Gives a View of the GLENOID CAVITY of the SCAPULA, with the ORIGIN of the CAPSULAR LIGAMENT of this JOINT.

- a*, The glenoid cavity.
- b, b*, The cartilaginous brim of the cavity.

*c*, The



TAB. 62.



Fig. 1.



Fig. 2.

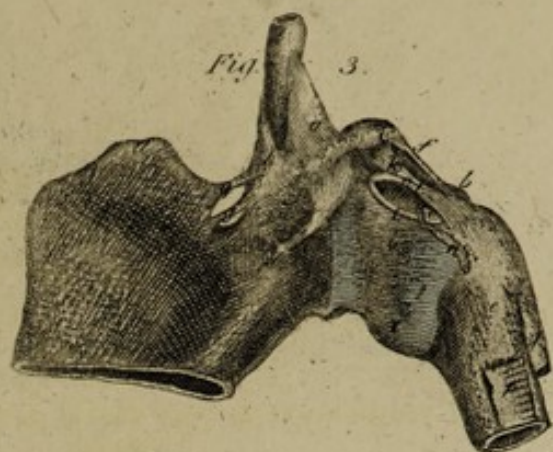


Fig. 3.

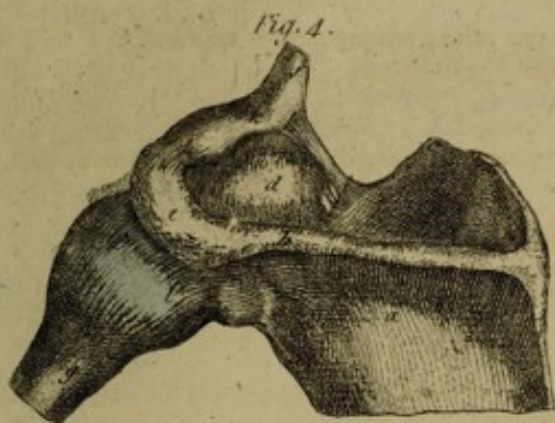


Fig. 4.



Fig. 5.



Fig. 6.



Fig. 11.



Fig. 7.



Fig. 7.



Fig. 8.



Fig. 10.



Fig. 13.



Fig. 15.

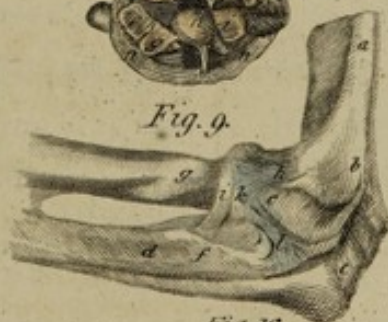


Fig. 9.



Fig. 12.



Fig. 14.



Fig. 16.

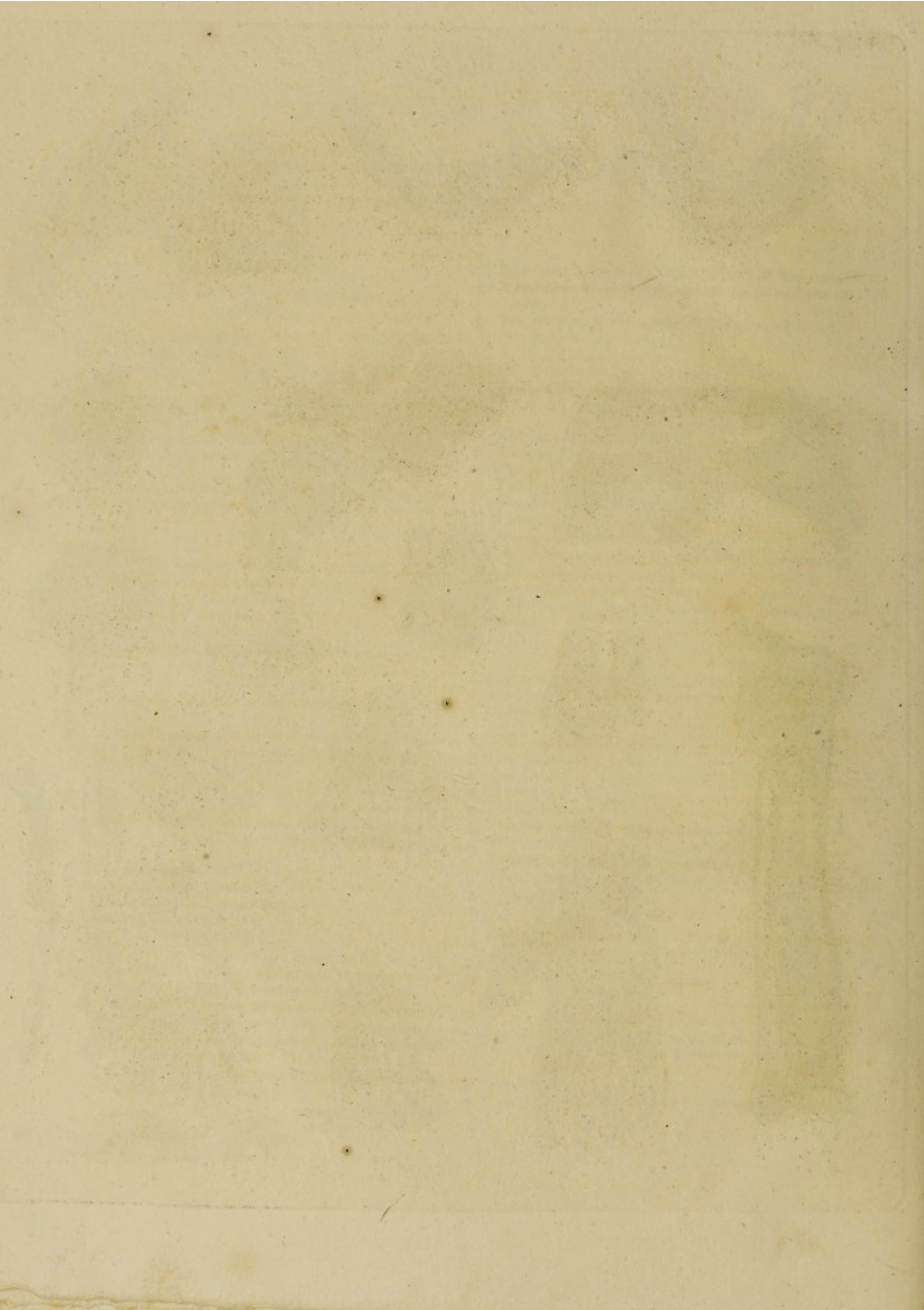


Fig. 18.



Fig. 17.







- c, The origin of the long head of the biceps.
- d, d, The inner surface of the capsular ligament.
- e, The edge of the oval hole.

FIG. 7.

*The HEAD of the Os HUMERI, with a Portion of the CAPSULAR LIGAMENT which incloses it.*

- a, The head of the os humeri.
- b, The tendon of the long head of the biceps continued through its sheath.
- c, The retinaculum in the beginning of the sheath of the tendon of the biceps.
- d, d, The inner surface of the capsular ligament.
- e, A fimbriated organ for the secretion of synovia, situated immediately under the ball of the os humeri, within the capsular ligament.

FIG. 8.

*The CONNEXION of the Os HUMERI and BONES of the FORE-ARM, and of the latter with each other; viewed Anteriorly.*

- a, A portion of the os humeri.
- b, The inner,
- c, The outer round process of articulation.
- d, The inner acute prominent process of articulation between the os humeri and bones of the fore-arm.
- e, The ulna.
- f, The olecranon of the ulna.
- g, The coronoid process.
- h, The inferior head of the ulna.
- i, The radius.
- k, The inferior extremity of the radius.
- l, l, The capsular ligament.
- m, The internal lateral ligament.
- n, The coronary, annular, or orbicular ligament of the radius.
- o, The accessory ring.
- p, The posterior accessory ligament.
- q, The chorda transversalis cubiti.
- r, r, The interosseous membrane or ligament of the fore-arm.
- s, An opening left by this membrane, and filled with muscles.

FIG. 9.

*The CONNEXION of the Os HUMERI with the BONES of the FORE-ARM, viewed Posteriorly.*

- 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 anconeus.

VOL. I.

- g, A portion of the radius.
- h, The external lateral ligament.
- i, The orbicular ligament of the radius.
- k, The accessory ring.
- l, The posterior accessory ligament.

FIG. 10.

*The CONNEXION of the Under End of the RADIUS with that of the ULNA.*

- a, The extremity of the radius.
- b, b, The double glenoid cavity of the radius.
- c, The intermediate triangular cartilage between the ulna and os cuneiforme.
- d, The extremity of the ulna.
- e, The ligament called Sacciform Capsular Membrane.
- f, f, The cut edge of the capsular ligament between the fore-arm and wrist.
- g, The mucous ligament within the joint.

FIG. 11.

*A View of the CAVITY of the JOINT between the FORE-ARM and WRIST; the CAPSULAR LIGAMENT being cut Posteriorly, and the BONES of the CARPUS turned back.*

- a, The extremity of the radius.
- b, ————— ulna.
- c, Part of the glenoid cavity of the radius, receiving,
- d, The first bone of the carpus.
- e, The other portion of the glenoid cavity of the radius, and,
- f, The intermediate triangular cartilage, receiving,
- g, The second, and,
- h, The third bone of the carpus.
- i, The capsular ligament between the bones of the fore-arm and wrist.
- k, The palmar slip intermixed with this membrane.
- l, The palmar accessory ligament from the radius.
- m, That from the fourth, and,
- n, That from the third bone of the carpus.
- o, The mucous ligament.
- p, The ligament by which the first and second bones of the carpus are attached.

FIG. 12.

*Shews certain LIGAMENTS on the PALM-SIDE of the HAND, after the INTEGUMENTS and TENDONS of the EXTENSORS have been removed.*

- a, The extremity of the radius.
- b, ————— ulna.
- c, The os pisiforme, with the tendon of the flexor carpi ulnaris fixed to it.
- d, The os trapezium, placed at the root of the thumb.
- e, The sharp process of the unciform bone.
- f, The metacarpal bone of the thumb.

g, g, The

D d



- g, g, The metacarpal bones of the fingers.  
 h, h, The first phalanx of the fingers.  
 i, The tendon of the flexor carpi radialis.  
 k, The tendon of one of the extensors of the thumb.  
 l, l, l, The internal interosseous muscles.  
 m, The ligaments between the ulna and os pisiforme.  
 n, o, p, q, The capsular ligament investing the extremities of the bones of the fore-arm and bones of the wrist, intermixed with numerous accessory slips.  
 r, s, Ligaments between the carpal and metacarpal bones.  
 t, Ligaments joining the bases of the metacarpal bones to each other.  
 u, u, u, Ligaments connecting the heads of the metacarpal bones to each other.

FIG. 13.

*A View of the LIGAMENTOUS BANDS which assist in forming the CAPSULAR LIGAMENT on the Back Part of the WRIST.*

- a, The extremity of the radius.  
 b, ————— ulna.  
 c, The first,  
 d, The third, and,  
 e, The fifth bone of the carpus.  
 f, The tuber of the seventh carpal bone.  
 g, The two tendons of the extensores carpi radiales.  
 h, The tendon 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.  
 l, The common oblique slip.  
 m, The ligament between the third and eighth carpal bones.  
 n, A section of the metacarpal bones.

FIG. 14.

*The Anterior LIGAMENTS which bind the BONES of the FORE-ARM to the BONES of the CARPUS, these to each other, and also to the BONES of the METACARPUS.*

- a, The extremity of the radius.  
 b, ————— ulna.  
 c, c, The bones of the carpus.  
 d, d, d, d, The bones of the metacarpus.  
 e, The capsular ligament of the wrist, with its accessory slips.  
 f, The anterior annular ligament of the carpus. Besides the annular ligament, numerous ligamentous slips are seen running in various directions, which unite the bones of the carpus to each other, and likewise to those of the metacarpus.  
 g, h, Two of the interosseous ligaments, which connect the bases of the last-mentioned bones.

FIG. 15.

*The CAVITY of the JOINT in the middle of the CARPUS; the CAPSULAR LIGAMENT being divided in the Back of the*

*HAND, and the two Rows of CARPAL BONES separated from each other.*

- a, b, c, d, The first row, and,  
 e, f, g, h, The second row of the carpal bones.  
 i, The inside of the palmar part of the capsular ligament.  
 k, The inside of the dorsal part of that ligament.  
 l, A ligament joining the first and second carpal bones together, where they are articulated with the end of the radius.  
 m, A ligament connecting the third and seventh carpal bones to each other.  
 n, The ligamentum mucosum connected with the second carpal bone.  
 o, A small frænum of the capsular ligament.

FIG. 16.

*LIGAMENTS between the Inferior Row of the CARPAL BONES and those of the METACARPUS, on the Back of the HAND.*

- a, b, c, d, The four bones of the second row of the carpus.  
 e, The metacarpal bone of the thumb.  
 f, f, The metacarpal bones of the fingers.  
 The ligaments which unite these bones are seen running in various directions.

FIG. 17.

*The LIGAMENTS of the JOINTS of one of the FINGERS.*

- a, The metacarpal bone.  
 b, c, d, The first, second, and third bones of the fingers.  
 e, e, e, The lateral ligaments of the joints of the fingers.  
 f, Part of the capsular ligament.

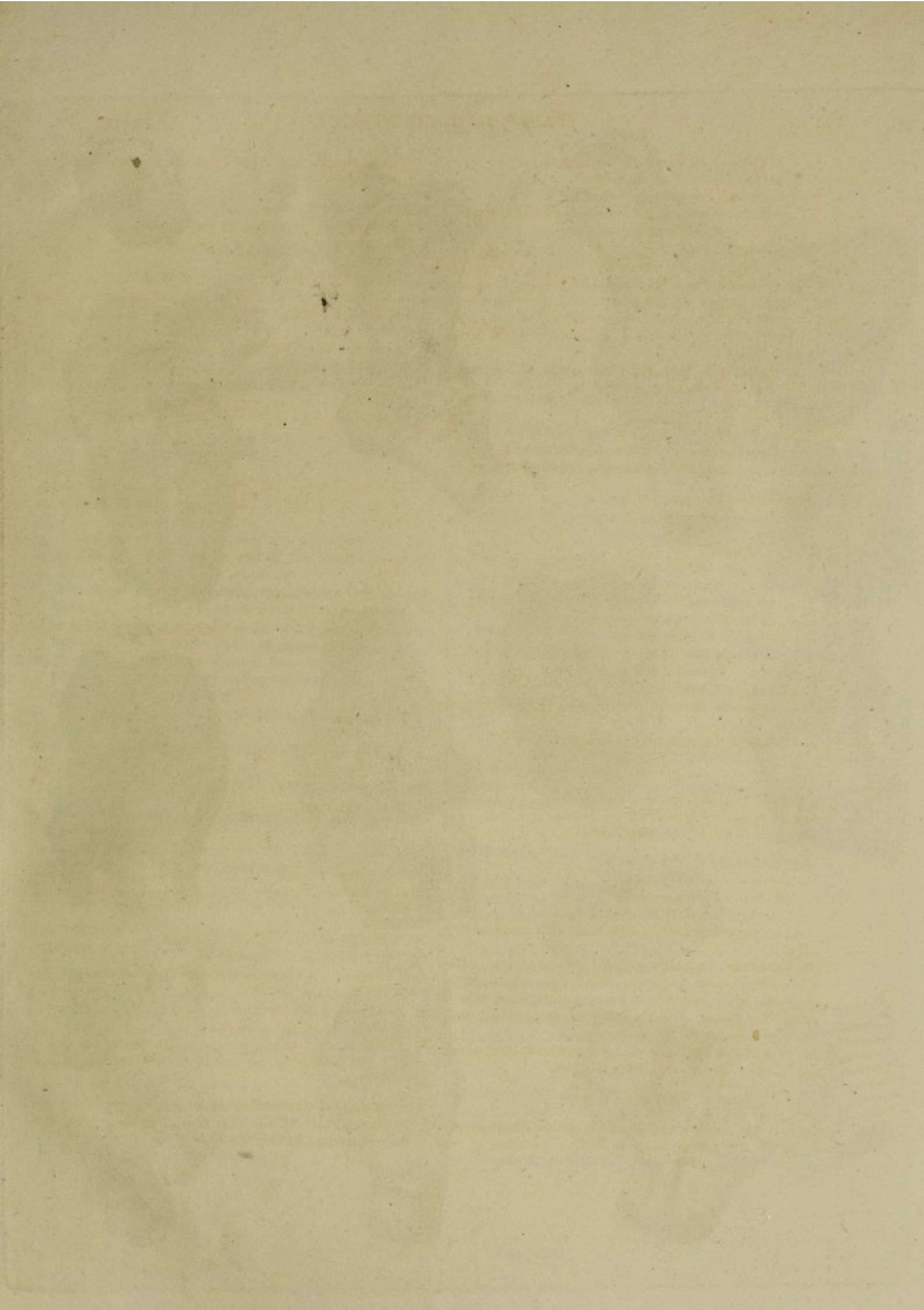
FIG. 18.

*The MIDDLE FINGER, with the ACCESSORY LIGAMENTS which bind the TENDONS of the PERFORANS and PERFORATUS.*

- a, A section of the vaginal ligaments.  
 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 tendon of the perforatus.  
 e, The tendon of the perforans.  
 f, The short accessory ligament of the perforans.  
 g, h, Long accessory ligaments of the tendon of the perforans.

*The tendon of the perforatus has accessory ligaments similar to those of the perforans, but they could not be represented in this view.*







TAB. 63.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 13.



Fig. 6.

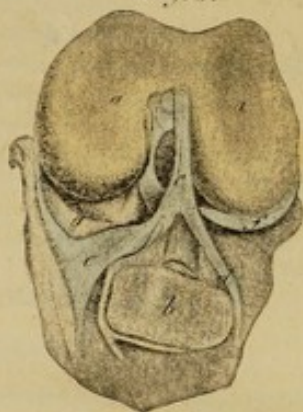


Fig. 7.



Fig. 5.

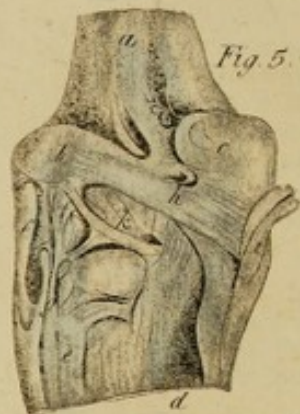


Fig. 8.



Fig. 9.



Fig. 11.

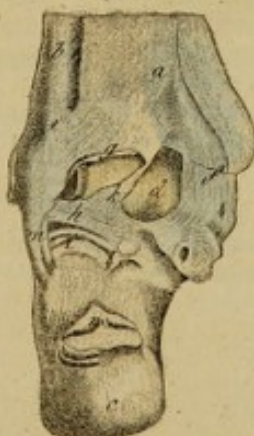


Fig. 10.

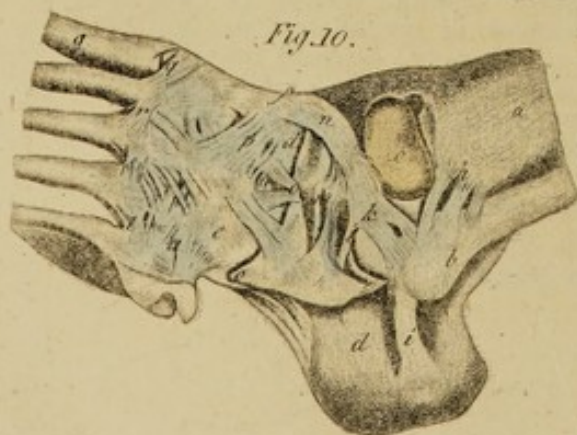


Fig. 12.





# T A B L E LXIII.

## LIGAMENTS of the LEFT INFERIOR EXTREMITY.

FIG. 1.

*A View of the CAPSULAR LIGAMENTS 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.
  - d*, ——— femoris.
  - e*, The trochanter major.
  - f*, ——— minor.
  - g*, The place of the insertion of the pectineus.
  - h, i*, The seat of the under end of the iliacus 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, o*, 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 which shuts up the foramen thyroideum.
  - r, s*, The external and internal ligamentous slips of this membrane, which form 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 ACETABULUM, and still adhering by means of the LIGAMENTUM ROTUNDUM.*

- a*, The ball of the os femoris.
- b*, The cavity of the acetabulum.
- c, c*, The cartilaginous brim of the acetabulum.
- d, d, d, d*, The capsular ligament cut and turned back, to shew,
- e, e*, Its density and thickness.
- f*, Retinacula reflected about the cervix of the os femoris.
- g, h, i, k*, The ligamentum rotundum.
- l, l*, Small ligaments which bind the fatty glandular mass *m* to the bottom of the acetabulum.

FIG. 3.

*Gives a View of the ACETABULUM, with its LIGAMENTS.*

- 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-View of the KNEE, shewing the Internal Lateral LIGAMENT.*

- a*, The os femoris.
- b*, The patella.
- c*, The inner side of the head of the tibia.
- d*, A portion of the vastus internus.
- e*, Aponeurosis of the vastus internus.
- f*, The remains of the inner tendon of the gastrocnemius.
- g*, The tendon of the semimembranosus.
- h*, The tendons of the gracilis and semitendinosus, turned back.
- i*, The popliteus.
- k, k*, The broad internal lateral ligament, enlarged by,
- l*, An accessory branch.
- m*, A circular ligamentous margin adhering to the internal semilunar cartilage.

FIG. 5.

*A Posterior View of the LIGAMENTS of the KNEE.*

- a*, The os femoris.
- b*, The external condyle.
- c*, The internal condyle.
- d*, The tibia.
- e*, The fibula.
- f*, The long external lateral ligament.
- g*, The short external lateral ligament.
- h*, The ligamentum posticum WINSLOH.
- i*, The tendon of the semimembranosus.
- k*, Irregular membranous expansions.

FIG. 6.

*An Anterior View of the JOINT of the KNEE, the CAPSULAR LIGAMENT being opened, and turned down along with the PATELLA.*

- a, a*, The condyles of the os femoris covered with cartilage.
- b*, The



- b*, The patella, with the capsular ligament at the sides of it, cut from the os femoris, and turned down.
- c*, The ligamentum mucosum, supporting the fat at the under edge of the patella.
- d, e*, Folds of the inner side of the capsular ligament, called by WEITBRECHT, *Ligamentum Alare externum minus*, and *Ligamentum Alare internum majus*.
- f, g*, The anterior edges of the semilunar cartilages.
- h*, Part of the posterior crucial ligament.

FIG. 7.

*A View of the CRUCIAL LIGAMENTS, as seen in the Back Part of the JOINT of the KNEE; the CAPSULAR LIGAMENT being laid open.*

- a*, The os femoris.
- b, c*, Its condyles; above which is seen the cut edge of the capsular ligament.
- d*, The tibia.
- e*, The fibula.
- f*, The posterior crucial ligament.
- g*, The insertion of the anterior crucial ligament into the os femoris.
- h*, The edge of the external semilunar cartilage.
- i*, Ligamentous fibres strengthening the joint at the head of the fibula.

FIG. 8.

*Anterior View of the CRUCIAL LIGAMENTS.*

- a, b*, The condyles of the os femoris.
- c*, The tibia.
- d*, The fibula.
- e*, The anterior crucial ligament.
- f, f*, The insertion of the posterior crucial ligament into the os femoris.
- g*, The ligament of the posterior cornu of the external semilunar cartilage, connected with the posterior crucial ligament, and with it fixed to the os femoris.
- h*, The ligament of the interior cornu of the external semilunar cartilage.
- i*, The ligament of the anterior cornu of the internal semilunar cartilage.
- k*, The transverse ligament connecting the anterior cornua of the semilunar cartilages to each other.
- l*, A slip fixed to the transverse ligament, and connected with the mucous ligament.
- m*, The external lateral ligament of the knee.
- n*, The insertion of the biceps muscle of the thigh.
- o*, The anterior ligament of the fibula.

FIG. 9.

*A View of the Upper SURFACE of the TIBIA and SEMILUNAR CARTILAGES.*

- a, b*, The glenoid cavities for lodging the condyles of the os femoris.

- c*, The external, and,
- d*, The internal semilunar cartilages.
- e*, The adhesion of the anterior cornu of the external semilunar cartilage to the fore part of the tuberosity on the top of the tibia.
- f*, The superior ligament of the posterior cornu of this cartilage, connected with the posterior crucial ligament.
- g*, The inferior adhesion of the posterior cornu of the external semilunar cartilage.
- h*, The adhesion of the anterior cornua of the internal semilunar cartilage to the fore part of the margin of the head of the tibia.
- i*, The adhesion of the posterior cornu to the back part of the tuberosity of the head of the tibia.
- k, k*, The common transverse ligament of the semilunar cartilages.
- l*, A slip fixing the transverse ligament, and intermixing with the mucous ligament.
- m*, The posterior crucial ligament.

FIG. 10.

*An Outer and Fore View of the LIGAMENTS connecting the BONES of the TARSUS to those of the METATARSUS and LEG.*

- a*, The extremity of the tibia.
- b*, The malleolus externus of the fibula.
- c*, The astragalus.
- d*, The os naviculare.
- e*, ——— cuboides.
- f*, ——— cuneiforme internum.
- g*, The metatarsal bone of the great toe, and, farther out, those of the other toes.
- h*, The anterior superior ligaments of the malleolus externus.
- i*, The middle perpendicular ligament of the malleolus externus.
- k*, The anterior ligament between the fibula and astragalus.
- l, m*, Irregular ligaments forming the ligamentous apparatus of the sinuous cavity of the astragalus and os calcis.
- n*, The superior ligament connecting the astragalus and os naviculare.
- o, p, q*, Numerous ligaments joining the bones of the tarsus to each other, and likewise to those of the metatarsus, and obtaining the names of Perpendicular, Oblique, Lateral, Dorsal, &c. according to their different directions and situations.
- r, s, t, u*, Ligaments which connect the bases of the metatarsal bones to each other.

FIG. 11.

*LIGAMENTS between the Under and Back Part of the BONES of the LEG, and those of the FOOT.*

- a*, A portion of the tibia.
- b*, ——— fibula.

*c*, The



- c*, The os calcis.  
*d*, The upper part of the astragalus, upon which the tibia moves.  
*e*, The posterior-superior ligament of the malleolus externus.  
*f*, A portion of the deltoid ligament.  
*g*, The inferior-posterior ligament of the malleolus externus.  
*h*, A fibrous ligament between the fibula and astragalus.  
*i*, A ligamentous slip proper to the astragalus.  
*k*, A fibrous slip connected with the capsular ligament.  
*l*, The frænulum of the capsular membrane, between the astragalus and os calcis.  
*m*, The middle perpendicular ligament of the malleolus externus.  
*n*, The insertion of the tendo ACHILLIS, with its frænulum.

FIG. 12.

LIGAMENTS in the SOLE of the FOOT.

- a*, The os calcis.  
*b*, ——— naviculare.  
*c*, ——— cuneiforme magnum.

- d, d*, A section of the metatarsal bones.  
*e, f*, The ligaments between the os calcis and naviculare.  
*g*, The oblique, and,  
*h*, The long ligament of great strength, which connects the os calcis to the os cuboides.  
*i*, The transverse ligament between the cuboid and external cuneiform 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 bases of the metatarsal bones.

FIG. 13.

*The MASSES of FAT, with their FIMBRIÆ, which are situated round the Edges of the PATELLA.*

- a*, The inner side of the patella.  
*b, b, b*, The masses of fat.  
*c, c, c*, The fimbriæ which project from the edges of these fatty substances.

END OF VOLUME FIRST.



















