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Jonathn. Elmer's

A Course of Anatomical Lectures

Delivered
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Quanta autem existerent consilii
solertissimi indicia, si tota hominis
fabrica perfecta foret? vi corporis totius
species et dignitas? sensuum organa
subtilissime fabricata, et aptissime locata.

Synop: Med:

Anatomia fundamentum est Medecinæ

Anomal:

Anatomical Lectures

Lecture 1st

Anatomy ανατομη in Greek signifies cutting, & by it anciently was meant only the dissecting of bodies, but at present it is implied in a more general sense.

Anatomy in respect of its object is divided into human and comparative.

Human Anatomy is that which is employed on the human body; and comparative Anatomy is that which is employed upon the bodies of other animals, these serving for the more accurate discriptions of several parts, and supplying the defects of human bodies.

Anatomy from its various ends may be said to be of four kinds viz: Theological, Medical, Juridical and Judicial.

The

The first consists in an acquaintance with the works of the creator in the human frame; according to Fontanel the study of Anatomy & Astronomy afford the strongest arguments against Atheism.

Medical Anatomy is ultimately health, for the preservation of which, restoring it when impaired, by diseases, or even preventing their access, nothing surely is more necessary than a true knowledge of the structure of that frame so liable to be injured.

Juridical Anatomy is the determining the causes of suspicious deaths, impotency, barrenness, the true times of pregnancy and delivery, the mortality of Wounds and a multitude of other causes of great importance to be adjusted in a court of Judicature.

Judicial Anatomy is the determining the cause and manner of the death of diseased persons from a subsequent dissection of the body

body; this is of the utmost use in the practice of Physic.

Upon the whole then the use of Anatomy is very great, nor is it confined to the bounds of Medicine alone: the Philosopher and Theologist, the Magistrate, Painter and Sculptor are in their respective employments more or less qualified in proportion to the progress they have made in this science; but the Physician and Surgeon are the people to whom it is most immediately necessary and who without a perfect knowledge of it cannot do justice to the world in their professions. What the needle is to the mariner, Anatomy is to both these, and we may venture to say that without its assistance, they would be rather detri=
=mental than beneficial to mankind.

The Anatomy of the solid parts is by Heister called Osteology and that of the soft parts Sarcology, each of these are subdivided.

Osteology or the anatomy of the solid parts is divided into the anatomy of the Bones called Osteology, Chondrology or the anatomy of the Cartilages, and Syndesmology or the anatomy of the Ligaments.

Sarcology or the anatomy of the soft parts is divided into Dermatology or the anatomy of the Tegumenta, Splanchnology or the anatomy of the Viscera, Myology or the anatomy of the Muscles, Neurology or the anatomy of the Nerves, Angeiology or the anatomy of the Veins and Arteries, and Adenology or the Doctrine of the Glands.

In the human body as a complex hydraulic Machine a double Enquiry must be made 1st Into the structure of the parts, this is called Anatomy, 2d Their functions & the laws of their motion which is termed Physiology

Lecture 2d

As the solids are formed out of one principal fluid chiefly, called the Blood it is proper to begin therewith.

Of the Blood

Blood in Scripture is called the life of the Animal: according to some it is the primum vivens ultimum moriens, its a heterogeneous mass, as is evident from the variety of ingredients of which it is made up, and the various forms it assumes in the animal machine.

The blood is composed of three substances viz: Serum, Cruramentum & a coagulable Lymph: We shall consider them in three different manners; first when Coularly examined, 2d Viewed with a Microscope,

and

3. The chemical Analysis thereof.

Blood fresh drawn from a sound living animal, upon standing, part of it congeals into a hard coagulum or suspended in a yellowish Serum, the upper surface being of a florid color while the bottom is black. The reason of the blood appearing bright and florid at the top is from its being in contact with the Air; this is confirmed by an experiment of D^r Hunter's who put a quantity of blood fresh drawn into a Viol, & stopt it close; upon standing it all turned of an uniform black color except a little spot upon the top with which a globule of Air had got in contact.

Blood stirred round with a probe

whilst

Oct.

Whilst warm, a fibrous elastic substance is obtained, which put in water turns of a whitish color: this is the coagulable Lymph, is strongly elastic, & is the cause of cohesion in the particles of the Blood, as is evident from the extravasation of the blood after death by a dissolution of the cohering particles. The coagulable Lymph is sometimes discharged from the Uterus and by Nurses taken for an Abortion, this error they are sometimes led into from a fever & that it should be so. If spirits of Wine be added to Serum, or the same made boiling hot, it curds up, emits fumes, and turns into a coagulum similar to the White of an Egg: the fibrous part of the blood is what forms

Polypuses

Polypuses, concretions &c.

Blood viewed by a microscope appears to consist of a number of globules, the larger ones being those that tinge it of a red color, &c. &c. therefore chiefly make the crassamentum, are of a certain determinate magnitude being of the same bigness in all animals, in a sheep as in an Ox, in an eel as in a man.

These globules are composed of six smaller or serumenous ones, and these serumenous ones are composed of smaller or lymphatic ones, and it is probable there are still lower orders of globules of blood.

These globules of blood are of a lenticular form and elastic, the largest kind being less than the 3000 part of an inch

Inch. The cruramentum is supposd
to contain 1/3 of the mass and the
Serum to make up the other 2/3.

Blood chemically analyzed, upon
distillation with a slow fire a quantity
of Phlegm arises, with the fire increasd
new Spirits an Oil and a volatile salt,
the caput mortuum being a fixed
alkali and a cretaceous Earth.

The chemical proportions of the
blood are by D.r Martin & Boyle reck:
as follows viz: of Phlegm 5/6, of
Oil 1/15, of Salt 1/25, of Spirit 1/28, &
of Earth 1/75, part of the whole mass.

The specific gravity of the blood
to that of rain water is by D.r Jurin
and

and Martin reckoned as follows, by Jurin as 1000 to 1054 by Martin as 1000 to 1056 or 1057 or as 18 to 19.

The density of blood in living ani=mals is to its density when reduced to the coldness of temperate Air as 134 to 135 or 992½ to 1000.

The color of blood is for the most part red, but redness is not a constituent quality in blood, for some Animals have white blood. In the human body the blood is redder & more florid in the Arteries than in the Veins, oweing to the action of the Lungs upon it, for by shaking fresh blood in a vial taken from a vein, it appears of the color of arterial Blood. That the blood

is

is redder in the Arteries than in the Veins. Dr. Hunter proved by the following experiment; he opened the Thorax of a live Dog and kept his Lungs working with a pair of Bellows: and drew a spoonful of blood from each side of the Heart i.e. from the Vena Cava & Aorta the latter of which appeard the reddest.

From accurate experiments it is found that a cubic Inch of rain Water weighs 253 1/3 grains, a cubic Inch of warm blood 264 3/4 grains.

An Ounce of Blood contains 1,813 Inches, An Avoirdupoize Ounce weighs 437 1/2 grains equal to 1,729/1000 Inches of water and 1,6526 of warm blood.

See A.

* Among these we may reckon Boerhaave inst. vol. 2

the coats of the Arteries are of a ligamentous substance and not muscular as is evident from their white appearance and their elasticity both of which is contrary to the general characteristic of a muscle however we are informed that Dr. Cullen has lately discovered that there are muscular fibres in the coats of the arteries the action of which he thinks assists in propelling the blood onward.

Haller likewise says that there is a muscular coat to the arteries as well as Boerhaave & many others.

Ed. Physiology Book i.

Lecture 3.d

Of the Arteries & Veins

An Artery is a strong, membranous, ramifying, elastic Tube, endowed with pulsation; arising from the ~~left side~~ ~~of the~~ Heart, and terminating in every part of the body. The Arteries are comp=
=osed of three coats, tho' some have reckoned four and some five.* The first external coat is very thin the fibres of × which going longitudinal & circular; the second coat is thickest and the fibres of it go in a circular direction; the 3.d coat is very compact and its inside very smooth and even, this smooth=
ness and compactness of the inner coat serves two purposes. 1.st to allow the blood to

to pass without hindrance & 2.d to prevent its exudation.

The pulsatory motion of the Arteries is a dilatation and contraction of them; the former called Diastole, and the latter Systole, which proceeds from the Heart, besides which they have a sort of a peristaltic motion, as is evident from an experiment of D.r Hunter's, who opened a live Dog and cutting off the meventeric Artery, injected it w.th warm milk, which he could plainly perceive the Artery to carry along w.th a vermicular motion; to confirm it the more he injected the meventeric Vein but the milk went no farther, than

the

the force of the injecting propelled it.

There are but two Arteries in the body viz: the pulmonic, which carries the blood through the small circulation, and the Aorta, which carries it to all the parts of the body.

The coats of the Arteries are very elastic, and are furnished with blood vessels for their nourishment; the Arteries mostly, and all except the Epigastric ramify at acute angles.

The common diseases the Arteries are subject to, are Aneurisms and Ossification.

Aneurisms proceed from a preternatural dilatation of the coats of the Arteries and are of two kinds 1st When the blood

x it is sometimes found in young subjects and is owing perhaps to a disposition of the constitution to form bony matter.

is contain'd within the coats of the Artery. 2d. when the Artery is burst & the blood extravasated into a membranous bag.

Ossification happens mostly to old people from a weak & slow circulation of the Blood. x

Veins are elastic, ramifying Tubes, like the Arteries, except smaller, their coats thinner, and without motion. Physiologically speaking the Veins begin at the extremities of the Arteries, or more properly speaking they are a continuation of the Arteries reflected back towards their Origin the Heart: but, anatomically speaking the Veins arise from the Heart.

There

There are 7 Veins in the body, from which all the rest arise viz. The Vena Cava ascendans and descendans, 4 pulmonary Veins, two from each lobe of the Lungs, and Vena Portarum.

The Veins are mostly ramified in the same manner as the Arteries, excepting the Vena Porta, and the cutaneous Veins of the extremities, & other parts.

The veins of the extremities have valves, but not those of the Viscera; the reason of which is because there is no Muscles in the viscera, hence the use of those valves in the Veins of the extremities is to prevent the blood from going backward as well

as

x Bellini exquisitely is of this opinion

as well as for, to push it forward when the muscle is contracted and the vein compressed.

Of Venesection & Hemorrhages.

In bleeding, the blood is supposed to flow out faster at the Orifice than it circulates in common, and to increase the circulation to the part, hence the doctrine of Revulsion & derivation is easily understood; thus we find in Cephalalgia bleeding in the Foot causes a derivation to the Feet and a revulsion from the Head &c.

In Hemorrhages the antients used Ligatures round the joints, as stopping the return of the blood to the Heart checked its impetus, but

but by Venesection two ends are answered: eg. supposing an Hemorrhage at the Nose, Lungs, Uterus &c. bleeding takes off the impetus of the blood & causes a revulsion, at the same time.
Dr. Haller thinks this latter method much the best.

The Veins are some of them sub-ject to Varices, which are an obstruction or destruction of the valves thereof.

The muscular coat of both the Arteries and Veins are somewhat subject to inflamation & suppuration, but not near so much as the other muscles of the body; this is very wisely adapted to their function, for suppur-ation of their coats would be attended with fatal consequences often.

Lecture

Lecture 4th.

Of the Lymphatics.

Lymphatic or absorbent Vessels are those fine ramifying vessels which contain a clear diaphanous Liquor; they take their rise internally from the cavities, as the Stomach, Intestines, and externally from the surface of the skin. The antients supposed the Lymphatics were a continuation of the Arteries dividing them into three classes, sanguineous, serous, and Lymphatic, but it has very lately been discovered that the Lymphatics are an entire system of vessels by themselves, having no affinity or communication with either the Arteries or veins. this

not passing into them from the veins
This is proved 1: by injections, 2: by
the motion of the fluid in them and the valves they
have; they are called absorbents from
their office, which is to absorb the Lymph
and other matters and carry it into the
Thoracic duct or Receptaculum Chyli:
where they are allways proved to terminate.

Those vessels called lacteals
belong to this system and calls Lacteals
only from their carrying a milky chyle:
their origin termination and decourse of
their fluids being the same. That the
lymphatics and absorbents is evident from
their absorbing moist substances rubed
on the skin, as Mercury, Turpentine,
Garlic &c. but in a more obvious manner
in the venereal Disease, when absorbing

The

virus they carry it to the adjacent
Lymphatic Glands and cause them to
tumify, hence Bubo's &c: sometimes the
virus causing the Glands to tumify and
inflame, constricts the vessels beyond
the same and prevents the infection
from going any farther: hence the cure
of the venereal disease sometimes by
the suppuration and discharge of a Bubo

Of the Glands.

A Gland is a secretory Vessel — the
antients called only those Glands which
we feel hard movable kernels under the
chin and other were until Malpighius
by his microscope found the Liver and
other substances to be of the same texture,
and therefore termed them all Glandular.

A

A gland he thought to be made up of
little fine round bodies consisting of
follicles which contained the secreted
fluid and between which was a parenchy-
matical substance; but Ruysch by
his injections found that the glands
were vascular or made up of fine vessels
which has been further confirmed by
later anatomists. The vessels of the
glands are Arteries, Veins, secretory
(and to some) excretory Vessels Nerves & lym-
phatics

Of Secretion

Some have imagined that the secretions
were performed by the diameters of the
secretory vessels, supposing them to be
of the size of the particles secreted;
but this theory is subject to these two
objections, viz: that the smaller particles
will

will go off with the larger ones and so the
secretion be confounded, and so a Jaun-
dice, whence the Bile had got into the
Blood it would continually remain so &
the Jaundice could not be cured, shews sup-
pos'd a particular fermentation happened
in the several Glands, & from thence
arose the difference in the several secret-
ed fluids, and likewise was the cause of
the secretion; this theory is liable to the
same objections with the former, and
therefore the most received opinion is, that
the secretions depend upon the particular
disposition of the vessels, to the partic-
ular fluid it is to secrete; hence arises
these Axioms. 1. That the secretions are
carried on uniformly in a living sound Animal.
2. One secretion increas'd another is diminished &c:

Lect

Lecture 5th

Of the Muscles & Tendons.

A Muscle is a fleshy fibrous, [illegible] substance, consisting of Veins, Arteries & Nerves, besides fleshy fibres &c.; having more nerves in proportion than any other part of the body serving to give notice to the brain of any external stimulus or irritation.

The redness of the muscles is not inherent in the fibres thereof, but only owing to the blood contained in them, of which there is a great quantity, more than is sufficient for their nourishment and may possibly be subservient to their motion.

A Tendon is a white compact fibrous unelastic substance. most muscles terminate in Tendons, and the Tendons are by some reckoned a continuation of the fibres of

of the muscles to which they belong,
only more compacted together as not
to admit the red globules of blood bet-
:ween their interstices: but D. Hunter
thinks the fibres of the Tendons are
not a continuation of those of the muscles,
but distinct fibres somewhat cemented
thereto.

The muscular fibres are cemented
together by the cellular membrane and
an intervening glue, & serve for the
moving of the solid parts of the body.

The Tendons are for the better
insertion of the muscles, and of great
use in motion; eg: in the Perforans and
Perforatus of the hand, the muscle arises
from the inferior part of the Humerus, and
if that was continued down to its insertion
muscular, it would render the hand trouble-
:some

vome and unwieldy, whereas now the Tendons being compact & taking up but little space, remedy that inconvenience.

Round many of the Joints as the Wrist Ancle &c: there is a Circular Ligament or Frenum which serves to keep these Tendons in their right places, and facilitate their regular motion; likewise over some of the Muscles there is a tendinous expansion called Aponeurosis, of much the same use as the preceding Ligament.

The muscles may be reckoned of three kinds 1st Cylindrical as those of the Arms, 2d Convex as those of the Heart, Stomach, Bladder &c. 3d mixt as those of the Abdomen the Pectoral muscles &c.

Muscles have their names from their Origin, Insertion, Use Appearance &c.

Let

Lecture 6th

Of the Nerves.

The Nerves are now by every body allowd to be a system of Vessels, and they are a fasciculi of white fine fibres, arising from the Medulla Oblongata & Spinalis, & expressing its fluid.

Over the Brain are the Meninges, or. 1st. The Dura Mater which is a tough, & a thick vascular substance, with this & adherent to the Brain is. 2d. The Pia Mater, which is a thinner membrane, between these two, some anatomists acknowledge another membrane, & thereby fine & reticular which they call Tunica Arachnoides.

The Brain is divided into three portions called, Cerebrum, Cerebellum, and Medulla Oblongata, the latter being

being continued thro' the spine of the back is called Medulla Spinalis.

The Brain is supposed to be vascular, & its substance of two sorts, external of an Ash color is called Corticalis; internal of a white color called Medullaris. The Nerves are of the same substance with the Brain, and are properly a portion thereof continued to all the parts of the body. The Nerves as they arise in pairs soon after decussate, or change sides as in the Optic Nerves, the left going to the right Eye, & the right to the left; hence a wound on one side of the head affects the contrary of the body.

The Nerves are distributed thro' the body in much the same manner as the Arteries; the one proceeding from the Brain the other from the Heart, but with this difference

&

difference. that the trunks of the Arteries grow less the more they are ramified together with the ramifications ad infinitum. but the capacity of a constituent Nerve never decreases tho being imperceptable, but the number of the fibres of the fasciculi decreases in proportion as the bundle ramifies, thus the cords of Nerves viz. as they egress from the Brain contain an innumerable number of constituent Nerves, decrease in N°. but not in capacity ad infinitum in proportion as they are ramified.

The Nerves anastomose, but not in the same manner as the blood vessels do, by uniting their tubes but only by their coming in contact with each other. these anastomoses are called Plexuses. sometimes like knots appear in Nerves called Ganglions, some imagin these knots proceed from, tho some inflamation, but this cannot be, as they are found

found in the Viscera &c in a Fœtus where no pressure could happen.

Lancisi reckons the use of these ganglions is for an an additament to the Brain, because ye many more nerves go from them than go to them, but from the substance of these knots not being the same w.th the brain, that cannot be. others think they serve to stop the nervous fluid from flying out at the end of the Tube without the impulse of the will by means of muscular fibres, they being only in those nerves distributed for voluntary motion: this also appears to be false.

The termination of the nerves is but little known, but supposed to be in every part of the body.

The use of the Nerves is for sensation, motion, nutrition, &c: the Brain being called the sensorium Commune to w.ch the Nerves carry all the sense communicated to them.

Volunt=

Voluntary motion is acquired by experience, as is evident from a Child whose will is frequently contrary to the Act performed.

Of the cellular Membrane.

The cellular membrane is of two Kinds, the one adipose containing fat, the other reticular without fat. It is a soft like substance, vascular, very thin and tender, consisting of many cells, & its fibres very fine: the cellular membrane is continued throughout all the body, except some of the viscera & is called by some the membrana Musculorum Communis. The cells of the reticular part of the cellular membrane communicate with each other, as is evident from an Anasarca which is a translation of Phlegm into the cells, & so from the one to the other, as is evident from the Legs swelling by walking & subsiding when lying down

× See the Lond.ⁿ med: observations vol: 2.

down: hence Ecchymosis from a false Aneurism, Diaresis, Contusion &c. by which the blood insinuates itself into the cellular membrane: hence also the great quantity of water evacuated from a scarification in an Anasarca.

An Emphysema is a remarkable proof of the communication of these cells. This is caused by the air distending these cells & often happens from a fractured rib puncturing the Lungs by w.ch the Air gets into this membrane, a remarkable instance of this happened in London, by w.ch the patient swelled to that degree that his eyes could not be seen. D.r Hunter made a puncture at the Eye by w.ch the Air sunk out, & by puncturing & rubbing he was cured. Putrefaction will cause an Emphysema, from the fermentation generating Air: hence

hence a drowned person will after awhile rise to the surface of the water.

The fat contained in the adipose cells differs in different bodies, in a Foetus the fat is soft and gelatinous, in children of a year or two old, the fat is chiefly near the skin, hence the fat less observed in children, & in adults the fat is solid and mostly internal.

The cellular membrane serves for easy smooth motion, for a defence to the body, to keep the parts warm & preserve the figure of the body, & blunt accidents. some animals are reckoned to be nourished in the Winter by their fat.

Lecture 7th

Of the Bones.

Here we shall, 1st describe the external conformation of the Bones, 2d examine their internal structure, 3d their connection, & 4th Explain their use.

A Bone is a hard fibrous compact substance. various Bones have various shapes & conformations, some are cylindrical: long, others flat, & broad, irregular &c: Bones are said to be made up of fibres forming Lamellæ, fastned together by means of oblique or transverse fibres.

Bones have processes and Cavities. Processes have different names from their different forms, & appearance, thus, a Condyle is an oblong process arising from the extremity of a bone; a Corone is an oblong

process

process terminating in a point; a Spine is
the sharp ridge of a Bone; a Superficies is
a thin round a cavity; a protuberance is a
rough process of a bone. Processes are of
two kinds viz Apophyses & Epiphyses.

Apophyses is a process growing out from
the body of a bone. Epiphysis is a process
growing to the body of the bone, being origin-
ally separate therefrom by a different Ossification.

The cavities in bones are of two kinds,
one for Articulation, & the other for the Lodgment
of soft parts; cavities for Articulation are
of three kinds, 1. Round & deep called Cotyloid,
2. round but superficial called Glenoid, and
3. deep & narrow called Alveoli; the Articulation
of Bones is by Galen called Aplopus Joint
& by him is reckoned of 2 kinds, 1. With motion

called

called Diarthrosis. 2d without motion called Synarthrosis; each of these are of 3 kinds.

Diarthrosis are. 1st Enarthrosis, 2d Arthrodia 3d Ginglymus

Synarthrosis are, 1st Sutura or Raphe, 2d Harmonia 3d Gomphosis.

The connexion of bones is termed their Symphysis, & is of two kinds. the one 1st and the other without an intervening substance. the first is that of the Cranium by mutual insertations. the second are of 3 kinds viz: Synchondrosis, Synneurosis & Syssarcosis.

Periosteum is an elastic fine membrane that covers the bones except at the joints teeth &c: its use is for the insertion of vessels, to strengthen the Epiphysis &c: the cylendric bones are all hollow, & so are most others & contain Marrow, the ends of bones are cellular.

× see Edinburgh med: Essays.

Lecture 8th

Osteogonea.

In a Foetus, the first month, there are no bones, nothing but a gelatinous fluid: then it gradually grows cartilaginous, & in time becomes boney; some imagine Bones are formed of Cartilages only by an expulsion of the redundant fluids; but Dr. Nisbet says, & it is now generally recd, that in Ossification, there is in the blood, or a fluid secreted therefrom, an ossifying juice; consisting of particles w.ch are not apparent. that wherever nature designs an ossification between membranes, or a cartilage she occasions a more than ordinary afflux of fluid which distends so much the vessels w.c were before invisible as to make them capable of recieving the red Globules of blood w.c is always

to be seen near to where ossification is begun.
In this blood gritty particles are to be felt by
the point of a knife, which have been formed
by the attraction & cohesion of the particles
of the ossifying juice obstructed alongwith
the other grosser fluids in the begining of
the vessels, prepared to receive the incluent
juices. The membranes or cartilages serve
as a bed between wch or within wch the bony
particles are deposited or shoot, but without
any intermixture of the particles of the
bone & cartilage, or continuation of the fibres
of one substance to those of the other as is
evident in bones made perfectly clean, the
cartilage dropping from it as easy or easier
than an Acorn from its Cup & there is a
smoothness of the part of both cartilage
and

and Bone which shew that there is no conjunction or union of the fibres of the two substances.

While bones are increasing within Cartilages, the cartilages are extended & spread out, by w.t with the pressure they suffer & the great influx of various fluids, & the nutritious matter being forced to flow freely into them, they decrease continually & at last may truly be said to be entirely destroyed.

Bones digested in Acids for some time grow flexible & gelatinous like a tendon. by which it appears the great quantity of Earth they contain makes them hard & rigid. Bones are furnished with Arteries and Veins, as is evident from the drops of

blood

bloodveen in vawing bones lengthwise, & upon their appearing tinged of a red color after the Animal has eaten Madder.

Dr. Havers divides the bloodvessels into sanguiferous, & medullary the latter enter the bones mostly near their center in an oblique manner.

Bones have Nerves as is evident from their exquisite sensibility where amputated, or exfoliated, & granules of flesh have sprouted out.

Diseases of bones are 1st: A softness & rickety disposition, appearing generally from y^e 1st: to the 3d: year after birth, tho' this habit may continue thro' life. It seems to be owing to an Idiosyncrasy or a want of bony matter in the constitution. Sometimes it is said to arise from the pox & Scurvy, but probably less frequent than from the other cause. We have the history of a species of Scurvy in France that affected the Bones & separated the Epiphyses.

In Anson's voyage we are told the Callus of bones (which had been fractur'd & united again for many years) were dissolved by the Scurvy ~

Softness from a venereal Taint can be nothing more than a Carices of the bone. the disease first affecting the Periosteum & then communicating itself to ye subjac^t. bone.

As to softness from Idiosyncrasy as it's call^d. or from a particular state of the solids & fluids. M^r. Goodye furnishes us w^th. a history of a woman whose bones without any apparent cause grew soft, her body shorten'd, & at last she dy'd, & he found that he could easily cut thro' the limb bone & all.

The academy of Paris give a more remark^ble. history of a woman whose bones were so soft that at length they had not solidity eno^h to give the muscles action—no kind of a scorbutic or poxey taint could be observed. see Dansfr: 4 p: 423.

M^r. Gooch had a case of this kind under his care, when the patient dy'd he found the bones so soft that he split the thigh bone, the Tibia & bones of the foot the whole length very easily with his knife. D^r. Tilton of Dover relates the like

Bones may likewise loose of their bulk like other parts from a loss of juices as in alveolar sockets of old people.

2^dly. Fractures. All bones have a tendency to unite again after being disjoin'd w^ch. is effected by means of a Callus, this was formerly suppos'd to be unorganiz'd, but is now known to be vascular by injections, & being ting'd w^th. madder. When a Callus is broke it will unite again contr^y. to the opinion of some authors. A Pupil of D^r. Haller's in a Thesis he wrote on the subject says that the callus is first a bloody matter, then slimy, next gelatinous & then vessels from the bone & meditullium shoot out thro' it & ossifica-tions begin directing themselves quaquaversum & thus the callus

Lecture 9th

Of the Cartilages & Ligaments.

Cartilages are compact, opaque, & a little
elastic: of wc there are 3 kinds, 1st such as
supply the place of bones as the Nose,
Trachea Arteria &c. these preserve the
structure of the part & admit of motion.
2d such as supply the place of bones be-
fore they are formed as in a Foetus. 3d
such as serve for the Articulation of
bones. Cartilages differ from bones
in not having Fibres nor blood vessels
to be discerned, tho' they are imagined
to be vascular; they serve at the Art=
iculation by their smoothness to prevent
abrasion; they wont granulate nor
exfoliate but may be corroded.

Ligaments

is compleat - sometimes the bones unite but with great difficulty

3.ly Caries - A caries in a bone is similar to an ulcer in the flesh it has circulation but it is unsound & often shoots out irregularly as the fungus of an ulcer See more in med: Diary 2: p: 150 Vanswieten 4 p 377.

4: Spina ventosa - This is a caries beginning on the inside of the bone & affecting it clear thro', hence Surgeons bore into the bone to let out the matter, but in gen: the limb is to be taken off. See Vanswieten 4 p 377

A Node by some is said to be an Ecostosis of the bone, but for the most part if not always it begins in the Periosteum. should be opend before it affects the bone

5.ly Anchylosis is a stiff joint having little or no motion, from the bones uniting into each other & the cartilages being eroded. Vanswieten vol 4 p 457 gives several curious cases of Anchyloses of all the Joints in the Body. See also Le Dran's Surgery

* where it covers the Cartilage it is call. Pericondrium

the external lamina of the capsular ligament goes from the substance of one bone to the other over the articulation & is inserted beyond the Epiphyses. Vanswieten

6.th Ecostosis is a hemefaction of a Bone or an excrescence growing out of the bone. It may proceed from a redundancy of ossifying particles in the System or in the part only from a morbid cause see Vanswieten 4 p 424. See the case of J. Leo at of the Pennsylvania Hospital in my American med: See Cheselden p 5.

Ligaments are firm, compact, unelastic, membranes serving to connect the joints, prevent luxation &c.

The Ligaments, Bones, Cartilages, Tendons & Dura Mater are not such as none of them to have much sensibility in a natural state. v. Whytt & Haller

The capsular ligaments are very strong & compact, made up of two lamellæ, the inner lamella being a reflected membrane going over the head of the joint, covering the Cartilage & becoming to join the external lamella, which is firmly inserted near the joint.

These capsular ligaments forming a sac in w^ch is contained a mucid aqueous liquor serving to lubricate the joint.

for

for in all Joints for motion there are synovial Glands which discharge the above synovia, this is subject to be disordered: 1st to become thin & serous, 2 thick and inspissated &c:

It is generally received of late, that the capsular ligament is lacerated in a Luxation of a Joint unless from internal cause, or a relaxation: & violent extension is unnecessary in reduction of the same; no more being necessary than to bring the ends even, and then coax them into their proper places, & there keep them by proper dressings & bandage.

For a particular description of the Bones vide Monro's Osteology, and of the muscles Douglas's Myographia

Sect. 40th

In the Osteology we divided the body into three parts, viz: Head, Trunk, and Extremities; the Trunk of the Skeleton we subdivided into, the Spine, Thorax, and Pelvis, but in a fresh subject we divide the Trunk differently, viz: into The Thorax, and Abdomen, or upper, & lower belly. The Viscera of the Thorax are only the Heart, and Lungs, & therefore not necessary to be subdivided.

The Abdomen is separated from the Thorax by the Diaphragm.

The Abdomen by reason of its largeness and the many Viscera contained therein, has been divided into several parts, by imaginary lines, for the readier knowing the particular situation of each Viscus. The divisions are as follows,

1st That which lies under the Cartilago Xyphoides, is called Scrobiculus Cordis, 2d From the Scrobiculus Cordis down to within 2 or 3 Inches of the Umbilicus is called Regio Epigastricum, circumscribed, and on each side thereof it is call'd Regio Hypochondricum. 3d From the Regio Epigastricum to 2 or 3 fingers below the Umbilicus is called Regio Umbilicus, circumscribed, and each side Regio Lumborum, 4th From the Umbilical Region to the Os Pubis is called Regio Hypogastricum, and on each side the Regio Iliaca 5th The lowest part is call'd the Regio Pubis.

As we are sometimes called to open the body of a deceased Person before their Friends, particularly if they died of a violent Death, we should endeavour

to

To do it with regularity & Decency.

The Ankeints opened the Abdomen, by begining at the Sternum & directing the Knife along the False Ribs to the Loines, then along the Spine of the Ilium to the Os Pubes; and laying the loose part over on the contrary side.

Others begin at the Xephoid Cartilage & make a strait incision down to the Umbilicus, then dividing the incision directing one to the Spine of the right, & the other to the Spine of the left Illium, and turning each part back.

But the best method is to begin the incision at the Xephoid Cartilage and going straight down to the Ossa Pubis and then another transverse from the Navel to the Loines each way.

The Thorax is opened by slicing off the Teguments & Cutting the Cartilages by the Sternum.

Lect.

All the internal superficies of the cavity of the Thorax, the ribs, cartilages of the ribs & convex side of the Diaphragm except where the pericardium lies in contact with it are lined with one continued, thin, nervous, very strong membrane, internally very smooth called Pleura.

On the external superficies of this every where is the cellular membrane w.ch in very fat animals is often so enlarg.d with fat as to lessen the capacity of the Thorax & thereby cause a shortness of breath.

The Pleura when it gets round to the vertebræ elevates itself perpendicularly bow.d Sternum w.ch with the one on the other side form a double pleura called Mediastinum dorsale.

The same duplicature is made of the Sternum where it is call.d mediastinum pectorale.

The pleura d'levis covers all the muscular circumference of the diaphragm above the cellular membrane w.ch arising up together with the orb of the Peritonæum from the back & Sternum, forms the external membrane of the pericardium w.ch is the third cavity of the Thorax in the middle between the 2 cavities of the pleura containing the Lungs & forms a conjunction of them.

This membrane of the pericardium is lined internally with a thin membrane w.ch is a branch of the external membrane of the Heart. The great vessels from the heart & they pass thro the pericardium go on beyond it & receive a coat & above the cellular one from the external membrane of the pericardium. This membrane forming a coat to the pulmonary arteries & veins w.ch when they arrive at the Lungs is expanded out & forms the external coat of the Lungs.

Haaw de Perspir. Hippocrat:

Sect. 41.

Of the Pleura.

The Pleura is a fine membrane, which lines all the cavity of the Thorax and is reflected back over the Lungs.

There are two Pleura, one on each side, like two bladders beginning at the sternum and going round within the Ribs to the Vertebra of the Back, then reflected back upon the outside of the Lungs (making the coat of the Lungs) to the sternum; there running in or uniting with the first fibres of the same and so on the other side; where the two Pleura meet at the sternum they are not quite in contact with each other, but there is a small space left between which is filled up with cellular Membrane.

Of

Constat pulmo duplici vasorum genere, aëriferis scilicet & sanguiferis.

Aërifera omnia vasa ortum ducunt ex unâ trachaeâ, quae mox a faucibus initium capiens, ante oesophagum, descendit, thoracem post thymum ingressa; & post cavem descendentem & pericardii apicem, ad quartam thoracis vertebram, quae est a superiore una tertia pars ipsius pulmonum longitudinis) divaricatur.

Hujus dein crura tendunt ad utrumque pulmonem, & statim dividuntur, in homine dextrum in tres, sinistrum in binos ramos, qui turae bronchia dicuntur, ad totidem pulmonum lobos, quos ubi ingressa sunt, dispergunter statim in ramos minores & minores; qui omnes ad obtusum angulum, respectu trancorum, oriuntur.

Rami autem majores ingressi pulmones, pro maxima parte, descendunt, pauci recti procedunt, ubi ingrediuntur; alii vero ascendunt ad illam lobofum partem, qua supra divisionem aërifero-rum truncorum, & horum ingressum est. quod praeter Eustachium neminem observasse video.

ultimi

Of the Lungs.

The Lungs are Vascular substances composed chiefly of Air Vessels, and Blood Vessels. The Air Vessels are Ramifications of the Trachea Arteria, and are called Bronchiæ; the blood Vessels are ramifications of the Vena and Arteria Pulmonalis; beside — which they have an Artery n. Nerves to nourish them, called the Bronchial Artery coming from the Ascending Aorta together with Nerves and Lymphatics, and some say also Parenchema which is perhaps no more than cellular Membrane.

Some Anatomists suppose there are little Follicles or cells at the extremity of the small Bronchial Vessels, which if there is are not discernable.

Ultimi autem ramuli amittunt cartilagineam indolem, & expanduntur in vesiculas oblongas, membranacëas, cavas, quæ Malpighianæ dicuntur, & quibus fiunt arëæ, & lobuli, qui tandem pulmonum lobos efficiunt.

Comitantur aërifera hac vasa, in omni decursu, ad vesiculas usque, vasa sanguifera, quæ omnia oriuntur ex arteriâ pulmonali, quæ cordis dextro ventriculo egressa, quâ parte superiore ventriculo sinistro jungitur, adscendit, mox se incurvat, arcum facit, & sub aortâ decurrit. Descendit

The inside of the Trachea arteria is lined with a membrane in which are small glands that secrete a mucus for lubricating the its internal surface in colds this mucus is secreted in too great quantity - sometimes inspissated & is spit up very thick especially in the morning.

Dissection has taught us that this membrane is the seat of that disease in children called the Hives & is found separated from the cartilages. - Nothing proves so useful in this disease as large doses of ☿. I have known ℈ x of calom: given to a child 2 years old produced 2 copious stools & disease immediately vanish

The Lungs are divided into two Lobes, by means of the Mediastinum and Heart. The right Lobe is divided into three Lobuli by fissures, and the left Lobe is divided into two Lobuli.

In a natural state, the Lungs are every where in contact with the Ribs, so that there is no vacuity left.

The Trachea Arteria is composed of cartilaginous Rings, which both end quite short but a small membrane between: each of the cartilages are connected likewise by membranes.

The Lungs are liable to inflamation, and Ulceration. In inflamation of the Lungs we should use plentiful bleeding, Glisters, fomentations externally and the steams of warm liquors particularly Vinegar, into the Lungs thro' the mouth.

x The Ventricles are divided by a middle partition called Septum Cordis.

Sect. 42d.

Of the Heart.

The Heart is a strong muscular substance, situate obliquely to the left side, more than the right; part of the inferior and or Apex is in contact with the Diaphragm, and pointing between the sixth and seventh Ribs on the left side; the Apex being likewise nigher the Sternum than the Basis.

The Heart is the Origin of the Veins and Arteries.

There are four cavities in the Heart, two Auricles, and two Ventricles; one right and one left. At the right Auricle the Vena Cava enters, and at the left the Vena Pulmonalis; at the right Ventricle the Arteria Pulmonalis egresses, and the Aorta from the left.

M

× these cordæ Tendineæ arise from the Carneæ Columnæ.

At the entrance of the Vena Cava into the right Auricle of the Heart are three Valves called Valvulæ mobiles, and about the middle of the Auricle there is a little Knob called Carna Versamicea. At the entrance out of the right Auricle into the right Ventricle are two valves called Valvulæ Tricuspides, connected by two small tendinous Cords called Cordæ Tendineæ: the internal part of this Ventricle is rough & muscular having many muscular Pillers, called Carnæ Columnæ which were for to strengthen the motion of the Heart and to work the blood so as to prevent the concretion & forming Polypuses, — which however sometimes happens.

After the blood has passed out of the right Ventricle into the pulmonary Artery it is prevented from returning by three valves

Valves named Valvulæ Semilunares.

There are likewise Valves at the entrance between the left Auricle and Ventricle named Valvulæ Mitrales, fastened by the small Cordæ Tendineæ on the left side of the Heart.

The left Ventricle is larger and a stronger & much thicker muscular bag than the right Ventricle, its internal surface rougher and the Carnæ Columnæ bigger. At the entrance out of the left Ventricle into the Aorta are likewise three Semilunar Valves.

The Heart is contained in a strong Membranous bag called Pericardium the internal part of which bag is very smooth and lubricated with a juice that continually transudes through the

Same

D^r. Plott in his History of Staffordshire attests of his own knowlege the case of one Mary Eagle who drew two quarts of milk from her breasts every day besides what her child sucked & that she could make two pounds of butter every week even when she was brought to bed which was above five months when the D^r saw her.

Borellus in his Hist. & Observ: Physico-med: relates an instance of the like nature in one Mary Barton a Taylor's wife of Bologna who afforded milk enough for two children & made Butter besides

Biog Dictionary Lett: Eag:

Sect. 43d.

Of the Diaphragm

The Diaphragm is a large Muscle between the Thorax and Abdomen, the muscular fibres of which arise from the internal part of all the ribs below the Sternum, and from the lower end of the Sternum, these fibres terminate in a tendinous expansion which is nearly in the middle of the Diaphragm, and which is of an oblong figure coming very nigh the Sternum upon which part the Apex of the Heart lies, and from thence turning down towards the Angle of the Ribs and is called the oval tendon of the Diaphragm the lower part of the Diaphragm is likewise muscular and on each side of the Vertebra are muscular fibres

vend

vent downw some distance called the Crura
of the Diaphragm, these terminate
near the Origin of the Psoas muscles
which arise at the internal part of
the Vertebra of the Loins and pass out
of the Abdomen at the Inguen to be
inserted into the Os Femoris. This
by making way through these muscles
that Abscesses of the Loins sometimes
fall downw to the Thigh and are to spend
and discharge their contents there.

There are three Apertures thro'
the Diaphragm, one on the right side
of the Vertebra through which the
Vena Cava goes, a second contiguous
to the Vertebra inclining a little to the
left thro' w.ch goes the Aorta, a third
over the Aorta & exactly over the Vertebra
through w.ch the Oesophagus goes. Of

Lecture 44th

Of Respiration

Respiration is an alternate dilatation and contraction of the Thorax the former performed by Inspiration and the latter by Expiration. The parts subservient to Respiration are divided into Active and Passive The active parts are the Ribs, Sternum, Heart &c: acting upon the the passive which are the Lungs themselves.

The dilatation of the Thorax happens both in length and diameter: in length by means of the Lungs pressing upon the Diaphragm and thereby rendering its convexity more plane, the diameter is increased by the motion of the intercostal Muscles &c. Thus the capacity

Capacity of the Thorax is increased
and as there is no vacuum between
the Lungs and ribs allowed of in a
natural estate, the capacity of the Lungs
will also be increased, and there will
be a vacuity in the Lungs w.ch nature
not admitting of and by the pressure
of the Atmosphere rushing through
the Aspera Arteria they are soon
filled with Air making Inspiration.

The fresh Air that is drawn in
by Inspiration stretching the Bronchia
and stimulating the same causes
them to contract and expel the Air
making Expiration. some Authors
imagin there are small Muscles
between

Between the cartilaginous Rings of the Bronchia which they call Musculi Bronchiales serving to contract the the same in Expiration.

The uses of Respiration are four,

1st For the circulation of the Blood, thus in Inspiration the Lungs are distended and the fine convolutions of the Arteries are are elongated so as to allow blood to pass through them whereas in a collapsed state the blood cannot pass through them. in Expiration the Lungs collapsing push the Blood through the Veins into the left Auricle of the Heart.

2d For Sanguification by communicating the Blood making it more florid & deliver

3d For cooling the blood

4th For Vocification, exclusion of Faces &c

Of the Peritonæum

This membrane is similar to the pleura, being smooth on one side & connected by cellular membrane on the other; it is reflected from the containing parts to the contained. It makes a compleat bag 1st: covering the viscera by intimate connection, & then covering the abdominal muscles loosely on the inside. The peritonæum has been considered as a double membrane true or false, the last is no more than cellular membrane w.h connects the peritonæum to the external parts. We may convince that all the viscera are within or without the peritonæum by: turning up or one side of a viscus & reflected back on another so as to form an almost compleat cover to each viscus separately, so that by a very nice dissection the peritonæum may be taken out in a compleat bladder having no perforation at all, leaving all the viscera undisturbed.

Lecture 45th

Of the Stomach

The Stomach is a large muscular bag situate obliquely from the Left Hypochondrium to the Epigastrium and serves for the reception & digestion of food, it has an upper & lower curvature called the lesser and greater curvatures of the Stomach.

There are two orifices to the Stomach; the superior one called the Cardia which enters it from the Oesophagus don't open at the fundus of the same but obliquely, at the side an inch or more from the end. Towards the inferior end the Stomach grows smaller & turns up opening into the Duodenum by an orifice called the Pylorus where there

is

The Nerves of the Stomach come from the par vagum.

Is a partial kind of a valve which does not prevent the regurgitation of fluids into the stomach being only a thickness of the internal coat of the stomach.

The stomach is furnished with Nerves and blood Vessels, x

Some Anatomists say there are small Glands in the stomach, but if so they are not easily discovered, there is however a fluid discharged into the stomach from the extremities of the Arteries called the Gastric Lymph from gastros the Greek name for the stomach, there is likewise Lymphatics which absorb the redundant fluids & carry it into the blood.

The coats of the stomach are three 1st. coming from the Peritoneum and is called

Called the Peritoneal Coat. 2d Muscular being composed of thin muscular fibres running longitudinal and transversly by which the capacity of the Stomach is encreased the readier to expel its contents. & 3d Villous or internal Coat which is thin.

Of the Intestines

The first Intestine next the Stomach is the Duodenum beginning at the Pylorus and ascending two or three Inches, has then two or three inflections passing down & across the Vertebræ being all the way tied fast by a duplicature of the Peritoneum to the back, having no mesentery.

The Ductus Choledochus & ductus Pancreaticus both enter the Duodenum

several

several Inches from the Pylorus, not both by one Orifice but by two very near together, next the Duodenum is the Jejunum, & then the Ileum which is the last of the small Intestines.

The coats of the Intestines are three the same as the Stomach, and in the small Intestines are annular explications of the internal Villous coat forming what is called Valvulæ Conniventes which serve for two purposes, first to make the passage rough & prevent the Faeces from passing on too fast and secondly to give more capacious Origin. to the Lacteals

The Ileum enters the Caecum not at the end but about an Inch therefrom obliquely. the blind end only being

Being called Cæcum, where there is an appendage called Appendicula Vermiformis. At the entrance of the Ileum into the great Intestines, there is a valve formed by the inner coat of the Colon & called Valvula Coli which in a sound state entirely prevents the regurgitating of the Faeces or any fluids passing, Injected per Anum.

The Colon runs up the right side then along under the Stomach and down the left side, surrounding all the Abdomen, hence Clysters beside discharging the Faeces serve the purpose of a fomentation to the contents of the Abdomen.

The Intestenies are furnished with blood Vessels from the two mesenteries

except

except the Rectum which receives
its from the Hemorrhoidals.

The Mesentery is a double membrane formed by a duplicature of the Peritoneum serving to connect the Intestines. & through which the blood Vessels go to be distributed to the Intestines. through it likewise goes the Lacteals which are fine Lymphatic or absorbent Vessels arising from the villous coat of the Intestines and passing through the mesentery, they terminate in the Receptaculum Chyli, to be described hereafter. there is also a great number of Glands in the Mesentery through which the Chyle passes, and by which it is supposed to receive some alteration.

These Glands are very small.

Sect. 40th

Of the Lacteals & Thoracic Duct

The Lacteals are an innumerable number of small Vessels arising as before said from the villous coats of the Intestines & running through the mesentery in the duplicature of the same and through many fine glands and terminate in the Thoracic Duct serving to convey the Chyle

The Thoracic Duct is a small canal running up the Vertebra of the Spine between the Aorta & Vena Azygos and under the Vena Cava until it gets above the Heart then it turns a little to the left and ascending empties itself into the Subclavian Vein.

The lowest end of this Duct has been called Receptaculum Chyli but improperly as it no larger than the rest of the Duct neither do the Lacteals enter there but some higher

Of Digestion

Digestion is that change of the Aliments whereby they are fitted for the nourishments of the body, this is different from the different juices mixed therewith and in the different parts of the body.

The first change that happens to the Aliments is in the mouth by means of Mastication and mixing with the Saliva by which it is somewhat dissolved and fitted for more easy Deglutition

Saliva is a clear mucous transparent fluid secreted by the Glands of the mouth in great plenty, and is of great use in digestion.

After the Aliments is sufficiently masticated & mixed with the saliva they are by the Tongue pressing against the roof of the mouth forced into the Pharynx

Pharynx and from thence through the Oesophagus into the Stomach. The Muscles employd in this Act of Deglutition are very many, serving chiefly to pull up the Oesophagus and to press the food down through the same, and we may very well conceive of the act of Deglutition by that of drawing a stocking on the Leg, part of the muscles drawing up the Oesophagus as we draw up a stocking upon the leg, and the rest pushing down the contents as we push down our Leg into a stocking.

The manner in which our food is digested in the Stomach was by some of the Antients reckoned to proceed from

Heat, others reckoned it was performed by means of triturations, and others again from the different juices there mixed imagined it was performed by Fermentation, but modern Physiologists from many observations, think it is performed by all three jointly viz: Heat, friction and Fermentation.

After the aliments are sufficiently digested in the stomach, by the contraction thereof which is the beginning of the peristaltic motion of the Intestines, they are forced through the Pylorus into the Duodenum, where it continues some time and receives another change by having the Bile and pancreatic juices mixed therewith.

The

The Bile is an oily bitter, and attenuating substance endued also with a saponaceous vittue it will incorporate with Oils and when so mixed they are both voluble in water, it curdles with salt forming a green color. by which it appears that the Bile is of great use in attenuating the viscid part of the Aliments, and stimulating the Intestines. the latter we are assured of by this that Bile secreted and discharged into the Intestines in too great a quantity causes a Diarrhea, and in a Jaundice where the Bile returns into the Blood and is not vented into the Intestines a Costiveness happens with white stools, and Boerhaave says

says the Gall of Animals is of use
in this case to supply the want of Gall

De Graaf collected great quantities
of the Pancreatic juice from Animals
which he says is rubacid it is reckond
to be somewhat of the nature of the
Saliva, some reckoned it serves to
sheath the Acrimony of the Bile but
this in a natural state is not too acrid

These two fluids being mixed with
the Aliments in the Duodenum the
fluid and nutritious particles of the
same are absorbed by the Lacteal vessels
and by them carried into the Thoracic
Duct to be convey'd into the Blood.

These Lacteals are in all the Intes-
tines. but in the small ones in the
greatest

Greatest plenty. That there are also Lacteals in the Colon seems evident 1st. From the rest the colon makes round the Abdomen, for if that is not for absorbing the particles that may chance to be not taken up by the vessels in the small Intestines why did it not go out strait like the Rectum and immediately terminate in Ano?

2d. From persons being known to have lived a long time by Glysters, not being able to get any thing thro' the Oesophagus, & it is known that they cannot pass by the Valve of the Colon.

The contents of the Intestines are carried along by the Peristaltic motion

thereof

thereof. Vomiting is an inversion of the peristaltic motion and is performed by means of a deep inspiration which presses the Diaphragm against the stomach & a convulsive contraction of the stomach by which its contents are thrown up hence we learn that Emetics are good in Fluxes by inverting the peristaltic motion they stop the same.

Of the Bile

Bile is secreted in the Liver. It is 8 times as viscid as water. More subject to concrete than any other humour in the body. Its specific gravity to water is as 810 to 795. In Duck quadrupeds & in the human species the bile is very bitter, but most so in carnivorous animals. Recent bile easily mixes with water. It mixes with oil by triture. Mixed with water it partakes of the property of soap, dissolves oil so that it will mix with water & takes out grease spots. It dissolves resins & mixes with balsams. It dissolves Myrrh Bdellium & Wax like the yolk of an Egg, & is supposed to dissolve the Blood when mixed with it as in a Jaundice.

The Ductus Choledochus may may be compressed & stopped by the Duodenum being distended with flatus. Eating Mushrooms has been known to distend the duodenum greatly & strangulate the ductus choledocus as it were with a ligature. It may also be obstructed by the contraction of the fibres of the intestine from stimuli as happens in the Colica pictonum, biliosa, inflam.n of the duodenum, acrid purges, glass of Antimony & poisons. Hither we may refer the Jaundice in Infants which is removed by Rhubarb. Storck has seen the ductus choledochus obstructed with a cheesy coagulum. Hillary says that is frequent in the warm Islands. See Monro Ed: Ess: v. p 247. Baglivi prax: med: Haller tom: 6. p 290

× about 4 fingers breadth below the pylorus.

Sect 4th of the Liver

The Liver is a large viscus situate immediately under the diaphragm mostly in the right Hypochondrium extending over the Stomach into the Epigastrium it is convex above and concave below suspended by three Ligaments one above to the Diaphragm one broad on the upper part & the round ligament from the Umbilicus which was the Umbilical Vessel in a foetus state. There are several fissures in the Liver 1st divides the great lobe from the lesser one. 2d divides the Lobulus Spigelii & the third where the Hepatic Vessels enter.

The Vesica Fellis lies in a deepness between the two lobes of the Liver from whence goes a duct remarkably contorted to appearance about two Inches where it joins the hepatic duct, both of them united form the Ductus communis Choledochus which terminates in the Duodenum. x

The Coat of the Liver comes from the

x sometimes called Tunica Glissoniana.

* The hepatic Artery divides a little before it enters the Liver one branch going to one lobe & the other to the other Lobe; it serves to nourish the liver & is said to secrete a small part of the Bile, some few of its evanescent branches terminating in the porii biliarii as is proved by injections.

The Peritoneum, beside which some Authors describe another coat viz: is vascular to be seen, The Gall Bladder has three coats 1st from the Peritoneum, 2d Muscular & the 3d Villous, appearing like a honey Comb inside. The Liver is furnished with Veins Arteries & Nerves.

The Blood Vessels are the Hepatic Artery & Veins & the Vena Portæ.

The Vena Portæ is like an Artery first in its Office & 2dly in the thickness of its coats; it arises from all the Viscera of the Abdomen terminating in the Liver and is supposed to carry the blood for the secretion of the bile, 1st From the largness thereof & the smallness of the Hepatic Artery. 2dly By Injections passing from it into the Biliary Ducts &c.

It is certain however that the blood being carried into the Liver, part of it is converted

× The general opinion of the ancient Anatomists was that the bile was conveyed into the gall bladder by little ducts running from the liver immediately into the bladder which they called ductii hepaticistici. Pechlin was the first who denied the existence of these ducts in the human body, then Ruysch, Cowper, Bidloo, Berger, Morgagni, Heister, Ludwig, Parsons, Lieutaud, Berger, & Cheseden, who says if a ligature be applied round the cystic duct, or if it be obstructed the gall bladder does not become turgid. Bohnius emptied the gall bladder of bile then tied a ligature round the cystic duct & upon examining the same several days afterwards found no bile in the cyst itself but the part of the duct between the ligature & liver was greatly distended. Bianchus & Haller have done the same. This clearly proves that there is no communication between the Liver & Gall bladder but by the cystic duct. What was supposed to be Hepatocystic ducts is demonstrated to be only blood vessels by Ruysch, Guntz, Haller, Morgagni & others.

converted into Bile & carried by the pori
Biliarii which all meeting together form
the hepatic duct. thro' the hepatic duct
to the cystic then regurgitates into the Gall
Bladder; that the Bile regurgitates thro' X
into the reservoir is proved 1st by there being
no other passage tho' some suppose there
way by little ducts &c. they call cysto hepatic
duct, but there is no such & is evident from
the injection's not passing thro' that way
into the Gut, & in a Viper the Gall bladder
is situate some distance from the Liver.

Horses & Deer have no Gall bladder.

That the Bile goes thro' the hepatic & cystic
Ducts into the Gall bladder is proved 2dly
by blowing into the hepatic duct the wind
passes freely into the cystic than through
the ductus Choledochus.

The remainder of the Blood is received
by the Veins & carried back to the Heart.

Diseases

* more frequently if not always the Jaundice arises from an obstruction of the Ductus communis Choledocus.

An obstruction of the cystic duct alone will not occasion a Jaundice.

Diseases of the Liver are:

1st Hydatides these are of two sorts the first tumors composed of several Lesser cysts filled with agelatinous matter, the other a kind of Vascular Cysts, the fluid circulating through it.

2d Inflammation this is to be relieved by plentiful bleeding warm relaxing and stimulating applications &c: sometimes suppurates & even grows cancerous.

3d Scirrhi like other glandular parts

4th It gives origin to the Jaundice viz. proceeds from an obstruction in the Cystic duct by wch means the Bile is prevented from going into the Gall bladder and therefore returns into the Liver where it is absorbed by the Veins or lymphatic Vessels & carried into the blood & by that means tinges the skin, the cystic duct may be stopt by concretions tumors compressing the

The same or more commonly by means of a Stone lodg'd therein: a Stone or concretion is best removed by Vomits which agitating the parts serves to remove it or by friction stimulating the same.

Some have imagined that a Jaundice proceeds from a Scirrhus Liver, but this is proved to not be the cause as no Jaundice can be unless the bile is absorbed after it is perfectly made

Transcient Jaundices sometimes happen to Children from a Spasm of the Duodenum from acidities or otherwise hinders the Bile from passing thereinto & which is relieved as soon as the Spasm is removed.

Durable Jaundices happen when the Obstruction of the Cistic duct cannot be removed. Sect. 40th.

Pancreas is a long slender conglomerate Gland situate obliquely under the Stomach between the Spleen & Duodenum. each

little

× Haller supposes the pancreas secretes three times as much fluid as the salival Glands.

× a Costiveness and a pain in the region where this Gland is seated is the common symptoms of its being obstructed.

a little acini or knot supposed to be the extremity of an Artery winding up in a knot and the whole vascular like the liver and all the other glands of the body. from each acini goes a small excretory Duct which terminates in a larger duct in the middle of the Pancreas called the pancreatic Duct & through which the pancreatic juice flows into the duodenum, the glands of the pancreas being the same with those that discharge the Saliva are supposed to secrete the same juice and for the same use. x

Diseases of the Pancreas are Inflamation, Cancer, & Schirri, which * are very difficult to be known until past cure they are however removed much in the same manner as the same Diseases on other parts, Soap is a very good thing in this case which not only cleans

x This appears very reasonable though it was never taken notice of by any author besides Mr. Munro.

Is a good revolvent but supplies the place
of this juice in digestion.

Sometimes a Diarrhea happens in a
Salivation and proceeds from a too great a
secretion of the pancreatic juice which being
the same with that of the Saliva is supposed
to be effected in the same manner with
Mercury & is only to be removed by removing the cause. x

Omentum is a fatty double mem-
brane composed & formed by a duplicature of
of the Peritoneum it has an appendage
between the Liver & Stomach called the
Omentum minor & may be inflated.

Uses of the Omentum are to lubricate
& keep the Intestines warm, and it is
supposed to supply oily particles to the
Bile and also the Blood.

It is sometimes much distended with
Fat and in very lean subjects quite
reticular.

Spleen

Of the Spleen.

The Spleen is a roundish tabulated Gland situated in the left Hypochondrium It is furnished with blood Vessels and but very few Nerves.

The Antients supposed it to use was to counterbalance the Liver, others thought it contain'd a fluid called the Stabilis, but the moderns mostly think that it is subservient to the Liver, it has been taken out of several animals without any apparent damage and is not therefore a vital Viscera.

It is subject to very few diseases, scarce ever being inflamed schirrus or carcerated, by reason of the fewness of the nerves, its only subject to a viscidity of its fluids and an enlargement therefrom.

Lect.

* The arteries generally divide into three branches and the veins into two before they enter the kidneys.

Sect 49th

Of the Kidneys

The Kidneys are two Glandular bodies situate between the false ribs & Ilium. the situation of the right Kidney is some-what lower than that of the left oweing to the Liver being on that side. The blood vessels of the Kidneys are an Artery and a Vein called Renales or Emulgents the right emulgent Artery is longer than the left & the left Vein than the right.

These vessels enter at the Pelvis and are distributed through the same. x

The external part of the Kidney is called Cortical the thickness of which is irregular and in this the Urine is secreted and emptied into little sacks in the inner part

* this pelvis is an enlargement or expansion of the
of the upper part of the ureter where it enters the
kidney or rather where the united urinary Tubes egress
out of it.

part of the same, which is called the Mamillary part of the Kidneys.

The little ducts into which the Urine is secreted are called Tubuli Urinarii and are in number about a dozen. These all unite in the Pelvis & forming the Ureter which is a membranous canal conveying the Urine from the kidneys to the Vesica Urinaria. The Ureter as it enters the Pelvis of the kidney is divided into three parts one going towards each end and the other through the middle. The coats of the kidneys are two, the first called Adipose and the second Membranaceous.

There is an appendage to the kidney called Glandula Renales or Glans

Glandulæ Succenturiati situate at the top of the Kidneys its particular use not known but supposed to be subservient to the Kidneys.

Diseases of the Kidneys are, Inflamation, Diabetes from a too great laxness of the Vessels allowing the red particles of the blood to pass through them, Gravel, etc. &c.

Sect. 30th

Of the Bladder

The Bladder is a membraneous Bag situate in the Pelvis the upper part of which is covered with the Peritonæum but when it is very much distended it protrudes about an Inch above the Pelvis, & being there covered without the Peritonæ-

Peritoneum & in this place is the upper
Operation for the Stone performed by
making an Incision into the Bladder
without cutting the peritoneum the doing
which would be of dangerous consequence.

The coats of the Bladder are three,
1st The common coat 2d: muscular and
3d Villous, the muscular coat at the
neck of the Bladder is thick & circular
and is called Sphincter.

The Ureters enter the Bladder one
on each side about an Inch from the
neck thereof by a small Orifice obliquely.

The situation of the Bladder is between
the Rectum & Ossa Pubis in men and
between the Uterus & Pubis in women
its use is a Reservoir to the Urine

Parts of Generation
Lect. 51st
1st In a Male.

These are the spermatic Cord, Testes Scrotum, Vesica Seminales, Prostrate Gland, and Penis.

The spermatic cord is composed of the spermatic Artery and Vein, Nerves, Lymphatics, & Vas deferens all incl=uded in a cellular coat and some have supposed a muscular w.c they called Cremaster w.c is not visible except where it passes out of the Abdomen w.c it does in an oblique manner through the rings of the Abdomen, by which the Intestines and Omentum sometimes falls thro! forming an Hernia Inguinalis or Scrotalis along the side of the spermatic Cord

The

† Caput Gallinaginis

The vas deferens empty themselves somewhat like the biliary Ducts there being a passage from them immediately into the Urethra, but it commonly regurgitates into the Vesiculæ Seminales & there kept till used.

Vesiculæ Seminales are two Glands situate under the neck of the Bladder, composed of little cells which communicate with each other, being receivers for the Semen, from each of these there goes a small Duct which opens into the Urethra at the Caput Galaginis, × where is a large Gland called the Prostrate Gland which secretes a fine mucus to defend the Urethra from the acrimony of the Urine.

The Scrotum is composed of skin Cellular Membrane & next to which has been reckoned a muscle called the Dartos which is not to be

discern'd

discerned, and the first & obvious Coat
is that w^ch surrounds the Testicle much
as the Pleura or Peritoneum does the
contents within them this is called the
Tunica Vaginalis propria Testes, and
within that is a coat which adheres to
the substance of the Testicle called the
Tunica Albuginea,

The substance of the Testicle is
wholly Glandular, the spermatic Artery
entering in at the side of the same and
distributed through the same terminating
in fine secretory ducts and these again
in excretory ducts which uniting into one
form the Vas deferens. The Epididymus
is an Appendage to the Testicle, formed by
numerous convolutions of the excretory duct,
reckoned 6 times as long as the spermatic Cord.

Sect. 52d

Parts of Generation in Females.

These are either external or internal, the external are the Mons Veneris on which hair grows at a certain age

Labiæ or External Lips of the Orifice at the upper part of w.ch is a small body called the Clitoris under which in a small groove is the Vas ad Urinam thro' which the urine passes & into which the Catheter must be introduced in a suppression of Urine, & we should be well acquainted with this Orifice as the modesty of women often occasions a weight of the part, so that we must introduce the Catheter by feeling, at the lower part where the Labiæ unite is formed a Fraenum or Fourchet or Fourchette.

× Iter externum ad Uterum

Nymphæ are two strong bodies within the Labia within these is Virgins is a circular membrane called Hymen within these is the Os Uteri externum et Uterum x

Vagina is a membranous substance furnished with rugæ by w^ch the Penis is more titilated in Coitu, there is likewise many small glands in the Vagina w^ch secrete aliquor to lubricate the same and during the Venereal orgasm wether real or imaginary there is sometimes so much mucus secreted by these glands, that it has been discharged in great quantities so as to wet all the external parts, this by some is reckoned the Female semen.

At the bottom of the Vagina is the Os Uteri internum et Uterum, the Os Uteri or Os Tincæ.

N

Between

Between the Fourchet and Anus. There is a seam called Perinæum, this in difficult deliveries is sometimes lacerated by the largeness of the Foetus & it is necessary to prevent this accident for to support the Perinæum with the hand while the Foetus advances

Uterus is a small body situate obliquely between the Bladder & Rectum its coats are near half an Inch thick & its internal cavity very small; the Neck of the Uterus is full of rugæ wch serve to allow the same to dilate for the expulsion of the Foetus. The Os Tincæ resembles the mouth of a Tench situate at the bottom of the Vagina tho' not a continuation thereof, the Vagina being

inverted

X On demande si le corps de la matrice étant renversé, & ayant tenté inutilement sa réduction, elle montroit quelque disposition à se gangrener, il conviendroit pour lors de l'extirper, après avoir porté une ligature le plus haut qu'il seroit possible. En pareil cas on ne devroit point balancer de faire cette opération pour empêcher que la gangrene faisant du progrès du côté des parties interieures, elle ne causât la mort à la malade. L'extirpation de la matrice, quoique rare, ne seroit point en cette occasion une operation téméraire, son succès étant prouvé par plusieurs observations

Verdier's Anat: v: 2. p. 166

Rousset, dans son Traité de Partu Cæsareo, dit qu'une femme à la suite de plusieurs accouchemens laborieux, eut une précipitation de matrice qui ne pouvant être

inserted round the Os Tincæ. From the Fundus of the Uterus there goes off nearly transversely on each side, a tube called the Fallopian Tubes lying loose & growing larger towards the further end wh. is fimbricated. the Uterus is suspended by the ligamenta lata & rotunda. ×

Ovaria are two glandular bodies situate on each side of the Uterus inclosed in cellular membrane in each of these Ovaria are near 20 small Ova

Of Generation

This is performed per Coitus by the Male's introducing his Penis into the Vagina, & perhaps into the Os Uteri tho' this is denied by some at which time the parts grow turgid by the venereal Orgasm the Os Tincæ opens & recieves the male semen in which are Anamalculees. immediately after wd.

résulta, se gangrena, & tomba d'elle-même. La femme ne daigna pas garder le lit, & elle jouit d'une parfaite santé pendant trois ans, au bout desquels, étant morte d'une fièvre continüe, l'ouverture de son corps fit voir que c'étoit véritablement le corps de la matrice, qui par pourriture s'étoit séparé de lui-même

Ibidem p. 168.

afterwards the Os Tincæ closes

During the Orgasm the Fallopian Tubes grow erect & the Fimbriæ incase the Ovaria at w.ch time some one or more of the Animalcule ascend thro' the Fallopian Tubes & enter the first ripe Ovum w.ch have now burst the cellular membrane by its turgidity, then the Ovum is disingaged & carried by the Fallopian Tube into the Uterus, and the place where the Ovum was in the Ovarium is soon after filled up by a yellow substance called Corpus Luteum, this is proved by opening a Bitch in the Horns of the Uterus were 4 Tubercles in one three & the other four & in the Ovaria were the same number of Corpora Lutea, by a like experiment upon a Bitch opened while the Dog was fastned thereto, for dogs having no Vesicula Seminales are obliged to remain fastned to the Bitch

a

a long time while the Semen is excreted and carried from the Testes by the Vasa deferentia into the Uterus) I found that the Semen was ejected immediately into the Uterus.

Tho' the preceding Hypothesis seems incredible and almost impossible, yet it answers all the Phenomena of Generation the best of any system yet advanced: however the subject is extremely intricate & no doubt is one of the Arcana natura which the omniscient Jehovah of his infinite goodness sees fit to hide from us.

Lect. 53d

Of the Fœtus & Nutrition &c.

The Uterus of the female &c. is fecundated in manner the preceding, by the Semen Masculinum & is supposed to contain also the membranes that envelops the Fœtus with the Placenta, Umbilical Chord &c.

The Uterus lies in the Uterus 9 months, but for the first two or three months the Placenta does not adhere to the Uterus

The Chorion is the external coat of the Fœtus & is a thick spungy membrane.

The Amnion is within the Chorion & is very thin and smooth, between these two membranes some have described another called Allantois &c. Ch: includes the Urine of the Fœtus carried there, from the Bladder by the Urachus, this is found in some brutes but cannot be discerned in the human species

The Placenta is made up of a congeries of vessels.

How does the Placenta adhere to the Uterus? How is the Fœtus nourished? is it by the Mouth, the Umbilical Vein, or by both together? Does red blood go immediately from the uterine Vessels of

the

* As first the want of Navel String, 2d a diminution of the Liquor Amnii, 3d mucus being found in the mouth & Stomach & meconium &c:

** 1st a want of mouth or any passage into the chylopoetic organs, 2d a corruption of the Liquor Amnii 3d That the Liquor Amnii is an exudation from the foetus & consequently not fit for its nourishment &c:

the mother through the Placenta to the Foetus &
vice versa? from whence come the Liquor of
the Amnios? these are questions, that have been
differently solved by physiologists.

Some have imagined that the placenta adheres
to the Uterus by its vessels inosculating with those of
the Uterus, others imagine there is no continuation of
vessels by inosculation from the placenta to the
Uterus, but that the placenta adheres thereto by
a kind of cement, for say they if it adhered other-
wise there must be a laceration (consequently an inflamation &
suppuration) which does not happen when it is brot away.

As to the Nourishment of the foetus many have
imagined that it rec'd nourishment by the mouth
& bring many arguments to prove it, on the contrary
others deny that the foetus receives any nourishm't
by the mouth but wholly by the umbilical Chord
this is the most receiv'd opinion, but for a particular
ac't of the Nutrition of the Foetus in Utero vide
Med: Essays of Edinburgh and D'r Hippen's
Thesis for the connection of the Placenta to the Uterus

It was the rec^d. Opinion till of late by all who allowed the foetus to be nourished by the umbilical Chord that red blood was immediately conveyed from the mother to the foetus; their arguments for it are 1^st. that if the mother bleeds to death the Foetus will be deprived of blood also. 2^d. Injection pass from the mother to the Foetus. 3^d. that hemorrhage shappen upon a separation of the placenta from the Uterus. 4^th. that the umbilical Chord will bleed a great quantity when cut &c: but the most modern doctrine that now prevails & w^d. answers all the phenomena best is, that red blood does not pass immediately from the mother to the Foetus, for before the placenta adheres to the Uterus it certainly cannot, & then it must be nourished by absorption of the Placentine vessels as well before as after its adhesion to the Uterus; we have said before that the placenta does not adhere to the Uterus by inosculation of Vessels, but by a slight cementation, hence we suppose that

the

the small ends of the placentine vessels open into the mouths of the uterine ones, and as the mouths of the uterine vessels are so large near the time of delivery as to admit a goose quill whereas the mouths of the placentine vessels are so small as not to admit red blood its very probable there are many of the placentine vessels open into one of those of the uterus.

These small placentine vascula are part of them supposed to absorb the chylous & serous nutritious part of the blood in the uterine vessels which the placenta forms into red blood before it is conveyed to the Foetus; The manner how the placenta acts in forming this nutritious fluid into blood is unknown, but it is supposed to perform the office of Lungs in that particular.

The placentine vessels having absorbed the nutritious particles of the mothers blood

and

and the placenta formed it into red blood
it is convey'd by the umbilical Vein into
the Foetus for its increase & nourishment,
while the impure & unnutritious part is re-
=convey'd by the umbilical Arteries into the
placenta & is absorbed by the uterine Vessels
and mixed with the blood of the mother;
thus instead of a reciprocal circulation between
the Foetus & Mother which was formerly supp-
=osed, and is still by some, there is only a
secretion of the fluids which pass from one
to the other. The Arguments brought to support
this new doctrine are, 1st That upon the mothers
bleeding to death, the Foetus will not be deprived
of any of its blood this D.r Shippen proved by
an experiment he made in Edinburgh before
Alexander Monro junr. he bled a Bitch to
death then opened her and took out her whelps
which appeared to have lost not one drop of
blood

blood. 2d. That the umbilical Cord when cut will not bleed but very little, no more than the blood contain'd in the Placenta, this most Midwives know & it is mention'd by Smellie: but 3d. Lastly the greatest arguement of all is that Injections cannot be made to pass from the placenta into the Vessels of the uterus nor vice versa tho' it has been repeatedly tried by the greatest Anatomists notwithstanding what has been said by some to the contrary.

A Course of Bandages

Bandages are very necessary to confine dressings upon any external part of the body, injured either by accident or by a necessary Operation.

Lect. 5th

Bandages of the Head.

1st Handkerchief doubled & made 3 square put round the head & tied behind

2d Grand Cover Chief a large square handkerchief doubled to ab. 2/3 the way & laid on the head the single part to reach the Nose, the double part the forehead, w. double part being uppermost must be fastned under the Chin, the other then turned up & tied behind in the nape of Neck

3d Boorman's Bandage of Galen

a piece of linnen cut into 6 tails & laid on the top of the head, the middle tails

fastned

fastned under the Chin the hind ones before
& the fore ones at least behind.

4th Capaline a long double headed bandage
4 or 5 fingers breadth wide to put round
the head

5th Uniting Bandage double headed &
like the former with a slit near the middle
to be applied to ye crown of the forhead.

6th Scapha for bleeding in the frontal
vein going several times round the head
at least the first 2 or 3 times over & tied behind

7th Fillet double headed for bleeding in
the Temporal Artery going several times
round the head then twisted round to a hard
knot over the Orifice & then past one end
over the crown the other under the Chin
and fastned.

8 & 9 Mono & Bi-Ocular double headed
the first covering one Eye the last both Eyes
Lea

10 Accipiter a T Bandage for the Nose going round & tail tied over the head.

11 A four tail'd sling bandage for the upper Lip.

12 A four tail'd sling bandage for the Chin the under half being the broadest.

13 Capistrum double headed bandage passing from under the Chin to top of the head then to neck & round to the Chin &c.

14. Divisive a long double headed rowler to keep up the head.

Bandages of the Trunk

15 Spica double headed for the Shoulder

16 Star Bandage for a fracture of the Clavicle a single headed rowler & if necessary the Capaline may be applyed with it for greater safety.

17 For the Thorax the Serviette or Napkin & Scapulier the first going round the body the latter slit going over the head & fastened thereto.

18 Suspensor of Heliodorus for a diseased Breast a T bandage

19 For Paracenthesis a broad flannel roler to go round & compress the Abdomen.

Lecture 56th.

20 Spica Inguinis double headed for any disorder in the inguen.

21 T Bandage or Suspensor Scroti beside wc. there are several others of less note to these parts particularly the Trufs

Bandages of the Extremities

22 Delver for the Wrist

23 Spica Pollicis for the thumb.

24 Gauntlet } for the fingers.

25 Demigantlet }

26 Eight tailed bandage for a broken Patella &c

27 For a simple Fracture of the Os femoris going round under the Splint to a single headed roller & Epidesmus going over the Splint to one roller very long may serve for both.

28 For a compound Fracture where there is a Wound &c. the 8 tailed bandage together with Splints Tapes &c and Castle Juncho, Box or Cradle &c if it be one of the Legs.

A Course of Operations

Lecture 37th

Of Sutures

There has been many sutures invented most of which are out of use.

We ought to observe that a wound made longitudinally in the direction of the fibres requires no suture be it ever so great, for by means of a bandage the sides of the Wound is easily brought together without suture.

But a wound made obliquely or transversely requires a suture as no Bandage can be made to keep the wound together.

The intention of Sutures is to bring the lips of a Wound in apposition, that the vessels may inosculate & heal by the first intention, the chief sutures are

The

Glovers Stitch, The interrupted suture,
The quilled suture, & the Gastrorraphy,

The Glovers stitch is performed with
a straight needle & waxed thread single,
turned over and over.

The interrupted suture is
made with a crooked needle & single waxed
thread the lips of the wound being brought
together first take a stitch in the middle
Rule for which is to begin as far from the
edge of the wound as the wound is deep
making the needle come out at the bottom
of the wound & continued thro' on the contrary
side then tied not over the wound but for
one side, then make two other stitches near
each end wch is mostly sufficient.

Quilled suture is made with
a crooked needle as before with a double cord &
tied at the end with a quill on each side the wound.

The

The Gastrorraphy is performed when the parietes of the Abdomen & intestines are cut. The intestine is to be sewed up with the Glovers stitch leaving a piece of the thread at each end to lie out of the wound of the Abdomen. then the Parietes is to be stitched with the interrupted suture in a particular manner viz: on each end of a waxed cord must be put a crooked Needle. then take one needle & from within the wound push it out then take the other needle & do the same on the other side of the wound. bringing them together & tying the same. so on until you have as many stitches as you think is necessary

Of Trepaning

When it is necessary to perform this Operation we should consider first the places where the Trepan may be applied: there are 3 places where it is improper to apply it viz: to the Sagital Suture, the frontal Sinuses, & the Occipitis.

In Operating an Incision must be made of a good length thro' the Scalp, the same done & the Cranium scraped, than having fixed upon the place apply first the Perforator & after that the Trepan circumscribing Artem.

Of Virtual Lacrymalis

This operation is performed when the ductus ad Nasum is stopped & performed in the Lacrymal Sac &c. Sometimes compression alone will cure this disease but when the Operation is necessary it is performed by making an incision over the Sac at the bottom of the Orbit & half the length of the same, into the Sac & cleaning

Cont

out the matter & if necessary making an Aperture through the Os Unguis with a strong Probe or a Trocar into the Nose.

Of the Polypus of the Nose

This is an excrescence growing in the Nose in the Schniderian Membrane, hav different degrees of firmness, in a recent state it is very tender but by degrees grows harder until it gets to a great firmness; the best time for extracting it is when it is so hard as not to break easily with the Forceps but not so hard as to adhere to the Schniderian membrane too strongly.

It is extracted by taking hold of it with the polypus Forceps & working it to one side and the other backwards & forwards &c. until it is loosened.

Extirpating the Tonsils.

This is best done by Ligature for fear of an Hemorrhage if the Tonsils are largest at the Apex its an easy matter with proper Instruments to pass the Ligature round its basis & make it tight, but, it often happens that the Basis is largest in this case a ligature put round would slip off therefore with a proper needle it must be run thro' the middle of the Tonsil & tied on each side cum nodo Chirurgica &c:

Of Amputation

Amputation is sometimes necessary but not near so often as has been tho.^t; all agree that it is necessary in a Mortification, but then it must not be performed until the mortification is stopt & even new flesh begins to granulate.

In Amputating the Leg we must stand between the legs that the saw may take the Fibula before the Tibia is quite cut off.

we

We first apply the Tourniquet to the thigh
to stop the blood then with a straight knife we
if the best we make a circular incision with
two cuts round the leg or thigh through the
skin cellular membrane & fat about an inch
below where we intend to cut off the Bone,
then an Assistant must pull up the skin
as high as possible, after wch the Operator
must make a second Incision through the
muscles to the bone then if it the leg or
forearm the double edged Scalpal must be
run between the bones to cut the interosseous
Ligament & Muscles, lastly the bone itself
must be cut off with the saw. & then the Arteries
taken up &c:

The Fingers are Amputated contrary to all
other parts at the Joints by cutting the flesh
as before then retching it up with the
Scalpal beginning on the side take off the Joint.

Of Empiema

This is an operation for letting Out Water or Blood out of the cavity of the Thorax, often times Pus, w.ch comes from an inflamation & Suppuration when this is in but small quantities, the Lungs by their great power of Absorption often cleans & off by Expectoration as we see in Pleurisies; but when in great quantities the operation must be performed very carefully for fear of bursting the Lungs between the 6th 7th or 8th Ribs with a common Scalpal.

Of Bubonocele

This is the dangerousest operation in Surgery, & not to be performed but when absolutely necessary; when so it is done by making a long incision from above the Rings of the abdominal Muscles almost to the bottom of the scrotum carefully in to the Intestine thro' the Peritoneum or Herniary Sac then dilate the passage by incision & carefully reduce the Intestine.

Of Couching

This Operation is performed for the removal of a Cataract or opacity of the crystaline Lens. There are two ways of doing it, the old way of depressing the Lens with a needle to the bottom of the Eye into the vitreous humor w.ch is done by running the needle about 1/10 of an Inch below the Cornea into the posterior Chamber behind the Iris & depressing the Lens.

The other method w.ch is the new way, much in vogue at present, & I think the best, is to cut the Cornea & extract the the crystaline Lens. In the old way the Lens is very apt to rise after it has been depressed w.ch makes this new way preferable, it is performed by a small knife with but one Edge w.ch is to enter near the place where the Needle enters & pushed thro' into the anterior chamber above the Iris (taking care not to cut it) and out on the other side cutting half or better of the Cornea, then with the point of the knife cut the capsula of the Lens & it easily pressed out.

Of Lithotomy

This Operation is performed for extracting a stone out of the Vesica Urinaria, there has been several methods invented to perform this operation but the Lateral Operation or that invented by Frere Jaque is the best & universally in use.

We are not to operate until we are certain there is a stone in the Bladder & we can feel it by sounding & all the other Surgeons prevent.

In Operating we first tye the patient on a Table of a sufficient height lying on his back by making a noose with a garter round the Wrist then making him take hold of the bottom of his foot with his hand putting the Garter round his Instep & hand in form of a sufficient number of times, with an assistant to hold each Knee then introduce the Staff into the bladder, letting a careful assistant hold the same bending the top a little towards the right Groin so as that the bend of the same may turn a little to the left then

Then the Operator setting down right before the Patient must with a sharp scalpel make an incision immediately upon the staff from the Base of the scrotum to beyond the anus ab.t an Inch to the left of Corinea through the skin & fat, (this should be made thus large that we may get at any Artery if necessary) Then make the incision deeper down to the staff when we feel the staff bare we must take the Gorget put the point of it into the Groove of the staff then take hold of the staff from your assistant & turn it over while you slip the Gorget along the groove into the bladder, then take out the staff, & introduce the Forceps upon the groove of the Gorget, when they are in the Bladder pull out the Gorget & gently feel for the stone, when you find it take care to get good hold of, it not being in too big a hurry, then you have it fast extract it.

If the stone breaks take out what you can with the Forceps & the rest with a scoop.

The wound must be dressed gently w.th Dry Lint.

Af Tapping

Of Injections

The antients used to employ only Ink for Injections which answered the end but very poorly until the time of Ruysch who made his injections of wax some of which have since been improved; his method of Injection was as follows viz.: He first laid open the hypogastrium & made two incisions about an Inch long into the Aorta & Vena Cava, then put the subject in cold water several days previous to the blood frequently. Next he put them in warm water several days more & put two tubes in the Artery one upwards & one downwards & fastned them tight.

His Injection was only simple suet coloured with Cinnabar in cold weather & in the Summer time he added a little white wax & injected it gently when warm into the vessels, then put the subject into cold water till the injection was cold, then dried the preparation carefully & preserved it in Spirit of wine

Injections used by the moderns are the following:

Corroding Injection of D^r. Nicholls

℞ Wax ℥iv Resin ℥viij when melted add Turpentine Varnish ℥ij

D^r. Hunter's Corroding Injections

℞ Wax ℥iv Resin ℥viij when melted add Venice Turpentine ℥j

Another

℞ Wax ℥iv Resin ℥viij when melted add Oil of Turpentine ℥ij

Another

℞ Wax ℥iv Resin ℥viij or ℥j Tallow ℥iij melt them together

The Injection is known to be of a proper consistence by dropping some of it when melted in water & when thoroughly cold forming it into the shape of the Vessel if upon handling it breaks it is too hard if it bends easily it is too soft & must be mended. Those Injections which have Turpentine Varnish, Venice Turpentine or Oil of Turpentine in them must be tried as above every time they are heated because in heating they lose of their volatile oil

Of the Colours

To the foregoing Injections such a quantity of colouring matter must be added as will give them a bright colour which must be determined by the Eye

Colours generally used are Vermilion Kings Yellow, Blue Verditer & Flake White. Other colours may be used. They are generally to be mixed with the Injections when they are melted; but there are some objections to this rule in some of the colours particularly the blue Verditer & in some measure the Flake White for they both ferment when mixed with the foregoing Injections, to prevent which it is necessary to melt some of the Ingredients alone & add the colour to it before the other Ingredients are added. The following Experiments will particularize these Exceptions

1 Blue Verditer with Tallow alone causes no fermentation

2 Blue Verditer with wax alone doth ferment

3d. Blue Verditer with Resin alone does ferment, therefore mix the blue Verditer with the Tallow or Wax alone or together & afterwards add the Resin which causes a small froathing

If Turpentine Varnish, Venice Turpentine or Oil of Turpentine be used mix your colour first with the melted wax & then add either of these Ingredients with the Resin

These observations are equally true of the Flake White

When we make a white Injection instead of yellow Wax we use white.

It would seem that we have not yet any Green Colour, but as blue & yellow make a green the blue Verditer added to the yellow wax or resin gives us a fine green

Dr Nicholls fine Injection

℞ Hard Brown Varnish & hard White Varnish ā ℥ij Turpentine Varnish ℥ij. add the colour & shake the Viol first putting some Shot therein to make them mix. Either of the hard Varnishes will do as well as both adding the same proportion of Turpentine Varnish (viz. 1 to 5)

Another

℞ Hard Brown Varnish & hard White ā ℥viij Venice Turpentine ℥iij. mix these as the former.

If we neglect being nice in our proportions & from often heating these Injection become too hard or brittle.

We know when they are of a proper consistence by the following Experiment; Drop one drop of it upon cold water which will immediately diffuse itself over the whole surface when the spirit will be immediately attracted by the water & the Gums with the Turpentine

will be left swimming on it, if this will bear raising up without breaking it is of a proper consistence, but if it breaks it too hard & must be softned till it is properly tenacious

Of Watery Injections

Glue dissolved in water alone makes a good minute Injection; before it is dissolved by heating its necessary to steep it in water for 12 hours then boil it upon the fire till the whole is dissolved, afterwards strain it & drop some of it upon a cold stone or any cold substance to cool that you may know its consistence; when it is somewhat thicker than a common Jelly it is of a proper consistence

Isinglass & water prepared in the same manner as the preceding makes an Injection similar to it

Gum Arabic, Tragacanth, or any other mucilaginous Gum dissolved in Water to the consistence of Cream & strained as the preceding make a very minute Injection

As the Colours mix difficultly with with these watery Injections, they ought first to be wiped well with a little of the Injection & then the remainder added to it.

Of Oily Injections

We often make Injections of almost all Oils as Oil of Turpentine Hogs Lard Tallow &c: The oil of Turpentine is rather too thin of itself but when added to two parts of the oil it is a good Injection

Butter or Hogs Lard make of themselves a pretty good Injection

All fine Injections require more Colour than coarse ones, for as it is to run into much smaller vessels it of course becomes more & more transparent and therefore requires such a quantity of colour as to render it opaque even when it is most minutely separated or diffused either in very small vessels or on any surface

Of Common Injections

The corroding Injections are too hard for several purposes & the fine ones too soft therefore we need something between them, some of which must be softer than others

The hardest is ℞ Resin ℥iij Tallow ℥ij Wax ℥ss Colour sufficient for an Injectⁿ

The other is ℞ Resin ℥ij Tallow ℥ij Colour sufficient for an Injection

These are generally used when the part is intended to be dissected

Varnishes

Turpentine Varnish

Yellow Resin 1 ℔ Oil of Turpentine 1/2 ℔, boil the water out of the resin & then add the Oil of Turpentine from the fire.

White Hard Varnish

Mastick & Gum Juniper a ℔i
Alcohol ℔ℓ

Brown Hard Varnish

Shell Lac & Seed Lac a ℔i/2
Gum Juniper ℔i/2 Alcohol Gall.s 2
clean the Gums from dirt & bruise them pretty small then put them in the Spirit & dissolve them in a sand heat

The Spirit of Sea salt is the corrosion commonly used by Anatomists

The part to be Injected must be macerated in water blood warm 2 or 3 days so as to relax the vessels & soak out all the blood in them, then having a proper sized Syringe with pipes of different sizes, fix one of the pipes into the vessel & fasten it well with a ligature bringing the ligature round the cross piece to secure it the better. The part to be injected lying in the warm water & the Syringe and Injection being warm, the Syringe is to be filled with the Injection, the end of it put into the pipe & kept fast & the Emboles of the Syringe pressed gently down with the breast till the part is sufficiently Injected or the Syringe when it is to be filled and emptied as before if necessary.