RESUME OF LECTURES ON ANATOMY

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Resume of Lectures on Anatomy by Edmond Souchon

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PREFACE.

This simple resumé of the Lectures on Anatomy, delivered before the Medical Students of the Tulane University, is intended solely to assist them in the study of the most important points of this branch, which is one hard to teach, hard to learn, hard to remember and yet of great importance, since it is the foundation of all medical studies.

It is a branch which can not be guessed.

It is one which can only be learned practically, and which it is almost impossible to the greatest number to study after leaving the college; hence another reason for studying it well once and at once.

This resumé should be carefully studied at home by the students before coming to the college. The resumé of the coming lecture should be studied a day or two in advance to profit well by the lecture, the dissections, the drawings and the microscopic preparations which may be exhibited at the lecture. The resumé of the lecture of the day should be well studied at night. After a set of organs have been described the resumé of those organs should be studied over.

All that does not require to be seen to be remembered has been left out of this resumé.

In order to assist the students in studying over and over, a list of numbered questions with corresponding numbers in the text has been placed at the end of the book. It will enable them to examine themselves and to become familiar with those questions, which will be the same that they will have to answer in the examining room.

To assist the students also in the *Dissecting Rooms*, the posterior surface of the organs is described last, though systematically it should come second. But as this study implies a removal of the organ or a great disturbance in the parts not yet studied, those parts should be studied first and then the posterior surface.

EDMOND SOUCHON, M. D.

RESUMÉ OF GENERAL HISTOLOGY.

CELLS.

1 **Shape.** Cells are spherical or lenticular, polygonal or cubical, cylindrical or columnar, conical or pyriform, spindle-shaped, stellate and prickly.

Number. Cells form either single layers or many layers (stratified or laminated).

2 **Structure.** Cells are composed of a *cell-membrane* and of *cell-contents* or protoplasm, which is a *fluid* containing *granulations*, pigment and a *nucleus*, containing itself a fluid and a *nucleolus*.

Some cells, such as the white blood corpuscles, have *no cell membrane*, and are formed of a mass of jelly-like matter with or without a nucleus.

The nucleus is a *little cell* in itself.

Some cells, such as the blood cells in man, have *no nucleus*.

Some cells have *many nuclei*, such as the giant cells of the red marrow of bones.

The *nucleolus* is comparatively *unimportant*.

3 **The Vital Properties of Cells** are absorption, assimilation, growth, secretion, excretion, motion (ameboid or ciliated), and death or destruction (by desquamation, dissolution, fatty, pigmentary or calcareous degeneration), and multiplication by gemmation or budding, and by segmentation or cleavage.

EPITHELIAL TISSUE.

4 **Definition.** Epithelial tissue is formed of cells lining the surface of the skin, mucous membrane and glands. It is almost always stratified.

The epithelial tissue of the skin is called the *epidermis;* that of the mucous membrane and glands is called the *epithelium*.

ENDOTHELIUM.

5 **Definition.** Endothelium is the cells lining the interior of the heart, blood vessels and serous membranes. It is always in a single layer.

CONNECTIVE TISSUE.

6 **Varieties.** It presents the following varieties:

1st, the transparent;—2d, the granular;—3d, the fibrillated (presenting lymph spaces and lymph corpuscles);—

4th, the corpusculated (presenting the so-called connective tissue corpuscles);—5th, the pigmented;—6th, the mucoid or gelatinous formed by large connective tissue corpuscles which branch and anastomose so as to form alveoles;—7th, the adenoid, lymphoid or retiform, formed of branched corpuscles forming alveoles filled with lymphoid cells.

FIBROUS TISSUE.

7 **Definition.** Fibrous tissue is formed of closely united bundles of connective tissue.

ELASTIC TISSUE.

8 **Definition.** Elastic tissue is composed of flattened band-like fibres much wider than those of the connective tissue. It curls when cut.
Varieties. It presents:—1st. A variety characterized by narrow fibres.—2d. A variety characterized by broad fibres with notched edges and perforated substance.

ADIPOSE TISSUE.

9 **Definition.** Adipose tissue is formed of fibrils of connective tissue in the meshes of which are deposited fat cells.
Structure. Fat cells have a distinct membrane, contain fluid oil and a nucleus.

GLANDULAR TISSUE.

10 **Varieties and Characters.**
1st. The **Racemose Glands** resemble a bunch of grapes.
The dilatations are the *acini*, and the stems, large and small, are the *ducts*.
They are simple or composite.
2d. The **Tubular Glands** have the form of a canal.
They are simple or composite, and straight or convoluted, and with a mere closed extremity or an extremity which terminates by a dilatation or pouch.
3d. The **Open Glandular Follicles** are vesicles which present a small opening through which the secretions are discharged.
4th. The **Closed Glandular Follicles** are vesicles deprived of opening and discharging their contents by rupture (ovaries). They are not to be confounded with the follicles of the lymphoid organs, such as isolated follicles of the small intestines, Peyer's patches, lymphatic gland follicles.

11 **Structure of Glands.** In a general way the *bottom* of the gland is the secreting part and is usually lined and filled with peculiar *gland cells*;—the *excretory ducts* are lined by a columnar epithelium.

PECULIARITIES OF THE TISSUES.

N. B.—Peculiarities are points which are usually special to a tissue or organ alone, seldom to two or three.

12 **Peculiarities of Epithelial Tissue.**

It is found on all surfaces in contact with the exterior directly (skin, mucous surfaces)—It is always laminated.—The Deep Cells are always round or oval and soft.—The Superficial Cells have little or no vitality.—It is deprived of vessels.—Nerve Fibrils form hair-cells, in some places, which terminate between the cells.

Peculiarities of Endothelium.

It is found in the cavities which do not communicate with the exterior (serous surfaces)—It is always in a single layer.

13 **Peculiarities of Connective Tissue.**

The most common variety is the fibrillated.—The fibres are round and wavy.—The corpuscles present branches or processes.—It has no capillaries distributed to it properly.

Peculiarities of Fibrous Tissue.

Is dense connective tissue.

Peculiarities of Elastic Tissue.

It curls when cut—The broad variety presents holes and forms the fenestrated membranes—It has no capillaries.

14 **Peculiarities of Adipose Tissue.**

It presents fat cells in meshes of connective tissue—It has capillaries; they form a network around each fat lobule.

15 **Peculiarities of Glandular Tissue.**

The *Racemose Glands* are found in a general way on the skin and on the mucous membranes.—The capillaries are peculiar.

In Resumé, the following are racemose glands:—Glands of the mucous membrane of the intestinal tract from the lips to the cardia, but not further, except the duodenal gland—The Salivary Glands are compound glands—The Liver.—The Pancreas.—Glands of the mucous membrane of the bladder—Prostate Glands—Cowpers' Glands—Glands of the mucous membrane of the Urethra.—Glands of mucous membrane of larynx, trachea, bronchi—The Lungs are a sort of racemose glands.—The Glands of mucous membrane of the Nasal Cavities—Lachrymal Glands and Caruncula.—Glands of the Skin: the Sebaceous.

Racemose Glands present lobes, lobules and acini.

Some Racemose Glands present an *accessory gland:* parotid, pancreas, lachrymal, duodenal glands. Some have two or more excretory ducts: sublingual, pancreas, lachrymal.

The *Tubular Glands* are found in:

The mucous membrane of Digestive Tract from the Cardia to the Anus—The Kidneys are a compound branching, cæcal tubular gland.—The Testicles, also.—The Sweat Glands of the Skin are compound convoluted tubular glands.

The *Closed Follicular or Lymphoid Glands* are: the Tonsils—Isolated follicles of intestines—Peyer's Patches—Spleen—Supra-renal capsules—Thyroid Body—Thymus—Pituitary Body.

There is but one *True Follicular Gland:* the ovaries.

Some Glands have *reservoirs* on the course of their ducts: the liver has the gall-bladder, the kidneys the urinary-bladder, the testicles the seminal vesicles, the lachrymal gland has the lachrymal sac.

Some Glands have a twisted duct, Wharton's duct, cystic duct, epididymis, sweat glands.

Capillaries—In the Racemose and Follicular Varieties the capillaries form a network around the lobules—In the Tubular kind the capillaries run parallel to the tubes—On cross-section they present a radiating arrangement.

16 Guide to Describe an Organ.

(When it is desired to describe it in detail.)

a **Definition.** *Synonymy, Etymology, History.*

b **Division of the Organ** into separate portions.

c **Number.** Simple or Double—Supernumerary organs. Absence of the organ.

d **Dimensions.** 1st. *Relative Size*, or size compared to that of other organs or to familiar objects. 2d. *Absolute Size:* Diameters, transverse, vertical, antero-posterior. *Calibre.*

e **Situation.** 1st. *General Situation*, or region it occupies. 2d. *Relative Situation*, or compared to the surrounding organs.

f **Direction.** 1st. Compared with *axis of the body.* 2d. Compared with *its own axis.*

g **Means of Fixity.** Vascular connections, adhesions, ligaments; supported by other organs.

h **Mobility.** 1st. *Intrinsic Mobility*, or mobility of the whole organ, or a part of it. 2d. *Extrinsic Mobility*, or mobility communicated by other organs. 3d. *Extent of Mobility.* 4th. *Exceptional Mobility.*

i **Shape.** 1st. Compared to a geometrical figure. 2d. Compared to the shape of a familiarly known object.

j **Surfaces:**

Synonymy.

Direction: forwards or backwards, above or below, intermediate direction.

Shape: plane, concave or convex in the vertical or transverse direction.

Peculiarities: projections (folds, processes, ridges or crests, tubercles, protuberances)—depressions, orifices (size, shape. boundaries, structure, contents), blind foramina—grooves and canals (depth, extent, contents, vessels, or nerves or organs). *When enumerating peculiarities*, begin on the median line and then on the sides; proceed from before backwards, or from within outwards, or from above downwards.

Relations: With skin (*i. e.* to that part of the surface it corresponds) or with bones, joints, muscles, viscera, vessels and nerves.

k **Borders:**

Synonymy.

Dimensions.

Directions: 1st. *Relative Direction*, vertical, horizontal, oblique, forwards or backwards, or above or below, or inwards or outwards. 2d. *Absolute Direction*, straight, sinuous, concave or convex.

Shape: Blunt or sharp, or beveled at the expense of one surface or the other.

Peculiarities, } as for surfaces.
Relations, }

All *Thick Borders* ought to be subdivided into *two edges* or lips and an *interstice*. Give for each: peculiarities, insertions and relations.

l **Angles or Extremities:** same as borders.

Base and Apex: same also.

m **Structure:**

Color.

Consistency: Density, Friability, Elasticity, Retractility.

Envelopes or Coats: Thickness, Resistance, Elasticity, External Surface (relations, adhesions). Internal surface (relations, adhesions, processes from internal surface, reflection into the interior of the organ). Stroma: is delicate or apparent; is composed of connective tissue, or elastic, or smooth muscular fibres.

Proper or Characteristic Elements: Cells, Tubes, Fibres, Prisms.

Vessels: Capillaries, Arteries, Veins, Lymphatics.

Nerves.

Excretory Duct of a Gland (as a separate organ).

Lining Membrane of a Hollow Organ: Thickness, Consistency, Elasticity, Adherent Surface (degree of adhesion); Free Surface: color, peculiarities, epithelium, glands.

n **Chemical Composition:** Organic, Inorganic Elements.

o **Development or Anatomy of the Ages.**

p **Peculiarities or Varieties, or Anomalies** due to Sex, Habits, Trades, Constitutions, Individualities, Nationalities, Races.

RESUMÉ OF THE DIGESTIVE ORGANS.

17 **Enumeration.** The organs concerned in digestion are the lips, the cheeks, the vestibule, teeth, tongue, hard and soft palates, tonsils, parotid, submaxillary and sublingual glands; the pharynx, œsophagus, stomach, duodenum, jejunum, ileum, cæcal appendix, cæcum, ascending colon, transverse colon, descending colon, sigmoid flexure, rectum, anus, liver, pancreas and spleen.

LIPS.

18 **Structure.** The lips are composed:—1st, of a *Cutaneous layer;*—2d, of a *muscular layer* formed principally of the orbicular muscle, closely attached to the skin;—3d, of a *cellulo-glandular layer* formed of loose areolar tissue and simple racemose glands;—the *labial artery* runs through the layer;—4th, of a *mucous layer.*

N. B.—The *lymphatics* of the median line of the lower lip discharge into the digastric glands—and the other lymphaties of both lips discharge into the submaxillary lymphatic glands.

CHEEKS.

19 **Structure.** The cheeks are formed:—1st, of a *Cutaneous layer;*—2d, of an *adipose layer* represented specially by a little mass of fat situated between the buccinator and the masseter;—3d, of a *muscular layer,* formed posteriorly by the masseter and anteriorly by the buccinator pierced by Steno's duct;—4th, of a *glandular layer,* represented by a small group of simple racemose glands, called the *molar glands,* and clustered on the buccinator, where Steno's duct perforates it;—5th, of a *mucous layer,* which is covered with microscopic papillæ.

VESTIBULE.

20 **Definition.** Is the space limited in front by the lips and cheeks and behind by the teeth.

When the teeth are clinched, the vestibule communicates with the mouth proper by an *opening* limited by the last molar teeth, and the vertical branch of the inferior maxilla.

THE TEETH.

21 **Number.** There are two sets.—The *temporary or milk teeth* number twenty, ten for each jaw.

The *permanent* set number thirty-two, sixteen for each jaw; two central incisors, two lateral incisors, two canines, four small molars or bicuspids, six large molars or multicuspids, the last of which are called the *wisdom teeth.*