Examination questions on the medical sciences / selected and arranged by James Greig Leask.

EXAMINATION QUESTIONS

ON THE

MEDICAL SCIENCES

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BY

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PREFACE.

In the preparation of this work the Author has aimed at providing, in a convenient form, such a concise collection of questions as will prove useful to the medical student. To attain this end University Calendars, Army Medical Reports, and Medical Periodicals have been consulted, and it possesses the important feature of an alphabetical arrangement, which it is hoped will add to its interest and utility, as tending greatly to facilitate the labour of reference.

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EXAMINATION QUESTIONS

ON

THE MEDICAL SCIENCES.

I.

ANATOMY AND PHYSIOLOGY.

Abdomen.

1. What is seen on opening the abdomen?

2. Into what regions is the abdomen divided?

3. Having removed the stomach and intestines only from the abdomen, mention in order the parts seen on the posterior wall of the cavity.

4. Enumerate, in their relative position, the viscera and bloodvessels contained in the upper zone of the abdomen, *i.e.*, between the diaphragm and a horizontal line drawn across the cartilages of the ninth ribs; describe any surgical operations which may be performed in this region.

Abdominal Ring.

1. What point of bone can be felt in the external abdominal ring?

Absorption.

1. Describe the different kinds of absorption.

2. State the general physical laws under which absorption takes place.

Acromio-Clavicular.

1. Describe the acromio-clavicular joint, enumerating the parts in relation with it.

Adipose Tissue.

1. Give an account of the intimate structure of adipose tissue.

2. Its chemical composition.

3. Physical.

4. Vital properties.

5. Mode of distribution in the body.

6. Purposes which it serves in the animal economy.

Alimentary Canal.

1. Describe the movements of the alimentary canal in man.

2. Describe the exact position within the abdominal cavity of the different subdivisions of the alimentary canal.

Alimentary Canal—*continued.*

3. Describe the arrangement of the muscular coat of the various parts of the alimentary canal.

Alimentary Substances.

1. State the principal heads under which alimentary substances are arranged, giving examples of each group.

2. Describe the chemical composition of the most important, and state the changes they undergo in the act of digestion.

Ankle Joint.

1. Name the relative position of the tendons, vessels, and nerves, passing behind the ankle joint.

2. Give the attachments and relations of the lateral ligaments of the ankle joint; and state what motions are controlled by their several parts?

Aorta.

1. What are the relations of the ascending portion of the aorta?

2. Give the origin, course, topographical divisions, and relations of the thoracic aorta.

3. Describe the abdominal aorta; its relations, branches, and their distribution.

Arch of the Aorta.

1. Describe the arch of the aorta in man; and its relations to contiguous structures.

2. Mention the branches arising from it.

3. Enumerate the more usual deviations from the normal disposition to which they are subject in their origin and course.

4. What parts are contained within the arch of the aorta?

Arch of the Foot.

1. What are the tendons and liga-

Arch of the Foot—*continued.*

ments to which the preservation of the arch of the foot is principally due?

2. Describe how the arch of the foot is formed; and on what points it rests in standing.

Areolar Tissue.

1. Give an account of the intimate structure of areolar tissue.

2. Its chemical composition.

3. Physical and vital properties.

4. Mode of distribution in the body.

5. Purposes which it serves.

Arteries.

1. What is the structure of the walls of the larger and smaller arteries?

2. Describe the instrument invented by Poiseulle for estimating the statical presence of the blood upon the walls of the arteries.

3. Describe the structure of the arteries; the properties they possess during life and after death, and the influence they exercise upon the circulation.

4. State the muscular and other parts which it is necessary to remove in order to fully expose the arteries, superficial and deep, on the front of the forearm, and the deep palmar arch in the hand.

Articulations.

1. Describe the articular surfaces and ligaments composing the radio-ulnar articulations.

2. Describe the articulations of the atlas with the occipital bone and the axis.

3. Classify the various kinds of articulations.

Arytenoid Cartilages.

1. Describe the arytenoid cartilages.

Ascending Pharyngeal.

1. Give the origin, course, distribution, and anastomoses of the ascending pharyngeal artery.

Asphyxia.

1. Describe the process of death by asphyxia, and the condition of the internal organs after death.

2. What are the phenomena of dyspnœa passing on to asphyxia?

3. Describe the changes which occur in the circulation in asphyxia.

Astragalus.

1. Name the bones with which the astragalus is in contact, and the ligaments which connect the astragalus with other bones.

2. Describe the astragalus; and mention in order the tendons in contact with it.

Astragalus—*continued.*

3. Mention the shape of its articulating surfaces.

Auditory.

1. Describe the origin, course, and distribution of the auditory nerve.

2. Explain what is meant by sound-vibrations, and describe the manner in which they are transmitted to the auditory nerve.

Axilla.

1. What are the boundaries of the axilla?

2. The form?

3. The contents?

4. The relations they hold to each other?

Axillary Artery.

1. What parts are met with on cutting down on the first stage of the axillary artery?

2. Give the relations of the brachial plexus of nerves to the axillary artery, in its three stages.

3. Name the branches arising from its first part, and describe their anastomoses.

Bend of the Elbow.

1. What are the boundaries and contents of the bend of the elbow?

Bile.

1. Mention the tests for bile in the urine.

2. How and where is the bile formed?

3. Through what passages is it conducted?

4. What are the purposes served in the animal economy by the secretion of bile?

Bladder.

1. Describe the form, situation, attachments, and structure of the urinary bladder, from without inwards.

2. Mention the portions of the bladder which are not covered by peritoneum.

3. What are the relations in the male and female subject to the immediately surrounding parts?

4. Describe the adult male bladder; its position when contracted and distended, its connexions, and the structure of its muscular and mucous coats.

Blood.

1. Describe the human blood.

2. State the various effects produced on blood, outside the body by the addition of sugar, of salt, and of water, by agitation in the air, and by exposure to carbonic acid; and state any explanation

Blood—*continued.*

of which the phenomena may be susceptible.

3. Give the physiological, physical, and chemical properties of the blood in the right and left sides of the heart.

4. Give the development of the red corpuscles, their average proportion, and functions in health.

5. Describe the coagulation of the blood, and mention the various circumstances which accelerate, destroy, or retard it.

Bone.

1. What are the microscopical characters and minute structure of bone?

2. State the chemical composition of human bone, and the relative proportion of organic or inorganic matter.

3. Describe the ossification of a long bone, from the earliest or primitive condition, to its completion.

4. Describe the mode in which a long bone increases in length and thickness.

Brachial Artery.

1. Describe the relative anatomy, and course of the brachial artery; and enumerate its branches.

Brachialis Anticus.

1. Describe the origin and insertion of the brachialis anticus, mentioning its precise action, and the nerve by which it is applied.

2. Give the dissection required to expose the brachialis anticus, and mention the parts in relation with it.

Brain.

1. Describe the minute structure of the white and grey substances of the brain, and the mode in which you would proceed to demonstrate them.

2. Enumerate the blood vessels at the base of the brain; or, describe the mode in which the circle of Willis is formed.

3. Describe the development of the human brain, from its first appearance in the embryo up to the full period of intra-uterine gestation.

4. Describe the parts seen on the surface of a section of the brain in the median line.

Bronchial Tubes.

1. Describe the structure of the bronchial tubes.

2. What purposes are served by the several tissues which are found in them?

Cadaveric Rigor.

1. State the circumstances affecting the supervention and degree of cadaveric rigor.

2. What is the average duration of cadaveric rigor?

3. In what order are the muscles affected by it?

4. In what order does it disappear?

Cæcum.

1. Describe the position, relations, and structure of the cæcum, and state the purpose and mode of action of the ilio-cæcal valve in man.

2. State what is known of its functions.

Capillaries.

1. Describe the minute structure of the walls of the capillaries.

2. Describe the circulation through them, including its rapidity, as compared with that in the arteries, as well as the reasons for the differences between the flow through the two classes of vessels.

Carbonic Acid.

1. Mention the various circumstances which may affect the quantity of carbonic acid exhaled from the lungs within a given period.

2. Give the quantity excreted daily.

3. What are the sources of the excretion of carbonic acid from the lungs?

4. What is carbonic acid, and in what form does it exist in nature?

Cardiac Nerves.

1. Give an account of the functions of the intra-cardiac nerves, and of the connections and functions of the extra-cardiac nerves.

Carotid.

1. In what respects does the left carotid differ from the right?

2. What relations does the common carotid artery bear to surrounding structures?

3. Give the dissection necessary to expose the cervical portion of the internal carotid artery.

4. Describe the course of the external carotid artery, and name its branches.

Cartilage.

1. Give an account of the intimate structure of cartilage.

2. Its chemical composition.

3. Physical.

4. Vital properties.

5. Mode of distribution in the body.

6. Purposes which it serves.

7. Enumerate the different kinds of cartilage that exist in the human body.

Caseine.

1. Give the characters and properties of caseine.

Cell.

1. Define the term cell.
2. Enumerate the offices which have been assigned to cells.

Cellular Tissue.

1. Give an account of the intimate structure of cellular tissue.
2. Its chemical composition.
3. Physical and vital properties.
4. Mode of distribution in the body.
5. Purposes which it serves.

Cerebellum.

1. Describe the relative development in man, and the functions of the cerebellum.
2. Describe the histological structure of the cerebellum.

Cervical Nerves.

1. Describe the first four cervical nerves, giving the exact course, relations, and distribution of branches.

Chemical Physiology.

1. Draw a comparison between the chemical physiology of a vegetable and animal.

Chest.

1. Describe the respiratory movements of the chest, and enumerate the muscles which severally enlarge and diminish the area of the chest.
2. Mention, in their respective relation to each other, all the structures which occupy and close the upper outlet of the chest.
3. What bones enter into the composition of the chest, and how are they articulated with each other?

Chorda Tympani.

1. Describe the physiological effects of injury or division of the portio-jura above the point where it gives off the chorda tympani nerve.
2. Trace the chorda tympani nerve through its entire course.

Choroid Coat.

1. Give an account of the structure and arrangement of the choroid coat, mentioning briefly the use assigned to this part of the organ of vision.

Chyle.

1. Describe the course of the chyle from the intestinal villi into the blood.
2. State the composition and properties of chyle; point out the difference between the composition of that fluid, of the lymph, and of the blood.

Chyme.

1. Describe chymification, and state the precise composition of the chyme.

Ciliary Movement.

1. Describe ciliary movement; mention the parts of the body of man on which it occurs.
2. In what respect does it differ from muscular motion.

Ciliary Muscle.

1. Describe the form, situation, uses, and attachments of the ciliary muscle.

Circulation.

1. With what phenomena of the circulation are the various parts of a sphygmographic wave connected?

Circumflex Nerve.

1. Trace the circumflex nerve from the brachial plexus, and mention its distribution.

Circumflexus Palati.

1. Give the origin and insertion of the circumflexus palati.

Clavicle.

1. What are the ligamentous connexions of the clavicle?
2. What muscles are attached to the clavicle?
3. Give a description of the clavicle, including some account of its curves and development.

Cochlea.

1. Describe the minute structure of the cochlea, and the parts contained in it.

Cœliac Axis.

1. Describe the position of the cœliac axis. Name its branches, their course, and distribution.
2. Give the names of the parts which have to be removed in order to expose the cœliac axis, and its primary branches.

Complexus Cervicis.

1. Describe the attachments and relations of the complexus cervicis muscle.

Cornea.

1. Give an account of the minute structure of the cornea, and state the mode in which it may be best displayed.

Corpus Callosum.

1. Describe the position, length, thickness, relations, connexions, and structure of the corpus callosum.

Corpus Luteum.

1. State what is meant by a corpus luteum.

Corpus Striatum.

1. Give the anatomy of the corpus striatum, describing its situation and

Corpus Striatum—*continued.*

immediate connections, and the arrangements of the white and grey matter within it.

Cremaster Muscle.

1. Describe the cremaster muscle, and name the nerve which supplies it.

Cricoid Cartilage.

1. Describe the cricoid cartilage.

Crural.

1. Describe the anterior crural nerve. Enumerate its branches, and give their distribution.

2. What are the boundaries of the crural arch, and how is it occupied?

Crystalline Lens.

1. How is the crystalline lens nourished?

2. Describe the connexions, form, position, and microscopic structure of the crystalline lens.

3. State the use of the crystalline lens in vision, and the changes which occur in it during accommodation.

Cuboid Bone.

1. Describe the cuboid bone.

Deglutition.

1. Describe the act of deglutition in its several stages.

2. Name the muscles which are engaged, as well as the influence which they exercise in its different stages.

3. Describe the mechanism of deglutition, with special reference to the preservation of the air passages.

4. Enumerate the muscles employed in the act of deglutition, and state whence each muscle derives its nervous supply.

Deltoid Muscle.

1. Describe the position, shape, and attachments of the deltoid muscle.

2. Enumerate in their order the parts seen in a dissection from skin to bone of the front of the arm from the level of the insertion of the deltoid to that of the pronator teres.

Development.

1. What is the mode of development of the frontal and occipital bones, and in what condition are these bones at birth?

2. Describe the development of the vertebral column, and mention the form of the vertebral centrum characteristic of each of the primary divisions of the vertebrata.

3. Describe the mode and order of development of a vertebra in general, noticing also those vertebræ which appear the most exceptional to the common plan.

Development—*continued.*

Diaphragm.

1. Describe the diaphragm.

2. What is the origin, the structures, apertures, blood-vessels, nerves, whence derived, relations on both surfaces, insertion, and action of the diaphragm?

3. Name the serous membranes connected with the diaphragm, and the viscera in contact with it, stating the position of each of the several viscera with reference to the diaphragm.

Digastricus.

1. Give the origin and insertion of the digastricus.

Digestion.

1. What are the changes undergone by starch, albumen, and fat, during their digestion?

2. Give a classification of dietary substances on physiological principles, and describe the mode in which digestion is performed.

Disintegrating.

1. In what tissues of the body do the disintegrating processes seem to take place most rapidly?

Duodenum.

1. Describe the duodenum, form, relative position to adjacent parts, mucous membrane, structure, and arrangement of its various coats.

2. Mention the various secretions entering into it, and their influence on the process of digestion.

3. Describe its course, vessels, nerves, and physiological functions.

4. State what changes the food undergoes in that part of the intestine.

5. Describe all the characters by which the duodenum is distinguished from the lower portion of the ileum.

Dura Mater.

1. Describe the structure, attachments, and processes of the dura mater.

2. State also the situation, and uses of the several sinuses connected with it.

Ear.

1. Of what structures is the pinna of the ear composed, and what are its attachments to the head?

2. Name the structures in the middle ear which are functionally important, and give a general idea of the special use of each structure.

Ear—*continued.*

3. What part of the ear specially serves for the reception of sound?

4. What is the peculiar structure that fits it for this purpose?

Elastic Tissue.

1. Give an account of the structures, physical properties, and chemical constitution of the elastic tissue.

Elbow Joint.

1. Describe the elbow joint.

2. State the relations of the ligaments, muscles, tendons, nerves, and blood-vessels immediately contiguous to it, with the arrangement of the synovial membrane.

3. Describe the elevations and depressions presented by the bones at the elbow joint, and within two inches of the elbow.

4. Mention the movements which take place at the elbow joint, and the muscles by which they are effected.

5. Describe the arterial anastomoses around the elbow joint, and mention the sources from which the anastomosing branches are derived.

Embryo.

1. Describe the origin, structure, functions, and relations to the embryo of the (1) allantois, (2) amnion, (3) umbilical vesicle.

2. Describe the first appearance of the visceral arches in the embryo.

3. Describe the development of the human embryo, from the entrance of the ovum into the fallopian tube to the end of the third month.

4. Describe the apparatus by which the embryo obtains its nourishment from the contents of the ovum in the oviparous vertebrata, the provisions for the aëration of its blood, and the manner in which these are combined in the placenta of mammalia.

Encephalon.

1. In making a longitudinal section of the encephalon, in the median line, enumerate the parts divided, in their order from above downwards.

Epidermis.

1. Describe the formation, composition, properties, and uses of the epidermis.

Epigastric Artery.

1. The relations of the internal epigastric artery from its origin to its entrance into the sheath of the rectus muscle.

2. Mention its relative situation with respect to the internal and external abdominal rings, and to the inguinal canal.

3. Give the origin, course, distribution, relations, and anastomoses of the deep epigastric artery.

Epiglottis.

1. Describe the structure of the epiglottis.

2. Mention its connexions.

3. What are the functions of the epiglottis?

Epithelium.

1. Enumerate the various kinds of epithelium met with in the body, and where they occur.

2. Point out the character of the epithelium in different parts of the urinary passages.

3. Define the term "epithelium."

Ethmoid Bone.

1. Describe the ethmoid bone and its articulations.

Eustachian.

1. Describe the eustachian tube, its relations to surrounding parts, and its functions.

Excito-Motory Action.

1. What is meant by excito-motory action?

Excretions.

1. Enumerate and classify the various excretions, stating the average daily amount of each in a healthy adult man.

2. Indicate the sources whence they are derived, and the channels through which they are eliminated.

3. State the principal constituents of each.

Expiration.

1. State the mechanism of expiration.

2. Explain the mode by which ordinary expiration is effected.

Extensor Indicis.

1. Give the origin and insertion of the extensor indicis muscle.

Extensor Ossis Metacarpi Pollicis.

1. Give the origin and insertion of the extensor ossis metacarpi pollicis muscle.

External Carotid Artery.

1. Give the origin, course, branches, and relations of the external carotid artery.

External Circumflex Artery.

1. Describe the dissection required to expose the external circumflex artery of the thigh, from its origin to the termination of its branches.

External Iliac Artery.

1. Describe with exactness the situation of the external iliac artery.

2. Explain the course which the blood takes to the lower extremity after the external iliac artery has been tied.

3. Give a plan of the relation of the external iliac artery, and enumerate its branches.

Eye.

1. Describe the structure of the eye.

2. Of the different transparent parts of the eye.

3. The appendages of the eye.

4. The optical arrangements of the human eye.

5. The means by which spheroidal and chromatic aberration is corrected.

6. What is the most probable mode by which vision is adjusted to near and distant objects?

Eyeballs.

1. Describe the changes which occur, both in the position and internal conditions of the eyeballs, during near and distant vision, mentioning the parts concerned in effecting these changes.

Eyelid.

1. Describe the structure of the upper eyelid; integument, mucous membrane, cartilage, glands, muscles.

Facial.

1. Describe the course, relations, and anastomoses of the branches of the facial artery, which arise below the inferior maxilla.

2. Trace the facial artery from its origin to its termination, and give the distribution and relations of its branches.

3. What muscles not belonging to the face are supplied by the facial nerve?

Fallopian Tubes.

1. Describe the situation, connexions, form, and structure of the fallopian tubes.

Fascia.

1. What are the connections of the fasciæ (1) transversalis, (2) axillary, (3) upper arm, (4) thigh, (5) pelvic, (6) perineal?

Fatty Matter.

1. State the composition, sources, and uses of fatty matter in the human economy.

2. Mention the amount of fatty matter normally present in the blood.

Femoral Artery.

1. If the femoral artery were tied above the origin of the profunda, how would the circulation be carried on?

2. How is the circulation maintained when the femoral artery is tied below the profunda?

3. Where would you compress the femoral artery?

4. Enumerate the anomalies of the femoral artery.

5. Give the branches of the deep femoral artery, points of origin, size, course, distribution, and anastomoses.

Femoral Hernia.

1. Describe the anatomy of the parts concerned in femoral hernia, and the variations to which they are subject.

2. What are the coverings?

3. Give the boundaries of the aperture through which it descends.

Femoral Ring.

1. Describe the position and boundaries of the femoral ring; and name the bloodvessels which are close to it, mentioning their position in respect to the ring.

Fibrine.

1. What are the chemical characters and physical properties of fibrine?

Fibrous Tissue.

1. What are the various kinds of fibrous tissue in the animal body?

2. Describe the chemical composition, vital properties, and the minute structure of the yellow fibrous tissue, stating where it is found in the human body.

3. Contrast white and yellow elastic fibrous tissue in their chemical and microscopical characters.

4. Give examples of elastic and non-elastic fibrous tissue.

Fibula.

1. Describe the fibula.

2. With what bones does it articulate?

Finger.

1. Describe the attachments of the muscles to the metacarpal bone and phalanges of the index finger.

2. What protects the joints of the fingers where the flexor tendons play over them?

Flexor Brevis Digitorum.

1. Mention in their relations to each other the parts seen on removal of the flexor brevis digitorum muscle.

Flexor Longus Pollicis Pedis.

1. Give the origin and insertion of the flexor longus pollicis pedis.

Flexor Longus Pollicis Pedis—*continued.*

2. State the nerve by which it is supplied.

Food.

1. Describe the physical and chemical actions to which the food is subjected in the stomach.

2. At what part of the canal, and by what structures, does the absorption take place?

3. How long would a man be likely to survive when entirely deprived of food and water?

4. What would be the relative loss of weight before death ensues; the condition of the temperature; the symptoms and appearances after death?

5. What is the smallest daily amount of food necessary to preserve health?

Foot.

1. Describe the astragalo-scaphoid and calcaneo-cuboid articulations of the foot.

2. Describe the parts situated in the plantar region of the foot.

3. Describe the course, relations, and distribution of the nerves met with in the dissection of the dorsum of the foot.

4. Name the articulations at which the movements of flexion and extension, inversion and eversion of the foot take place.

Forearm.

1. Describe, in the order in which they appear in dissection, the parts situated in the forearm.

Frontal Bone.

1. What is the mode of development of the frontal bone, and in what condition is it at birth?

Gall Bladder.

1. Give an account of the form, situation, and structure of the gall bladder and ducts.

Ganglia.

1. Point out the situation of the ganglia of the sympathetic in the head, face, and neck.

2. Describe their relations and connections with other nerves.

3. State whence each derives its motor, sensitive, and sympathetic filaments.

Ganglion.

1. Describe the situation and immediate relations of the spheno-palatine ganglion; the nerves joining or proceeding from it; their distribution and connexions.

2. Describe the position, relations, and connexions of the otic ganglion.

Ganglion—*continued.*

3. Give the dissection required to display them.

4. Describe the position of the lenticular ganglion; mention the nerves with which it is connected, the branches which are derived from it, their course and distribution.

Ganglionic.

1. What is the intimate composition of the ganglionic system of nerves?

Gastric Juice.

1. What is the apparatus for the secretion of the gastric juice?

2. Give the composition of gastric juice, and its chemical action on food in the stomach.

Gastrocnemius.

1. Gastrocnemius and soleus having been removed, mention the muscles, nerves, bloodvessels, brought into view from the upper border of the popliteus muscle to the heel.

2. Describe the origins, the insertions, the length of fibre, and the disposition of the muscular and tendinous substance of the gastrocnemius and soleus muscles; also state their actions, and enumerate the other muscles of the leg which assist them.

Generative Organs.

1. Describe the various changes through which the male and female generative organs pass in their transition from the rudimentary to the complete stage.

Genio-Hyo Glossus.

1. Give the dissection required to expose the genio-hyo glossus muscle, noticing all the parts brought into view, with the relations of the salivary glands, and of their ducts.

Gimbernat's Ligament.

1. Describe Gimbernat's ligament, and enumerate the fibrous structures which are connected with it.

Glands.

1. Mention the structures common to secreting glands generally, and describe the modifications the structure undergoes in the different classes of glands.

2. Describe the dissection required to expose position, size, anatomical relations, form, and minute structure of the various glands, with their ducts, whose secretions are poured into the mouth.

3. Enumerate the glands which possess the compound racemose type of structure, and give a description of the minute structure of any one of these.

Glands—*continued.*

4. What organs of the human body may be comprehended under the term of ductless glands?

5. Describe the structure and presumed functions of the ductless glands in the human subject.

Glosso-Pharyngeal.

1. Give the origin, course, relations, distribution, and functions of the glosso-pharyngeal nerve, and describe the dissection required to expose it in its course below the base of the skull.

Glottis.

1. Describe the respiratory movements of the glottis.

Glutæal Artery.

1. Describe the origin, course, and relations of the glutæal artery.

2. Name its branches and their anastomoses.

Gluten.

1. What are the characters and properties of gluten?

2. To what constituent is the nutritive properties of wheaten bread due?

Gluteus Maximus.

1. Supposing the gluteus maximus removed, what have we exposed beneath? And state the position in which each part lies.

2. Give the attachments of the gluteus maximus, all the peculiarities of this muscle, and its functions.

3. The skin of the posterior part of the thigh from the crest of the ilium to the knee-joint having been removed, the gluteus maximus muscle having been cut away, the superficial, deep fascia, and fat having been thoroughly dissected off, mention the parts thus exposed in the exact order in which they are seen, beginning at the crest, and proceeding downwards.

4. How is it supplied with blood and nerves?

Gluteus Medius.

1. Give the attachments and actions of the gluteus medius.

Gluteus Minimus.

1. Give the origin and insertion of the gluteus minimus.

2. State the nerve by which it is supplied.

Graafian Vesicle.

1. What are the structure and contents of a mature Graafian vesicle?

2. State the changes which take place in a Graafian vesicle from which the ovum has been discharged.

Gracilis.

1. Give the origin, insertion, and action of the gracilis, and state the nerve by which it is supplied.

Hair.

1. What is the structure, form, mode of growth, and development of the hair?

Hearing.

1. Explain how the sense of hearing is supposed to be induced in man.

2. State the functions assigned to the different parts respectively of the organ of hearing.

Heart.

1. Describe the interior of the right auricle of the heart, and the relative position of the different objects seen on opening it.

2. How much larger is the pericardium than the heart?

3. State the average weight and circumference of the heart at ages from twenty to thirty.

4. How would you know the anterior surface of the heart?

5. In what way is blood supplied to, and returned from, the muscular structure of the heart itself?

Heart's Action.

1. Describe the mechanism of the heart's action.

2. Describe the impulse and various sounds which attend the heart's action, with the mode in which they are produced.

3. Describe the relation of the heart's action to the nervous system.

Heat.

1. Mention the different sources of heat in animals and nature.

2. Give an account of the mode in which vital action is influenced by heat.

3. What is Liebig's theory of animal heat?

4. State the means by which heat is generated and maintained in the human body.

5. Explain the influence of the nervous system with respect to it.

Hepatic Vein.

1. What is the distribution of the minute branches of the hepatic vein?

Hip-Joint.

1. Describe the various structures which form the hip-joint.

2. Name and classify the muscles which act upon the joint, specifying the nervous supply and action of each.

Hip-Joint—*continued.*

3. Describe the ligaments of the hip-joint, and mention the muscles in contact with its capsule.

4. State the course, relations, and anastomoses of the arteries around the hip-joint.

5. Describe the attachments, relations, and uses of the ligamentum teres of the hip-joint.

Homologies.

1. Point out the homologies between the bones of the anterior extremity of a horse, of an ox, and those of the upper extremity of a man.

Humerus.

1. What is the condition of the humerus at birth?

2. State the extent of the lower epiphyses of the humerus.

3. Describe its mode of growth in length and thickness, the order in which the epiphyses ossify, and the age at which each epiphyses is united to the shaft.

Hyoid Bone.

1. Describe the hyoid bone, its form, position, relations, ligamentous connexions, nerves by which the muscles are respectively supplied, and their actions.

2. Enumerate the different parts attached to it, specifying the parts of the bone to which each muscle is attached.

Iliac.

1. Describe the course and relations of the left common iliac artery.

2. Name and describe the course of the branches of the internal iliac artery, and their distribution.

3. Point out the anatomical differences between the left common iliac artery on the left and right sides of the body.

4. Describe the internal iliac artery, stating its point of origin, length, direction, and relations, with the dissection required to display.

5. What is the relative position of the common iliac veins?

Ilium.

1. Name the muscles that are attached to the ilium.

2. Describe the ilium.

Inferior Maxillary.

1. Describe the inferior maxillary bone, its mode of ossification, and the changes which it undergoes at different periods of life.

2. What are the origin, course, functions, of the different parts of the inferior maxillary nerve?

Inferior Maxillary—*continued.*

3. Describe the branches of the inferior maxillary nerve, and their distribution.

Inguinal Canal.

1. What are the boundaries and contents of the inguinal canal in the male?

Innervation.

1. Describe the innervation of the respiratory organs.

2. What are the circumstances which affect the frequency and extent of the respiratory movements?

3. Give an account of the innervation of the heart.

Innominate.

1. What are the relations of the innominate artery?

2. Supposing that vessel to be obstructed, through what arteries would the collateral circulation be carried on?

3. Describe the formation, course, and relations of the innominate veins.

4. Mention the veins which terminate directly in each.

Inspiration.

1. State the mechanism of inspiration.

2. Mention the muscles which enlarge the capacity of the chest during ordinary inspiration.

3. What are the nervous arrangements concerned in the production of an ordinary inspiration?

Inspiratory Capacity.

1. What is the average inspiratory capacity of a healthy man, about five feet ten inches in height?

2. What do you understand by the term inspiratory capacity of the chest?

3. Mention the circumstances and conditions of age, sex, stature, and configuration of the chest, under which the inspiratory capacity of the thorax is augmented or diminished.

Intercostal.

1. The relative anatomy of the first intercostal artery.

2. Describe the dissection required to expose the left superior intercostal artery and vein, and contrast the arrangement of these vessels on the two sides of the neck.

3. Describe the action of the intercostal muscles in respiration.

Internal Mammary.

1. Give the origin, course, distribution, relations, and anastomoses of the internal mammary artery.

Internal Maxillary.

1. Give the origin, course, dissection, necessary to expose branches in the order in which they arise, parts to which they are distributed, relations of the internal maxillary artery; and name the nerves exposed to view in the dissection.

Interosseous Artery.

1. Give the dissection required to expose the posterior interosseous artery of the forearm in the whole of its course, mentioning in the order in which they occur the parts that must be removed in order to expose it.

2. Give the origin, course, distribution and relations of the interosseous nerves.

Intervertebral Disc.

1. Describe the structure of an intervertebral disc.

Intestines.

1. State the differences in point of structure between the large and small intestines.

2. Describe the disposition and structure of peyers glands in the intestines; and mention what has been suggested as to their function.

3. Mention the anatomical characters which distinguish the three divisions of the small intestines.

Iris.

1. Give an account of the minute structure of the iris; its action, position, bloodvessels, nervous supply, and their several functions.

2. Describe the sphincter of the iris.

3. Enumerate the chief medicinal agents which affect the movements of the iris, distinguishing those which cause dilatation from those which produce contraction of the pupil.

Ischio-Rectal.

1. Describe the ischio-rectal fossa, mentioning the structures which bound and occupy that space.

Jaw.

1. Describe the articulations of the lower jaw, and its movements.

2. Name the muscles connected with the lower jaw, and describe the attachment of each muscle.

3. How do they affect the external lateral ligament of its articulation?

4. Contrast the lower jaw in the child and in the adult.

Joint.

1. What are the uses of a joint?

2. Enumerate the several joints which

Joint—*continued.*

are provided with a complete interarticular fibro-cartilage.

3. What examples of the classes of joints are presented by those of the lower extremity?

4. Compare the knee and elbow joints, as regards their construction and movements.

Jugular Veins.

1. Describe the commencement, course, termination, and relations of the jugular veins.

2. What veins open into the internal jugular vein?

Kidney.

1. Give an account of the mode of development of the kidney, from the earliest period to the completion of the organ, stating when the various changes occur.

2. Describe the situation, form, functions, and minute structure of the kidney, with the process of renal secretion.

3. Name the structures composing the cortical substance.

4. Describe the distribution of the bloodvessels in the kidney.

5. Under what physiological conditions does the blood pressure in the renal arteries vary?

6. What effect have such variations on the secretion of urine?

Knee-Joint.

1. Describe the attachments and relations of the crucial ligaments of the knee-joint.

2. What are the ligaments of the knee-joint?

3. Describe the semi-lunar fibro-cartilages of the knee-joint, their structure, and assign their uses.

4. Indicate the positions of the bursæ which are most constantly present in the knee-joint.

Lachrymal.

1. Describe the lachrymal apparatus; its use, and the manner in which its functions are performed.

2. Trace the lachrymal nerve from its origin to its termination.

3. Give the relations of the lachrymal sac.

Lacteal System.

1. Give a general account of the minute structure and functions of the lacteal system.

Laryngeal Nerve.

1. What is the cause of the suffocation which usually supervenes upon division

Laryngeal Nerve—*continued.*

of the inferior laryngeal nerve, or of the trunk of the pneumogastric above these branches?

2. Give the course and functions of the two laryngeal nerves.

3. What muscles of the larynx are supplied by the motor and sensitive filaments of the superior laryngeal nerve?

4. Give the dissection by which you would expose to view the course of the right recurrent laryngeal nerve, from its origin to the lower border of the cricoid cartilage.

Larynx.

1. Name the nerves of the larynx and their distribution.

2. Describe the cartilages, ligaments, and intrinsic muscles of the larynx; their relations, attachments, and functions.

3. In what manner are vocal sounds produced in the larynx?

4. Describe the structure of the larynx.

Latissimus Dorsi.

1. What is the object of the latissimus dorsi arising so high up in the back?

Length.

1. Give the average length of the following parts in the adult: appendix vermiformis, biliary ducts, duodenum, eustachian tube, fallopian tube, gall bladder, intestines.

Levator Ani.

1. Mention the parts in contact with the levator ani muscle.

2. What are the attachments and function of the levator ani muscle?

Lever.

1. Give examples in the human body of each form of lever, explain the action, specify the advantages of each.

2. On what form of lever do the greater part of the muscles act in moving the limbs?

3. State the mechanical advantages and disadvantages resulting from the use of that form of lever.

Lingual Artery.

1. Give the origin, course, distribution, relations, and anastomoses of the lingual artery.

2. Give the dissection required to expose the lingual artery.

Ligament.

1. What is the purpose of the accessory ligament of the lip?

2. Describe the structure of ligament.

3. Name the structures which occur in the broad ligament of the uterus, stating their several positions.

Liver.

1. State in order the various organs, or structures, in contact with the liver; and the means by which it is retained in its position.

2. Describe the minute structure of a lobule of the liver, and state the peculiarities of the blood supply of that organ.

3. What is the glycogenic function of the liver?

4. Describe the inferior surface of the liver, mentioning the parts with which it is in relation.

Lung.

1. Describe the structure of a lobule of the human lung.

2. Describe the constituents of the roots of the lung, on either side, in their several relations to each other, and to the neighbouring parts, and state their mode of distribution within the lung.

3. Whence are derived the nutrient vessels of the lungs?

4. What nerves supply them?

Lymphatic.

1. Give a general account of what is known respecting the microscopic structure and functions of a lymphatic gland.

2. Give an account of the structure of lymphatic vessels, and the power by which the lymph is moved.

3. Explain the mode of origin of the lymphatic system.

4. What classes of animals possess lymphatics?

Malleolus.

1. Give the relative position of the vessels, nerve, and tendons passing behind the inner malleolus.

Mammary Gland.

1. Describe the structure of the mammary gland.

Masseter Muscle.

1. Describe the parts, as displayed on dissection, contained in the space bounded by four lines corresponding to the borders of the masseter muscle, proceeding from the surface inwards to the mesial line.

Mastication.

1. Describe the act of mastication, mentioning the muscles concerned therein, and the nerve centres by which these muscles are controlled.

Maxillary.

1. Describe the portions of bone which enter into the construction of the internal wall of the maxillary antrum.

Maxillary—*continued.*

2. Describe the superior maxillary bone, its development and connections.

3. Mention the articular surfaces of the superior maxillary bone, and its relations with blood-vessels, nerves, muscles.

4. Mention the nerves which pass through the foramina of the superior maxillary bone.

Mediastinum.

1. What parts are contained in the mediastinum, and their relative positions?

2. State the boundaries of the mediastinum.

3. Describe in order from above downwards the several structures which are brought into view when the sternum and costal cartilages have been removed, the anterior mediastinum cleaned, and the pericardium laid open.

Medulla Oblongata.

1. Describe the minute structure.

2. General form.

3. Relations.

4. Dimensions.

5. Connexion of the various parts with the cerebrum, pons cerebellum, and spinal cord.

6. Give an account of the functions of the medulla oblongata.

Mesenteric Arteries.

1. Describe the origin, course, and distribution of the superior and inferior mesenteric arteries, and the anastomoses they form.

Middle Meningeal.

1. Give the origin, course, distribution, and anastomoses of the middle meningeal artery.

Mucous Membrane.

1. Describe the mucous membrane of the genito-urinary apparatus in the male, stating precisely the structural peculiarities, the sources of vascular and nervous supply of each part.

2. What are the differences observable by the naked eye in the mucous membrane of the several parts of the alimentary canal below the pharynx of man?

3. Describe the mucous membrane of the dorsum of the tongue.

4. Mention the peculiar characters of mucous membranes met with in the various regions.

Muscle.

1. Describe the structure of the fibres of voluntary muscle, and state in what particulars the muscle of the heart differs from the above.

Muscular Fibre.

1. Give an account of the minute structure of the striated muscular fibre, and of its vital endowments.

2. Describe the two principal kinds of muscular fibre, in regard to structure and function.

3. State in what parts of the human body they are respectively found.

Muscular Sense.

1. What is the nature of the muscular sense?

Muscular Tissue.

1. What are the microscopic features and physiological properties of muscular tissue?

Musculo-Spiral.

1. Give the formation, course, relative anatomy, and distribution of the musculo-spiral nerve.

2. If the musculo-spiral branch of the brachial plexus of nerves were divided in the centre of the axilla, name the muscles which would be paralysed, and describe the positions which the forearm and hand would assume.

3. Describe the dissection required to expose the trunk of the musculo-spiral nerve.

Nails.

1. What is the structure, form, mode of growth, development, and connexions of the nails?

Nasal.

1. Give the bony boundaries of the nasal duct and fossæ, mentioning the openings by which they communicate with other cavities, the arteries and nerves distributed to their lining membranes.

2. Describe mucous membrane of the nasal passages and cavities, and state precisely how each region is supplied with nerves.

Neck.

1. Describe the parts contained in the space bounded, above, by the lower border of the jaw; below, by the os hyoides; behind, by a line drawn from the angle of the lower jaw to the extremity of the great cornu of the os hyoides; and internally, by the median line of the neck.

2. In a transverse section of the neck, through the fourth cervical vertebra, name the parts seen in their order from before backwards.

Nerve.

1. Describe the third cerebral nerve.

Nerve—*continued.*

2. Give a general account of the origin, distribution, and functions of the fifth cranial nerve.

3. Give the origin and distribution of the sixth nerve.

4. Trace the course and relations of the fourth nerve.

Nerve Cells.

1. Describe the form, size, and structure of nerve-cells, and their varieties.

2. Describe the experiments by which Waller was led to the conclusion that the nutrition of nerve fibres is influenced by nerve cells.

Nerve Fibre.

1. What is the structure of nerve fibre? and mention instances where each variety is met with.

2. What are the functions of nerve fibre?

Nervous System.

1. What are the structural elements of the nervous system?

2. Describe them, and the varieties they present in different parts.

3. State what you know of the vaso-motor nervous system, and of its functions.

4. Cite facts and experiments by which such conclusions have been reached.

Nervous Tissue.

1. Give an account of the microscopical characters of the different forms of nervous tissue.

Nose.

1. Give the anatomy of the nose, describing its bony parietes, its cartilages, the different orifices communicating with its cavities, its lining membrane, its bloodvessels, and nerves.

Nutrition.

1. What is the nature of the process of healthy nutrition, with respect to: (1) blood; (2) tissue; (3) nervous system?

2. What are the essentials for its performance?

3. State briefly what is known of the influence of the nervous system in nutrition.

Oblique.

1. What are the oblique muscles of the eye; their uses, relations, origin, course, insertion, and nervous supply?

Obliquus.

1. Give the origin, insertion, and state the nerves by which the obliquus externus and internus abdominis are supplied.

Obturator.

1. What are the parts in immediate relation with the obturator externus?

2. Describe the origin, course, and distribution of the obturator nerve; and mention any varieties occasionally met with.

3. Describe the anatomy of the external rotators of the neck of the femur, specially of the obturator internus in relation to dislocation of the hip-joint.

Occipital Artery.

1. Give the dissection required to show the origin, course, and distribution of the occipital artery, describing the several parts exposed in the dissection.

Occipital Bone.

1. With what bones does the occipital bone articulate?

2. Describe the articulation of the axis with the occipital bone.

3. Describe the shape and position of the occipital bone, the muscles attached to it, and their points of attachment.

4. Describe the ligaments which connect the two uppermost vertebræ of the neck to each other, and to the occipital bone.

Œsophagus.

1. Give the relative anatomy of the œsophagus, the dissection necessary to expose it, and its structure.

Omo-Hyoid.

1. What is the object of the peculiar direction of the omo-hyoid muscle?

2. Describe the parts brought into view in exposing the omo-hyoid, from the point at which it emerges from behind the clavicle to its insertion.

3. Mention at what level the omo-hyoid muscle crosses the carotid artery.

4. Describe the omo-hyoid, its attachments, position, the character of its muscular and tendinous parts, its nerves, their place of entrance into it, and its relations.

Optic Nerve.

1. Trace the course of the optic nerve fibres.

Orbit.

1. Give the bony boundaries of the orbit, and the relative position of the bones in its walls.

2. Give the foramina opening into the orbit, and the parts passing through them.

3. Name the nerves of the orbit, position as they enter, relations in the cavity, and their distribution.

Orbit—*continued.*

4. Name the dissection necessary to expose the contents of the orbit.

Organic Functions.

1. Enumerate the several organic functions.

Os Femoris.

1. Give the origins, insertions, and actions of the muscles attached to the upper third of the os femoris.

Os Innominatum.

1. Give an account of the os innominatum, mentioning the several muscles attached to it, with their place of attachment, and the nerve supplying each muscle.

Os Magnum.

1. The connexions of the os magnum of the carpus.

Os Scaphoid.

1. What supports the os scaphoid in the perfect foot?

Os Trapesium.

1. Describe the os trapesium.

Ossification.

1. State the centres of ossification of the occipital bone, femur, dorsal vertebra. Assign the time at which each becomes united to the shaft, and their respective positions in the ossification.

2. Describe the process of ossification.

3. Describe the course observed in the ossification of the femur and of the tibia, stating the order and periods of life at which ossification commences, and is completed at each point.

4. State the different modes in which ossification takes place, giving an instance of each.

Ovary and Ovum.

1. Describe the situation, structure, form, functions, and connexions of the human ovary and ovum, with its vessels and nerves.

Oxygen.

1. How much oxygen is consumed by a healthy adult person, under ordinary circumstances, daily?

2. What are its principal purposes in the system?

3. In what forms is it chiefly eliminated?

Palate.

1. What are the uses of the arches of the palate?

2. Describe the origin, insertion, and functions of the muscles of the soft palate.

Palate—*continued.*

3. Mention the structures which compose the soft palate.

4. What muscles raise the soft palate—arteries and nerves supplying it?

Palate Bone.

1. Give a full description of the palate bone, its relations to surrounding parts, blood-vessels, nerves, connexions, processes and foramina.

2. Mention the nerves which pass through the foramina of the palate bone.

Palm of the Hand.

1. Describe the distribution of the several structures composing the palm of the hand, in the order in which they present themselves in dissection.

Palmar.

1. How are we to ascertain the exact position of the superficial palmar arterial arch in the hand?

2. Describe in order the parts met with in the dissection required to expose the deep palmar arterial arch.

3. Describe the formation of the superficial and deep palmar arterial arch, their respective branches, and the dissection required to display them.

4. Mention the structures exposed on removal of the palmar fascia, and describe their relative position.

Pancreas.

1. Describe the pancreas; its position, form, relations, structure, and physiological functions.

2. Describe the effects on digestion, which are assigned to the secretion of the pancreas; and its action on albuminoid, gelatinoid, fatty, and starchy substances.

Parotid Gland.

1. Describe the parotid gland; its structure and connexions; also the sources of its bloodvessels and nerves.

2. Give the dissection necessary to display the parotid gland.

Pectoralis Major.

1. The whole of the pectoralis major being removed, mention the various parts exposed, and their relative position.

2. Describe the pectoralis major muscle in man, including the disposition of its fibres.

3. What is its action?

Pelvis.

1. What are the contents of the pelvis?

Pelvis—*continued.*

2. Describe the method of making a side view of the contents of the male pelvis; and give a general description of the parts thereby exposed.

3. What are the distinctive characters of the male and female pelvis?

4. Describe the mode in which you would proceed to obtain a side view of the parts contained in the female pelvis; then state the position and relation of the various parts, together with the bloodvessels and nerves by which they are supplied.

Penis.

1. How does the blood get from the arteries into the cells of the penis?

2. How does the blood return from the cells of the penis?

3. Discuss the views entertained regarding the mechanism by which the penis becomes erected.

Pepsine.

1. How may pepsine be isolated?

Pericardium.

1. Describe the position and structure of the pericardium.

Perineum.

1. Give the anatomy of the perineum in the male.

2. Enumerate in their order, from the skin inwards, the parts displayed in the dissection of the perineum.

Peritoneum.

1. What parts of the alimentary canal are only partially covered by peritoneum?

2. Contrast the pelvic reflections of the peritoneum in the male and female; and state the operations in which an exact knowledge of their limits is essential.

Peroneal.

1. Describe the origin, course, distribution, and anastomoses of the peroneal artery.

2 Enumerate the muscles supplied by the peroneal nerve.

Peroneus Longus.

1. State the dissection required to expose the peroneus longus, in its whole course, from its origin to its insertion, mentioning its relations to other parts.

Pharynx.

1. Describe the origin, insertion, and functions of the muscles of the pharynx.

2. State the nerves by which they are respectively supplied.

3. The pharynx being opened from behind, describe the parts brought into view without further dissection.

Pharynx—*continued.*

Phrenic Nerves.

1. In what respects do the phrenic nerves differ from each other in their course?

2. State the origin, course, and mode of distribution of the phrenic nerves.

3. What happens when they are divided?

Pia Mater.

1. Describe the structure and attachments of the pia mater in the interior of the brain, and its uses.

Pituitary Body.

1. Describe the pituitary body in the adult, and give its relations to the various structures lying within half an inch of the limits of the pituitary fossa.

Placenta.

1. In what does the human placenta differ from other placentæ according to the Hunterian theory?

2. Describe the circulation of blood through the placenta between the mother and the fœtus.

Plantar.

1. Give the origin, course, and distribution of the external and internal plantar arteries.

Plexus.

1. How is the solar plexus formed?

2. Describe the cervical plexus of nerves, mentioning how it is formed, its position, and its branches of connexion and distribution.

3. The lumbar plexus; its situation, relations, the nerves constituting it, and their arrangement in it; then give the nerves proceeding from it, in the order in which they come off from above downwards, with the course and distribution of each.

4. Give the dissection required to display the sacral plexus of nerves; and describe the course and relations of its several branches within the pelvis.

Pneumogastric Nerve.

1. Where does the pneumogastric nerve arise?

2. What foramen does it pass out of?

3. Mention the branches of the pneumogastric nerve; its course and relations on the right and left sides.

4. Describe the distribution of the pneumogastric nerve in the thorax.

Popliteal.

1. Give the branches of the popliteal artery; points of origin, size, course, distribution, and anastomoses.

Popliteal—*continued.*

2. What are the boundaries of the popliteal space; its form, contents, and relations they hold to each other?

Popliteus.

1. The superficial muscles of the calf being removed, describe the parts brought into view between the lower border of the popliteus muscle and the head.

2. Describe the form and relations of the popliteus muscle.

3. Mention in the order in which they appear, the parts which must be removed to expose it.

Portal Vein.

1. Describe the course and relations of the portal vein, outside the liver.

2. What is the distribution of the minute branches of the portal vein?

3. Enumerate the veins which combine to form the portal vein.

4. Give the course and termination of the portal vein.

5. What are the peculiarities of the blood in the portal vein?

Portio Dura.

1. Give the origin, course, connexions, and distribution of the portio dura nerve, outside the stylo-mastoid foramen.

Poupart's Ligament.

1. What is Poupart's ligament?

2. What passes under it?

3. What are its relations?

Prismatic Colours.

1. Enumerate the primitive or prismatic colours.

Profunda Cervicis Artery.

1. Describe the origin, relations, and course of the profunda cervicis artery, and the dissection required to expose it on the posterior aspect of the vertebræ.

Pronator Radii Teres.

1. Describe the attachments of the pronator radii teres muscle.

2. Name the directly antagonistic muscle.

Prostate Gland.

1. Give the anatomy of the prostate gland, describing its size, form, situation, connexions, functions, and structure.

2. State in what surgical operations it is implicated, and to what extent.

3. How is the capsule for the prostate gland and neck of the bladder constructed?

Proteine.

1. What are the characters and properties of proteine?

Proximate Principles.

1. Name the proximate principles in animals.

2. What is meant by proximate principles in plants?

3. Give a short account of the most important proximate principles, mentioning the tissues in which they occur, and distinguish the ternary from the quaternary.

Psoas Muscle.

1. Give a description of the psoas muscle.

Pterygoid Muscles.

1. What parts must be removed to expose the pterygoid muscles?

2. Describe these muscles, noticing their relations to adjacent structures, the source from whence they derive their nerves, and their precise action in mastication.

Pterygoid Plates.

1. Describe that portion of the under surface of the base of the skull which is bounded in front by a horizontal line drawn through the roots of the pterygoid plates, and behind by a line between the points of the mastoid processes; and then mention, in their order from before backwards, the several structures in direct relation with it.

Pudic Artery.

1. Enumerate the branches of the pudic artery.

2. Give the course and distribution of the internal pudic artery in the male.

3. Specify the operations in which any particular branch of it is liable to be wounded.

Pulse.

1. Mention the frequency of the human pulse.

2. What are the healthy conditions which influence its rate and character?

3. What is the nature of the arterial pulse?

4. Give a full account of the pulse wave.

Quadratus Femoris.

1. Give the dissection required to expose the quadratus femoris, and mention the parts in immediate relation with it.

Quadratus Lumborum.

1. Describe the attachments, the relations in front and behind, of the quadratus lumborum muscle.

Quantity.

1. What is the quantity of blood contained in each cardiac ventricle?

Quantity—*continued.*

2. What is the quantity of blood contained in the body of a healthy adult man?

Radial Artery.

1. Describe the steps of the dissection required to display the course of the radial artery, from the styloid process to its termination.

Radius.

1. Describe the radius, including its articular surfaces, and mention the various muscles and tendons attached to, and in connection with it.

2. Give also their nerve supply.

3. State the kind of movement which the radius describes at its upper and its lower end.

Ranine Arteries.

1. State the relations of the ranine arteries.

Recti.

1. Give with precision the origin, insertion, and use of the recti muscles of the head.

Rectum.

1. What is the rectum?

2. How is it divided?

3. Describe the anatomical relations of the last four inches of the rectum, in the male, its structure, position, and the arrangement of its bloodvessels.

Rectus Abdominis.

1. How is the sheath of the rectus abdominis formed, and to what extent is that sheath imperfect?

2. What other peculiarity has it?

3. Give the origin and insertion of the rectus abdominis, and explain its action.

Rectus Femoris.

1. Give the attachments and actions of the rectus femoris.

Reflex Action.

1. Define reflex action of the nervous system.

2. Give instances of the various phenomena assigned to it on the living body.

3. Through the reflex action of what nerves can the respiratory muscles be called into action?

Reproduction.

1. Describe the different modes of reproduction in the animal kingdom, and give an illustration of each.

Respiration.

1. For what offices within the body is the oxygen introduced by respiration employed, in addition to the change in the state of the blood?

Respiration—*continued.*

2. What are the changes which occur in the air and blood during respiration?

3. State the chemical phenomena of respiration.

4. What is meant by abdominal and thoracic respiration?

5. Describe the mechanism of each; of what age and sex each is characteristic.

Retina.

1. Enumerate the structures of which the retina is composed.

2. Mention the anatomical and physiological facts that prove the rods and cones to be the peripheral terminal organs of the optic nerve.

3. Explain the mode in which the images of external objects are formed on the retina.

4. Give the reasons for supposing that the part of the retina specially adapted to receive the optical image for the purpose of vision is the layer of rods and cones.

5. Describe its position, connexions, and functions.

Rib.

1. Describe the dissection required to expose the upper surface of the first rib; and mention, in order, from before backwards, the several structures which are in contact with that bone.

2. In what respects does this rib differ from all the others?

3. Describe the articulations of the posterior end of the second rib with the spinal column.

4. Describe the articulations and ligaments of the seventh rib, and the attachments of the muscles to it.

5. Give a general description of the ribs, and the peculiarities by which certain ribs are distinguished.

Rima Glottidis.

1. State by what muscles the rima glottidis is influenced, and how they act in changing its shape.

Sacrum.

1. Describe the sacrum, and fifth lumbar vertebra, and their mode of connexion with each other, and with adjacent bones.

2. Point out in what points this bone differs in the male and female.

Saliva.

1. State the chemical composition, and physiological properties of the saliva on the food.

Saphenous Opening.

1. What bounds the saphenous opening in the thigh externally?

Scalenus Anticus.

1. The connexions of the scalenus anticus; what parts must be removed to expose the anterior surface of that muscle?

Scalp.

1. Why will not the scalp lose its vitality and liberate the sloughs, like the skin of other parts, in phlegmonous erysipelas?

2. Enumerate the dangers in wounds of the scalp as compared with wounds of the skin.

3. Describe the origin and course of the branches of arteries which are supplied to the hairy scalp.

4. Give a description of the scalp; enumerate the veins and sensory nerves which are distributed to it.

Scapula.

1. Enumerate the muscles attached to the scapula, and describe the exact points of their attachment.

2. State the nerves and vessels by which they are supplied.

3. What is the action of each muscle?

Sciatic Nerve.

1. Describe, step by step, the dissection required to expose the great sciatic nerve, from the sciatic foramen to its place of bifurcation.

2. Give the dissection required to expose the trunk and branches of the small sciatic nerve.

Sclerotic.

1. Give the structure of the sclerotic.

Secretions.

1. Mention the various secretions contributing to the process of digestion.

2. State whence they are derived, and the chemical constitution and special functions of each.

3. In what respects do excrementitious and recrementitious secretions differ?

4. Mention the most important of each class.

Semi-Membranosus.

1. Describe the origin, insertion, and structure of the semi-membranosus muscle.

Septum Lucidum.

1. What are the attachments of the septum lucidum?

Serratus Magnus.

1. Give the origin and insertion of the serratus magnus, the vessels and nerves by which it is supplied, and enumerate the muscles which are its antagonists.

Shoulder-joint.

1. Describe the anatomy of the shoulder-joint, noticing, in the order in which they are placed, the muscles, mode in which the various movements of the joint are effected by them, nerves, blood-vessels, and other parts, in immediate relation with it.

2. Why does the long tendon of the biceps pass through the shoulder-joint?

Skin.

1. Give an account of the functions performed by the skin.

2. State the characters, the quantity, and the uses of the secretions of the skin.

3. State what physiological effects result from their suppression.

4. Give an account of the several structures which enter into the formation of the skin.

5. Refer to the structure of the sebaceous follicles, sudoriparous glands, and ducts.

Smell.

1. Give an account of the essential and accessory parts of the organ of smell.

Spermatic Cord.

1. Describe the anatomical composition of the spermatic cord.

2. Mention the coverings of the spermatic cord, in its course from the internal abdominal ring to the scrotum.

Spermatozoids.

1. Describe the form, movements, and development of the spermatozoids, and their function in the act of fecundation.

Sphenoid Bone.

1. Describe the sphenoid bone.

2. Mention the bones with which it articulates, the parts in relation to its superior surface, and state its position in the skull.

3. Describe accurately the greater wing of the sphenoid bone:

(1.) Objects seen upon the dry bone.

(2.) Anatomical regions into the boundaries of which it enters.

(3.) Parts related to its several surfaces.

Sphygmograph.

1. Describe the construction of the sphygmograph, and explain, physically, its working.

Spinal Accessory Nerve.

1. Describe the origin, course, connexions, distribution, branches and functions of the various branches of the spinal accessory nerve.

2. Describe the parts met with in dissecting the spinal accessory nerve, from the point where it escapes from beneath the digastric muscle to its termination.

3. Give the origin, course, and distribution of the spinal accessory nerve.

Spinal Cord.

1. Describe a transverse section of the spinal cord in the dorsal region.

2. Describe the means by which the spinal cord and its membranes are connected with the walls of the spinal cord, and with each other.

3. What phenomena results from dividing only the posterior columns of the spinal cord in the living animal?

4. Describe the structure of the white and grey matter of the spinal cord, and mention the essential points of difference in functions.

5. Assign the limits of the posterior columns of the spinal cord.

Spinal Nerves.

1. Upon what evidence is our knowledge of the functions of the anterior and posterior roots of the spinal nerves founded?

2. State the total number, and the number of each division of the spinal nerves.

3. Describe the manner in which spinal nerves join the spinal cord.

Spleen.

1. How are the bloodvessels of the spleen distributed?

2. What are the uses of the spleen, and how are they connected with the history of the blood corpuscles?

3. Describe the nature of the spleen.

4. Enumerate the other organs which more or less resemble it.

5. What is the histological structure of the spleen?

Sterno-Clavicular.

1. Describe the sterno-clavicular joint.

2. What are the movements which take place at the joint?

3. What muscles cause these movements?

Sterno-Mastoid.

1. Is the scalenus anticus entirely concealed from view by the sterno-mastoid muscle, or not?

2. Give the origin, insertion, relation,

Sterno-Mastoid—*continued.*

actions, nervous and blood supply of the sterno-mastoid.

3. Name the principal muscles, bloodvessels, and nerves which it covers.

Sternum.

1. Describe the sternum, its articulations, and its muscular attachments.

Stomach.

1. What are the connexions of the stomach?

2. Give an account of the structure of the mucous membrane of the stomach, in the cardiac, central, and pyloric orifices, respectively.

3. What influence do the nerves exert over the digestive functions of the stomach?

4. Where is the stomach situated?

5. From what sources are its vessels and nerves derived?

Subclavian Artery.

1. If the subclavian artery were tied in the first part of its course, how would the arm be supplied with blood?

2. If the subclavian artery were tied in the third part of its course, how would the arm be supplied with blood?

3. What are the differences between the right and left subclavian artery in the first part of its course?

4. Describe the relative position of the subclavian artery in the third part of its course.

5. Give the anatomical grounds on which ligature of the subclavian artery in the third stage is to be preferred to ligature of the axillary artery in its first stages.

Submaxillary.

1. Give the dissection required to expose the submaxillary gland.

2. Give the position and relations of the submaxillary gland. Trace its duct into the mouth, and state the nature and uses of its secretion.

Subscapular Artery.

1. Give the dissection required to expose the subscapular artery, and its branches.

Supinator Radii Brevis.

1. Give the dissection required, and mention in the order in which they appear the parts that must be removed in order to expose the supinator radii brevis.

Supra-renal Body.

1. Describe the situation, form, and internal structure of the supra-renal

Supra-renal Body—*continued.*

body; the source, mode of distribution of its bloodvessels and nerves, with the evidence which at present exists regarding its function.

Supra-scapular Artery.

1. Trace the supra-scapular artery, from its origin to its termination, noticing the dissection necessary to display it, and naming its various anastomoses.

Supra-scapular Nerve.

1. Trace the supra-scapular nerve, from its origin to its termination, noticing the dissection necessary to display it.

Sympathetic Nerve.

1. What effects follow division of the sympathetic nerve in the neck, as far as relates to the organ of vision?

2. State the effects upon a secreting gland of the division or lesion of that portion of the sympathetic nerve from which it is supplied.

3. Describe the thoracic portion of the sympathetic nerve, and the distribution of its branches.

Tarsus.

1. Describe the lines of articulation between the tarsus and the metatarsus, giving the form of each of the articular surfaces.

Taste.

1. Where is the sense of taste most developed?

Tears.

1. Describe the apparatus for the secretion of the tears.

Teeth.

1. What are the respective numbers of the temporary and permanent teeth?

2. State as nearly as you can the periods at which you would expect the different teeth to appear.

3. Give the kinds of the teeth in man.

4. Describe the external configuration and the position of the teeth of the adult, and their internal structure so far as it can be discerned with the naked eye.

5. State the characters visible to the naked eye of the first and third true molar teeth in both jaws.

Temporal Bone.

1. Describe the changes which take place in the temporal bone between birth and puberty.

2. In what homological relation does the styloid process of the temporal bone stand to the os hyoides?

Temporo-Maxillary.

1. Describe the temporo-maxillary articulation in man, and the movements which take place in it.

Tendon.

1. Describe the structure, both naked eye and microscopic, of a tendon.

2. In what way are the tendons supplied with blood?

Tensor Vaginæ Femoris.

1. Give the origin and insertion of the tensor vaginæ femoris, and state the nerve by which it is supplied.

Testicle.

1. Describe the change of position of the testicle in its course from the abdomen to the scrotum.

2. What are the coverings which it successively acquires during that stage?

3. Where do the arteries of the testicle arise, and where do the veins terminate?

4. Describe the anatomy of the testicle; position, form, relations, structure, and nervous supply.

5. With what parts in the female do its parts severally correspond?

Testis.

1. Give an account of the mode of development in the testis.

Thalamus Opticus.

1. Mention the parts which must be removed in order to expose the entire of the upper surfaces of the thalamus opticus.

Thoracic Duct.

1. Describe the receptaculum chyli and thoracic duct, including their structure and relations to adjoining textures; and mention the points of entrance into the duct of its chief tributaries.

Thorax.

1. Describe the boundaries of the upper opening of the thorax.

2. Enumerate the parts which pass through it, and state their relative positions.

3. Give the parts which form the boundaries of the thorax.

Thumb.

1. Describe the position of the thumb; its bones, articulations, the several motions which may be performed by the thumb, stating the muscles by which they are effected, together with the origin and insertion of these muscles.

2. Give the attachments and nervous supply of each of the muscles which flex and extend the thumb.

3. Enumerate the muscles connected

Thumb—*continued.*

with the thumb, giving their origins and insertions, and the precise relative position of those constituting the ball of the thumb, with their relations, bloodvessels, nerves, and tendons.

Thyroid.

1. Describe the position and shape of the thyroid body, in relation to the surrounding structures.

2. Describe the origin, course, distribution, and termination of the arteries and veins of the thyroid body.

3. Enumerate the muscles which are attached to the thyroid cartilage, distinguishing their several places of attachment.

Tibia.

1. Describe the arrangement of the osseous tissue in the tibia.

2. State the sources whence the tibia is supplied with blood, and describe how the arteries permeate its structure.

3. Describe the attachment of muscles to the tibia, and mention the nerve supply of each.

Tibial.

1. Enumerate the branches of the anterior tibial artery; give its muscular relations in the leg, and the operation for arresting hæmorrhage in punctured wound of this vessel in the middle of the leg.

2. Give the relations of the posterior tibial artery, from its commencement to its bifurcation; and describe the operation of tying it in the middle third of its course.

3. Describe the dissection necessary to expose the whole length of the anterior tibial nerve, and mention the muscles which it supplies.

Tongue.

1. Give the attachments and actions of the muscles of the tongue.

2. Describe the arrangement and structure of the compound papillæ of the tongue.

3. Describe the functions of the tongue.

4. Enumerate the extrinsic muscles of the tongue, and their relative positions.

5. Mention the nerves and bloodvessels which are distributed to the tongue; their course, and give the functions of its nerves.

Tonsils.

1. State very shortly the size, weight, shape, functions, muscles, and vessels in

Tonsils—*continued.*

immediate relation with the tonsils; also the sources of their blood supply.

2. Illustrate its characters by mentioning any gland or glands which it resembles in structure, and the features of this resemblance.

Touch.

1. On what arrangement of nerves is the sense of touch dependent?

Trachea.

1. What are the structures composing the trachea?

2. Give its direction, size, length, and relations to adjacent structures.

3. What are its cervical and thoracic relations?

4. Describe the surgical relations of the trachea in the neck.

5. Where does it bifurcate?

Trapesius.

1. Describe in their proper order the parts brought into view when the trapesius muscle is removed.

Tympanum.

1. Describe the boundaries of the cavity of the tympanum; the various processes and openings observable in them, and the parts contained within the cavity, including the nerves traversing or in immediate relation with it.

2. Describe the position, form, and relations of the cavity of the tympanum; and point out the anatomical arrangements by which vibrations are transmitted across that cavity to the labyrinth.

3. Describe the membrana tympani in man, and its structure.

Ulnar.

1. Give the formation, course, distribution, and relations of the ulnar artery and nerve.

2. Describe the course and distribution of the ulnar nerve in the palm, and the dissection necessary to expose it.

Urea.

1. What is the chemical composition of urea, and its physical characters?

2. State the source of its formation, and the average amount per diem of its excretion.

3. State how its presence may be detected in the urine, and other fluids of the body.

4. Give the precise nature of urea.

5. How is urea separated from the urine?

Ureter.

1. Give the relations of the right and left ureter.
2. What symptoms indicate the presence of a calculus in the ureter?
3. Describe the course and position of the ureter.

Urethra.

1. Describe the membranous portion of the male urethra; its form, immediate relations, and structures.
2. Give the dissection requisite to expose the membranous portion of the urethra.
3. What are the connections of the triangular ligament of the urethra?
4. Into what parts is the urethra of the male divided?
5. What names are applied to these parts?

Urine.

1. Describe the urine of a healthy person.
2. What is the influence of food, exercise, and season, on the organic and inorganic salts of the urine?
3. What is the average daily quantity discharged by an adult man?
4. Describe the preparation of hippuric acid from urine; and explain its decomposition by hot hydrochloric acid.
5. State its specific gravity.

Uterus.

1. Describe the virgin uterus, and its appendages, as examined by the naked eye.
2. Describe the structure of the uterus, and mention the changes which take place during gestation.
3. Describe the changes which take place in the ovaries and uterus at each catamenial period.

Uvula.

1. Describe the structure and functions of the uvula.

Vagina.

1. Describe the situation, connections, form, and structure of the vagina.

Vagus Nerve.

1. What is the course of the left vagus nerve, and what are its branches?

Valves.

1. Describe the auriculo-ventricular valves.
2. Explain their function and modes of action.
3. Describe the structure, form, and attachments of the cardiac valves, and explain their functions.

Vaso-Motor.

1. What is meant by the vaso-motor centre?
2. Give the evidence of its existence.

Vein.

1. What is the purpose of the azygos vein?
2. Describe the structure of the walls of the veins, and the mechanism of the valves.
3. What veins are known to be destitute of valves?
4. Describe the position and arrangement of the veins in the vertebral canal.
5. In what respect do veins in different parts of the body differ from each other in structure?

Vena Cava.

1. Enumerate the veins which join the inferior vena cava.
2. Describe the course and relations of the veins which terminate in the inferior vena cava, above the junction of the common iliac.

Venous System.

1. Describe the general plan upon which the venous system is constructed.
2. Mention the parts on which certain peculiarities of structure are noticed.
3. State the agencies which promote the flow of blood towards the heart.
4. Mention the forces concerned in the venous circulation, and describe their action.

Ventricle.

1. Name in order from above downwards the parts of the brain which must be removed to show the third ventricle of the brain.
2. State the boundaries of that cavity.
3. Describe the fourth encephalic ventricle.
4. What are the lateral ventricles of the brain?
5. Supposing the roof of the lateral ventricles, in other words the corpus callosum, to be removed, what have we to remark on the floor of their interior?

Vertebra.

1. Describe the principal parts of a vertebra, and the uses of each part.
2. Describe the characters which distinguish the vertebra of the cervical, dorsal, and lumbar regions from each other, and what are the purposes served by those peculiarities.
3. Describe the peculiarities of the first and last dorsal vertebræ.
4. Give a description of the tenth,

Vertebra—*continued.*

eleventh, and twelfth dorsal vertebræ, and of their articulation with the ribs and other vertebræ.

Vertebral Artery.

1. State the origin and course of the vertebral arteries, and their distribution within the cranium.

2. Describe the relations of the right vertebral artery.

Vessels.

1. How are nerve vessels formed?

2. By what simple experiment can it be shown that the walls of the blood-vessels have an osmotic property?

Vestibule.

1. Describe the vestibule and semicircular canals in the dry bone; also the soft structures they contain in the recent state.

Villus.

1. Describe the structure of an intestinal villus.

2. What is the function of an intestinal villus?

Vision.

1. Explain binocular vision.

2. Describe the vitreous body, and state the effects of the transparent media of the eye in vision.

Vocal Cords.

1. Describe the structure of the vocal cords.

Vocal Cords—*continued.*

2. State the position and connexions of the vocal cord.

3. Contrast the vocal cords as to structure, form, and use.

Voice.

1. Describe the mechanism of the voice.

2. How is the voice produced and modulated?

3. What are the different arrangements in the organ of voice for producing sounds of different pitch?

Weight.

1. Give the average weight of the following organs in the adult: brain, liver, lungs, kidney.

Wrist-Joint.

1. Describe the articular surfaces of the wrist-joint.

2. Enumerate in the order in which they occur the bones, cartilages, ligaments, tendons, nerves, and bloodvessels in immediate or close relation with it.

3. What movements take place at the wrist-joint, and by what muscles are they effected?

4. Describe the structure, attachments, and uses of the anterior annular ligament of the wrist-joint.

5. Enumerate the parts passing under it, and mention their relative position.

II.

BOTANY.

Achene.

1. Define the term achene.

Aconitum Napellus.

1. Describe aconitum napellus: (1) root, (2) leaves, (3) inflorescence, (4) calyx, (5) corolla.

Acrogens.

1. Describe the structure of the axis of acrogens, and give British examples of these plants.

Æstivation.

1. What is meant by æstivation?

2. What are the principal kinds of æstivation in plants? and illustrate each by an example.

Albumen.

1. Name some officinal seeds whose albumen is endowed with poisonous properties.

Algæ.

1. What are the principal distinctive characters of algæ?

2. What analogy is there between the reproductive organs of mosses and those of algæ?

3. Mention the three forms of fecundation met with in the algæ.

Amentaceæ.

1. What are the characters of the natural order amentaceæ, in its widest

Amentaceæ—*continued.*

sense, and of its principal subdivisions?

Anther.

1. What is the normal structure of the anther, and what are the chief deviations from it?

2. Describe the anther of grasses, sedges, heath.

3. Trace the development of an anther, from its first appearance up to maturity.

Arillus.

1. State the nature of arillus and of arilloda.

2. Describe the difference between a true and false arillus, stating examples.

Asclepiadaceæ.

1. Describe the stamens of asclepiadaceæ, and the whorls of the flower of asclepiadaceæ.

2. Explain the nature of the pollen masses in the asclepiadaceæ.

Axis.

1. What are the distinctive characters of the ascending and descending axes of plants?

Bean.

1. Trace the development of a common bean from its embryo state to the perfecting of its seed.

Berry.

1. Define the term berry.

Bracts.

1. Mention some of the chief varieties of bracts.

Branches.

1. What happens to plants in autumn, with definite and indefinite branches, respectively?

Bud.

1. Give a full account of the structure of a bud.

Bulb.

1. Define the term bulb.

2. Illustrate by a drug.

3. State the differences between a corm and a bulb.

4. Describe the bulb of a lily; onion.

Calyx.

1. What is meant by an inferior and superior calyx?

Cambium.

1. Describe cambium; state the place it occupies, and the office it performs.

Campanularia.

1. Give the general characters of campanularia, and a sketch of their reproduction and development.

Capsule.

1. Define the term capsule.

Carex.

1. Describe the genus carex.

2. Describe the male and female flowers of a carex.

Cell.

1. What are the chief kinds of cell formation?

2. Enumerate the different kinds of cells met with in vegetable tissues.

3. Give examples of like and unlike reproductive cells.

Chara.

1. Describe the vegetative and reproductive organs of the genus chara.

Chlorophyll.

1. Give an account of chlorophyll.

2. What is known as to the development of chlorophyll?

3. Define the term chlorophyll.

4. State what you know regarding the uses to plants of chlorophyll.

Circulation.

1. Explain the circulation of fluids in plants.

2. Give an account of the causes and course of the circulation of the sap in plants.

Compositæ.

1. Give the essential characters of the natural order compositæ.

2. What are the different modifications of the style and stigma in compositæ.

3. What officinal plants belong to the natural order compositæ?

4. Enumerate the medicinal plants contained in the compositæ.

Confervæ.

1. Describe the usual mode of fertilisation and reproduction in confervæ.

Coniferæ.

1. Describe the organs of reproduction in the natural order of coniferæ.

2. Give the essential characters of the natural order coniferæ.

3. Give a brief sketch of the distribution of the principal genera of coniferæ.

4. Mention the chief forms of fruit met with in the coniferæ.

Crops.

1. What is the nature of the rotation of crops?

2. What are the physiological grounds on which it is founded?

3. What class of crops best succeed one another in this way?

Cruciferæ.

1. What genera of cruciferæ have the fruit a lomentum?

2. Mention some of the most useful of the cruciferæ.

3. Describe the various modifications of the fruit in the order cruciferæ.

4. State the characteristics of the natural order cruciferæ.

Cryptogams.

1. What are the essential distinctive characters of cryptogams?

2. What do their reproductive organs consist of?

3. What are the orders of the class cryptogams, and what are their characters?

Cucurbitaceæ.

1. Give the general structure of the family cucurbitaceæ.

2. Describe the pollen grains in cucurbitaceæ.

Cycas.

1. Describe the fructification in cycas.

2. What is the morphology of the fruit in cycas?

Cyme.

1. Describe the two forms of uniparous cyme.

2. Define cyme.

Cyperaceæ.

1. Give the natural character of grasses and cyperaceæ.

2. Point out where they agree and differ.

Dehiscence.

1. What forms of dehiscence are met with in the fruit of datura, ricinus, viola?

2. Describe six different modes of dehiscence in anthers, and give an example in each.

Drupe.

1. Define the term "drupe."

2. Give an example.

Embryogeny.

1. Give an account of the embryogeny of conifers.

Endogens.

1. What are the essential distinctive characters of endogens?

2. Describe the structure of the trunk of endogens.

Endosmose.

1. Define endosmose.

Equisetum.

1. Describe the vegetative and reproductive organs of the genus equisetum.

Evergreens.

1. Explain distinctly the nature of evergreens.

Exhalation.

1. Describe the function of exhalation.

Exogens.

1. What are the essential distinctive characters of exogens?

2. Describe the structure of the axis of exogens.

3. Describe the albumen of exogens.

4. Enumerate the differences between exogens and endogens in stems, leaves, bark, seeds, embryos.

Exosmose.

1. Define exosmose.

Ferns.

1. Describe the vegetative and reproductive organs of ferns.

2. Trace the development of any common fern from the spore.

3. Explain what is meant by alternation of generation in ferns.

4. What are the essential characters of ferns?

5. Contrast the product of a moss spore with that of a fern spore.

Filices.

1. Describe the organs of reproduction in the natural order filices.

Floras.

1. Contrast the carboniferous and miocene floras of Britain.

2. Describe briefly the miocene floras of Britain, and state its geographical range elsewhere.

3. Describe the triassic floras of Britain.

Flower.

1. Describe the different parts of a flower, in their order, beginning from the outside.

2. What is a flower?

3. Name the two outer whorls of the flower, and state what principle regulates the relative position of the individual part of one whorl to those of the other.

4. Describe the flower of a dicotyledonous plant.

5. Why are certain flowers called inferior and others superior?

Follicle.

1. Define the term "follicle."

Fruit.

1. Give an account of the classification of fruit.

2. What is a compound fruit?

3. Give a definition of a fruit.

4. Describe seven kinds of fruit found

Fruit—*continued.*

in the natural order rosaceæ, and give an example of each of them.

5. Mention the chief varieties of fruit, with examples from the pharmacopœia and from edible fruits.

6. What is the form of the fruit of aconite, belladonna, coffee, ipecacuanha, poppy, senna, thorn apple?

Fungi.

1. What are the principal distinctive characters of fungi, and of its subdivisions?

2. Describe the phenomena of conjugation in fungi.

3. State what is meant by the mycelium of a fungus, and describe its structure.

Gentianaceæ.

1. What are the characteristics of the gentianaceæ?

Geographical.

1. What are the geographical and climatic conditions which regulate the area of cultivation of the maize, olive, potato, vine, wheat?

2. What is the area of geographical distribution of betulaceæ, coniferæ, dipterocarpæ, ericaceæ, proteaceæ, orchideæ?

Germination.

1. Describe the germination of a grass seed and of a bean seed.

2. Describe the phenomena of germination in dicotyledons, a grain of barley.

3. Describe the process of germination in exogens and endogens, and in a fern spore.

4. What are the conditions essential to the germination of seeds?

Gossypium.

1. To what order does the genus gossypium belong?

Gramineæ.

1. Give the essential characters of the natural order gramineæ.

2. What are the principal gramineæ cultivated as cereals and for fodder?

3. Give the area of the distribution of each in cultivation.

Gutta Percha.

1. What are the chemical and physical properties of gutta percha?

Hair.

1. What is the hair of a plant?

2. What are its functions and its principal modifications?

Hermaphrodite.

1. What is the order of development of the floral organs of a complete hermaphrodite flower?

Hybrids.

1 What are hybrids?

Inflorescence.

1. What is an inflorescence?

2. Describe the forms of inflorescence called: (1) amentum, (2) raceme, (3) umbel, (4) cyme.

3. Explain the inflorescence of a daisy, Scotch fir, hop, poplar, common arum.

4. Describe the different kinds of inflorescence in plants.

5. Describe carefully the structure of the inflorescence in compositæ.

Leaf.

1. What is the cause of the fall of the leaf?

2. Describe the structure, function, and junction of a leaf.

3. Distinguish between simple and compound leaves.

4. Account for the progress of water imbibed by the extremity of the root fibres through a tree into its leaves.

5. On what principle do you explain alternate and opposite positions of leaves?

Legume.

1. Define the term "legume."

2. Give the characters and properties of legumin.

Leguminosæ.

1. Give the characters of the three sub-orders of the natural order leguminosæ.

2. Mention the most important useful products yielded by that order, giving in each case the name of the plant, the use of the product, and the part used.

3. Contrast the characters of leguminosæ and rosaceæ, giving their main points of agreement and difference.

4. Mention some of the more important medicinal plants belonging to the leguminosæ.

5. Describe in detail the fruit met with in the leguminosæ.

Liber.

1. What is liber?

2. In what part of the plant does it occur?

3. Where is liber situated in exogens and endogens respectively?

1. What are its characters and economical applications?

5. From what natural orders do our manufactures derive the greatest supply?

Lichens.

1. What are the principal distinctive characters of the reproductive organs in lichens?

Magnoliaceæ.

1. What is the geographical distribution of the magnoliaceæ?

Marchantia.

1. Give the vegetation and reproduction of marchantia.

Milky Juice.

1. What families of plants yield a milky juice?

2. In what families may the juice be expected to be innocuous, and in what cases poisonous?

Monocotyledons.

1. Give the characteristics of the three sub-classes of the monocotyledons.

Moss.

1. Describe the development of a moss, from the spore to the maturity of the theca.

2. Describe the mode of reproduction met with in a moss.

3. Give the life-history of a moss.

Musci.

1. Give the essential characters of the natural order musci.

Mushroom.

1. Describe the parts of the common mushroom, agaricus campestris.

Natural Orders.

1. Give the natural orders of the following plants: artichoke, bamboo, carrot, frogsmouth, indigo, lettuce, maize, jute, rice, tamarind, papyrus, quince.

2. Give the essential characters of the ollowing natural orders: cruciferæ, iridaceæ, labiatæ, ranunculaceæ, compositæ, liliaceæ.

3. Give the natural orders, the botanical names and native countries of: mint, rue, squill.

4. Describe the natural orders of plants, and their essential distinctive characters.

Orchideæ.

1. Give the prominent characters of the natural order orchideæ.

Orchis.

1. Describe the morphology of the flower of an orchis.

Ovule.

1. What is an ovule, and when is it said to be straight?

2. Describe the formation and structure of the ovule.

3. Describe in detail an anatropous ovule.

Ovule—*continued.*

4. Give the different parts of the vegetable ovule and seed.

5. Explain the development of the vegetable ovule.

Papaveraceæ.

1. Give a diagnosis of the family papaveraceæ.

2. What are its principal products?

Parasitic.

1. What British genera of flowering plants are parasitic? and give an example of each.

Peduncle.

1. What is meant by a peduncle?

Petioles.

1. Mention some of the more remarkable varieties of petioles.

Phænogams.

1. Give an account of the process of impregnation in phænogams.

2. Describe the processes of root formation and development in phænogamous plants.

Phanerogams.

1. Describe the phenomena of movement in phanerogams.

2. Describe the process of fertilisation in phanerogams, up to the complete embryo.

Phyllodes.

1. What are phyllodes, structurally and homologically?

Phyllotaxis.

1. What are the principles of phyllotaxis? and give two instances differing numerically.

Pitchers.

1. In what natural order of plants do pitchers, or allied organs, occur?

Placentation.

1. Give an account of the different kinds of placentation in plants, and name examples illustrating its principal modifications.

2. In what order does free central placentation exist?

Plants.

1. What are the proximate principles of plants?

2. Mention the various ways in which the propagation of plants is effected.

3. From what plants do you get arrowroot, sago, tapioca?

4. What provisions are made in order to prevent the pollen of water plants being injured by moisture?

5. Describe the process of respiration in plants, and how it is effected.

Plants—*continued.*

6. What parts of the plant are employed for the production of almonds, chicory, flax.

Pollen.

1. What is the structure of pollen grains?

2. What is its function, and how performed?

3. In what part of the plant is the pollen grain developed?

4. Describe the pollen grains of a daisy.

5. Describe pollen, its usual forms, coverings, and tubes.

Prickles.

1. What are prickles, and how do they differ from the spines of branches and of leaves respectively?

Radix.

1. Define the term "radix."

2. Illustrate by a drug in common use.

Ranunculaceæ.

1. What is the geographical distribution of the ranunculaceæ?

2. Give the genera of medical importance.

3. Give the essential characters of ranunculaceæ and rosaceæ.

4. Point out in what respects they agree and in what they differ.

5. Define the natural order of ranunculaceæ.

Raphides.

1. What are raphides, structurally and chemically?

2. In what orders are they prevalent?

Reproductive Process.

1. How does the reproductive process differ in phænogamous and cryptogamous plants?

2. What is the reproductive process in phænogamous plants?

Rhizome.

1. What is rhizome?

2. Give examples.

3. Illustrate by a drug.

Root.

1. Explain the structure of an ordinary root.

2. Describe its different forms.

3. What difference exists between the root of a monocotyledon and dicotyledon?

4. State what are the functions of the root in plants.

5. Describe the following roots: aconite, calumba, gentian.

Rubiaceæ.

1. Give the characters of the natural order of rubiaceæ.

Rubiaceæ—*continued.*

2. Give the drugs derived from rubiaceæ.

Saliqua.

1. Define the term saliqua.

Seaweeds.

1. Mention the seaweeds which characterize the zones of marine vegetation in Britain.

Seed.

1. Define the structure of the seed of an exogen and of an endogen.

2. Describe fully the seed of the cocoa-nut, and its mode of germination.

3. Define the term "seed."

Silex.

1. State the different forms under which silex occurs in the tissue of plants.

Spatha.

1. Define the term "spatha."

Spike.

1. Describe a spike, and enumerate its different well-marked varieties.

Spikelet.

1. Describe a spikelet of barley, of wheat, of rye-grass.

Spiral.

1. Describe spiral vessels, and punctated wood tissue.

Stamen.

1. Define a stamen, its parts, and contents.

2. State the relations in position of stamens to divisions of perianth.

3. Describe the hypogynous insertion of a stamen, giving an example.

Stem.

1. Enumerate the different parts which enter into the structure of the stem of a dicotyledonous and endogenous plant respectively.

2. Compare the structure of the stem in an oak, a cedar, a palm, and a tree fern.

3. What are the chief modifications of the stem?

4. Name the characters by which roots are distinguished from stems.

5. Enumerate and describe the principal forms of underground stems.

Stomata.

1. Describe the structure and functions of the stomata in plants.

2. Describe the microscopical appearance of a stoma.

Tendrils.

1. What are tendrils?

2. Explain their use and the phenomena connected with their movements.

Tissue.

1. Enumerate some of the more remarkable forms of cellular tissue.

2. Give the principal forms of vascular tissue, with the characteristic features of each variety.

3. Enumerate the different systems of tissues.

4. Mention the plants, and parts of plants, where they are respectively found.

Tuber.

1. Define the term tuber.

2. Illustrate by a drug.

Umbelliferæ.

1. What is the geographical distribution of the umbelliferæ?

2. Describe the general character of the umbelliferæ, and give six examples.

3. Describe the fruit of the umbelliferæ.

4. Enumerate the drugs derived from the umbelliferæ.

5. Distinguish between the fruit of conium maculatum and the fruits of the other umbelliferæ.

Urticeæ.

1. Describe the fruit met with in the urticeæ.

Valve.

1. Define the term valve.

Vegetable.

1. What part in the vegetable economy is played by carbonic acid?

2. What are the classes of the vegetable kingdom, and their characters, according to the natural arrangement?

Vernation.

1. What are the principal kinds of vernation in plants?

2. Give examples of each.

Violaceæ.

1. Give the geographical distribution of violaceæ.

2. Name the drugs derived from the violaceæ.

Wheat.

1. Of what organs does a grain of wheat consist?

III.

HYGIENE.

Acclimatisation.

1. What amount of truth is there in the doctrine of acclimatisation?

Accoutrements.

1. Describe the accoutrements of the infantry soldier of the line, and discuss their effects on health.

2. What ill-effects can reasonably be traced to dress and accoutrements in soldiers at all times, more particularly when they are made to undergo much fatigue in hot weather?

Air.

1. State the best means of ascertaining that the proper standard of the purity of air is maintained.

2. State precisely how, and to what extent, air is vitiated by respiration and cutaneous transpiration.

3. What are the methods of examining air for impurities?

4. What proportion of carbonic acid renders air poisonous?

5. What quantity of air is required by a healthy male adult per hour, and how can this be best supplied?

Alimentary Substances.

1. Mention the principal heads under which alimentary substances may be arranged.

2. Give one or more instances of alimentary substances belonging to each group.

Alkali Works.

1. What is the object aimed at by the Alkali Works Acts?

2. What noxious vapour is produced by the alkali works, and how may its escape into the air be prevented?

Armies.

1. Give the causes which produce typhus in armies; its symptoms, general and special indications in the treatment, and best modes of prevention.

2. Give the causes which produce phthisis in armies.

Barometer.

1. Explain the construction and action of the aneroid barometer.

2. Prove the formula upon which the measurement of heights by an aneroid barometer depends.

Barometer—*continued.*

3. Mention its relative advantages and defects as compared with a mercurial barometer.

4. Upon what principle is the mercurial barometer constructed? and explain its action.

5. What is the standard height of the barometer generally accepted by meteorologists, and what its amount?

Barracks.

1. Give a general sketch of the construction of barracks in the United Kingdom, as now fixed by regulation, and state how the ventilation is provided for.

2. What are the general principles to be attended to in the choice and preparation of sites for barracks?

3. What duties do the Medical Regulations impose on medical officers of regiments in respect of inspection of barracks?

4. Give an account of the present system of ventilating barracks on home service.

5. How would you examine the condition of a barrack which was reported to furnish a larger percentage of sickness among the men than adjacent barracks?

Beer.

1. How would you determine the total fixed and volatile acidity of beer; the amount of alcohol; of solids; the adulterations of beer?

2. How would you detect the presence of picric acid in beer?

Bread.

1. A piece of bread is suspected to contain sulphate of copper; how would you test bread for this impurity?

2. What are the methods which you would employ for the detection of alum introduced into bread?

3. Classify the proximate constituents of a piece of bread under the two heads of nutritious and non-nutritious.

Camp.

1. A camp being supplied with water from a single source, either a spring or a small stream, what rules should be laid down with respect to the distribution of the water for man and animals, and for preventing any contamination?

2. What are the chief sanitary duties to be carried out in a camp?

3. What diseases at home or in the tropics are likely to rise from foul camps?

Camp—*continued.*

4. Under what conditions are typhus and typhoid fever generated in camps?

5. If necessary to filter water, how can it best be done with such common appliances as are available in camps?

Climate.

1. Give a brief statement of the best known effects of a hot climate on natives of a temperate region.

2. What are supposed to be the physiological influences of climate, and what part do these influences play in the production of disease?

Cubic Space.

1. What are the regulations as regards cubic space and floor, per head, at home and abroad.

Cysticeicus.

1. What are the appearances to the naked eye, and under the microscope, of the cysticeicus, in pork or beef.

Death Rate.

1. What is the relation of density of population to death-rate?

2. What is meant by the expression "death-rate"?

3. Show why the death-rate fails in establishing the salubrity or insalubrity of a district.

4. Let there be 120 deaths in one week in a population of 260,000; find the death-rate.

5. State the mode of calculating the death-rate of any town or district.

Decomposition.

1. What are the products of the decomposition of animal and vegetable substances respectively?

2. In what way do they affect the health of persons exposed to them?

Deodorising Substances.

1. What are the most important deodorising substances, and how are they obtained?

2. What plan would you recommend for deodorising an offensive drain?

Dew Point.

1. What is meant by the dew point?

2. How is the dew point learnt from the readings of the dry and wet bulb thermometers?

3. How is it determined?

4. What is saturation and the dew point?

Diarrhœal Cases.

1. What would you do if there occurred a number of diarrhœal cases?

2. What would be the most probable causes of such an outbreak?

Diet.

1. What nutritive principles should be represented in a scheme of diet?

Disease.

1. Give examples of the geographical distribution of disease.

2. What is meant by epidemic and endemic disease?

3. Give examples.

4. Has any relation been observed between the occurrence of epiphytic, epizootic, and epidemical disease?

Disinfectants.

1. What are the principal disinfectants of air and sewage, how are they prepared, and in what cases are they the best?

2. In what do disinfectants and antiseptics differ from each other?

3. What are the two methods in use for disinfecting clothes?

4. Give directions for disinfecting a room which has been occupied by scarlatinous patients.

5. What are the advantages in the disinfection of an apartment by sulphurous acid?

Drainage.

1. Give a brief account of the different ways in which drainage affects the temperature of the soil.

2. State the arguments in favour of large and small pipes respectively for house drainage.

3. Describe the construction of a system of house drainage such as you would approve of, stating the materials of each pipe and the mode of jointing the pipes.

4. Sketch a trap, or system of traps, by which a house can be thoroughly isolated from the town drainage.

Dwelling.

1. What is the definition of a dwelling?

Dysenteric Cases.

1. What would you do if there occurred a number of dysenteric cases?

2. Give the causes of dysenteric cases.

Earth-Closet.

1. State the conditions requisite for the efficient carrying out of the earth-closet system.

Epidemics.

1. What are the epidemics which are observed to co-exist in tropical climates?

2. Is there any relation between their respective mortalities?

Excreta.

1. What have been the plans employed for the removal of the excreta in the stations in which you have served?

Excreta—*continued.*

2. What are the best arrangements for the removal of excreta from barracks in hot climates?

3. Discuss these plans, and compare them with any others of which you have read.

4. Enter at length into the question of the removal of the liquid and solid excreta from dwellings.

5. What are the objections which have been raised to the removal of excreta by water, and how far are they valid?

Exercise.

1. What are the chief physiological effects of exercise?

2. What is the usual rule for estimating the amount of exercise?

3. What amount of exercise is demanded from the infantry soldier?

Exertion.

1. How much exertion can a man be called upon to undertake in a day without injury to his health?

2. How much exertion would you consider a good day's work for an adult?

3. State what would be the conditions as to dress, accoutrements, and diet under which you would wish a soldier to be placed when great exertion is demanded from him.

4. What are the results of excessive exertion?

Fæcal Emanations.

1. What are supposed to be the effects on the body of fæcal emanations?

Field Hospitals.

1. What are the chief points to which an assistant surgeon, stationed at a first line of surgical assistance on a field of action, should give attention when wounded men are carried to him, before sending them on to the field hospitals for further aid?

Field Service.

1. Give a sketch of the authorised arrangements for the care of the sick and wounded on field service in India.

Flour.

1. What are the chief causes of flour becoming sour, and how would you remedy it, supposing that the flour must be used for bread?

2. Which is the most nutritious, rice or pea flour, and upon what do their relative qualities depend?

3. Enumerate the principal adulterations of wheat flour.

Flour—*continued.*

4. How would you determine the quality and presence of maize, oats, pea flour, in flour?

5. Examine a specimen of flour for ergot.

Food.

1. What should be the amount and kind of food on active service?

2. State the quantity of food ordinarily requisite to maintain the human system in vigorous action.

3. Give a classification of foods, and cite examples of each class.

4. Give examples of diseases caused by insufficient or unwholesome food.

Gibraltar.

1. Give a short sketch of the chief conditions at Gibraltar which might affect the health of the troops.

2. State briefly the chief diseases at Gibraltar.

Habitation.

1. What are the chief points to which you would direct your attention in examining whether the ground round and under any habitation is likely to be injurious to health?

Heart Diseases.

1. What are the reasons for believing that heart diseases are more prevalent among soldiers than among civilians of the same age, and what are the causes which have been assigned to account for this prevalence?

Highway.

1. What is a highway?

Home.

1. What are the special circumstances in the life of a soldier at home which are unfavourable to health?

2. Enumerate the chief diseases causing admission into hospital at home.

3. What are the most common causes of mortality at home, and the present death-rate of the army serving at home?

4. What do you conceive to be the principal causes of these diseases?

5. What suggestions can you make with a view to their removal?

Hospital.

1. Why is it supposed that pavilion, or separate block buildings, are better adapted for a large hospital than a great single building?

2. What are the conditions required to keep a hospital in a healthy state?

3. Under what circumstances may persons be compulsorily removed to a hospital?

Hospital—*continued.*

4. What is the official plan for ventilating hospitals in the United Kingdom?

5. What objects are sought to be obtained from this system?

House.

1. In what cases can the owner be compelled to supply a house with pure water?

2. What are the chief requisites for a healthy house?

3. In house-fittings, enumerate the several places where ventilating pipes are required.

4. In modern houses which are plentifully provided with water-pipes and cisterns, and also with foul-water and soil-pipes communicating with underground drains, what precautions are necessary: (1) to preserve the purity of the drinking-water: (2) to keep the air in the foul-water and soil-pipes as free as possible from impurity, and to prevent it from getting into the house?

5. What are the regulations in the Public Health Act respecting common lodging-houses?

Hut.

1. What are the causes of the unhealthiness of a wooden hut?

Hygrometer.

1. Describe the dry and wet bulb hygrometer.

2. Describe the kinds of hygrometer in common use.

3. Explain the principle on which the action of Daniell's hygrometer depends.

4. How does Regnault's differ from it?

India.

1. Give a general statement of the sickness and mortality of the soldier in India; and state especially what steps you would take in anticipation of, or during, an attack of cholera.

2. What are the chief points connected with the climate of India which appear to be of importance as influencing Europeans?

3. What are the chief diseases of Europeans in India?

4. How may the chief diseases of Europeans in India be prevented?

5. What are the death rates and causes of death in Europeans serving in India; and to what causes is the diminution in the mortality of late years owing?

Inspection.

1. What are the chief points of importance to be attended to in the inspection of bread, fresh beef, flour, pork, tents?

Jamaica.

1. What has been the medical history of the white troops serving in Jamaica?

2. State briefly the chief diseases at Jamaica.

3. Supposing the diseases which formerly caused mortality to return, what preventive measures would you adopt?

Labour.

1. What amount of labour is undergone by the soldier in time of peace?

2. How would you estimate this if you were required to give a numerical expression for it?

3. How does the labour performed on a march of twenty miles with and without weights compare with the labour of a common mechanical trade?

Lime-Juice.

1. Determination of acidity in a specimen of lime-juice.

2. How would you determine the purity and strength of a sample of lime-juice?

March.

1. What is the usual length and rapidity of a march for infantry soldiers?

2. How is a soldier to be kept healthy on the march?

3. What are the precautions to be taken in supplying water to troops on the line of march?

4. What are the chief diseases to be apprehended on a long march from foul water, unhealthy encampments, exposure to weather or sun, over marching, and under feeding?

Marches.

1. What are the usual sanitary precautions to be adopted at home or abroad during marches extending over several days?

2. What diseases occurring during marches have been supposed to be attributable to bad water?

3. In the case of an army taking the field in Europe, what would you recommend in respect of food and clothing, and what are the chief points to be attended to in marches and encampments?

4. What are forced marches?

Mauritius.

1. What are the chief diseases which at present cause mortality in the Mauritius?

2. What are the chief rules of prevention?

Mediterranean Stations.

1. What are the chief diseases causing men to go into hospital in the Mediterranean stations?

Meteorological Instruments.

1. What are the meteorological instruments used in the A.M.D.?—and explain the mode of using them.

Milk.

1. What are the adulterations of milk?

2. State how you would estimate caseine in milk.

3. Determine the percentage of lactin in milk.

4. State the changes which take place when milk turns acid.

5. How is caseine extracted from milk?

Mortality.

1. State what are the most common causes producing mortality in the European troops serving in the (1) Bengal; (2) Madras Presidency.

2. Discuss the etiology of these diseases; and state what should be the preventive measures?

3. What are the chief causes of mortality among children under five years of age?

4. If called upon to draw up a tabular form to represent the health and mortality of a district, how would you proceed?

5. In which quinquennial period of life does the greatest mortality prevail?

Noxious Gases.

1. What are the noxious gases which prevail in badly ventilated localities; and their effects on health?

Nuisances.

1. What is the difference between common and private nuisances?

2. State the principal common nuisances.

3. Describe some of the nuisances which are prohibited under penalties.

4. Enumerate the various matters defined as nuisances in the Public Health Act, 1875.

Overcrowding.

1. Define overcrowding.

2. What are the effects on health of the overcrowding of dwelling-houses?

Quarantine Regulations.

1. Mention the leading points in the

Quarantine Regulations—*continued.*

quarantine regulations now in force in Great Britain.

Recruit.

1. Describe the systematic inspection of a recruit, and the purpose of each step of the examination.

2. How is the British army recruited?

3. Give the best account you can of the system of recruiting in the British army.

4. Give the leading principles to be observed in the medical examination of recruits; and the mode of conducting the examination as taught in the army medical school.

Sanitary Conditions.

1. State what you consider to be good and bad sanitary conditions for a body of troops.

Sanitary Precautions.

1. What are the usual sanitary precautions adopted when cases of (1) cholera; (2) dysentery; (3) enteric fever; (4) scarlet fever, occur in a barrack?

Sewage.

1. State the various means of removing sewage from dwellings, and utilising it.

2. In the disposal of water sewage, what are meant by the terms precipitation, intermittent filtration, irrigation?

3. What are the opinions now generally held as to the respective merits of clarifying sewage by precipitating chemical agents, or by the application to land?

4. Explain the mode of analysing a sample of sewage guano.

5. Under what circumstances would you recommend the dry system of disposal of sewage, in preference to irrigation?

Sewer.

1. What are the requisites of a good sewer?

2. What are the effects of the inhalation of sewer air?

3. What are the means of obviating the escape of sewer gases from gullies (1) as applied to the gullies; (2) as applied to the sewers?

4. What are the causes of the influx of sewer gases into inhabited houses?

5. What are the sewer gases, and how would you estimate the amount of each?

Sewerage.

1. What are the diseases which have been supposed to be connected with imperfect sewerage of houses?

2. If you are called upon to examine whether the ventilation and the sewerage arrangements of a house are sufficient, to what points would you direct your attention?

Soil.

1. What effects have soil and configuration of ground on health?

2. What are the conditions of soil which have been supposed to be favourable to the development or prevalence of phthisis, typhoid fever, and cholera?

3. What diseases are favoured by a moist condition of the soil?

4. What are the conditions of soil supposed to have been instrumental in causing the late outbreak of fever at the Mauritius?

5. Give a short account of soils, of what they are composed, their agricultural varieties, and their relations to vegetation.

Syphon trap.

1. Explain the action of a syphon trap in a branch drain.

Thermometrical Observations.

1. What are the thermometrical observations of most importance?

Trichina.

1. What are the appearances to the naked eye and under the microscope of trichina in pork or beef?

Troops.

1. What effect has the measured tread of troops marching across a suspension bridge?

2. What articles are carried in the field panniers supplied to medical officers in charge of troops proceeding on active service?

Troop-ships.

1. What are the chief sanitary duties to be attended to on board troop-ships?

2. On board troop-ships, what cubical space per man should be given?

Tropical Climates.

1. Explain shortly the causes which affect the ratio of deaths to admissions in tropical climates.

Typhoid Fever.

1. What would you do if there occurred a number of admissions from typhoid fever?

2. How would you proceed to investigate an outbreak of typhoid fever?

3. What circumstances are to be in-

Typhoid Fever—*continued.*

quired into with a view to ascertain and remove the cause of typhoid fever?

Vaccination.

1. What is the machinery of vaccination at present in force in the United Kingdom?

2. Describe the leading provisions of the Vaccination Act.

Ventilation.

1. What would be the best system of ventilation for a hot inland station in India?

2. State the general principles of ventilation, and what are the most effective means of applying it on a very large scale.

3. What diseases are supposed to be connected with the imperfect ventilation of houses?

4. What proportion of CO_2 may exist in 1000 volumes of the air of an inhabited room consistently with fairly good ventilation?

Vessel.

1. Draw up a code of regulations for a crowded vessel necessary to preserve health.

War.

1. What are the chief causes which give rise to sickness and mortality in time of war?

2. State briefly the measures you would advise for their prevention.

3. Give an outline of the surgical duties and of the general arrangements for the care of the sick and wounded under ordinary circumstances of the troops on the march in time of war.

4. Give concisely an account of the articles comprising the regulated equipment for British field hospitals in time of war.

Wards.

1. Mention particularly any ordinary circumstances which are likely to make wards unhealthy.

Water.

1. What diseases are supposed to be communicated through the agency of bad water?

Water—*continued.*

2. Give some account of the substances which may be present in drinking water, giving tests, and stating how they affect its quality.

3. What points would lead you to an opinion as to the sufficiency of the supply, as to the purity of the water?

4. Why is so much importance attributed to the amount and changes in the subsoil or ground water?

5. Discuss some of the points connected with this question.

Water Closets.

1. What are the defects of the ordinary pan water-closets?

Water Pipes.

1. Why should water-pipes be laid down deeper than gas-pipes?

Weights.

1. What are the weights of the dress, accoutrements, and armament carried by the British infantry soldier?

2. What effects do ill-adjusted weights produce on the health and efficiency of the soldier?

3. Give your opinion as to the mode in which they are disposed.

4. What are the weights at home in heavy marching order?

West Indies.

1. What are the chief diseases which at present cause sickness and mortality in the West Indies?

2. What are the chief rules of prevention?

3. What measures would you adopt if cases of yellow fever were to appear in a barrack in the West Indies?

4. Contrast the diseases and the mortality of the West Indies and East.

Wine.

1. Determine the total acidity of wine.

2. Detail M. Pasteur's plan for the preservation of wine.

Work.

1. What are the points to be attended to in order that the greatest amount of work may be got out of the soldier with the least chance of injury to him?

IV.

MEDICAL CHEMISTRY.

Acid—Acetic.

1. Give the process for making glacial acetic acid.

2. How is common vinegar produced, and how from it can glacial acetic acid be obtained?

Acid—Arsenious.

1. What is the exact composition of the ammonic nitrate of silver, and what its reaction upon a solution of arsenious acid?

2. What are the physiological properties and medicinal uses of arsenious acid?

3. How may arsenious acid be known by heat simply?

Acid—Benozic.

1. Give the composition of bensoic acid?

2. Describe the preparation of bensoic acid.

Acid—Boracic.

1. Describe the conditions under which boracic acid occurs in nature.

Acid—Carbolic.

1. How is carbolic acid prepared?

2. How is it distinguished from creosote?

3. What substance is produced when carbolic acid is passed through red-hot charcoal?

4. What is carbolic acid?

5. Give as complete an account as you can of the purposes to which it is applied in modern medicine.

Acid—Citric.

1. How much citric acid is equivalent to one fluid ounce of fresh lemon juice?

2. Distinguish between a solution of citric acid and tartaric acid by lime-water.

3. How is the solution of citric acid used in the navy as an antiscorbutic prepared?

4. Give the process for preparing citric acid from lemon-juice.

Acid—Gallic.

1. Give its form, taste, solubility, therapeutic action, and doses.

2. How distinguished from tannic acid by gelatine.

3. Give the process for making gallic acid from gall nuts.

Acid—Hydrochloric.

1. Give in the most abridged form the formula of the bleaching salt of lime, and explain the action of hydrochloric acid upon it.

2. Explain also how it is applied in the disinfection of clothes.

3. How is pure hydrochloric acid prepared?

Acid—Hydrocyanic.

1. Describe the medicinal properties, uses, doses, and modes of administration of hydrocyanic acid.

2. Give the process for detecting any other acid mixed with hydrocyanic acid, and the strength.

3. What is the mode of preparation, and the chemical composition of acidum hydrocyanicum dilution?

Acid—Hydrosulphuric.

1. What is the use of hydrosulphuric acid as a test?

2. How is it made?

3. How is it used?

Acid—Nitric.

1. Give the characteristic test for nitric acid.

2. Describe the action of nitric acid on silver, and write in the form of an equation what takes place.

3. Under what conditions is it formed from atmospheric air?

4. Write the formula of nitric acid.

5. How is nitric acid manufactured and what action does it exert on metallic lead?

Acid—Phosphoric.

1. How is the acid phosphoric dilute of the B. P. made?

2. State how you would test it for nitric acid.

3. In what organs or tissues of plants and animals does phosphoric acid chiefly occur?

Acid—Sulphuric.

1. What is the action of sulphuric acid upon alcohol, copper, iron, silver, zinc?

2. What is the nature of the decomposition which oxalic acid undergoes when treated with sulphuric acid?

Acid, Sulphuric—*continued.*

3. Explain the preparation of sulphuric acid and the tests for it.

4. What impurities does sulphuric acid contain, how recognised, and how may they be removed?

Acid—Sulphuric Aromatic.

1. What is the chemical constitution of aromatic sulphuric acid?

Acid—Sulphurous.

1. Give the chief actions of sulphurous acid on the dead and living textures.

Acid—Tartaric.

1. Describe the mode of preparing tartaric acid, and point out the method of detecting the adulteration of powdered tartaric acid with cream of tartar, powdered citric acid, and from oxalic acid.

2. How much carbonate of ammonia will it require to saturate twenty grains of tartaric acid?

Acids.

1. On what principles are the dilute mineral acids prepared?

2. State the rules which would guide you in prescribing acids and alkalies in dyspepsia.

Aconite.

1. Give the sensible characters of aconite root.

2. State the dose of the tincture.

Aconitine.

1. Mention the symptoms produced by aconitine, and state for what purposes it is used in medicine.

Albumen.

1. Give the test for albumen, to what is it an antidote, and the composition.

2. What are the known morbid conditions relating to albumen?

Alcohol.

1. Write the formula for alcohol.

2. How is alcohol converted into ether and acetic acid?

3. What are the products of the gradual oxidation of alcohol?

4. Give the per-centage of alcohol in (1) spiritus rectificatus; (2) spiritus tennior; (3) vinum xericum, with the formation of ether and acetic acid from alcohol.

5. Give the chemical history of alcohol, mode of preparation, and method of testing its purity.

Alcoholic Drinks.

1. Enumerate the roots and grains from which alcoholic drinks are distilled, and their effects on the system.

Alcoholic Drinks—*continued.*

2. State briefly the results of chronic alcoholic intoxication.

Aldehydes.

1. Give the general characters of the aldehydes.

2. How would you distinguish a ketone from an aldehyde?

3. What relation has chloral to aldehyde?

Alkalies.

1. What are the chief mineral alkalies employed in medicine?

2. Give the therapeutic action of alkalies.

3. Notice the chief pharmacopœial preparations, and state briefly for what diseases they are used.

Alkaloids.

1. Give the names and formulæ of some of the more important natural alkaloids.

2. Enumerate the official alkaloids and their several preparations.

3. State whence they are derived, what are their physiological and medicinal properties, and what the doses of the pharmacopœial preparations.

Almond.

1. Why has bruised bitter almond no odour till it is moistened?

Aloes.

1. What kinds of aloes are there, how distinguished from one another, and where do they come from?

2. Give the therapeutic action of aloes.

3. How much aloes is in a fluid ounce of compound decoction of aloes, and why are acids incompatible with that preparation?

Alterative.

1. What do you understand by an alterative medicine?

Alum.

1. How would you prepare a specimen of chrome alum?

2. Explain the formation of alum from alum shale.

Alumina.

1. Mention some common substances containing alumina, and state with what it is combined in them.

Ammonia.

1. How many kinds of ammonia are there?

2. What are the chemical and physical characters of ammonia?

3. What are the principal sources from which it is obtained?

Ammonia—*continued.*

4. Write the composition of ammonia, how prepared, and tests.

5. How may the composition of ammonia be proved?

Anæsthetic.

1. Enumerate the so-called anæsthetic agents, and state which you consider to be most worthy of confidence.

2. Contrast as to their respective anæsthetic effects chloroform with ether.

Angustura Bark.

1. From what source do we obtain angustura bark?

2. What are its therapeutical uses?

3. How distinguished from the bark with which it has been confounded?

Anhydrous.

1. Are all dry substances anhydrous, and are all anhydrous substances dry?

2. Give illustrations with your explanation.

Antacids.

1. Enumerate the preparations employed both as direct and remote antacids.

Anthelmintics.

1. Enumerate the principal vegetable anthelmintics, giving in each case the scientific name, physiological effects, natural order, native country, and part of the plant used.

Antimony.

1. State generally the physiological and therapeutical actions of antimony.

Anti-Periodic.

1. State the sources, preparations, and doses of the anti-periodic febrifuges.

Anti-Scorbutic.

1. Name the anti-scorbutic plants.

Apyretics.

1. What are apyretics?

2. Name those used externally and internally

Argentic.

1. How can you distinguish argentic chloride from argentic cyanide?

Arrowroot.

1. How is arrowroot prepared?

Arsenic.

1. What are the indications furnished by the eyes, and by the tongue, of the physiological action of arsenic?

2. What is the chief source of metallic arsenic?

3. Describe the preparations of arsenic, and the average doses.

4. State briefly the physiological properties of arsenic.

Arsenic—*continued.*

5. In what affections is arsenic used as an external application?

Astringents.

1. Enumerate the chief astringents; and state in what diseases the vegetable astringents are used.

2. Describe the action of astringent medicines.

3. State the cases for which certain of them are more appropriate than others.

Atmosphere.

1. What is the composition of the atmosphere?

2. How is organic matter in the atmosphere detected?

3. How would you estimate the daily variations in the quantity of ozone present in the atmosphere?

4. Why do the density and temperature of the atmosphere diminish in ascending mountains?

5. What is the effect on climate of aqueous vapour in the atmosphere?

Atmospheric.

1. Give an account of what is meant by atmospheric denudation.

2. Describe a simple experiment which proves that atmospheric air is not an element.

Atomic Weight.

1. What is meant by the atomic weig of an element?

2. How is specific heat related to atomic weight?

3. State the two methods of finding atomic weight.

Atropia.

1. Mention the physiological action, therapeutical applications, mode of employment, and doses of atropia.

Base.

1. What is meant by a base?

2. Give two examples.

Basicity.

1. What is meant by the basicity of an acid?

2. How would you proceed with a view to determine the basicity of an acid?

Belladonna.

1. How would you proceed to ascertain the presence of the active principle of belladonna in the urine?

2. How, by external characters, may the substitution of dulcamara leaves for belladonna leaves be discovered?

Bismuth.

1. How is the subnitrate of bismuth prepared?

Bismuth—*continued.*

2. What are the officinal compounds and preparations of bismuth? give their doses and general therapeutics.

Bleaching-Powder.

1. What is bleaching-powder?
2. How is it prepared?
3. What reactions takes place in the process?

Bones.

1. Fossil bones include phosphate, carbonate, and fluoride of calcium; how is their analysis effected?

Bromide.

1. How is bromide of potassium made?
2. How is it tested for bromate of potassium, and for iodide of potassium?
3. For what purposes used internally?

Bromine.

1. What are the chief pharmacopœial preparations of bromine?
2. What are their doses?
3. How are they presumed to act?
4. In what diseases are they most commonly employed?
5. State the method by which you would prepare bromine.

Calabar Bean.

1. Give an account of the physiological action of Calabar bean.

Calomel.

1. How is calomel formed from sulphate of mercury?
2. In what disease, and dose, may calomel be used as a soothing sedative?
3. By what means may calomel be distinguished from other white powders?

Calumba.

1. Give the scientific name, order of the plant, physical appearances of the officinal portion, and physiological effects.
2. Name the pharmacopœial preparations of calumba; and state the dose of each suited for an adult.

Camphor.

1. What is camphor; name, and natural order?
2. What does it enter into?
3. What soluble in?
4. How is it obtained?
5. Give the chemical and therapeutic uses.

Candle.

1. What products are formed by the combustion of a common candle in air?
2. Contrast the phenomena with those observed when the same candle burns in oxygen, and explain the differences in the two cases.

Cantharides.

1. Describe the ordinary action of cantharides on the urine; and occasional inconveniences through absorption by the skin.

Carbon.

1. What is carbon?
2. Enumerate the principal forms of carbon, giving their physical characters.
3. Give the names and formulæ of the oxides of carbon; and two methods of preparing each.
4. In what forms does carbon occur in nature; free, and in combination with other elements?
5. Determine the temperature produced when carbon is burned in air.

Carbonate of Ammonia.

1. Give its sensible properties.
2. Action on it of water.
3. Of exposure to the air.
4. Give an officinal preparation in which carbonate of ammonia is present.

Catechu.

1. From what plants are the different sorts of catechu obtained?

Caustics.

1. Name the principal officinal caustics.
2. Give the chemical composition of the leading caustics; and the purposes for which they are commonly employed.

Cevadilla.

1. From what source is cevadilla obtained?
2. Give the characters of the officinal portion of the plant, therapeutical effects, dose, and mode of administration.

Chalybeate Water.

1. Describe the varieties of chalybeate water; diseases principally treated by it; any precautions necessary.

Charcoal.

1. How are animal and vegetable charcoal obtained?
2. How are animal and vegetable charcoal distinguished by a single test?
3. What gases can be formed by the combustion of pure charcoal in air?
4. To what is due the usefulness of animal charcoal as a filter?
5. Give its chemical action as a disinfectant.

Chemical.

1. Give the general characters of chemical affinity.
2. Enumerate the three laws of chemical combination; giving illustrations of each.
3. State the chemical composition of:

Chemical—*continued.*

bread, blood, chyle, diamond, meat, nervous matter, gypsum, quartz.

4. Explain the relations between physical properties and chemical constitution.

5. Describe the results of the following experiments in chemical equations: (1) pouring oil of vitriol over iron sulphide; (2) pouring oil of vitriol over chalk; (3) pouring oil of vitriol over marble and nitric acid.

Chemistry.

1. What is the object and extent of chemistry?

Chloral.

1. Describe the preparation, and explain the constitution of chloral.

2. What are the chief indications and counter indications for its employment?

Chlorine.

1. What are the characters of chlorine?

2. How is chlorine prepared from common salt?

3. To whom is the discovery of chlorine due?

4. How does this element occur in nature?

5. Describe its principal physical and chemical properties.

Chloroform.

1. Write the formula for chloroform.

2. How do you prepare it?

3. Give the properties, medicinal effects, principal uses, and impurities of chloroform.

4. As regards ether and chloroform as anæsthetics, which is the speedier, and which is the safer of the two in action?

5. Mention the specific gravity of chloroform.

Cinchona Bark.

1. Explain the effects of polarisation upon the principal alkaloids found in cinchona bark.

2. Enumerate the chief pharmaceutical preparations derived from cinchona bark.

3. Describe the pharmaceutical barks, and their constituents; giving their physiological effects and uses.

4. From what species of bark is yellow bark obtained?

5. What are the four leading alkaloids in the barks; and their relative energies?

Citrate of Iron and Quinine.

1. Explain the pharmacopœial tests for the citrate of iron and quinine.

Coal.

1. What is coal geologically and physically?

Coal—*continued.*

2. What are the principal products of its distillation?

3. How would you determine the percentage of sulphur contained in coal?

4. In what states of combination does sulphur exist in coal?

5. How are seams of coal formed; and of what materials?

Colchicum.

1. Describe the parts of the plant from which each preparation of colchicum is made.

2. State the relative value of the preparations.

Colocynthidis.

1. What is the most important difference in the composition of extractum colocynthidis compositum, and pilula colocynthidis composita?

Conium.

1. What does conium enter into?

2. Describe the conium plant.

3. What are the indications by which we know that conium is beginning to produce its physiological effects?

4. Which preparation of conium is most deserving of confidence; and in what dose should it be given?

Convolvulaceæ.

1. Enumerate the plants of the order convolvulaceæ used in medicine.

Copaiba.

1. State the modes of administering balsam of copaiba; and prescribe it in the form of an emulsion.

Copper.

1. Give the name and composition of the two carbonates of copper.

2. Give the formula of copper pyrites, and its crystalline system. State also how its analysis is made.

3. Describe the preparation and medicinal properties of sulphate of copper.

Corrosive Sublimate.

1. How is corrosive sublimate made; antidotes, and formula for?

2. What are the effects of corrosive sublimate, used as a remedy, outwardly and inwardly?

Cream of Tartar.

1. How is cream of tartar obtained; and the formula for it?

Creasote.

1. Prescribe a mixture containing creasote, with directions for its internal use.

Croton Oil.

1. What is the usual dose of croton oil?

2. What is an unsafe dose?

Cyanogen.

1. What is cyanogen?

2. Under what circumstances has it destroyed human life?

3. Enumerate the compounds of cyanogen, which are well known as poisons, and their mode of operation on the system.

Dew.

1. Account for the formation of dew.

2. Heavy dews are more frequent after hot days than after cool ones; why is this?

3. What is the theory of the production of hoar frost, fog?

4. What are the laws which regulate the deposition of dew?

Dialysis.

1. Explain the process of dialysis, and its applications.

Diaphoresis.

1. Name the various means by which diaphoresis is produced.

Digitalis.

1. From what part of what plant are the tincture and infusion of digitalis derived?

2. Describe the action of digitalis on the cardiac muscle and nerves.

3. State its uses in medicine.

4. Give the doses in which it is administered.

Diuretics.

1. Enumerate the principal vegetable diuretics; give the plants, their parts, natural orders, native countries, and in what particular diseases are they given?

2. What are diuretics?

3. In what species of dropsy are diuretics most successful, and in what are they apt to fail?

4. Enumerate the principal diuretic medicines; give the pharmacopœial preparations, with their composition, and state the doses which you would give.

5. What diuretics act more especially by influencing the renal circulation?

Doses.

1. What are the doses of corrosive sublimate, liquor arsenicalis, for an adult?

2. State the physiological phenomena which may follow comparatively small doses of quinine, potass. iodid., pot. bromidum, chloral, mercury.

Drugs.

1. What are the common impurities of the following drugs—quinine, senna, rhubarb?

2. What drugs do we obtain from roots, and what from underground stems?

3. Mention those drugs which are most

Drugs—*continued.*

readily absorbed through the unbroken cuticle.

4. Enumerate those drugs which stimulate, and those which depress the action of the heart.

5. Mention the various drugs which produce eruption on the skin, and describe the forms of eruption produced.

Elaterium.

1. Give the nature, composition, action, dose, and mode of administration of elaterium.

Electricity.

1. Classify the following substances with respect to electricity: sulphur, powdered glass, ice, marble, zinc, nitric acid.

2. How is it that a hollow cylinder of metal is as effectual for the purpose of collecting electricity as a solid mass of the same size?

3. Explain carefully the way in which a Leyden jar accumulates a charge of electricity.

4. What experiment shows the great velocity of electricity?

5. State the therapeutic uses of electricity.

Emetics.

1. Give the doses, indications for their use, and part of plant yielding the following emetics—ipecacuanha, mustard.

2. What are the chief mineral and vegetable emetics?

3. When are emetics useful?

4. Which would you choose, and why?

5. When is their use contra-indicated?

Epispastics.

1. Define epispastics.

2. Enumerate the drugs in the class.

Ergot.

1. State the sensible and chemical properties by which powder of ergot may be distinguished from all other powders.

2. State the pharmaceutic forms and doses of ergot, and their actions when taken medicinally.

3. Explain the pharmacopœial process for obtaining extractum ergotæ liquidum.

Eruption.

1. In what respect does the eruption produced by croton oil and tartar emetic differ?

Escharotics.

1. Define escharotics.

2. Name at least three.

Euphorbiaceæ.

1. Name the three articles in the Phar-

Euphorbiacæ—*continued.*

macopœia which belong to the natural order euphorbiaceæ.

2. Give their medicinal properties and uses, and the names and doses of their several preparations.

Expectorants.

1. What do you mean by expectorants?

Fermentation.

1. Describe the nature of acetous and vinous fermentation.

2. Describe the process of brewing and the theory of fermentation.

3. Explain the phenomenon of alcoholic fermentation.

Ferri Sulphas.

1. What is the mode of preparation and the chemical composition of ferri sulphas?

Ferrocyanide of Potassium.

1. How is ferrocyanide of potassium prepared?

2. What is its composition?

Fluorescence.

1. Describe the principal phenomena of fluorescence.

Formulæ.

1. Give the formulæ for albumen, borax, cream of tartar, ethyl-alcohol, gelatine, heavy spar, lactic acid, nitre, orpiment, tartar emetic, white precipitate.

Galvanism.

1. Mention the different forms of galvanism used in medicine, and their mode of application.

Gas.

1. What is the composition of the common gas used for lighting?

2. How is chloride of ammonia made from gas liquor?

3. Describe generally the processes employed for obtaining ammoniacal alts from gas liquor.

4. What are the products of the combustion of olefiant gas in air?

5. How is olefiant gas prepared?

Ginger.

1. Give the scientific name and order of ginger.

Glass.

1. Give some account of the composition, manufacture, and properties of the most important kinds of glass.

2. Describe the methods you would employ for the quantitative analysis of a sample of flint glass.

3. Describe and explain the operation of etching on glass by means of fluor spar.

Gluten.

1. What are the properties and characters of gluten?

2. Determine the amount of gluten weighed wet.

Glycerine.

1. What is the source of glycerine?

2. Why is it so called?

3. What are its characters?

4. Give its uses in medicine.

5. How is it prepared from olive oil?

Glycogen.

1. What is glycogen?

2. Where is it found?

3. Give the tests by which it is recognised.

Glycol.

1. Describe glycol, and explain its preparation from ethylene.

Gold.

1. Describe the chief characters of gold.

2. What acids are the best solvents of gold?

Grey Powder.

1. Describe the preparation, characters, and tests of grey powder.

Gum.

1. Define gum, and distinguish from each other gum, gum resin, and resin.

2. Give examples of each, and say of what orders of plants each is characteristic.

Gun-Cotton.

1. How is gun-cotton prepared?

2. What is its composition?

Hæmostatics.

1. Name the drugs and preparations which are employed externally and internally as hæmostatics.

Heat.

1. What is meant by the latent, specific, sensible, and radiant heat of a body?

2. What is the action of heat on acetate of ammonia, cellulose, nitrate of potash, oxalate of lime, sulphate of zinc?

3. Mention some substances which radiate heat badly, and conduct it well.

4. By what means may the specific heat of bodies be determined?

5. What is meant by a unit of heat?

Hemlock.

1. State the officinal parts of hemlock, and the preparations derived from them.

2. Give an account of the physiological effects of hemlock.

3. Estimate the probable value of each preparation.

Homologous Series.

1. Define the term homologous series, and give examples.

Hydrogen.

1. How do you make hydrogen?
2. How can hydrogen be obtained from water?
3. How is peroxide of hydrogen prepared?
4. State the process which is most effective in destroying sulphide of hydrogen when present in the air of an apartment.

Hypodermic Injection.

1. Describe the process of hypodermic injection, and the principal medicines used.
2. What are the diseases in which the hypodermic injection of morphia is most useful?
3. What are the inconveniences and dangers to be guarded against in the use of this remedy?
4. What is the strength of the solution you would employ?
5. Mention the apparatus employed, and the mode of using it.

Hypophosphites.

1. How are hypophosphites of lime and soda prepared?
2. Mention their doses and therapeutic uses.

India-Rubber.

1. What are the chemical and physical properties of india-rubber?

Indigo.

1. Explain the constitution which is ascribed to indigo blue.

Infusum.

1. Give the use, composition, and dose of infusum gentianæ compositum.

Inhalation.

1. Mention the various agents employed to produce anæsthesia, and their mode of administration.

Iodides.

1. Describe the officinal iodides, how prepared, their distinctive characters, therapeutic uses, and doses.

Iodine.

1. For what purposes is iodine, and its salts, used in medicine?
2. What are the chief pharmacopœial preparations?
3. From what source is iodine obtained?
4. What is iodine?
5. How is it prepared upon the large scale.

Iodism.

1. Describe the symptoms of iodism.

Ipecacuanha.

1. What is ipecacuanha?
2. What are the active principles?
3. Where is it found?
4. What is the therapeutic use of ipecacuanha in tropical medicine?
5. State the three principal actions of ipecacuanha, with their doses.

Iron.

1. In what form does iron ore chiefly occur in Britain?
2. What preparations of iron are mentioned in the British Pharmacopœia.
3. Which a protosalt and which a persalt of iron?
4. State the empirical formula for the strength of hollow pillars of cast-iron.
5. Mention generally the composition of a clay iron-stone, and give the methods of estimating the amount of each of its constituents.

Isinglass.

1. How is gelatine distinguished from isinglass?

Kamela.

1. What is kamela?
2. Give its characters, therapeutic action, dose, and mode of administration.

Labiatæ.

1. Enumerate the medicinal plants contained in the labiatæ.
2. State the characteristics of the natural order labiatæ.

Lead.

1. What are the salts of lead used in pharmacy?
2. Discuss the conditions under which the use of lead in cisterns and water-pipes is dangerous.
3. Describe the various modes by which lead may find its way into the system, with the appropriate treatment in each case.
4. State the symptoms it gives rise to.
5. How is the metal purified for use in the arts?

Leaf.

1. How may the leaf of (1) belladonna; (2) foxglove; (3) hemlock, be distinguished, each by sensible and chemical characters, from other leaves which resemble them?

Lime.

1. What are the differences between limestone, quicklime, and slaked lime?
2. How is lime-water prepared?
3. What are its uses?
4. How would you readily detect lime in lime-water?

Lime—*continued.*

5. How much lime is in one fluid ounce of aqua calcis?

Linimentum.

1. Give the use and composition of linimentum iodi.

Liquor Ammoniæ.

1. What is the Pharmacopœial process for making liquor ammoniæ acetatis?

2. Give the chemical history and pharmaceutical use of liquor ammoniæ acetatis.

3. By what synonym is liquor ammoniæ acetatis known?

4. What are its physiological effects and doses for an adult?

5. State the method of preparing liquor ammoniæ.

Liquor Arsenicalis.

1. Give the chemical history, mode of preparation, and pharmaceutical use of liquor arsenicalis.

Liquor Morphiæ.

1. For what purposes, and in what doses, would you employ liquor morphiæ acetatis?

2. Give the chemical history, mode of preparation, pharmaceutical use of liquor morphiæ hydrochloratis.

Liquor Potassæ.

1. How is liquor potassæ prepared.

2. State the dose of liquor potassæ.

Liquor Sodæ.

1. Describe and explain the process for making the liquor sodæ chloratæ.

Liquorice.

1. In what form is liquorice obtained?

Lobelia Inflata.

1. Give the natural order, place of growth of lobelia inflata, its therapeutical action, and doses of its preparations.

2. What do you consider to be a poisonous dose of lobelia inflata?

Magnesium.

1. In what state is magnesium found in nature?

Manganese.

1. Give a sketch of the medicinal properties, uses, and doses of the preparations of manganese.

2. Describe the manganese ores.

Medicines.

1. What are the chief medicines which can be employed through the agency of the skin or subcutaneous tissue, either by simple application, friction, or subcutaneous injection?

2. What effects are produced in each case?

Melanthaceæ.

1. Describe the medicinal substances derived from the natural order of melanthaceæ.

Methylamine.

1. How is methylamine obtained?

Mineral Waters.

1. Classify mineral waters according to their compositions.

Mixtures.

1. Give the use, composition, and dose of the following mixtures: mistura guaiaci, mistura ferri composita, mistura cretæ.

Molecule.

1. What is meant by the term molecule?

Molecular Weight.

1. Explain what is meant by the term molecular weight.

2. What is the law which connects density with molecular weight?

Morphia.

1. Give a process for the preparation of the hydrochlorate of morphia; its form, taste, solubility, and physiological action.

2. What are the tests for the detection of meconate of morphia?

3. State the principal differences between the action of opium and morphia.

4. Enumerate the preparations of morphia.

Mustard.

1. What is the active principle of mustard, and how is it formed?

2. Mention the preparations and uses of mustard.

Narcotic.

1. What do you mean by a narcotic?

2. Enumerate the three principal narcotics.

3. Mention the best narcotic to be used under the following circumstances: (1) Sleeplessness from overwork; (2) delirium tremens; (3) delirium of typhus; (4) acute mania.

4. What are the differences between the action of the sedatives, the narcotics, and the refrigerants?

Nauseants.

1. In what diseases would you give nauseants?

2. State the action and dose of each.

Nervine Tonics.

1. Mention the remedies which are commonly described as nervine tonics; state in what cases you would use them, and the doses in which they may be given.

Nervine Tonics—*continued.*

2. What do you understand by a nervine tonic?

Nitrates.

1. What nitrates occur in nature?

2. Explain the formation of nitrates in the soil.

Nitre.

1. What is the poisonous dose for an adult of nitre?

2. Mention the symptoms, the chief appearances on dissection, and the tests.

3. Describe the chemical changes which take place during the formation of nitre.

Nitrite.

1. Discuss the different therapeutic uses of nitrite of amyl, and what symptoms are produced by the inhalation of nitrite of amyl.

Nitrogen.

1. How may nitrogen be obtained?

2. Mention its physical properties, specific gravity, combining weight, and density.

3. How may it be made to combine with oxygen and hydrogen?

4. Enumerate its compounds with these respectively.

5. What proportion of nitrogen renders air unfit for respiration?

Nutmeg.

1. Give the scientific name and order of nutmeg.

Oil.

1. Define oil, and distinguish fixed, volatile, irritant, vegetable, and animal, with the orders, organs, and tissues of plants where prevalent.

2. How is cod-liver oil obtained?

3. Give the chemical history of oil and describe the varieties known in commerce.

4. Write what you know about castor oil.

5. How is fusel oil to be detected in rectified spirit?

Opium.

1. From what plant is opium derived?

2. State its different kinds and countries.

3. State the relative quantity of opium in confectio opii, emplastrum opii, extractum opii liquidum.

4. Contrast the diseases in which the administration of opium is beneficial, with those in which its employment is either doubtful or contra-indicated.

5. State the effects of a full dose of opium severally on the sweat, urine, bile, and mucous secretions.

Overdose.

1. State the effects produced by an overdose of belladonna, digitalis, colchicum, iodide of potassium, sulphate of quinine.

Oxide.

1. What is nitrous oxide?

2. How is it prepared?

3. Describe its principal uses.

4. How may it be distinguished from oxygen?

5. What precautions should be used in preparing it for inhalation?

Oxidising.

1. What is an oxidising agent?

2. Give three examples, and an illustration of the action of each.

Oxygen.

1. State the compounds of oxygen with bismuth, zinc, iron.

2. How much potassic chlorate is required to generate 1,000 cubic inches of oxygen?

3. Compare the properties of oxygen and ozone.

4. With what substances besides oxygen does hydrogen combine?

5. What body is formed when sulphur is burnt in oxygen?

Ozone.

1. State what is known of the nature of ozone.

2. How is its presence in the atmosphere detected?

3. How may it be obtained, and what are its characters?

4. What evils are supposed to result from its excess or deficiency?

5. How is the ozone modified by altitude or humidity?

Paraffines.

1. What is the general formula of the paraffines?

Pareira.

1. To what source is pareira referred in the British Pharmacopœia?

2. What are its physical characters, physiological effects, therapeutic uses, and pharmacopœial preparations?

3. State their doses.

Pharmaceutical.

1. What pharmaceutical preparations are more especially liable to become damaged by exposure to light and to air?

Pharmacopœial.

1. Mention the more important pharmacopœial preparations of arsenic, bark, colchicum, digitalis, hyoscyamus, Indian hemp, magnesia.

2. State their therapeutic uses, and average doses.

Phosphorus.

1. Where found in animals and plants?
2. Give in symbols the decompositions by which phosphorus is prepared from bone ash.
3. Which variety of phosphorus is poisonous?
4. What quantity sufficient to kill an adult?
5. Name a natural disease which phosphorus poisoning has been supposed to resemble.

Pilula.

1. Give the use, composition, and dose of pilula hydrargyri sub-chloridi composita, pilula colocynthidis composita, pilula galbani composita.
2. What is the difference in the composition of pilula aloes barbadensis, and aloes socotrina?

Podophyllin.

1. Give the nature, source, and therapeutic action of the substance called podophyllin.
2. Why is hydrochloric acid used in preparing podophyllin?
3. State the dose and mode of administration.

Poisons.

1. Enumerate the principal vegetable poisons.
2. Give the name and natural order of the plant yielding them.
3. State the part of the plant in which the poison occurs.

Potash.

1. What is the formula of the acid tartrate of potash?
2. What is the action of permanganate of potash on organic substances; and what are the therapeutic applications founded on it?

Prescriptions.

1. Write a prescription in full for a child of seven years at the outset of scarlet fever?
2. Write a prescription for an adult in the first stage of acute pneumonia.
3. Write in full a prescription for a draught containing turpentine and opium for a woman affected with tympanitis after delivery.
4. Prescribe an acidulated drink, such as might be given in a case of typhoid fever.
5. Write out in full a prescription for an adult requiring a diuretic mixture.

Pulvis.

1. What is the composition, proportion of the more important ingredient in, and dose of: Pulvis Cretæ Aromaticus Opii, Pulvis Ipecac. Co., Pulvis Ipecac. c Scilla, Pulvis Rhei Co., Pulvis Kino Co., Pulvis Jalapæ Co., Pulvis Glycyrrhizæ Co.?

Purgatives.

1. State the names, natural orders, doses, and native countries of the principal pharmacopœial purgatives.
2. How are purgatives classified?
3. Give a good example of each class, mentioning its dose.

Quinine.

1. How procured, adulterations, how detected, when used, the best substitutes for it.
2. Mention the physiological effects of a drachm dose of quinine, and to what natural order does the plant which yields quinine belong?
3. Of what country is it a native, where is it cultivated, how is it prepared, doses in tropical medicine as a remedy for intermittent, and as a prophylactic against it?
4. How may a salt of quinine in solution be distinguished from all similar salts?
5. Have any bad effects been recorded as following the subcutaneous injection of quinine?

Refrigerant.

1. State what you mean by a refrigerant.

Rhubarb.

1. Whence is rhubarb obtained?
2. Describe the preparations in the British Pharmacopœia, and their uses.
3. Contrast Russian with English rhubarb.

Roborants.

1. State in what respects the organic roborants agree with the inorganic; and what are the points of difference between them.

Rosaceæ.

1. What are the characters of the natural order rosaceæ?
2. How distinguishable by a floral character?

Rubefacients.

1. Define rubefacients.
2. Enumerate the principal
3. Explain their action and purposes.

Salicine.

1. To what class of bodies does salicine belong?

Salt.

1. Enumerate the chief sources, and the principal chemical and physical properties of common salt.

2. What are its most important uses in chemistry and the arts?

3. What substances are manufactured from common salt?

4. Describe the different kinds of metallic salts; and give the class to which each of the following salts belong: potassæ carbonas, potassæ bicarbonas, potassæ chloras.

5. Describe the therapeutical action of the following salts: cupri sulphas, potassii iodidum.

Sal Ammoniac.

1. What is sal ammoniac, and how is it prepared?

Santoninum.

1. What is the therapeutic action of santoninum?

2. Prescribe it in the form of an enema for a child three years old.

3. What are its physical properties and doses?

Scammony.

1. How is scammony distinguished from aloes?

2. State the composition of scammony, and its active ingredient.

3. State the usual adulteration of scammony, and how to detect it.

4. How much scammony is in sixty grains of confectio scammonii?

Silica.

1. Give a short description of the varieties of silica.

2. Give a system of classification of the silicates, with examples.

Silver.

1. What are the constituents of ordinary German silver, and how is its analysis effected?

2. Describe the method for the extraction of silver from reduced lead.

Soda.

1. How is the volumetric solution of soda prepared, and what is it used for?

2. Explain in symbols the pharmacopœial process for preparing valerianate of soda.

Soap.

1. Describe the manufacture of soap, and explain the chemical changes involved.

2. Give the composition of the three kinds of soap in the Pharmacopœia, and state their uses.

Soap—*continued.*

3. Explain, in a general way, how the thickness of a soap film can be determined from its colour.

4. To what class of bodies do soaps belong?

Solaneæ.

1. Give the botanical characters of the natural order of solaneæ.

2. Enumerate the medicinal plants contained in the solaneæ, and the drugs yielded by the order.

3. What are their several physiological and therapeutical properties?

Specific Gravity.

1. Define specific gravity.

2. Give the specific gravity of water, nitric acid, alcohol.

3. How is it ascertained in solids, liquids, and gases?

4. Enumerate the six metals having the highest specific gravity.

Squill.

1. What is the officinal name and natural order of squill?

Stalactites.

1. Explain the formation of stalactites.

Starch.

1. State the chemical properties and physical characters of starch.

2. What form of starch is most commonly met with in vegetable tissues?

3. How can starch be converted into dextrine and grape sugar?

4. Describe the changes which starch undergoes in the process of bread-making and of brewing.

Stearine.

1. Give the characters and properties of stearine.

Steel.

1. Where, and how, was cast-steel first made?

Strychnia.

1. What is strychnia?

2. Give the symptoms indicative of its action on the system.

3. Under what circumstances used in medicine?

4. What officinal preparations contain strychnia, and what are their doses?

5. What are the tests of strychnia, and how should they be applied?

Succi.

1. Give the general methods of preparation of the succi.

2. Mention the officinal succi.

Sublimation.

1. What is meant by sublimation?

Sublimation—*continued.*

2. Mention as many substances as you can which are readily subject to it.

Sugar.

1. What plants yield sugar, and where are they cultivated?

2. Define the term sugar.

3. State what you know of the different kinds of sugar.

4. How is sugar prepared?

5. Give the composition of cane, grape, and diabetic sugar.

Sulphur.

1. Under what conditions does sulphur occur in nature?

2. Describe fully the action of heat upon sulphur.

Syrupus.

1. State the effects, uses, and doses of syrupus ferri iodidi, syrupus ferri phosphatis.

Tannin.

1. What is the constitution of tannin, and how has it been established?

Temperature.

1. Explain what is meant by temperature.

Terebinthaceæ.

1. Enumerate the genera contained in the natural order of terebinthaceæ; which yield medicinal plants.

2. Give the exact composition of confectio terebinthinæ, and mention the quantity of oil of turpentine in each fluid ounce.

Thermometer.

1. Explain the principle and construction of the thermometer.

2. Describe the different kinds of thermometer used, stating the countries which adopt each.

3. What information do you obtain by the observation of the wet and dry bulb thermometer?

4. How can observations made with any one of them be converted into the other scales?

5. What aid does the thermometer afford us in diagnosis?

Tincture.

1. How may tincture of guaiac be distinguished from all other tinctures by a single chemical test?

2. Name at least three tinctures which become turbid when mixed with water.

3. What menstrua are employed in the preparation of the tinctures of the British Pharmacopœia?

4. Give the composition, doses, and

Tincture—*continued.*

uses of the following tinctures: Tinctura cubebæ, tinctura benzoini co.

5. What is the composition of tinctura cinch. co.?

Tobacco.

1. What effect has tobacco been observed to produce on the heart's action?

2. What are the injurious effects which are said to arise from the prolonged abuse of tobacco?

Turpentine.

1. How is oil of turpentine obtained?

2. Describe its chief uses in medicine.

3. What are the physical properties of turpentine?

Unguentum.

1. Give the use and composition of unguentum gallæ cum opio.

Uric Acid.

1. Explain the formation of alloxan from uric acid.

2. How is pure uric acid prepared?

3. Give the treatment, medicinal and dietetic, of uric acid gravel.

Urinary Concretions.

1. Enumerate the constituents of urinary concretions.

2. Give general hygienic directions for the use of patients suffering from urinary concretions.

Valerian.

1. What are the principal uses, chief preparations, and average doses of valerian?

Veratria.

1. Give an account of the preparation of veratria, explaining the various steps of the process; mention its characters and uses as a remedy.

Vinum.

1. For what purposes, in what doses, would you employ vinum antimoniale?

2. How many grains of antimonium tartaratum are in one fluid ounce of vinum antimoniale.

Voltameter.

1. Describe Faraday's voltameter, and explain its use.

Water.

1. How do you make distilled water?

2. How would you detect chlorides, sulphates, NH_3, Pb. and As. in a sample of water?

3. What is meant by weighing a body in water?

4. What steps would you take in making a preliminary examination of drinking water, for sanitary purposes?

Wax.

1. What is the composition of wax?

White Powders.

1. Make a list which shall contain the names of all the white powders mentioned in the British Pharmacopœia.

2. How would you at once determine which it was?

Yeast.

1. What is yeast?

2. Give its uses in making bread.

Yeast—*continued.*

3. How is a yeast poultice prepared?

4. State its action upon sugar.

Zinc.

1. What are the principal ores of zinc?

2. How can pure zinc be prepared?

3. What is the composition of zinc blende?

4. What impurities are usually found in zinc as it occurs in commerce?

V.

MEDICAL JURISPRUDENCE.

Abortion.

1. Enumerate the means commonly employed to induce abortion criminally, and the mode by which their desired effect is usually caused.

2. At what period of pregnancy are attempts to procure abortion most commonly made, and why?

3. What appearance would you expect to find in a living woman who had recently been the subject of a criminal abortion?

Acid—Arsenious.

1. Describe briefly the minimum dose of arsenious acid which would give rise to fatal poisoning, and its mode or modes of action.

2. What are the acute symptoms it would produce during life, the best methods proposed for counteracting its injurious effects, the morbid appearances it would leave on the dead body, the chemical tests for the poison in its pure state, and in combination with animal matters in or out of the body?

Acid—Carbolic.

1. Describe the symptoms and morbid appearances in poisoning by carbolic acid.

2. Mention the treatment which you would adopt in such a case.

3. In what form and under what circumstances has it generally been taken as a poison?

Acid—Oxalic.

1. Contrast the symptoms during life of acute poisoning by oxalic acid and bichloride of mercury.

Acid—Oxalic—*continued.*

2. Describe the distinctive characters of oxalic acid, and the means of detecting it in the stomach and tissues.

3. What is the treatment of poisoning by oxalic acid?

Acid—Sulphuric.

1. Give the symptoms of poisoning with sulphuric acid, post-mortem appearances, treatment, and tests for it on clothes.

2. What evidence is there for the assertion that sulphuric acid is dibasic?

Aconite.

1. State the symptoms of poisoning by aconite in nervous system, in vascular system, in digestive system.

2. How would you treat such a case?

Almonds.

1. Describe the symptoms and treatment of poisoning by the essential oil of bitter almonds.

Arsenic.

1. What are the symptoms which might lead to a suspicion that a person was undergoing slow or chronic poisoning with arsenic?—and give the treatment.

2. What investigations would you undertake in order to enable you to make a correct diagnosis?

3. Give the tests for finding the presence of arsenic in an organic liquid.

4. What precautions would you undertake to prevent the further administration of the poison?

5. Give a simple test for the detection of arsenic in the wall paper pigment called emerald green.

Atelectasis.

1. Describe the condition known as atelectasis of the lung, and state its causes.

Asphyxia.

1. Enumerate the morbid appearances on the dead body common to all forms of asphyxia, and in addition those which are characteristic respectively of death by drowning, hanging, smothering, and carbonic oxide fumes.

2. Describe the course of the circulation of the blood.

Belladonna.

1. State the symptoms of poisoning by belladonna, and the treatment.

2. How would you proceed to ascertain the presence of the active principle of belladonna in the urine?

Blood.

1. Death from effusion of blood on the brain. A person is found on dissection to have died from this cause. What circumstances would lead to the opinion that the effusion was due to natural disease and not to violence: (1) from the age of the deceased; (2) the condition of the scalp; (3) the part of the encephalon where the blood was effused; (4) the state of the bloodvessels within the head?

2. What stains may be mistaken for those of blood?

3. How would you determine their nature by optical and chemical assistance?

4. Whether that of a human being or some other animal?

Body.

1. Determination of the period of death from cooling of the body. State the circumstances which retard cooling: external to the body; belonging to the body itself.

Burn.

1. How would you distinguish a burn occasioned after death from one inflicted on the human body during life?

Child.

1. A recently married woman is accused of having already had a child. What is the evidence by which you would determine this question?

2. In cases of suspected infanticide, how far are the condition of the bladder and rectum to be relied on as evidence of the child having lived after birth?

3. Why does the fact of the child being proved to have breathed not necessarily show that it was born alive?

4. What are the changes which take

Child—*continued.*

place in the vascular system of a child which survives birth for some weeks?

Contusion.

1. How would you distinguish a contusion occasioned after death from a contusion inflicted on the human body during life?

Copper.

1. Give the treatment for poisoning by salts of copper.

2. How would you examine the contents of a stomach supposed to contain copper?

3. Reinsch's test applied to the contents of the stomach gives a precipitate upon the copper, which may be either mercury, arsenic, or antimony. State what tests you would use to make a differential diagnosis of it.

4. Enumerate and briefly describe the more common poisonous salts of copper.

5. What are the symptoms of acute poisoning with salts of copper?

Corrosive Sublimate.

1. By what chemical tests would you recognise corrosive sublimate?

2. Describe the symptoms, treatment, and post-mortem appearances in a case of poisoning by corrosive sublimate.

Drowning.

1. Describe the treatment to be pursued in a case of suspended animation from drowning.

2. What are the pathological conditions usually met with in a fatal case?

3. State the immediate cause of death by drowning.

4. What information in cases of drowning is got from post-mortem examination of the stomach?

Fœtus.

1. Enumerate such causes of the death of the fœtus in utero, after reaching the viable period, as do not imply criminal culpability.

Foramen Ovale.

1. At what period after birth is the foramen ovale fully closed?

Gunshot.

1. In a gunshot wound, whether is the wound of exit or the wound of entrance smaller?

2. What are the characteristics of a self-inflicted gunshot-wound?

Hanging.

1. In cases of hanging, how may death take place?

Hanging—*continued.*

2. What may be the post-mortem appearances?

3. Whether suicidal or homicidal?

4. Whether the body has been suspended during life or after death?

Hydrocyanic Acid.

1. How would you treat a case of poisoning by hydrocyanic acid?

2. What method is best adapted to the discovery of hydrocyanic acid in the body after poisoning by its means?

3. Describe the symptoms and morbid appearances of poisoning by hydrocyanic acid.

4. Within what period do the symptoms usually begin?

5. What is the duration of the fatal illness?

Hydrostatic Test.

1. Describe the mode of employing the hydrostatic test.

2. What does it prove?

3. Objections against modified hydrostatic test.

Injury.

1. What are the duties of the magistrate and the medical man respectively, in reference to a person who has received a mortal injury?

Insanity.

1. Give the different forms of insanity, and also give the essentials of a lunacy certificate.

2. When called on to report as to a person being a fit patient or otherwise for a lunatic asylum, what points would you fix on to distinguish betwixt eccentricity and insanity?

Lead.

1. State in what form lead exists in water.

2. By what means its presence may be detected in the tissues.

3. Describe the symptoms and treatment of poisoning by white lead.

4. What symptoms would a dose of two ounces of acetate of lead be likely to produce?

Life-Assurance.

1. A policy is wanted on the life of a man, aged 26, whose father died of phthisis, but who is reported to be in good health, and to present no sign of pulmonary disease: what special inquiries ought to be made in order to judge of the probability of his having or not having inherited a tendency to consumption?

2. What is meant by a life-curve?

Life-Assurance—*continued.*

3. What are the principal points to be regarded in examining for the purpose of life-insurance?

4. What is meant by a life-table?

5. Mention some of those that are best known.

6. What is meant by (1) expectation of life; (2) probable life?

Live Birth.

1. What is the signification of the expression "born alive"?

2. How would you establish, post-mortem, the fact of live birth?

3. A dead infant is brought to you, and you are requested to state whether it was born dead or alive: how would you proceed to find out?

Mania.

1. Mention some of the medical characteristics of homicidal mania.

Mercury.

1. How do you ascertain the presence of mercury in the contents of the stomach?

Mushrooms.

1. What are the chief symptoms of poisoning by mushrooms?

2. By what characters may edible mushrooms be distinguished?

Opium.

1. State the symptoms of poisoning by opium.

2. What chemical means have you of distinguishing the presence of opium in the contents of the alimentary canal?

3. Detail the post-mortem appearances in a fatal case.

4. What other poison produces symptoms similar to opium?

5. What may it be mistaken for?

Phosphorus.

1. Describe the constitutional symptoms produced by phosphorus.

2. How would you examine the contents of a stomach supposed to contain phosphorus?

3. Give the treatment of poisoning by phosphorus.

4. What are the leading physical properties of the form of phosphorus which is poisonous?

5. What special difficulty does it present in reference to determining the probable time of its administration?

Poison.

1. In what cases is the action of one poison known to be remediable by the action of another?

2. What are the circumstances by

Poison—*continued.*

which the influence of a poison received into the system may be modified?

3. Define, or describe, what you term a poison.

4. Can you give any instance of a recurrent action of a poison?

Pregnancy.

1. Give the reliable or certain signs of an existing pregnancy between the sixth and seventh months, indicating the relative importance and applicability of each, and the readiest methods for availing ourselves of them.

Rape.

1. What constitutes the crime when perpetrated (1) on an adult; (2) on a child; (3) lesions to be looked for in each case?

2. What diseases may produce symptoms resembling the physical signs of rape?

3. Under what circumstances, irrespective of physical force, may rape be perpetrated?

4. What is the value of laceration of the hymen as part of the proof of rape?

5. How are seminal stains recognised?

Savine.

1. By what characters would you recognise savine in the stomach?

Shell-Fish.

1. Describe the symptoms produced by the ingestion of poisonous shell-fish.

Spectral Illusions.

1. What persons are most subject to spectral illusions?

2. In what states of system do they occur?

3. By what causes are they produced?

4. In what conditions of the organ of vision?

Starvation.

1. How is death produced by starvation?

2. Describe the post-mortem appearances to be expected in (1) the body generally; (2) the intestinal canal.

3. How would you know a child was suffering from starvation?

Sterility.

1. Mention the causes of sterility in the female which are incurable.

Still Birth.

1. Mention some of the natural causes of still birth.

Strychnia.

1. How would you proceed to test for strychnia in the contents of a stomach?

Strychnia—*continued.*

2. Compare the symptoms of poisoning by strychnia with those of tetanus.

3. What are the symptoms and morbid appearances of an overdose of strychnia?

Submersion.

1. What period of submersion under water makes recovery very improbable?

2. Describe the course of the circulation of the blood, mentioning what changes take place in the blood in the lungs in health, and what occurs when the entrance of air into the lungs is prevented by submersion, or any other mechanical cause.

Tartar Emetic.

1. Mention some of the tests of the presence of tartar emetic in solution.

2. Describe the evidence of fatal chronic poisoning by tartar emetic.

3. How would you ascertain if tartar emetic contained a small quantity of arsenic?

4. With what morbid conditions, capable of occurrence in a state of seeming good health, might the effects of tartar emetic, in an excessive dose, be confounded?

Uterus.

1. Give the anatomical differences between the nulliparous and multiparous uterus.

Vitriol.

1. State the symptoms likely to follow the taking of vitriol in a concentrated form.

Wound.

1. The recent dead body of an adult has an incised wound, deep and extensive, but not quite horizontal, running across the throat. Excluding from your consideration all evidence except what you can deduce from your anatomical inspection, by what will you be guided in determining (1) that such wound had caused the death; (2) whether it was inflicted by the deceased or by another?

2. In an affray with poachers a gamekeeper received a gunshot wound; he asserted that the poacher fired at him from a distance of five yards; the poacher asserted that the gun went off when the keeper was trying to wrench it from him; what would be the difference in the character of the wound, if the latter, and not the former, statement were true?

Zinc.

1. State the symptoms and appearances following the taking of a large dose of chloride of zinc.

VI.

MEDICINE AND PATHOLOGY.

Abdomen.

1. A robust man, 45 years of age, is suddenly seized with violent pain in the abdomen, attended with sickness, shivering, vomiting, and tendency to collapse: what may be the various causes of the attack, and how would you treat such cases? how would you distinguish each form of affection?

Abdominal Parietes.

1. Mention the causes which give rise to abscess in the abdominal parietes, the diagnosis, and treatment.

Air.

1. Give the causes leading to dilatation and collapse of the air cells, with the physical signs.

2. Describe the pathological changes to which the air tubes are liable.

Alcoholism.

1. What symptoms would lead you to suspect that a patient was suffering from acute and chronic alcoholism, and what are the indications of treatment?

Amyloid-Degeneration.

1. Describe the characters generally, and the more minute alterations of tissue in the liver, kidney, spleen, and intestines, when amyloid-degeneration is present in these parts.

2. Give the methods for determining the site and existence of this degeneration, with chemical nature of the morbid change.

3. Give the composition of the test solution used to determine the presence of amyloid degeneration.

4. Give the characters of amyloid degeneration of arteries, and the conditions under which the change is commonly observed.

Amyloid Liver.

1. Give the chief points of diagnosis between cancer of the liver and amyloid liver.

2. Compare and contrast fatty and amyloid liver, as examined with the naked eye, and under the microscope.

Anæmia.

1. What do you mean by the term "anæmia"?

Anæmia—*continued.*

2. Describe the state of the blood.

3. Give the condition of the various organs, and treatment.

Anasarca.

1. What are the chief causes of anasarca?

Aneurism.

1. Describe the symptoms accompanying aneurism at the base of the brain, aneurism of the ascending aorta, aneurism of the abdominal aorta, aneurism of the arch of the aorta, and the plan of treatment to be adopted in each case.

2. Give the signs, negative and positive, of aneurism of the thoracic aorta; the diagnostic value, and rationale of each.

3. Give the causes which appear to produce aneurism of the vessels among soldiers.

4. Describe the lesions of structure which affect the arteries, exclusive of aneurism.

5. Give an account of the lesions in the aorta which seem to precede and to favour the development of thoracic aneurism.

Angina Pectoris.

1. Describe the diagnostic symptoms, nature, and treatment of angina pectoris.

Aortic.

1. Give the physical signs of aortic obstruction.

2. In what would they differ from those characteristic of mitral obstruction?

3. State what assistance to diagnosis, if any, is given by the sphygmograph.

4. At what period in a case of patent permanency of the aortic valves are the characteristic phenomena, except the regurgitant murmur, absent?

5. Describe the secondary effects on the heart, and on other organs, of incompetency of the aortic valve.

Aphonia.

1. Mention the diagnostic value which may attach to the symptoms of aphonia.

Apoplexy.

1. What are the measures to be adopted when an individual is seized with cerebral apoplexy?

Apoplexy—*continued.*

2. What are the anatomical characters of circumscribed pulmonary apoplexy?

3. State the sites of the local lesions in cerebral apoplexy.

4. Give the physical signs, and state the causes of pulmonary apoplexy.

5. Give the different forms of apoplexy, with their treatment.

Ascites.

1. What are the chief causes, symptoms, and treatment of ascites?

2. Mention the structures which must be divided in the operation for ascites, and the precautions to be observed.

3. What would be your treatment for the ascites that might occur after cardiac disease?

4. What diseases may be confounded with ascites?

5. How would hydragogue cathartics act to benefit the ascites?

Asthma.

1. Give the treatment of spasmodic asthma: during the paroxysm; during the intervals.

Atheroma.

1. Describe the lesion known as atheroma; the sites of its occurrence, how it is brought about, and what this lesion tends to, or may result in.

Average Height.

1. State the average height of growing lads at the age of 18, and of men at the age of 25.

Beriberi.

1. Give the symptoms and causes of beriberi.

Bile.

1. Mention the tests for distinguishing suppression or non-elimination from obstruction of secreted but retained bile.

Bleeding.

1. What are the different causes of bleeding from the lungs?

2. Describe the symptoms and treatment of each kind.

3. What indications for bleeding are to be drawn from the state of the blood?

Blood.

1. In what diseased states of the system are the following changes effected in the blood: (1) fibrin increased or diminished; (2) red corpuscles increased or diminished; (3) albumen diminished in quantity?

2. What are the chief morbid conditions of the blood?

Blood—*continued.*

3. Describe the pathology as far as is known of the more important ones.

4. Give the symptoms that denote the entrance of purulent matter into the blood.

Bones.

1. Name the bones of the human body which are incomplete at 18 years of age, and state in what respect they are incomplete from the ages of 17 to 25.

Brain.

1. Enumerate the chief morbid changes which may occur in the nervous substance of the brain and cord.

2. What symptoms do they produce?

3. Give the morbid anatomy of the several kinds of softening of the brain, their symptoms, and treatment.

4. What are the symptoms and morbid appearances in inflammation of the brain substance.

5. Describe the morbid anatomy and clinical history of tubercular disease of the brain.

Bright's Disease.

1. Give as complete a definition as you can of Bright's disease.

2. Describe a case of Bright's disease in an adult man, the causes, mode of accession, and symptoms.

3. How could you distinguish lardaceous kidney from other forms of Bright's disease?

4. Describe the morbid conditions of the kidney in cases of Bright's disease.

5. Give the treatment of convulsions secondary to Bright's disease.

Bronchitis.

1. Give the signs on auscultation and percussion in bronchitis, the causes, and course.

2. How would you distinguish pneumonia from pleurisy, and from bronchitis?

3. Write a prescription in full for a case of bronchitis.

4. Describe the symptoms, pathology, and treatment of capillary bronchitis.

Cachexia.

1. What are the general and special features of the carcinomatous cachexia?

2. Describe the condition generally known as malarial cachexia; its causes lesions, symptoms, and treatment.

Cæcum.

1. Detail the symptoms and physical signs which may attend a tumour of the cæcum, the diseases it may be confounded with, and their differential diagnostic characters.

Cancer.

1. In what organs of the abdomen does cancer most usually occur?

2. Give a description of cancer of the liver, as seen by the naked eye, and under a microscope.

3. Give the symptoms during life, duration, progress of cancer of the liver, and diagnostic points between cancer, hepatic abscess, syphilitic liver, and hydatid cyst.

4. Describe the physical signs and symptoms of intra thoracic cancer of the lung.

5. Give the naked eye characters, and describe the minute structure of colloid cancer.

Cerebrum.

1. When, on removal of the calvarium and the dura mater, the convolutions of the cerebrum are seen to be flattened, what are the morbid conditions within the cranium which may give rise to this morbid condition.

Chlorosis.

1. What do you mean by the term "chlorosis"?

2. Describe the state of the blood.

3. State the condition of the various organs.

4. Give the treatment.

Cholera.

1. From what date may cholera be said to have ingrafted itself on the endemics of the soil of India?

2. What are the conditions which appear to act most powerfully as predisposing causes of cholera?

3. What is the probable source of danger from encamping on ground lately occupied by a body of men among whom cholera has prevailed?

4. What influence do high and low situations respectively exert on the proportional mortality of those attacked, and on the proportionate number of those seized.

5. Explain in what way excessively long marches appear to increase the virulence of the epidemic of cholera in soldiers.

Chorea.

1. What are the causes, different forms, and symptoms of chorea?

2. State the general treatment of a case of chorea, with the principal drugs which have been found useful, and give your opinion of their respective merits.

Circulatory.

1. What are the chief diseases of the circulatory system observed by you among soldiers; to what causes do you attribute them, and how far do you deem such causes remediable?

Cirrhosis.

1. Give a definition of cirrhosis of the liver; causes, consequences, and final results.

2. State how you would diagnose a case of cirrhosis of the liver.

3. What are the symptoms of cirrhosis, and the appearance of the liver externally?

4. Describe the alterations in structure, form, relative position, with an account of the management of a case in the early, and in the later stages of the disease.

5. Describe the mechanism of the hæmorrhage that occurs in cirrhosis.

Colon.

1. Where is stricture of the colon most likely to occur?

2. What are the symptoms and course?

3. How would you treat it?

Coma.

1. What are the chief causes, symptoms, and diseases giving rise to coma?

2. Describe the principal lesions you would expect to find after death.

Contagion.

1. What is usually meant by the term "contagion"?

Contagious.

1. Enumerate the diseases which are said to be contagious, and mention the chief reasons which are supposed to justify the application of the term "contagious" to them.

2. What are the regulations in force for preventing the spread of contagious disease by public conveyances?

3. State your reasons for either approving or disapproving of the Contagious Diseases Acts.

Convulsions.

1. You are called to a person in convulsions; how do you proceed to discover their cause?

2. What is your treatment?

3. Enumerate the chief causes of convulsions in adults and children.

4. How would you treat a case of convulsions depending on teething, and occurring in a child ten months old, and what would be your prognosis?

Convulsive.

1. Give the symptoms of a convulsive

Convulsive—*continued.*

attack in an adult proceeding from kidney disease.

2. State particularly how the diagnosis is to be made.

3. What treatment you would adopt.

Cow-Pox.

1. Give an account of the phenomena of cow-pox on the human subject.

Croup.

1. State the pathological anatomy, symptoms, and treatment of croup.

2. What do you understand by the term "croup"?

3. Describe the complaints included in it, and their treatment.

4. Write a prescription in full for a child three years old.

5. Can we do any good by tracheotomy in croup?

Cyanosis.

1. Describe the anatomical causes of cyanosis.

2. Explain the relation of cyanosis to morbid states of the circulation.

Cynanche.

1. Give a short description of cynanche tonsillaris.

Cysts.

1. Describe the different modes in which cysts become developed.

2. Give a brief account of the different kinds of cysts, illustrated by examples.

3. Describe the characters of hydatid cysts, which distinguish them from other forms of cyst found in the human body.

Death.

1. When a person is at once and completely deprived of food, describe the mode of death, and state the circumstances which, in such a case, influence the duration of life.

2. Name the six important items in the registration of deaths.

Degeneration.

1. Enumerate the forms of degeneration which occur in tissues or organs, and state how they may be recognised in the organs after death.

2. Describe the anatomical characters of fatty degeneration of the heart, its etiology, symptoms, secondary lesions, and treatment.

3. Mention the characters, as seen by the naked eye and under the microscope, of the liver affected with waxy degeneration.

4. Describe what is meant by degeneration of tissue in pathology.

Degeneration—*continued.*

5. Describe the waxy degeneration of the spleen known as sago spleen.

Delirium.

1. Enumerate the principal causes of delirium; and how would you distinguish them?

2. Describe fully the symptoms, etiology, diagnosis, prognosis, different ways in which it proves fatal, and give the treatment of a case of delirium tremens, with an opinion on the use of opium, chloral, and stimulants in the treatment.

3. Describe the symptoms and proper treatment of delirium following injuries.

4. How are the symptoms to be distinguished from those of inflammation of the brain?

Diabetes Mellitus.

1. Sketch the symptoms, causes, and treatment of diabetes mellitus by medicines and diet.

2. What are the modern views of the nature of diabetes?

3. Sketch the condition of the urine in diabetes.

4. How is the morbid impregnation supposed to arise?

5. Explain the indications to be observed in the treatment, and the measures best adapted to fulfil them.

Diabetic Urine.

1. Is sugar always present in diabetic urine?

2. State what kind of sugar it is.

3. Give a simple test for it.

4. Why is it that the blood in the general circulation becomes saccharine in this disease?

Dietetic Treatment.

1. What dietetic treatment is most advisable in scorbutus?

2. State the details of the dietetic treatment of diabetes, uric acid gravel.

Differential Diagnostic.

1. Give the differential diagnostic marks of: (1) i. small-pox; ii. cow-pox; iii. chicken-pox; iv. measles; v. scarlet fever; (2) i. gout; ii. rheumatism; iii. osteo-arthritis; (3) i. cerebral disease; ii. meningeal disease; (4) i. cerebral vomiting; ii. gastric vomiting; (5) i. hysteria; ii. epilepsy.

Diarrhœa.

1. Mention the different remedies which may be used to check diarrhœa, and to allay sickness and vomiting, giving the doses and forms in which they should be employed.

Diarrhœa—*continued.*

2. Write a prescription for the administration of such a remedy.

Diphtheria.

1. Describe the anatomical characters, symptoms, course, diagnosis, different forms, prognosis, duration, sequelæ, and give the treatment of diphtheria.

2. Prescribe a gargle containing carbolic acid for a case of diphtheria.

3. What symptoms directly due to derangements of the nervous system accompany and follow diphtheria?

Disabilities.

1. Enumerate the chief disabilities for military service, and the prescribed method for detecting them.

Diseases.

1. State the diseases in which you would employ arsenic, bismuth, digitalis, iron, quinine, zinc.

2. Enumerate the chief diseases which can be communicated from one person to another.

3. What particulars are necessary to prove this?

Distoma.

1. What is a distoma?

2. What are the organs or parts of the human body in which this parasite is found?

3. In what form or stage of development does it exist in these organs or parts?

4. How does it betray its presence during life?

5. In what geographical districts does this parasite prevail?

Dropsy.

1. What are the forms of dropsy of the areolar tissue?

2. Describe the features of cases of cardiac and renal dropsy; state how you would detect them, and the treatment to be adopted for their relief.

3. Explain how serous effusion takes place in cardiac dropsy.

4. What are the causes of dropsy?

5. State how they may be best counteracted.

Dysentery.

1. Give an accurate definition of dysentery, various forms of the disease, circumstances which determine the development of each, symptoms, pathology, and treatment of the sthenic type.

2. How would you diagnose a case of dysentery?

3. Where is it most prevalent?

Dysentery—*continued.*

4. What do we learn by washing the evacuations in dysentery?

5. Mention two good remedies for chronic dysentery, their doses and frequency.

Dysentery with Scorbutus.

1. Describe the course, characteristic appearances seen in dysentery with scorbutus, and the treatment.

2. Notice any complication of other organs usually associated with it.

Dysphagia.

1. Enumerate the various causes of dysphagia, and how would you distinguish between them?

Dyspnœa.

1. What causes induce dyspnœa, and how would you examine the patient with a view to determine the cause?

Dysuria.

1. What causes induce dysuria in childhood?

Eczema.

1. Describe a case of eczema.

2. Give the local and constitutional treatment of acute eczema of the face in children.

3. A case of acute eczema presents itself for treatment; there is much moist exudation, with smarting and tingling, and almost erysipelatous redness. It is proposed to give arsenic. Would this meet with your approval, and what would be your line of practice?

Effusions.

1. Explain fully the mode by which serous effusions into the abdominal cavity are produced.

2. Describe the symptoms and treatment.

3. Describe the different kinds of effusion into the pleural sac, their pathological causes, diagnosis and treatment.

4. Explain how secondary effusions into the pericardium may take place.

5. What are the symptoms and physical signs of effusion of fluid in the chest?

Embolism.

1. What is the nature and probable consequences of embolism?

2. What are the symptoms produced by complete embolism of the middle cerebral artery on the right and left side?

3. What do you understand by embolism?

4. Give an account of the different kinds of embolism, and the ultimate results.

Embolism—*continued.*

5. Mention the chief vessels which may be affected.

Empyema.

1. Give a complete account of empyema, causes which may lead to it, symptoms by which the presence of pus may be detected or inferred to be present in the cavity of the pleura, progress, modes of termination, diagnostic physical signs, and treatment.

Endemic.

1. Name the endemic diseases of India, giving their classes and orders according to the official system of classification.

Enlarged Spleen.

1. Give the causes, symptoms, diagnosis, consequences, and state the treatment of enlarged spleen.

2. How may it be recognised during life, and state the condition of blood coincident with enlarged spleen?

Entozoa.

1. What are the distinctive characters of entozoa?

2. What are the entozoa which can live in the alimentary canal of man?

3. Give the symptoms they cause, the prophylaxis and treatment required for their expulsion.

Epilepsy.

1. What appear to be the most common causes of epilepsy in the army?

2. How do you distinguish between true and feigned attacks?

3. What do you understand by the terms: status epilepticus, haut mal, petit mal.

4. What are the steps you would take before sending a soldier before an invaliding board?

5. Describe the leading principles of treatment in each form.

Eruptions.

1. Describe the fully developed eruptions seen in measles, small-pox, scarlet fever.

2. Indicate the chief distinctions as regards signs, sequelæ, and symptoms between the eruptions in measles, small-pox, scarlet fever.

3. What is the supposed difference in duration between the latent periods of eruptions?

4. State the periods of the disease when the eruptions appear and disappear, and mention what inferences as to the severity and prognosis of the case can be drawn from them.

Erysipelas.

1. Mention the symptoms which usher in an attack of erysipelas of the head and face.

2. What treatment would you adopt if head symptoms had supervened?

3. What post-mortem appearances might you expect to find within the cranium?

4. Give your treatment of erysipelas.

Erythema.

1. Give the diagnosis and treatment o the various forms of erythema.

Exanthemata.

1. Enumerate the exanthemata, and give the distinguishing character of each disease.

Expectoration.

1. Enumerate the principal varieties in the expectoration in pulmonary diseases.

Fatty.

1. Describe the appearance on section of the liver in fatty degeneration, and the microscopic changes that take place.

2. Describe the fatty degeneration of muscular fibre, its appearance, anatomical characters, including the results of observation with the microscope.

3. Mention any circumstances believed to predispose to that morbid condition.

4. Describe the differences between fatty degeneration and fatty infiltration of an organ, and the effects of each lesion upon the minute elements of its tissue and functions.

5. Give the differential diagnosis of fatty degeneration of the right and left ventricle.

Febrile.

1. By what means may the febrile condition of the body be most accurately recognised and measured?

2. Give a concise account of the value attached to thermometric observations in cases of acute disease.

Fever.

1. Sketch the more important secondary diseases that occur in the progress of continued fever.

2. Explain the terms "crisis" and "lysis" in reference to fever.

3. What do you mean by the term "fever" used in its abstract sense to indicate a state accompanying many diseases?

4. Name and define each of the several forms of fever comprehended under the designation of common continued fever.

5. What are the types of fever usually seen in unsanitary camps and garrisons?

Fevers.

1. Contrast the symptoms of intermittent, relapsing, enteric, remittent, and yellow fevers as regards: (1) causation; (2) symptomatology; (3) temperature; (4) duration; (5) anatomical lesion.

2. Give an account of the malarious fevers, including the presumed causes, the symptoms, and the treatment.

Fibrinous Deposits.

1. What are the conditions under which fibrinous deposits are found post-mortem?

2. What are the situations where such fibrinous deposits are most commonly found?

3. What may be the result of the formation of such fibrinous deposits during life?

Fungi.

1. What are the elements and forms of texture which compose a fungus?

2. Name the elementary structures of microscopic fungi.

3. What are the skin diseases associated with fungi?

4. Give an account of the forms of the fungi peculiar to each.

5. Name the diseases in which fungi are known to take a prominent place in the lesion.

Gallstones.

1. What are the symptoms produced or caused by the passage of gallstones?

2. Give their composition.

3. What is to be done?

4. How do they behave in water?

5. How do you get the cholesterine out of them?

Gout.

1. Distinguish between gout and rheumatism.

2. What complications may be expected in each disease?

3. How are we to prevent the return of gout?

4. Give the pathology, symptoms, morbid conditions of internal organs, and treatment of gout.

5. What are the structures affected in gout, and what in rheumatism?

Gouty.

1. Describe the microscopic characters of gouty deposits in the structure of the joints.

2. The kidney may be affected with the gouty-poison. Describe this state of the organ.

Hæmatoma.

1. What do you understand by hæmatoma?

2. In what form, and in what part of the body, has the lesion been shown to you?

3. What is the nature, its usual site, and the circumstances under which it is developed?

Hæmoptysis.

1. Give the various causes of hæmoptysis, including the pathology and sequelæ of the morbid conditions giving rise to it.

2. State the indications for treatment, with the usual remedial agents.

3. What is hæmoptysis?

4. Give the characters which distinguish hæmoptysis from hæmatemesis.

5. In what diseases is it liable to occur?

Hæmorrhage.

1. State the several conditions under which hæmorrhage from the lungs, stomach, or bowels may occur.

2. What are the chief causes and symptoms of intestinal hæmorrhage in fever?

3. Give the treatment and the remedies.

4. How would you treat each particular variety of hæmorrhage?

5. What remedies would you employ?

Hair.

1. Describe the conditions giving rise to loss of hair.

Headache.

1. State the varieties, causes, and treatment of headache.

Heart.

1. What are the chief causes of displacement of the heart?

2. State the average weight and circumference of the heart, at ages from 20 to 30.

3. What are the causes, constitutional and physical, which appear to produce heart-diseases amongst soldiers?

4. Name the so-called valvular orifices of the heart, in the order of their relative sizes and circumferences.

5. What are the chief causes, and what are the effects of the enlargement of the right and left ventricle of the heart?

Hemiplegia.

1. Give the symptoms of hemiplegia caused by acute softening of the brain.

2. What is meant by hemiplegia, paraplegia, and locomotor ataxy?

Hemiplegia—*continued.*

3. Describe the symptoms of each disease, and the morbid conditions upon which they depend.

4. Describe a case of hemiplegia, the different forms, its complications with the general principles of treatment in the different stages.

Hepatic Abscess.

1. What are the symptoms of hepatic abscess, and what treatment would you adopt?

Hepatitis.

1. In a case of supposed acute hepatitis, give the diagnostic value of pain, jaundice, cough, enlargement of the liver.

2. Detail the symptoms, ordinary terminations, anatomical characters, and treatment of hepatitis.

3. Define the lesions sometimes classified under the name of hepatitis.

Herpes.

1. Describe the first appearance and course of herpes preputialis.

2. Describe herpes testa.

3. Give its etiology and treatment.

Hooping-Cough.

1. Give your treatment of hooping-cough.

2. A child is under treatment for hooping-cough, and the mother states that after each dose of his medicine his face flushes, and he complains of his throat being very dry. What drug is most likely to produce these symptoms?

3. Describe the complications that generally arise in the progress of hooping-cough.

Hydro.

1. Describe a case of acute hydrocephalus in a child, and state what treatment you would adopt.

2. Describe the causes, diagnostic symptoms, and treatment of hydro-pericardium.

3. How is hydro-nephrosis produced?

4. Describe a well-marked example of the lesion.

5. Mention the structures which must be divided in the operation for hydrothorax.

Ileus.

1. Give the diagnosis of ileus, and the treatment founded on a diagnosis of the causes.

Insanity.

1. Sketch the different forms of insanity.

Impetigo.

1. Give the diagnostic characters, forms, and treatment of impetigo.

Inflammation.

1. Sketch the anatomical characters, diagnostic symptoms, terminations, and treatment of inflammation of the cæcum.

2. Describe the anatomical characters, causes, and consequences of inflammation of veins.

3. What are the pathological characters and results of (1) parenchymatous; (2) secretary inflammation?

4. How do we judge of the propriety and requisite amount of blood-letting in inflammations?

Insolatio.

1. Give the best account you can of insolatio.

2. Explain the circumstances and conditions under which soldiers are most likely to suffer from insolatio.

3. Does this affection occur only in the direct rays of the sun?

4. What appear to be the most powerful predisposing causes of the disease?

5. Give (1) the premonitory; (2) the actual symptoms of insolatio.

Intellect.

1. Name the several forms of disorders of the intellect, according to the medical regulations.

Intermittent.

1. In what cases of true intermittent is quinine often found to fail?

2. Describe the varieties of ague.

3. Describe the symptoms and course of intermittent fever in its severest form, the anatomical conditions it leaves behind, and the treatment, including prophylaxis.

4. How would you distinguish an intermittent pulse, dependent on functional disorder of the heart's action, from that kind connected with structural disease of the heart?

5. What drug would you recommend when the patient cannot take bark or quinine?

Intestinal Obstruction.

1. What are the causes of intestinal obstruction?

2. Are there no direct means which may be tried to overcome intestinal obstruction?

3. Describe the typical phenomena characteristic of intestinal obstruction.

4. Explain how fæcal vomiting occurs.

5. Mention the chief varieties of in-

Intestinal Obstruction—*continued.*

testinal obstruction, in the order of relative frequency.

Intestinal Perforation.

1. What symptoms denote that intestinal perforation has taken place?

2. What is desirable under such circumstances?

Intus-Susception.

1. At what period of life does intussusception most frequently occur?

2. To what symptoms does this state give rise?

3. What line of treatment holds out the best prospect of success?

4. What are the results of it?

5. By what process has the invaginated portion sloughed away, and how do you know it?

Jaundice.

1. State the pathology of jaundice.

2. What are the symptoms?

3. What is the treatment of jaundice?

4. Mention the diagnosis between jaundice dependent on obstruction, and suppression of bile.

5. Name the diseases in which jaundice is met with, arranging them under the following heads: diseases of the liver, of its ducts, diseases indirectly affecting the biliary secretions, zymotic diseases.

Kidney.

1. What are the principal distinguishing signs of enlargement or tumour of the kidney?

2. What are the chief morbid appearances found in the kidney, or in its pelvis, on post-mortem examination?

3. Give the pathological anatomy of the granular kidney.

4. Mention the symptoms which are usually associated with it.

5. Describe particularly the chemical and microscopic characters of the urine.

Lardaceous.

1. What is lardaceous disease?

2. Describe the character of the lesion, anatomical and chemical.

3. In what textures and organs, and in what parts of these organs is the lesion found?

4. How is the lesion to be recognised after death, with and without the iodine test solution?

5. Give the composition of the iodine test solution, and describe the conditions under which lardaceous disease is brought about.

Laryngitis.

1. Describe the symptoms, causes of acute laryngitis, and the diseases with which it is apt to be confounded.

2. Describe the various forms of chronic laryngitis, and the treatment adapted to each.

Lead.

1. Describe briefly a case of lead palsy-paralysis.

2. What is the particular organ affected in cases where the mischief arises from the handling of lead compounds?

3. What prophylactic means would you recommend the patient to adopt?

4. State the symptoms of lead colic, the diagnosis, and the treatment.

Leucoderma.

1. Give the causes and diagnosis of leucoderma.

2. How may the leucoderma of leprosy be distinguished from the other kinds.

Leukæmia.

1. Define leucocythæmia.

2. Give the causes which appear to induce this condition.

3. Describe the state of the blood.

4. State the diagnosis, symptoms, and condition of the various organs.

5. Give the most rational treatment.

Lichen.

1. Give the varieties of lichen, their anatomical seat, and the treatment.

Liver.

1. Describe accurately the normal limits of the liver, and its position in every direction.

2. Describe the morbid anatomy of a liver reduced by the cicatricial contractions of syphilitic lesions.

3. Describe the etiology, morbid anatomy, symptoms, and results of acute atrophy of the liver.

4. What are its normal dimensions?

5. Explain the most common causes of abnormal position of the gland, and how detected.

Loins.

1. What are the principal causes of severe pain in the loins?—and give the distinguishing symptoms of the conditions you enumerate.

Lung.

1. What are the causes and symptoms of consolidation or deposit in the lungs?

2. Name the forms of destructive diseases of the lungs given in the nomenclature.

Lung—*continued.*

3. What are the diseases which may produce cavities in the lungs?

4. What is the evidence of the connexion of diseases of the lungs, with the inhalation of foreign particles?

5. State the various conditions under which atrophy of the lungs, with thoracic deformity, is met with, and the differential diagnostic symptoms and physical signs.

Lupus.

1. In what does the constitutional cause of lupus consist?

Malaria.

1. By what means may an individual best protect himself against marsh malaria?

2. Can you offer any explanation as to why malaria productive of intermittent fever is not observed in the bog districts of Ireland?

3. What do you understand by the term?

4. Describe the conditions under which it is generated.

5. Give the forms of fever it produces.

Measles.

1. Describe the symptoms of measles, the time of incubation, duration of premonitory fever, and rash.

2. In measles, from what sources do dangers arise?

3. Give the treatment of the disease.

4. The complications and sequelæ of measles differ from those of scarlatina: How?

Melanosis.

1. Give the pathology of melanosis.

2. What are the several sources of spurious melanosis of the lungs?

3. How is it distinguished from true?

Melancholia.

1. Give an account of the pathology of melancholia in the following details: (1) the earliest mental and bodily phenomena which indicate the disorder; (2) the characteristic appearances of the patient and his general symptoms.

2. Name the several well-known forms of the disorder.

3. Describe the course to which the cases of this disorder tend.

Meningitis.

1. Describe a case of tubercular meningitis in a child from the appearance of premonitory symptoms to the termination in death.

2. Discuss the treatment of tubercular meningitis.

Meningitis—*continued.*

3. Describe the characteristic appearances and lesions presented by the brain and its membranes in acute tubercular meningitis.

4. Describe the post-mortem appearances of a case of fatal tubercular meningitis.

5. Contrast the symptoms and pathology of idiopathic with those of tubercular meningitis.

Mesenteric.

1. What are the chief abnormal conditions of the mesenteric glands?

Metastatical.

1. Indicate the probable anatomical sources of metastatical abscesses in the lungs and in the liver.

Miasmata.

1. State the effects of animal and paludal miasmata on the system.

Microscope.

1. Explain the principles of the microscope.

2. How would you determine the magnifying power of the lenses in a microscope, and append the scale used?

3. State the formula from which you ascertain the magnifying power.

Microsymes.

1. Explain the term microsymes.

Mitral.

1. Detail the physical signs, consecutive diseases, and general treatment of mitral stenosis.

2. What is the differential diagnosis of obstructive and regurgitant mitral valve disease?

3. Describe the phenomena in their natural sequence which lead in this disease to a fatal termination.

4. Give the best modes of mitigating their effects as they arise.

5. State the results which proceed from (1) contracted mitral valves; (2) incompetency of the mitral valve; (3) constriction of the mitral orifice, and the signs by which the existence of the affection may be determined.

Mumps.

1. Mention the differences between mumps and parotiditis.

2. Give the effects of mumps upon the salivary secretion.

3. In what respects are mumps and eruptive fevers analogous?

Muscular.

1. What are the causes of muscular atrophy?

Muscular—*continued.*

2. State the nature of muscular tumour occurring in the walls of the abdomen, and mention the chief points of error in diagnosis.

Myocardium.

1. Describe briefly the different morbid conditions which may be met with in the myocardium.

Nephritis.

1. Describe the causes, diagnosis, symptoms of acute desquamative nephritis; and how would you treat the disease?

2. Describe the naked eye appearances and histological changes in acute suppurative nephritis.

3. Describe the symptoms, course, and treatment of chronic nephritis; and give the results of a chemical and microscopical examination of the urine.

Neuralgia.

1. What are the views most commonly entertained respecting the nature of neuralgia?

2. Where is it most frequently situated?

3. How is it to be treated?

4. Give the different remedies for neuralgia, with their doses.

5. State which drugs are most worthy of confidence in cases of neuralgia of the fifth nerve.

Palsy.

1. Sketch the different forms of palsy, their pathological causes, and treatment.

2. Describe the pathological causes of facial palsy, and the symptoms.

Pancreas.

1. What are the symptoms of cancer of the head of the pancreas?

2. What are the principal diseases of the pancreas?

3. How may they be recognised during life?

Paralysis.

1. What is the result of paralysis of the third cerebral nerve?

2. What are the principal lesions of the brain which may give rise to paralysis of motion?

3. What are the symptoms of paralysis of the seventh pair or facial nerves? Mention the causes upon which it may depend, and the treatment you would adopt for its relief.

4. Enumerate the different forms of paralysis of motion dependent on disease of the brain and spinal cord.

Paralysis—*continued.*

5. Describe the causes (1) within the cranium, (2) within the spinal column, (3) external to the cranium, (4) cord; and post-mortem appearances.

Paraplegia.

1. What is meant by paraplegia?

2. Describe the symptoms of paraplegia.

3. Upon what various causes may paraplegia depend?

Parasitic Animals.

1. Enumerate the chief kinds of parasitic animals; which infest man or animals.

2. Give the order to which they belong, their habitats, or the organs they principally affect.

3. Mention the probable source from which each may enter, and mode of propagation.

Parasitic Diseases.

1. Describe the mode of propagation of the following parasitic diseases: dracunculus, hydatid echinococcus, scabies, tape-worm.

2. The hydatid echinococcus cysts, the tape-worm, and the Guinea worm being the most frequent of parasitic diseases amongst soldiers, give an account of the natural history of each, and all the forms of these parasites; stating the sources of each, showing how they obtain access to the human body, as well as to the body of animals, and how they reach the sites in which they are severally found.

Pericarditis.

1. Give the signs on auscultation and percussion in pericarditis; dry, and with great effusion.

2. At what period of the attack will the friction sound be first heard, and over what region?

3. What are the most frequent causes of acute pericarditis, symptoms, and treatment?

4. Name the general diseases in which pericarditis is apt to occur, in the order of frequency of occurrence.

5. Describe the characters of the new material which is enclosed in the sac in the various forms of pericarditis.

Peritonitis.

1. What are the chief causes and symptoms of peritonitis?

2. Describe the symptoms of a case of tubercular peritonitis.

3. With what diseases may it be confounded?

Peritonitis—*continued.*

4. What are the chief indications of peritonitis, after operations for strangulated hernia?

5. To what is the peritonitis due which causes death?

Phthisis.

1. Give its place in the official classification of diseases.

2. Give an account of the nature of fibroid phthisis.

3. Why is phthisis an apex disease?

4. What are the causes which appear to operate in its production and propagation in the army?

5. Mention the most judicious means of counteracting them.

Pleurisy.

1. Describe a case of pleurisy, the symptoms at each stage, diagnosis, prognosis, course of the disease, the effects of pleurisy, signs on auscultation and percussion of pleurisy, with great and long continued effusion on the left side, anatomical characters, outline of the treatment by medicines.

2. Explain the pathological changes in the contraction of the chest after pleurisy.

3. Under what circumstances is it advisable to evacuate the fluid by tapping?

4. On what symptoms and physical signs would you rely for the diagnosis of diaphragmatic pleurisy?

Pneumonia.

1. Give the general symptoms of pneumonia in the adult.

2. In what kind of pneumonia would you bleed, in what give stimulants, and in what expect a favourable termination under simple treatment?

3. What are the physical signs in pneumonia at the base of the left lung?

4. Describe the appearances presented by the lung after death in the different stages of pneumonia, and the appropriate treatment.

5. How is the sound of the voice altered when heard through the stethoscope, placed over the region of the consolidated patch in pneumonia?

Pneumothorax.

1. In a case of pneumothorax there is fluid in the cavity of the pleura: what proof is there that this fluid is not the contents of a vomica that has discharged its contents into this cavity, and how is it to be accounted for?

Pneumothorax—*continued.*

2. Explain how pneumothorax may arise.

3. Give its physical signs and treatment.

4. What are the symptoms and results of pneumothorax?

Post-Mortem.

1. Describe the post-mortem appearances you would expect to find in examining the bodies of patients who died of dysentery, pneumonia, phthisis.

2. Describe the best method of performing a post-mortem examination.

3. Describe the mode of removing the contents of the thoracic cavity.

4. State how you would detach the several organs and viscera in the skull and abdomen.

5. Mention how the larynx, trachea, and thoracic aorta are to be opened.

Progressive.

1. Give a description of the symptoms, progress, duration; with a careful diagnosis between progressive locomotor ataxy and paraplegic affections.

2. Give a description of the symptoms, progress, duration; a careful diagnosis between progressive muscular atrophy and paraplegic affections.

3. Describe and explain the eye symptoms in locomotor ataxia.

Pulmonary

1. What may be the morbid conditions leading to pulmonary collapse, with the physical signs? and state its appropriate treatment.

2. If the lungs collapse on opening the pleural cavities, what may be inferred as to their condition?

3. If they do not collapse, what may be the morbid conditions which prevent them from collapsing?

4. Describe the morbid anatomy, symptoms, and effects. Give the signs on auscultation and percussion in pulmonary emphysema; mode of production of the emphysema; its relations with other diseases of the chest; and treatment.

5. Describe the anatomical characters, diagnostic signs, and causes of pulmonary gangrene.

Pulse.

1. Describe the varieties in the pulse, and the practical inferences to be deduced from them.

2. What is the state of the pulse in the following conditions: (1) acute peri-

Pulse—*continued.*

tonitis, (2) compression of the brain, (3) delirium tremens, (4) recurrent hæmorrhage, (5) senile gangrene.

Purpura.

1. Give the symptoms, forms, and treatment of purpura.

Pyæmia.

1. What do you understand by the term "pyæmia"?

2. Symptoms of a case of pyæmia.

3. The pathological conditions found after death.

4. Mention the circumstances under which you would expect cases of pyæmia to occur in warfare.

5. Explain the nature of pyæmia with phlebitis, and the post-mortem appearances.

Pylorus.

1. What is the treatment of thickening of the pylorus?

2. Describe the symptoms of scirrhous pylorus, and state how this lesion is to be distinguished during life from chronic ulcer of the stomach.

3. Describe the various conditions under which obstruction of the pylorus occurs.

Pyrosis.

1. Describe the disease known as pyrosis; say whether any particular foods cause it; and detail the treatment for it.

Rales.

1. In what diseases are humid rales heard in the lungs?

2. What would be the differential diagnosis of those diseases?

Remittent Fever.

1. Describe the symptoms in a case of uncomplicated remittent fever.

2. Show where they differ from, where they resemble, those of true yellow fever.

3. Mention the organs most prone to suffer in the course of the disease.

4. State the tendency to death.

5. Give a sketch of the leading principles of treatment.

Renal.

1. Describe the symptoms, course, diagnosis, accompanying the passage of a renal calculus through the ureter, and treatment.

2. Describe the forms of renal disease which give rise to dropsy and albuminuria.

3. Give the precautions to a person cured of renal dropsy.

Renal—*continued.*

4. Prescribe a diuretic in this case.

5. What are the several causes of renal hæmorrhage.

Respiration.

1. If puerile respiration be found in the adult, what is generally its chief determining cause?

Rheumatic Fever.

1. Give three different modes of treating acute rheumatic fever, and explain why each may, in turn, be quite appropriate.

2. What are the cardiac symptoms and signs which may occur in rheumatic fever, with their treatment?

3. Describe a case of rheumatic fever.

Rheumatism.

1. What are the cardiac signs and symptoms which may occur during the progress of rheumatism?

2. Supposing any signs of cardiac affection to manifest themselves in rheumatism, what is to be done?

3. Explain the nature of rheumatism as you may have seen the disease prevail among soldiers.

4. Mention its place in the classification of diseases.

5. Give the changes which take place in the tissues and structures in chronic rheumatism.

Scabies.

1. Describe the varieties of scabies, and give the treatment for each variety.

Scarlet Fever.

1. Describe fully a case of scarlet fever, with all its possible sequelæ, or complications.

2. What are the chief causes of danger in scarlet fever?

3. Give the appropriate treatment for every stage.

4. What are the usual sanitary precautions adopted when cases of scarlet fever occur in a barrack?

5. When does a person who has recovered from an attack of scarlet fever cease to be contagious?

Sclerosis.

1. Describe the morbid anatomy of sclerosis as a lesion of the nervous system.

Scorbutus.

1. Describe the post-mortem appearances in cases of extreme scorbutus.

2. Describe the causation, symptoms, diagnosis, and treatment of scorbutus.

Septicæmia.

1. What do you understand by septicæmia?

Skin.

1. Describe the diseases of the skin usually grouped under the term vesicular, and give the appropriate treatment.

2. Describe the following diseases of the skin: acne, boil, erythema nodosum, lupus, scabies.

3. Sketch the pustular diseases of the skin.

4. Give the etiology, symptoms, course, diagnosis, and treatment of: eczema, pemphigus, porrigo.

5. On what do such eruptions generally depend?

Small-Pox.

1. State what general symptoms would lead you to dread a fatal result in a case of confluent small-pox.

2. What special complications of the disease would cause the same?

3. On what day death most usually occurs.

4. What is the rate at which unvaccinated persons, affected with small-pox, die, and the death rate among those vaccinated under similar circumstances?

5. Describe the treatment of small-pox.

Sounds.

1. Give the characters which distinguish exocardial from endocardial sounds.

Spinal.

1. What are the conditions which have been observed in fatal cases of spinal concussion?

2. What are the symptoms of concussion of the spine?

3. Describe the diseases to which the spinal-cord is liable.

4. Give the diagnostic symptoms and treatment of each.

Stethoscopic.

1. Give the stethoscopic signs of the following diseases: pneumonia, hydrothorax, pulmonary apoplexy, coincident constriction and patency of the cardiac mitral opening, and similar conditions of the aortic orifice.

2. Define the following stethoscopic terms; state in what morbid conditions they are heard, and specify their diagnostic indications: amphoric respiration, bronchial respiration, cracked-pot sound, dulness on percussion, fine crepitation, pectoriloquy, sibilant rales, vesicular murmur.

Stomach.

1. Describe the characters, causes, and treatment of non-malignant ulcer of the stomach.

Stomach—*continued.*

2. What are the symptoms of cancer of the pyloric orifice of the stomach?

3. What are the symptoms resulting from an ulcer of the stomach having penetrated into the peritoneal sac?

4. What are the symptoms and treatment of chronic ulcer of the stomach leading to perforation?

5. What are the chief structural changes in the stomach?

Sunstroke.

1. Define sunstroke.

2. Describe the varieties.

3. The causes which predispose to it.

4. The effects of high temperature on the blood and tissues.

5. The way in which death seems to be caused.

Syphilis.

1. Describe the morbid changes you would expect to find in a person who had died from protracted syphilis.

2. Define what is understood by syphilis.

3. State the rules that you would observe in the employment of mercury and iodide of potassium respectively.

4. Describe the symptoms of inherited syphilis; mention the periods of life at which they are liable to appear, and the suitable treatment.

5. Describe the symptoms by which inherited syphilis may be detected in a young person from 10 to 20 years of age, what tissues are most commonly affected, and what treatment is usually most beneficial.

Syphilitic.

1. Sketch the syphilitic diseases of the skin, and internal organs.

2. Describe syphilitic lepra; its diagnostic marks, probable previous symptoms, how distinguished from simple, and what treatment should be pursued.

3. Mention the points which are to be recorded in the description of syphilitic sores.

Tape-Worm.

1. What are the sources of the tape-worm; which infest man?

2. Name the kinds of tape-worm found among soldiers.

3. In what countries are they most common?

4. Describe the origin and growth of the cysticercus, which becomes the common tape-worm in soldiers in India.

5. Enumerate the usual remedies.

Temperature.

1. What morbid temperature is denoted by the term hyper-pyrexia?

2. Mention the usual normal temperature of the human body in health.

3. Give a concise account of the pathological significance of records of temperature taken daily in cases of acute diseases, and the precautions to be observed in taking the observations.

4. What variations does the temperature undergo in health in the course of twenty-four hours?

5. Mention the various means of lowering the bodily temperature in health and disease, and explain their action, more especially enumerating the remedies which act only in conditions of pyrexia.

Tetanus.

1. Describe the diagnostic symptoms, forms, pathological causes, and treatment of tetanus.

2. Mention the various drugs which have been of service in tetanus, with your opinion of their relative efficiency, and give the dose of each.

Thermometer.

1. Illustrate by special examples the use of the thermometer in the diagnosis of disease.

Thoracentesis.

1. When is the operation of thoracentesis necessary?

2. How is it performed?

3. Accidents which should be guarded against.

4. Circumstances which determine the proper period for its performance.

Thorax.

1. What information as to the condition of the lungs and heart is to be obtained by the inspection of the thorax?

2. What are the deviations from the normal shape of the thorax which are associated with disease of the lungs or pleuræ?

Throat.

1. How would you examine the throat.

2. How would you distinguish between the sore throat of cynanche tonsillaris, scarlatina, diphtheria?

3. Give the symptoms, the state of the parts, the favourable and unfavourable results, and treatment of the clergyman's sore throat, and state by what means the local treatment can be applied.

Thrush.

1. What is thrush?

2. Give the cause and treatment.

Thrombosis.

1. What is the nature of thrombosis, and probable consequences?

2. Conditions in the living body under which a thrombus is apt to form?

3. State the difference between a thrombus and an embolus, and describe the causes of thrombosis.

Thyroid Body.

1. Describe the varieties of enlargement of the thyroid body, the morbid phenomena which are associated with them, and their appropriate treatment.

Tonsillitis.

1. Give your treatment of tonsillitis with great swelling.

Trichiasis.

1. What are the causes, symptoms, and treatment of trichiasis?

2. State what is known of the structure and life-history of trichina spiralis.

3. Give the symptoms and pathology of trichinosis, including a description of the animal.

4. How would you examine the flesh in order to detect the entozoon?

Tubercle.

1. Describe the phenomena of ill-health which precedes and accompanies the growth of tubercle in the lungs.

2. What do you understand by the term "tubercle"?

3. What are its usual seats in the young and in the adult?

4. What is the anatomical constitution, and what are the general characters of miliary tubercle?

Tuberculosis.

1. What are the forms of intra-cranial tuberculosis?

2. At what decennial period of life is tuberculosis most prevalent?

3. Describe the forms in which tuberculous growths are localised in the lungs.

4. What are the evidences that such growths are ever thrown out, absorbed, or remain latent?

5. What do you mean by acute tuberculosis?

Typhoid Fever.

1. Give the leading symptoms of typhoid fever, ending in perforation on the nineteenth day.

2. What are the symptoms, causes, and treatment of perforation of the gut in typhoid fever, if recognised?

3. During what stage of the intestinal lesions may perforation happen?

4. For what other diseases may typhoid

Typhoid Fever—*continued.*

fever be mistaken, and how would you distinguish between them ?

5. Describe a case of typhoid fever, giving the incubation, the various stages of the disease, the process which goes on in the intestines, together with the modes of death, and the treatment.

Typhus Fever.

1. State the main points in the phenomena of typhus fever.

2. Describe the lesions, after-death appearances, seen in cases of typhus fever.

3. Describe the course the spots follow, the day they may appear, their duration.

4. Give the symptoms of typhus fever under the following heads and in the following order: (1) character of the chill: (2) when prostration appears; (3) describe the exanthem, when it usually appears, the one which it most resembles, and the diagnostic signs; (4) the head symptoms and usual condition of mental faculties throughout the disease; (5) chest symptoms; (6) abdominal symptoms; (7) urine; (8) temperature from first, and as usually observed throughout the disease; (9) if case terminates favourably, when does the change usually appear, and in what manner ?

Ulcer.

1. Give the treatment of a case of gastric ulcer, with hæmorrhage.

2. Describe the symptoms, causes, and what is the treatment of ulcer of the larynx.

3. Give carefully the diagnosis in each form of ulcer of the larynx.

4. State how remedies can be applied to the larynx.

5. What are the chief forms and causes of (1) ulcer in the stomach; (2) ileum; (3) colon; (4) rectum ?

Uræmia.

1. Describe fully the symptoms usually included by writers under the term "uræmia."

Urine.

1. Explain the methods which you would adopt in testing urine for albumen, sugar, and bile.

2. What are the most usual sediments in the urine ?

3. Mention the chief reasons for which the urine is examined.

4. Three specimens of albuminous urine: (1) from a case of passive renal congestion; (2) from a case of renal calculus; (3) from a case of chronic morbus

Urine—*continued.*

Brightii; how would you distinguish between these ?

5. Mention the chief conditions of the urine which are important for diagnosis.

Urinary.

1. Describe the several varieties of urinary deposits.

2. Describe the symptoms characterising the passage of a urinary calculus into the bladder, and state how you would treat such a case.

Vaccination.

1. What is the most suitable age for vaccinating infants ?

2. Describe the method of performing the operation.

3. Enumerate the circumstances which would induce you to postpone its performance.

4. When is the vesicle matured ?

5. How know a genuine pock ?

Vaccine.

1. Describe the local characters of the vaccine disease, including the diagnosis between true and spurious vaccination.

2. What are the chief conditions which interfere with the regular course of the vaccine vesicle ?

3. What kind of cicatrix in the arm of a recruit would satisfy you that it was the result of a genuine vaccine vesicle ?

Valvular.

1. Describe the general principles applicable to the detection of valvular disease of the heart.

2. Diseases to which the valves of that organ are liable.

3. Means of detecting the particular valves affected.

4. Name the nature of the affection.

5. The duration of cases of valvular disease of the heart varies exceedingly; say on what cause or causes this essentially depends.

Venereal.

1. Describe the nomenclature necessary to be attended to in the description of venereal sores: (1) physical character and exact site of lesion; (2) probable period of incubation; (3) character of attendant inflammation; (4) subsequent effects on neighbouring glands; (5) prognosis; (6) consequences of the sore.

2. What kind of eruption or sore on the organs of generation may be confounded with venereal sores ?

3. Describe the varieties of primary venereal sores commonly met with, their

Venereal—*continued.*

probable consequences, and proper treatment.

Vomiting.

1. What are the chief causes of obstinate vomiting in a child, young woman, man injured, middle aged person, decline of life, after a surgical operation?

2. How would you treat a case of obstinate vomiting supposed to depend on ulceration of the stomach?

3. Mention some of the principal causes of vomiting, state how you would distinguish them, and the remedies you would use to arrest it.

Wasting.

1. Enumerate the principal diseases which lead to general wasting of the body, point out the grounds of diagnosis between them, explain the relation between the disease and the wasting.

Worms.

1. Give the names of the round or hollow worms which infest the human subject.

2. State the part of the body where each is found, and the means of preventing their occurrence.

3. Mention the chief remedies which may be employed for their expulsion and

Worms—*continued.*

destruction, and the doses and modes in which they should be given.

Yellow Fever.

1. Give roughly the altitudinal and horizontal ranges of yellow fever, with such exceptions to the general rule as you may remember.

2. What temperature appears to be essential for the propagation of the disease in an epidemic form?

3. Within the yellow fever zone, is the coming of an epidemic of that disease ever preceded by an exceptional state of health of the inhabitants? If so, describe what has been observed, and give any examples you may remember.

4. Give briefly your opinion on the contagiousness or otherwise of the disease, and any facts you may remember bearing on its propagation.

5. With what diseases is yellow fever apt to be confounded?

Zymotic Diseases.

1. What is meant by zymotic diseases?

2. What are the so-called zymotic diseases of which the contagion or exciting causes are supposed to be carried by articles of food or drink?

VII.

MIDWIFERY.

Abortion.

1. What are the maternal and ovuline causes of abortion?

2. Give a description of the latter.

3. What is meant by the term "abortion"?

4. What are the risks which attend abortion?

5. What are the post-mortem signs which would show that abortion had taken place a few days before death?

After-Pains.

1. Describe the symptoms, causes, and treatment of after-pains.

2. What is meant by the word after-pains?

Albuminuria.

1. What is the precise pathological significance of albuminuria?

Albuminuria—*continued.*

2. What signs would lead you to suspect the presence of albuminuria in pregnancy?

3. What treatment would you adopt in such cases?

Amenorrhœa.

1. What are the pathological conditions which give rise to amenorrhœa, and how is it to be dealt with?

2. Mention the causes, symptoms, prognosis, and treatment of epileptic mania with amenorrhœa.

Amnion.

1. Give an account of the amnion, including its structure, uses, and mode of formation.

2. Mention the symptoms which would indicate dropsy of the amnion.

Ante-Version.

1. What are the symptoms of anteversion?

2. What treatment would you adopt?

Arm Presentation.

1. How is delivery completed in an arm presentation?

2. Describe the operation of turning in a case of arm presentation.

3. Mention the stage of labour at which it should be performed.

4. State the advantages of bringing down one or both feet.

Breast.

1. What are the diseases of the female breast?

2. When does the secretion of milk take place from the female breast?

3. What are the symptoms attendant thereon?

4. Describe the affections of the breast to which women are liable during lactation, and state how you would treat them.

Breech.

1. Describe fully the positions and management of a breech case.

2. What practice would enable us to bring down a part, approximating in its measurements to those of the breech, which cannot be effected in turning operations?

3. How would you tell a breech before the membranes ruptured?

4. How afterwards?

5. Mention the risks to mother and child in a case of breech presentation.

Cæsarian Section.

1. Describe the operation of cæsarian section; indicate the nature of cases requiring it, and the circumstances regulating the time for operating.

Catheter.

1. In what direction must the catheter be passed in: partial prolapsus, complete prolapsus, retroversion, inversion?

Cephalhæmatomata.

1. What is the nature, origin, and treatment of cephalhæmatomata?

Child.

1. What are the principal signs of maturity in a newly-born child, as regards average weight, eyes, navel, external genitals?

2. How endeavour to resuscitate a still-born child?

3. Enumerate the advantages of putting the child early to the breast.

4. How would you advise the bringing

Child—*continued.*

up of a child: (1) when partly, (2) when wholly deprived of its mother's milk?

5. What precautions would you adopt before advising a woman to suckle her child?

Children.

1. What do you know about jaundice as it affects children?

2. Enumerate some of the common forms of the diseases of the scalp in children, and their treatment.

3. What is the treatment in the asphyxia of new-born children?

4. What are the ordinary affections of the mouth in children?

5. Give the treatment.

Chorion.

1. When is the chorion formed?

2. What is its appearance during the earliest periods of utero-gestation?

Convulsions.

1. What are the different forms of convulsions?

2. What are the symptoms?

3. What is the treatment in such cases?

4. Under what class of labours do you place them?

5. What are the causes of puerperal convulsions?

Corroding Ulcer.

1. What differences are there between corroding ulcer and cancer of the uterus?

Craniotomy.

1. What are the antero-posterior diameters which limit craniotomy?

2. What symptoms in labour would oblige you to perform craniotomy?

3. Give reasons for preferring craniotomy to use of forceps.

4. Describe the operation.

Death.

1. Give the puerperal causes of death of mother and child.

2. State the symptoms of the death of the child in utero.

3. How would you diagnose and treat death of the child after the seventh month?

Decidua.

1. What is the decidua?

Delivery.

1. Enumerate the chief diseases during the first week after delivery.

2. Give their chief symptoms and treatment.

3. Trace the successive events in a case of normal delivery at full time.

4. What would you do in a case of pro-

Delivery—*continued.*

fuse flooding-immediately after delivery; before the placenta has come away, and afterwards?

5. Describe the condition of the uterus after delivery.

Diagnosis.

1. Give the diagnosis of: (1) anteversion of the womb; (2) ulceration of the os uteri; (3) fibrous tumour near the fundus.

Displacements.

1. Describe the backward displacements of the gravid uterus; and give symptoms, diagnosis, prognosis, and treatment of a case.

2. Enumerate the displacements of the uterus.

Distorted Pelvis.

1. What is the nature of distorted pelvis?

2. Its effects on labour.

3. Name the diseases which mostly cause it.

4. What are the most common varieties of distorted pelvis?

Dysmenorrhœa.

1. What do you understand by dysmenorrhœa?

2. What are the most common causes and treatment of dysmenorrhœa?

3. In mechanical dysmenorrhœa, how are we to widen the cervical uterine canal efficiently and with the least risk?

4. Describe the different forms of dysmenorrhœa, and the morbid changes with which they are associated.

Embryulcia.

1. Give indications for embryulcia, and describe the different methods by which the head may be reduced in size.

Ephemeral Fever.

1. Describe the ephemeral fever of lying-in women.

Ergot of Rye.

1. Name the circumstances demanding the use of ergot of rye.

2. How administer it?

3. Mention the various modes in which ergot of rye has been said to cause the death of the fœtus in utero during labour.

4. What appears to be that most consonant with the physiological action of the drug and the anatomical structure of the uterus?

5. Name the circumstances in labour that absolutely contra-indicate the ergot of rye.

Evisceration.

1. Describe the operation of evisceration.

Evolution.

1. Describe the process of spontaneous evolution.

2. Under what circumstances does it take place?

3. What are the duties of the obstetrician in these cases?

Extra-Uterine.

1. What are the varieties and symptoms of extra-uterine pregnancy?

Face.

1. Distinguish between a face and breech presentation.

2. How diagnose the former?

3. What mistake it for?

4. How conduct it?

5. Describe the course of the head through pelvis.

Flooding.

1. What are the chief causes of flooding during and after labour?

2. How are such cases to be treated?

3. A married woman not having menstruated for three months, suffered from a severe attack of flooding, for which she was examined. The os uteri felt soft and pulpy, and was slightly patulous, though not sufficiently so to admit the point of the finger beyond the internal os; the uterus was reaching midway between pubes and umbilicus. What was the probable condition of the patient? State the reason for your opinion, and what line of treatment would you adopt?

Fœtal Circulation.

1. Describe the fœtal circulation, and the changes which take place after the birth of the child.

2. Describe the fœtal circulation in the liver, and contrast it with that in the adult.

Fœtus.

1. How is the heat of the fœtus maintained in utero?

2. How is it produced and maintained after birth?

3. Describe the relations of the amnion, chorion, decidua, to the fœtus in the human subject.

4. How does a fœtus at the seventh month of pregnancy differ from one at the ninth month?

5. How would you tell if a fœtus were at full term, and if it had been born alive?

Footling Case.

1. Give the mechanism of the delivery

Footling Case—*continued.*

of the head in a footling case, back anteriorly.

Forceps.

1. When are the forceps required, and the precautions necessary?

2. State the conditions in which you would prefer the long to the short forceps.

Gestation.

1. What is the ordinary term of gestation in the human female, and what may be the deviations from it?

2. What are the symptoms, terminations, and treatment of tubal gestation?

3. What are the auscultatory evidences of gestation, and what may be the import attachable to each?

Hæmorrhage.

1. Define accidental and unavoidable hæmorrhage.

2. What precautions would you adopt to prevent it?

3. What are the conditions which give rise to hæmorrhage in the unimpregnated uterus?

4. What do you understand by internal hæmorrhage in midwifery practice?

5. How would you recognise and treat it?

Hydatid.

1. Describe the nature and symptoms of the hydatid mole.

Hymen.

1. What is the hymen?

2. Give its abnormal deviations.

3. How far can reliance be placed on the existence of the hymen as a proof of chastity?

Inertia.

1. What are the chief causes and treatment of inertia of the uterus during labour?

Infantile.

1. What are the causes, symptoms, prognosis, and modes of treatment in (1) infantile convulsions; (2) infantile paralysis; (3) infantile syphilis; (4) infantile remittent fever: (5) infantile gastric fever; (6) infantile diarrhœa; (7) infantile collapse of the lung?

2. How would you treat suspended animation in infants?

Inversion.

1. Give the diagnosis between inversion of the uterus; (2) prolapsus; (3) polypus.

2. What is the condition of the vagina in inversion of the uterus?

Inversion—*continued.*

3. What are the symptoms of chronic inversion of the uterus?

4. Give the causes and treatment of inversion of the uterus in its acute and in its chronic forms.

Labour.

1. What do you mean by a natural labour?

2. Describe the phenomena of the second stage of labour.

3. Mention the premonitory symptoms of labour.

4. What are the dangers to be guarded against during the last stage of labour?

5. State the management in the third stage of labour.

Leucorrhœa.

1. What is leucorrhœa, and its symptoms?

2. State the causes which give rise to it, and treatment.

Mal-Presentation.

1. Describe the various forms of malpresentation in their order of frequency, and say what plan of treatment you would adopt in each.

Mania.

1. Describe acute mania in adult women, and the treatment.

Menorrhagia.

1. Definition of menorrhagia, various forms, treatment under different circumstances.

2. Enumerate the causes of menorrhagia.

3. Give the treatment for severe menorrhagia during the attack, and in the intervals, where there is no organic mischief.

Menstruation.

1. What is the condition of the uterus, fallopian tubes and ovaria during menstruation, with the post-mortem examination of a woman dying during menstruation?

2. What are the chief causes and treatment of suppressed menstruation?

3. Explain what is meant by the function of menstruation, and also the physiological actions and changes which take place from the commencement to the termination of one menstrual period.

4. Contrast the corpus luteum of pregnancy with that of menstruation.

Milk.

1. Is an abundant supply of milk an indication that it is good in quality?

2. Describe a case of so-called milk fever.

Milk—*continued.*

3. What treatment would you adopt where the secretion of milk was excessive, and its flow impeded?

Morning Sickness.

1. What do you mean by morning sickness?

2. Why is it so called?

3. How treat it?

Obstruction.

1. State what is known concerning obstruction of the arteries, in connection with the puerperal state.

Ovarian Cyst.

1. Describe the early indications of the presence of an ovarian cyst.

2. Give an account of the structure of the ovarian cyst, of the progress of its growth, and of the evil effects it produces.

3. By what symptoms may an ovarian cyst be distinguished from ascites dependent on diseased liver, or from a fibrous tumour of the uterus?

Ovarian Dropsy.

1. Describe Ovarian dropsy.

2. Give the diagnosis between pregnancy, fibrous tumour, ascites, and ovarian dropsy.

3. Describe the chief modes of treatment of ovarian dropsy, and the conditions in which they may be respectively resorted to.

Ovarian Tumour.

1. What are the forms of ovarian tumour?

2. What are the chief diagnostic symptoms of ovarian tumour?

3. Diagnosis between ovarian tumour and uterine.

4. Give the diagnosis and management of a labour impeded by an ovarian tumour.

Ovariotomy.

1. Describe the operation of ovariotomy.

2. When to be recommended.

3. What cases may be best selected for ovariotomy?

Pains.

1. What do you mean by true pains?

2. What by false pains?

3. Describe the causes of the latter.

4. How treat them?

Parturition.

1. Mention the different classifications of parturition.

2. Enumerate the indications of recent parturition in the living female, state their comparative value, and the causes that may frustrate your investigation.

Parturition—*continued.*

3. From what causes may fœtal life be imperilled during parturition?

Pelvic.

1. What are the symptoms and treatment of pelvic abscess after parturition?

2. State the symptoms, diagnosis, and treatment of pelvic cellulitis.

3. How do such cases generally terminate?

4. Give the site, symptoms, and management of pelvic hæmatoma.

5. State what degrees of pelvic contraction respectively justify our having recourse to the following operations: craniotomy, cæsarian section, forceps, induction of premature labour, podalic version.

Pelvis.

1. Point out the distinctions between the male and female osseous pelvis.

2. Give the average dimensions of each outlet in the two sexes.

3. What are the normal diameters of the adult female pelvis?

4. What size would you consider too small for the natural delivery of a full-grown child?

5. What would you do in the case of a woman with a contracted pelvis becoming pregnant?

Perforating.

1. What are the indications for perforating the child's head, and the rules for performing this operation?

2. Describe the operation of perforation, and the different perforators most commonly used.

Phlegmasia Dolens.

1. What is the phlegmasia dolens?

2. When does it usually come on?

3. How treat it?

4. What is its pathology?

5. Could you diagnose between phlegmasia dolens and dropsy?

Placenta.

1. What symptoms during the latter months of pregnancy would lead you to suspect the existence of placenta prævia, and how would you detect it?

2. Describe the structure, uses, diseases of the placenta, and its mode of connection with the uterus.

3. What is the treatment of placenta prævia, at the full time, with considerable bleeding and dilated mouth?

4. How would you detect and remove a retained placenta from inertia of the uterus?

5. What is placenta prævia?

Placental.

1. What is the placental souffle, and where is it generally heard?

Plural.

1. Describe the mechanism and management of plural births.

Polypus.

1. State the varieties, seat, structure, symptoms, consequences, and treatment of polypus of the uterus.

Positions.

1. What are the four varieties of head positions in labour?

2. Which is the most impracticable, and why?

3. Give the diagnosis of a head in the third position, describe the modes in which the head is expelled, and state the conditions which determine the one mode or the other.

Poultices.

1. Describe all the poultices which may be used in lying-in cases.

Powerless Labour.

1. What are the symptoms of powerless labour?

Precipitate Labour.

1. Enumerate the sources of danger to mother and child in precipitate labour.

Pregnancy.

1. What are the signs of pregnancy and when available for diagnosis?

2. What are the chief disorders occurring in its course, and their treatment?

3. What is the difference between hydatid and ordinary pregnancy.

4. What different forms of molar pregnancy are observed?

5. Enumerate the changes in the breast produced by pregnancy.

Pregnant.

1. Describe at length the course of investigation you would adopt if you were called upon to examine a patient suspected of being pregnant, but who refused to give any information.

2. Enumerate the different diseases of the genital organs in pregnant women.

Premature Labour.

1. Under what circumstances would you bring on premature labour?

2. Describe the various ways in which it may be effected.

3. State the advantages and disadvantages of each.

Presentation.

1. In presentation of the cord, what are the circumstances which would direct you either to leave the case to nature, to apply the forceps, or to turn the child?

2. In a case of funis presentation, state the causes, and describe the treatment which has been recommended for the safety of the child.

3. Describe the diagnosis, dangers, and treatment of a case of shoulder presentation.

4. What is meant by a transverse presentation?

5. What are the varieties of transverse presentation of the fœtus?

Pressure.

1. What female disorders arise from pressure?

Preternatural Labour.

1. Define preternatural labour.

Prolapse of Funis.

1. Explain the various ways which may be adopted for replacing the prolapse of the funis.

2. Give the management of a labour complicated with prolapse of the funis.

3. How soon may you be able to discover a case of prolapse of the funis?

4. Under what circumstances is prolapse of the funis likely to occur?

Prolapse of Uterus.

1. What is the condition of the uterus and adjacent parts in prolapse of the uterus?

2. What is the difference between the effects produced by partial, and those produced by complete prolapse of the uterus?

3. Give the causes and treatment of prolapse of the uterus.

Protracted Labour.

1. Give the causes of protracted labour, on the part of the child, and the management of a case delayed by hydrocephalus of the infant.

Pruritus Vulvæ.

1. What are the symptoms, causes, and treatment of pruritus vulvæ?

Pseudo-Pregnancy.

1. What is the enlargement in pseudo-pregnancy?

Puerperal Eclampsia.

1. What is known of the pathology of puerperal eclampsia?

2. What are the predisposing and exciting causes of puerperal eclampsia?

Puerperal Fever.

1. Describe a case of puerperal fever.

2. What precautions ought to be taken by persons who practise in puerperal fever?

Puerperal Fever—*continued.*

3. Enumerate the various forms.

4. Describe malignant puerperal fever; its symptoms, morbid appearances, and treatment.

Puerperal Mania.

1. What are the characters by which you would distinguish puerperal mania from hysteria, and from other temporary deviations from sound mind?

2. Give the symptoms, treatment, and supposed causes of puerperal mania.

Recent Delivery.

1. Describe the signs of recent delivery, both in the living and in the dead.

Retention.

1. Under what circumstances does retention of urine occur in the adult female?

Retroversion.

1. What is the condition of the vagina in retroversion of uterus?

2. What is the most frequent cause of retroversion of uterus?

3. Mention the treatment you would adopt.

4. What is the difference between retroversion, inversion, prolapsus, polypus, retro-flexion?

5. What are the symptoms of retroversion of uterus?

Rigid.

1. Give the various forms, causes, and treatment of rigid os uteri, in a healthy woman during labour at the full term.

Rupture.

1. Under what circumstances is it justifiable to rupture the membranes?

Ruptured.

1. What are the symptoms of ruptured uterus?

2. Circumstances under which it occurs.

3. Post-mortem appearances.

4. What treatment would you advise?

5. Describe fully the nature, causes, and treatment of ruptured perineum during parturition.

Sterility.

1. Mention the causes of sterility in the female which are incurable.

Symphyseotomy.

1. Describe the operation of symphyseotomy, and give an opinion as to its utility.

Tumour.

1. Describe the pathology and treatment of fibroid tumour of the uterus.

2. State the diagnosis between fibrous tumour of the uterus; malignant tumour, and ovarian dropsy.

3. Describe the anatomical characters of fibrous tumour, and changes produced by it.

4. What are the symptoms of fibrous tumour of the uterus?

Turning.

1. Enumerate the cases in which turning is necessary.

2. State the modes in which the operation is performed.

3. What are the dangers, and the most appropriate means for obviating them?

4. What conditions interfere with its accomplishment, and say how you would endeavour to overcome them?

Twin.

1. What are the symptoms in twin cases?

2. How treat a case of twins?

3. The means of diagnosis.

4. Describe the dispositions of the fœtal membranes which occur in cases of twins.

Unimpregnated.

1. What are the causes, symptoms, diagnosis, mode of treatment of displacements of the unimpregnated uterus?

2. What means do we possess wherewith to dilate the os and cervix in the unimpregnated condition?

Uterine.

1. Define peri uterine hematocele.

2. Give the diagnosis between uterine and vaginal leucorrhœa.

3. Name the functions of the uterine system.

4. What information is gained in uterine diagnosis by the sense of touch, unaided; or aided by the sound, tent, and exploring-needle?

5. Describe the various uses of the uterine sound, the mode of its introduction, with the caution to be observed, and the nature of the information to be derived from its employment in various cases.

Uterus.

1. Describe the changes consequent on impregnation which take place in the uterus, in regard to its form, size, position, and the structure of its middle coat.

2. Mention the inflammatory diseases of the uterus.

3. For what affections may they be mistaken?

Uterus—*continued.*

4. What treatment would you adopt?

5. Give their pathological conditions and terminations.

Version.

1. What is version?

2. What part of the child would you feel for, and why?

Version—*continued.*

3. Describe the method of performing podalic version.

4. Describe bi-manual version.

Vesico-Vaginal.

1. What are the causes of vesico-vaginal fistula, the treatment, and instruments required?

VIII.

PHYSICS.

Acceleration.

1. Define uniform acceleration, and find the distance described from rest, with a uniform acceleration in a given time.

2. Define acceleration, and distinguish carefully between acceleration in magnitude and acceleration in direction.

Achromatic.

1. Explain the principles of achromatic glasses.

2. Describe the structure of the compound achromatic microscope.

3. How may an achromatic image of an object be obtained by means of a lens?

Air.

1. What is the composition of atmospheric air, and how would you determine the quantity of oxygen, nitrogen, and carbonic dioxide in a given quantity?

2. How may the amount of aqueous vapour in the air be determined?

3. Of what gases does common air consist, and in what proportion are they present?

4. Give the specific gravity of each.

Artesian.

1. What is an artesian well?

2. What is the difference between a common and an artesian well?

Asia.

1. Give a sketch of the physical geography of Asia; its great ranges of mountains, and the course of its principal rivers.

Atmosphere.

1. What is the composition of the atmosphere when fairly pure?

2. Why does it vary in density at different elevations?

Aurora.

1. Describe the phenomena of the aurora borealis, and state what is supposed to be its cause.

Balance.

1. What are the requisites of a good balance?

2. What is meant by the sensibility of a balance?

Basalt.

1. What kind of rock is basalt?

2. Give an account of the basalt rocks of Britain.

Boiling.

1. What is the boiling-point of a liquid?

2. Upon what does the temperature of the boiling-point of a given liquid depend?

Calorimeter.

1. What is meant by a calorimeter?

2. Describe Favre and Silbermann's calorimeter.

Canal.

1. Investigate the time required to empty a canal-lock.

Centre.

1. How could the position of the centre of gravity be found practically in a flat piece of wood of irregular shape?

2. Define the centre of pressure, and deduce the equation for determining its position.

3. Give a general method of finding the centre of pressure of a fluid on a plane area.

4. What is meant by the centre of pressure on a surface immersed in a liquid?

5. Define the term "centre of gravity" of a body.

Chalk.

1. How do calc-spar, marble, and quicklime differ chemically, and in their external properties?

2. What is chalk geologically and physically?

3. How is it supposed to have been produced?

4. What is the microscopical structure of chalk?

5. What is the generally received explanation of its formation?

Clay.

1. What is clay slate?

2. To what class of rocks is it referred?

3. To what cause do you attribute the cleavage of clay slate?

Climate.

1. What differences exist in the climate of the east coast of North America, and the west coast of Europe, and how are they to be explained?

2. Explain the difference between an insular and continental climate.

3. Explain the effect of vegetation on the climate of a country.

4. How does it appear that the conversion of a swamp, or a low lying damp piece of ground, into a lake, would add to the dryness of the climate of the surrounding district?

Coil.

1. Define the action of a Ruhmkorff's coil.

2. Describe the construction and action of the induction coil.

3. Why are the discharges of an induction coil obtained in a single direction instead of in opposite directions?

Condenser.

1. Describe the form and action of the condenser.

2. Describe the electrostatic capacity of a condenser.

Connection.

1. What are connection currents?

Densities.

1. Arrange the following substances in the order of their densities: copper, gold, hydrogen, lead, mercury, oxygen, silver.

2. What law holds in an elastic fluid with respect to its density?

3. What is meant by the mean density of a body?

Dielectric.

1. What is meant by the specific inductive capacity of a dielectric?

Diving.

1. Describe the diving-bell, its construction and use.

Earth.

1. What is the position of the earth in the solar system, its distance from the sun, its diameter, and the nature of its orbit?

2. Define a meridian of the earth.

3. How is the internal heat of the earth proved?

4. What are the phenomena connected with earthquakes, and how have they been explained?

Eclipse.

1. What are the distinctive phenomena of a total eclipse of the sun?

2. Explain how a solar eclipse is caused.

3. When does a lunar eclipse take place?

Electrical.

1. State the principle of Grammes's magneto-electrical machine.

2. Explain the structure of an electrical machine, and its action.

3. Explain the principle of the electrical machine of Carre.

4. Give the theory of Holt's electrical machine.

Electro.

1. Explain what is meant by electrolysis.

2. What are the substances decomposable by its action?

3. What is an electro-magnet?

4. How is it constructed?

5. Define electro-motive force.

England.

1. Give a sketch of the tertiary formations in England.

2. Enumerate as many places you can in England having a population of over 100,000.

Engine.

1. Explain the distinction between a high pressure and low pressure engine.

2. To which class, condensing and non-condensing, does a railway locomotive belong?

3. Describe the construction and use of a common fire engine.

4. Explain the method of reversing an engine when fitted with a single eccentric.

5. Give the theory of the single-acting engine.

Equator.

1. Why are the seasons reversed opposite sides of the equator?

Equator—*continued.*

2. Show that places situated on the equator have days and nights of equal duration throughout the year.

3. What is the mean temperature of the air at the equator?

Ethyl.

1. What is ethyl?

2. Write its formula.

Felspar.

1. Write the formula of felspar, and give the successive steps of its analysis.

Flame.

1. What constitutes flame; and on what does its illuminating power depend?

Force.

1. Explain clearly what is meant by centrifugal force.

2. What is meant by a uniformly accelerating force?

3. What especially distinguishes the chemical from other molecular force?

4. Define the term force.

5. Explain what is meant by the principle of the transmission of force.

Forest.

1. In what regions of the earth are forests most abundant?

2. What is their influence on climate, on health, on temperature, on rainfall?

Fossil.

1. What is meant by a fossil?

2. Give a list of characteristic upper silurian fossils.

3. What kinds of fossils are found in the old red sandstones of Scotland?

4. How are fossils made use of in geology?

Freezing.

1. Can water be reduced in temperature below the freezing point without freezing?

2. Explain the principle on which the employment of freezing mixtures is based?

3. What are the chief freezing mixtures commonly used?

Galvanic.

1. Describe the structure of a simple galvanic battery, and give its rationale.

2. What is meant by the electro-motive force of a galvanic battery?

3. Construct a galvanic pile, and give the rationale of its action.

Galvanometer.

1. Explain the principle of the tangent galvanometer.

2. Explain the mode of graduating a galvanometer, to be used with a Nobilis' pile to study radiant heat.

Gas.

1. What are the laws which connect the volume of a gas with its density and temperature respectively?

2. Give the law which connects the refractive index of a given gas with its density.

3. Distinguish between a fluid and a gas.

Geological.

1. Give a tabular statement of the principal geological formations on the earth, in their order of succession, and state briefly the position of each in Great Britain.

2. Describe the geological action of a river.

Glacial.

1. What is meant by the glacial epoch in geology?

2. Explain what you consider to be the best theory of the recurrence of the glacial epoch.

Glacier.

1. What traces of the action of a glacier are found on the earth when they are not found?

2. What is a glacier?

3. How is it formed?

4. How does it move?

Gravitation.

1. State Newton's law of universal gravitation.

Gulf.

1. Give an account of the causes and course of the gulf stream.

2. How does it affect the climate of Britain?

Hardness.

1. What is meant by the scale of hardness, and how is it used?

Harmonic.

1. What are simple harmonic vibrations?

Horse-power.

1. What is the technical value of a horse-power.

2. Calculate the horse-power of a condensing engine.

Hyalus.

1. Give the characters of the genus hyalus, and mention the varieties of rhomboidal quartz.

Hydraulic.

1. Explain the principle and working of the hydraulic press.

Hydrometer.

1. Describe Nicholson's hydrometer, and explain how it is used for taking the specific gravities of solid bodies.

Hydrostatic.

1. Explain the principle of the hydrostatic press.

2. Describe the hydrostatic balance, and show how to compare by means of it the specific gravities of a solid and a liquid, the former being specifically lighter than the latter.

Ice.

1. How is ice prepared artificially?

2. Describe the geological work of ice in its different forms.

3. What is the chief sanitary objection to the practice of scattering salt on the pavement when it is covered with ice or snow?

4. Upon what physical fact does this objection depend?

Indefinite Increase.

1. What is the main obstacle to indefinite increase?

Inertia.

1. Explain clearly what you understand by the inertia of matter.

2. Define "moment of inertia."

3. Find the moment of inertia of a cylinder about one of its generating lines.

Iron.

1. What are the principal ores of iron in Britain?

2. Explain the process of the extraction of the metal, and the difference between cast-iron, malleable iron, and steel.

3. Give an account of the different kinds of cast-iron used in making machines.

Isothermal.

1. What are isothermal lines?

Jar.

1. What is a Leyden jar, and how is it charged with an induction coil?

2. State the laws of electric charge?

3. What is a unit jar?

4. How is it used?

5. Define the unit jar of electric resistance.

Kaleidoscope.

1. Explain the principles made use of in the construction of a kaleidoscope.

Landslip.

1. Describe the nature and causes of a landslip.

Latitude.

1. What are the various methods employed in determining the latitude and longitude of a place?

2. Explain the terms latitude and longitude.

Lens.

1. Describe the forms of a lens now commonly used in lighthouses.

2. Define a lens.

3. Describe the different kinds of lenses.

4. Define the optical centre of a lens, and determine its position.

5. Explain the action of a convex lens.

Lever.

1. Explain the action of the different kinds of lever.

2. Give instances of each.

Light.

1. Describe the experiment which shows that the velocity of light in water is less than the velocity in air.

2. State the law of the propagation of light from one medium into another.

3. What are the effects of the complete and continued withdrawal of light from a growing plant?

4. Describe and explain the phenomena known as interference of light.

5. What is meant by the aberration of light?

Liquid.

1. Define a liquid.

2. Show that the surface of a liquid at rest is a horizontal plane.

3. What is meant by the spheroidal state of a liquid?

4. What is meant by a volatile liquid?

5. What is meant by the absolute, and what by the apparent, expansion of a liquid?

Locomotive.

1. Find the speed of a locomotive whose weight is 30 tons, and the evaporation one cubic foot per minute.

2. Show how to determine the pressure of steam in the cylinders of a locomotive.

Machine.

1. What is meant by the efficiency of a machine?

2. Describe the electrifying machine, and give the rationale of its construction and action.

Magnet.

1. Describe the action of one magnet upon another.

2. Define the magnetic moment of a magnet.

3. What do you understand by the polarity of a magnet?

Magnetic.

1. Describe the two methods by which the magnetic meridian may be determined by means of the dip needle.

Magnetic—*continued.*

2. What is meant by the magnetic meridian of a place?

3. Explain what is meant by magnetic storms.

4. What is magnetic dip, and how is it measured?

5. Describe the method of obtaining the earth's magnetic force.

Magnetism.

1. On what theory may the phenomena of magnetism be accounted for?

2. What is meant by the term "induction of magnetism?"

Mechanical.

1. How many mechanical powers are there?

2. Name them.

3. Why are they called mechanical powers?

4. Why is the assistance gained by them limited?

Metals.

1. Divide the metals into groups, according to their action upon water or water-vapour.

Microscope.

1. Explain the principle of the microscope.

Mineral.

1. Describe the most common features of a mineral vein, and explain how it is distinguished from a dyke.

2. What are the mineralogical characters of amber, diamond, felspar, granite, hornblende, jet, mica, quartz, slate, talc?

3. Enumerate the conditions under which certain minerals exhibit electrical phenomena.

4. What influence is exercised upon the distribution and civilization of man by the various circumstances of the composition and arrangement of the strata and other mineral masses?

5. Name the three minerals that combine to form granite.

Moon.

1. Account for the phenomenon popularly called the harvest-moon.

Motion.

1. Define motion.

2. Enuntiate Newton's three laws of motion, and give examples of each.

3. Enuntiate the law of motion which states the effect which a force produces on a body in motion.

4. What is the immediate cause of fluid motion, and what are usually the secondary causes?

5. Define energy, and distinguish between energy of position and of motion.

Needle.

1. Describe the astatic needle.

Noise.

1. How is a musical note distinguished from a noise?

Ocean.

1. What is the present state of our knowledge of the depth of the ocean, and the inequalities of its bottom?

2. Give an account of the principal oceanic currents.

3. State in what manner and to what extent they influence the climate of the great continents.

Oolitic.

1. Give an account of the oolitic flora of Britain.

2. In what period would you class the oolitic rocks.

Optics.

1. Distinguish between geometrical and physical optics.

Oscillation.

1. Define the axis of oscillation.

Piesometer.

1. Describe Oeisted's piesometer, and its uses.

Pressure.

1. Two rafters, making an angle of 120°, support a gasalier weighing 1 cwt.; what is the pressure along each rafter?

2. Prove that the pressure of fluids at rest is the same in all directions.

3. How do you measure the pressure at any point in a fluid?

Pump.

1. Explain the construction of the common water-pump.

2. Why is there a limit to the height to which it will raise water?

3. Describe the operation of the pump.

4. Describe the construction and action of Smeaton's air-pump.

5. Explain the several causes which limit the action of an air-pump, and describe the various kinds of pumps.

Pulley.

1. Define the three systems of pulley, and find the relation between the power and the weight in the third system, when the weights of the pulley are taken into account.

2. Explain the actions of the pulley.

Pendulum.

1. What is meant by a simple pendulum?

2. Investigate the formula for the time of vibration of the simple pendulum.

Quicklime.

1. How do marble and quicklime differ chemically?

Rainbow.

1. Explain the formation of the rainbow, and why the colours of the primary and secondary bows are in a reverse order.

2. Give Newton's theory of the rainbow, and calculate the altitude of the centre of the arch.

Rain-Fall.

1. What rain-fall does a fall of six inches of snow represent?

2. State the annual rain-fall in different parts of the United Kingdom, and the causes to which the great observed differences have been attributed.

Rain-Gauge.

1. Describe the construction of a common rain-gauge.

2. What practical points should be attended to in placing and setting up a rain-guage?

Refraction.

1. What is meant by the refraction of light?

2. What is its effect on the position of a star?

Rock.

1. What rock consists of quartz, felspar, and mica?

2. How does it weather?

3. Explain the process.

4. What is meant by a stratified rock?

5. What are the general divisions of the rocks composing the crust of the earth?

Rocket.

1. Explain briefly why the ignition of the composition within the body of a rocket causes it to move.

Sea.

1. Trace the action of the sea in producing a cliff.

2. Explain the cause of land and sea-breezes.

Seasons.

1. What is the cause of the change of seasons, and of the differences in the length of day and night at different seasons?

Sextant.

1. Describe Halley's sextant, and the mode of using it.

Solar.

1. What is the solar spectrum?

2. Describe carefully how you would proceed to obtain a pure solar spectrum.

3. Why is the light admitted through a narrow slit?

4. Describe an arrangement by which the lines of the solar spectrum may be seen through a telescope.

5. Give an account of the solar system, stating the number and relative size of the planets, their distance from the sun, and the length of their orbits.

Sound.

1. Give a sketch of the phenomena of sound.

2. State Newton's law for the velocity of sound in air.

3. How is the velocity of sound in air ascertained experimentally?

4. Upon what does the velocity of sound depend, and why?

5. Explain how the velocity of sound has been measured.

Steam.

1. How is the latent heat of steam found?

2. Give some account of the history of the steam-engine.

3. Calculate the formula for the relative volume of steam.

4. Find the useful effect in a steam-engine.

Steel-Yard.

1. Describe the common steel-yard, and show how to graduate it.

Sympiesometer.

1. Describe the sympiesometer, explaining the principles involved in its action.

Syphon.

1. Explain the action of the syphon.

2. How does this action account for the phenomena of intermitting springs?

Telegraph.

1. Explain the principle of the electric-telegraph.

2. Show how to connect up and work a pair of needle-telegraphs.

3. Show how a fault in a telegraph-wire will affect the signal most when it occurs near the middle of the line.

Telescope.

1. Describe the Galilean telescope.

2. What is meant by an achromatic telescope?

3. Give a description of the astronomical telescope.

4. Describe the various adjustments of the transit telescope.

Temperature.

1. Define temperature.

2. When are bodies said to have the same temperature?

Thermo-Dynamics.

1. Explain what is meant in thermo-dynamics, (1) by a cycle of operations; (2) a reversible cycle.

2. State the second law of thermo-dynamics, in any of its forms.

Thermo-Electric.

1. What kind of coil should be used for detecting feeble thermo-electric currents?

2. Explain the construction and use of the thermo-electric pile.

3. What is meant by a thermo-electric current?

4. What is meant by thermo-electricity?

5. What is its most important practical application?

Thermoscope.

1. Describe Rumford's thermoscope.

Tides.

1. What is the nature, and what are the causes of the tides?

2. How is their great variation at different periods, and in different places, explained?

3. Explain the phenomena of spring and neap tides.

Trade Winds.

1. What are trade winds?

2. Where do the trade winds blow?

3. Explain their cause.

4. What is their direction?

Transit.

1. What is the peculiar importance of a transit of Venus?

2. Show how the sun's parallax may be obtained by means of a transit of Venus.

3. With which (a solar or lunar eclipse) would you compare a transit of Venus, and why?

4. Describe a transit instrument.

Twilight.

1. Explain the phenomenon of twilight.

2. Find the time of year when twilight is shortest.

Vapour.

1. What are the sensible properties of vapour?

2. Explain the methods of finding the densities of a vapour.

3. Describe Regnault's apparatus for determining the pressure of vapour of water at different temperatures.

Velocity.

1. Define velocity; and explain the expression angular velocity.

2. Define uniform velocity.

3. How do you express a velocity of 16 feet per second in yards per hour?

Vernier.

1. What is the use of the Vernier in reading philosophical instruments?

2. How is it constructed?

Volcanic.

1. What is the cause of volcanic action?

2. Give a general account of the distribution of regions of volcanic action on the earth's surface.

3. Describe the more important products of volcanic action; and show the part which each plays in eruption.

Volcano.

1. What is a volcano?

2. Describe its products.

Voltaic.

1. Describe the voltaic battery in its simplest form.

2. State the causes of the enfeeblement of the current in the voltaic battery.

3. Describe a voltaic pile; and give the rationale of its action.

4. In an insulated voltaic pile, how is electricity distributed at the two ends, and in the middle?

Watch.

1. Describe the fusee in a watch.

2. Describe fully the lever escapement as applied in a watch.

3. Sketch and describe the piece of mechanism employed for preventing the over-winding of a watch.

Weight.

1. Define the term weight, and explain how it is measured numerically.

2. What is the relation of the power to the weight, on a smooth inclined plane?

Wheels.

1. What are spur wheels, and for what purpose are they used?

2. What are the usual forms for the teeth of wheels?

Work Done.

1. How is work done expressed?

2. Calculate the work done by the evaporation of 1 lb. of water.

Years.

1. Define the tropical, siderial, and anomalistic years, and compare their lengths.

IX.

SURGERY.

Abdomen.

1. What complications may accompany an apparently simple stab of the abdomen, two inches to the right of the umbilicus; and what would be the immediate appropriate treatment, according to the circumstances of the case?

2. In wounds of the abdomen, what are the symptoms which would lead you to conclude that the (1) stomach; (2) spleen; (3) intestine; (4) kidney; (5) abdomen, is penetrated or ruptured?

3. Describe the treatment of each injury.

4. Describe wounds of the abdomen: contused, punctured, and incised. Mention those parts most liable to be injured; the chief dangers attending these wounds; and give the treatment, general and local, according to the seat, nature, and extent of the wound.

Abscess.

1. Give a list of the various instruments which might be required in an operation for trephining a deep-seated abscess in head of tibia. Describe particularly the trephine used in such cases.

2. Contrast epiphysary abscess with abscess of the medullary canal.

3. Describe the symptoms of abscess of bone.

4. What is the more common seat of such an abscess, and the treatment to be adopted in a suspected case?

5. What is lumbar abscess?

Abscesses.

1. State any rules that you would generally observe in regard to the opening of certain abscesses as soon as the presence of pus is ascertained, and the leaving of others till they point, or spontaneously discharge.

2. What abscesses require to be opened at a very early period?

3. Enumerate the situations in which fœtid abscesses are met with.

4. Name the abscesses best adapted for being opened with caustic potass.

Accommodation.

1. What is accommodation of the eye?

2. Give proofs of its existence.

3. State the changes in the eye during the act of accommodation, and the methods by which they are ascertained.

4. Mention also the most probable explanation of its mechanism, and the evidence on which the explanation is founded.

5. What changes can be ascertained by direct observation to take place within the eye when we accommodate for near and for distant vision?

Amaurosis.

1. In amaurosis, what are the various ophthalmoscopic appearances?

2. Describe the general appearances and ocular symptoms usually met with in a case of cerebral amaurosis.

Amputation.

Make a list of instruments and materials for the first dressings required for amputation above the knee.

2. What diseases and accidents call for amputation at the shoulder-joint?

3. What advantages are claimed for the supracondyloid amputation of the femur?

4. Describe the operation of amputation of the foot, at the ankle-joint, preserving the skin of the heel.

5. Name the structures divided in the operation.

Anchylosis.

1. What is meant by anchylosis?

2. What varieties of anchylosis are there?

3. What structural conditions do these depend upon?

4. How is incomplete anchylosis remedied.

5. From what causes does anchylosis arise?

Aneurism.

1. Describe the process of formation of an aneurism.

2. Mention the methods of treatment.

3. Give the pathology of non-traumatic aneurism, from its commencement to its termination.

4. What forms of aneurism occur at the bend of the elbow?

5. Describe the differences between them.

Antrum.

1. To what diseases is the antrum maxillare liable?

2. Describe their respective anatomical characters.

3. Give the diagnostic signs, and the treatment of abscess of the antrum of Highmore?

4. Describe the symptoms and treatment.

5. What are the exciting causes of this disease?

Anus.

1. What are the various forms of abscess that may be found in the vicinity of the anus?

2. Give the symptoms and treatment of fissure of the anus.

3. Describe the principal forms of prolapsus ani.

4. State how you would treat each of them.

5. Mention the causes and treatment of pruritus ani.

Articular.

1. In operating upon the articular ends of bones, it will be at the option of the surgeon to remove or not, a part or the whole of the articular cartilage. Is it a matter of consequence which plan should be adopted?

2. Describe the principal morbid changes to which articular cartilage is liable.

3. Describe the minute changes which articular cartilage undergoes in the process termed ulceration.

4. What are the microscopic appearances presented by articular cartilage, when undergoing the changes described as 'absorption?'

Auditory.

1. State the morbid conditions to which the external auditory meatus is liable: their causes, symptoms, and treatment.

Bayonet.

1. A man has been wounded by a bayonet in the right side of the chest, between the fifth and sixth ribs, which has punctured the pleura. Describe the symptoms which would probably occur in such a case during its progress towards recovery.

2. How would you treat the patient?

3. What are the characteristic features of wounds inflicted by bayonets?

4. Name the chief points to be attended to in the treatment of a stab by one of these weapons.

Bladder.

1. Describe the various kinds of wounds of the bladder which result from musket-balls; symptoms, the principal complications which occasionally accompany them, and their proper treatment.

2. Give the causes of spontaneous rupture of the bladder.

3. In what cases of injury or disease would you puncture the urinary bladder?

4. Name the part of the bladder you would prefer to open.

5. Give your reasons for selecting that part.

Bone.

1. Describe acute inflammation of bone in youth, its symptoms, pathology, and treatment.

2. What are the principal forms of disease to which bone is liable?

3. Describe the various tumours affecting bone, their structural characters, diagnostic marks, and the treatment required for their removal.

4. Describe the local and general symptons of an abscess forming in bone.

5. In which bones, and in what portions of them, is abscess usually found?

Brain.

1. Describe the symptoms of concussion of the brain, and give an explanation of them.

2. Give the diagnosis between compression and concussion of the brain.

3. What evil consequences may follow on such a condition?

4. What should be the treatment adopted?

5. State the symptoms which distinguish blood, pus, or depressed bone, as the cause of compression of the brain.

Breast.

1. Give the cutaneous appearances of a cancerous breast.

2. State the conditions to prevent its removal by operation.

3. Describe a case of sero-cystic tumour of the female breast.

4. Enumerate the various diseases of the female breast.

5. Give the constitutional and local treatment you would pursue in each disease.

Bubo.

1. Describe the signs, symptoms, and progress of an acute sympathethic bubo, from its commencement to its termination in spontaneous cure.

2. To what causes may bubo in the groin be attributed; and in what way

Bubo—*continued.*

does the treatment depend on the nature of the cause.

3. Name the forms of bubo, stating their points of difference, and indicate the treatment.

4. Describe Milton's plan of opening buboes.

Burns.

1. Describe the characters, dangers, local and constitutional treatment of burns, of different degrees of severity.

Bursæ.

1. Describe the symptoms and treatment of enlargement of the deep palmar bursæ.

2. Describe the principal diseases of the bursæ over the patella.

3. Give the proper modes of treating them.

4. To what morbid changes are bursæ liable?

5. Give examples, and mention such modes of treatment as you think most eligible.

Calculus.

1. Describe the symptoms which indicate the passage of a calculus from the kidney to the bladder.

2. State how you would treat a case of this kind during and after the passage of the calculus.

3. Describe the different kinds of urinary calculi, and the circumstances which determine their composition.

4. In what different situations may urinary calculi be found?

Cancer.

1. Describe the characters during life, and after death, of the most frequent forms of cancer of rectum.

2. State the best means of palliating the symptoms connected with it.

3. State what you understand by the term cancer.

4. Give the diagnosis between cancer of the testis and chronic inflammation.

5. Describe the ordinary characters of cancer of the tongue, the means of distinguishing it from other growths, and ulcers of the same organ; and its microscopical characters.

Cancrum Oris.

1. Describe a bad case of cancrum oris, the different positions in which it may commence, the treatment applicable, what deformities may result, and methods of removal.

Carbuncle.

1. Describe the usual course of a carbuncle, constitutional conditions which favour its formation, its appearance, symptoms, ordinary site, pathological nature, and surgical treatment.

Caries.

1. Enumerate the symptoms and dangers attending caries of the four upper cervical vertebræ.

2. Describe the local appearances and treatment of caries of a tarsal bone.

3. Mention the modes by which caries of the temporal bone may prove fatal.

4. Describe the causes, symptoms, consequences, and treatment of acute caries of the lower dorsal region of the spine?

5. State the circumstances under which recovery may take place, and the pathological changes accompanying recovery.

Cartilaginous.

1. At what period of life are cartilaginous tumours most frequent?

2. Describe their internal structure.

3. In what situations are they found?

4. To what changes are they subject?

Cataract.

1. What is a cataract?

2. Mention the various kinds of cataract; and give the usual diagnostic characters of each.

3. Make a list of the instruments and materials for the first dressings required for cataract.

4. Describe the extraction of cataract by the flap operation.

5. State the usual conditions under which the different forms occur.

Colotomy.

1. Describe the several steps in the operation of colotomy.

2. Describe the nature, seat, diagnosis, of the diseases which may render the operation of colotomy expedient.

3. Describe the relative anatomy of the parts concerned in the operation.

Congenital.

1. State the different forms of congenital malformation, or defect in the lower bowel, which cause difficult evacuation, or complete obstruction to the discharge of fæcal matter.

2. Mention the plan of treatment to be adopted in different cases.

3. Describe any necessary operation.

4. Describe the congenital malformations of the brain which are perceptible externally, and their diagnosis from

Congenital—*continued.*

other surgical affections with which they might be confounded.

5. What are the symptoms of congenital syphilis, and what is the treatment in an infant?

Cornea.

1. Contrast vascular opacity of the cornea; or pannus, with interstitial keratitis.

2. Describe ulceration of the cornea: what are its causes, complications, and results; and how is it to be treated.

3. Describe the treatment of a penetrating wound of the cornea.

4. What consequences are likely to ensue from the impaction of a fragment of iron in the cornea?

5. How would you treat such a case?

Curvature.

1. What is meant by acute angular curvature of the spinal column: its causes, symptoms, pathology, treatment, and results?

Cystitis.

1. What are the symptoms of chronic cystitis, and condition of the urine in it?

2. What is the cause of its alkalinity?

Cysts.

1. Classify the serous cysts that occur in the groin.

Degeneration.

1. Describe the structural changes that occur in the arteries, in the various forms of degeneration to which they are liable; and explain the influence of these changes, when advanced, upon the circulation.

Deligation.

1. By what mechanism is the supply of blood sent to a limb after deligation of the main trunk?

Dislocation.

1. Describe the ordinary symptoms of dislocation of the head of the humerus, downwards and inwards.

2. State particularly the symptoms on which you would chiefly rely for diagnosis in old as well as in recent cases of such.

3. Describe the injuries of the elbow-joint which are liable to be confounded with a dislocation.

4. Enumerate the structures surrounding the shoulder-joint, and describe how they are affected in the different dislocations of the head of the humerus.

5. Describe the various forms of dislocation of the hip-joint.

Ectropion.

1. What are the common causes of ectropion and entropion?

Ectropion—*continued.*

2. Describe the operations for their relief.

3. What is ectropion, and its effects upon the eye?

Emphysema.

1. How is emphysema produced: the signs, and the treatment?

2. What is emphysema, and the causes of it when occurring in surgical practice?

Enchondroma.

1. What is enchondroma?

2. Describe the general and microscopical characters of enchondroma, or cartilaginous tumours; in what structures they usually occur, and the treatment to be adopted in particular cases.

Epiphora.

1. Enumerate the causes of epiphora; and mention the appropriate treatment.

Epistaxis.

1. What are the chief circumstances in which epistaxis occurs?

2. Describe the best corresponding means of treatment.

3. Describe the operation of plugging the posterior nares in a case of epistaxis.

Epithelioma.

1. Describe the local appearances and treatment of epithelioma.

2. In what situations and tissues it usually occurs.

Epulis.

1. Describe the pathology, symptoms, diagnosis, prognosis, and treatment of epulis.

Erysipelas.

1. What is erysipelas?

2. Describe the forms of erysipelas.

3. Distinguish between erythema and erysipelas, as to causes, symptoms, and course.

4. Describe the distinguishing features of (1) cutaneous erysipelas, (2) cellulo-cutaneous, and (3) cellular; with the preventive measures, and curative treatment.

5. Mention a drug which seems to have a specific influence over the poison of erysipelas.

Erythema.

1. Give the characters of the spots in erythema nodosum.

2. Situations in which they appear.

Excising.

1. Describe accurately, step by step, the operation of excising the shoulder-joint, by a single linear incision.

2. Name the several structures divided.

3. What muscles and other structures

Excising—*continued.*

divided by the ordinary method are left undivided when the same operation is performed sub-periosteally?

4. Describe the operation of excising the elbow-joint by a single straight incision in the ordinary method.

5. Name the anatomical structures, not cut in excision of the joint, which would be divided if amputation were performed a hand's breadth above the joint instead.

Excision.

1. In what cases are excisions suitable?

2. In what cases of injury and disease should excision of the elbow-joint be performed?

3. How much should be removed?

4. Describe the operation by a linear incision.

5. Enumerate in their proper order the parts divided in the operation.

Extravasation.

1. Describe the local and constitutional symptoms which would be present in extravasation of urine into the perineum.

2. State the direction in which the extravasation would extend, and the reasons.

3. Explain how the perineal fascia limits extravasation of urine in certain directions, and permits it to spread in others.

4. What treatment should be adopted in such a case?

5. Mention the diseases which may produce extravasation of urine.

Eye.

1. Explain the way in which the eye is enabled to see objects at different distances.

2. Give the method by which the range between the nearest and most distant points of distinct vision may be determined and expressed.

3. Describe the methods of detecting simulated blindness of one eye.

4. What are the consequences of injury of the eye and its vicinity from lime, and how are they to be treated?

5. Mention and explain the normal and abnormal conditions of refraction met with in the human eye.

Eyeball.

1. Describe the circumstances under which you would remove the eyeball, and the mode of performing the operation.

2. Mention, in order, all the structures

Eyeball—*continued.*

which must be divided in excision of the eyeball.

Fatty.

1. In what situations are fatty tumours found?

2. Give their diagnostic signs and treatment.

Femoral.

1. How would you compress the common femoral artery with your finger?

2. Mention the branches by which the collateral circulation would be carried on after ligature of the femoral artery.

3. What is a femoral hernia?

4. Describe the ordinary characters of a femoral hernia of moderate size.

5. Mention the general symptoms and local signs of a case of strangulated femoral hernia.

Fibroid.

1. State the method of diagnosis between a cancerous and a recurring fibroid tumour, before and after removal by an operation.

2. Give the results to the patient, local and general, to be looked for after the removal of those growths respectively.

Fingers.

1. In endeavouring to save a portion of the injured fingers, will the saved portion interfere with the important movements of the uninjured ones?

Fistula.

1. Describe the symptoms of fistula *in ano*, its morbid anatomy, and varieties.

2. What is the best method of laying it open?

3. Mention the structures which must be divided in the operation for fistula *in ano*.

Foreign Body.

1. Give the signs indicating the presence of a foreign body in the air-passages.

2. Mention the diseases resulting from the presence of a foreign body in the windpipe.

3. Why should not a foreign body be expelled through the same aperture by which it has entered?

4. Describe the probable course and termination of a case when a foreign body is retained.

5. State how you would proceed in attempting to give relief.

Fracture.

1. Describe the principal forms of fracture of the patella, their symptoms, the processes for their repair, and the

Fracture—*continued.*

several appropriate modes of treatment.

2. Enumerate the various muscles, and describe their respective actions, by which the deformity witnessed in fracture of the neck of the femur is probably caused.

3. Mention the signs of fracture (1) extra-capsular; (2) within the capsule; probable result of the injury, and the treatment.

4. Enumerate the various muscles, and describe the respective actions by which the deformity witnessed in fracture of the lower end of the femur, immediately above the condyles, is caused.

5. State Sir James Paget's views of the mode of union in simple fracture.

Fractured.

1. How may the patella be fractured?

2. Describe the principle of the treatment of this injury, and the various appliances used.

3. How do these fractures unite?

4. On what does the subsequent efficiency of the limb depend?

5. What would be the symptoms in a patient who has fallen head-foremost downstairs, and is supposed to have fractured the fifth and sixth cervical vertebræ, producing complete pressure on the cord?

Fractures.

1. Describe minutely the method of treating fractures of the shaft of the femur by the extension-pulleys, and give your views as to the comparative advantages of that method and treatment by the long splint.

2. Mention the different simple fractures which occur at the elbow and at the superior radio-ulnar joints.

3. State the diagnostic symptoms and treatment of each.

4. What are the complications of compound fractures that may render immediate amputation necessary?

Ganglion.

1. Describe the different forms of ganglion of the wrist, their diagnosis, and treatment.

2. How do bursal tumours differ from ganglion?

Gangrene.

1. Describe the symptoms of traumatic gangrene following compound fracture of the leg, and what treatment should be pursued, local and constitutional.

Gangrene—*continued.*

2. Why may gangrene attack an extremity?

3. In what consists the analogy between a case of dry gangrene and one of senile?

4. By what symptoms may gangrene of the foot, the result of embolism, be diagnosed from senile gangrene?

5. State in what respects the treatment would differ in each.

Glaucoma.

1. Describe the distinguishing characters of glaucoma, the three forms of it, including those observed within the eye with the help of the ophthalmoscope; also the morbid changes in the structure of the eyeball, and the effects on vision.

2. State the appearances and symptoms which enable a surgeon to distinguish a case of cataract from one of acute glaucoma, and its treatment.

Gonorrhœa.

1. At what time after infection does gonorrhœa generally commence?

2. What is the seat and nature of that disease?

3. What are its effects in mild and in severe cases?

4. What is the appropriate treatment in different cases?

5. What local mischief has been ascribed to the arrestment of gonorrhœa by copaiba?

Granular.

1. Describe the nature and appearances of the disease known as granular eyelids.

2. What is the pathology of granular conjunctiva? Mention its causes and treatment.

Granulations.

1. Describe the structure of, and mode of healing by, granulations.

Gunshot.

1. Give a sketch of the various circumstances which affect the consequences of gunshot fractures of bones, and of wounds of joints of the extremities, under ordinary conditions of warfare.

2. Mention the consequences which these circumstances tend to produce.

3. Classify concisely the varieties of gunshot injuries of the bones and articulations of the lower extremities.

4. Give the distinctions and mortality resulting from situation, kind of injury, and neighbouring complications.

5. Specify the treatment of each

Gunshot—*continued.*

variety: (1) amputation, (2) resection, (3) conservation.

Hæmatocele.

1. What is a hæmatocele of the tunica vaginalis testis?

2. Give the morbid anatomy, diagnosis, prognosis, and treatment of hæmatocele.

3. In cases of hæmatocele, what circumstances would you consider justified the performance of the operation of castration?

4. If subjected to incision, what are the pathological changes which precede the cure?

Hæmatoma.

1. Mention Paget's account of the mode of formation of hæmatoma.

Hæmaturia.

1. What are the causes of hæmaturia, from surgical injuries?

2. How would you diagnose the source of the blood from the condition of the urine?

3. Prescribe an astringent mixture for a case of hæmaturia.

Hæmorrhage.

1. Describe the treatment for hæmorrhage from a wound in the palm of the hand.

2. Name the best means for arresting hæmorrhage from small bloodvessels recently divided.

3. State the means of employing them, and the cases to which they are severally best suited.

4. Give the various modes of arresting hæmorrhage from an artery, a vein, or a mucous membrane.

5. Describe the processes by which hæmorrhage from a completely divided artery may be naturally arrested, and those which follow the tying of an artery so divided.

Hare-Lip.

1. Double hare-lip: how managed—in two separate operations, or at once? When to operate?

2. Explain the cause of the congenital deformity known as hare-lip.

Hectic Fever.

1. Give a short description of hectic fever.

Hernia.

1. Name the varieties of umbilical hernia, and give the diagnosis of each.

2. What are the usual forms of hernia in children, male and female?

3. Enumerate the varieties of form

Hernia—*continued.*

which crural hernia may assume; account for each anatomically, and likewise minutely detail the different positions in which the bowel may be strangulated.

4. Describe the difference between a congenital and infantile hernia.

5. Describe a congenital hernia cerebri.

Hernial.

1. What is meant by incarceration, and what by strangulation, of a hernial protrusion?

2. What are the signs of incarceration, and what of strangulation?

Hospital Gangrene.

1. What is understood by hospital gangrene?

2. Describe the causes, their modes of action, symptoms, and treatment for the arrest of hospital gangrene.

Hunterian Chancre.

1. Describe the characters of Hunterian chancre on the penis;

2. Hunter's ulcer on the tonsil; and

3. The character of the secondary eruption, if not properly treated.

Hydrocele.

1. What is a hydrocele?

2. Give some account of the varieties of hydrocele.

3. What are the characters of the fluids in (1) hydrocele of the spermatic cord, (2) hydrocele of the tunica vaginalis, (3) encysted hydrocele of the testicle and epididymis?

4. What is the treatment of hydrocele in the infant?

5. With what other tumours of the scrotum might it be confounded?

Hypermetropia.

1. A patient is said to have manifest hypermetropia equal to 1·40: what do you understand by this expression?

2. State and explain the symptoms which this condition gives rise to, and how they are to be treated.

Incontinence.

1. What are the causes of incontinence of urine, local, constitutional, or accidental, and the measures to be adopted for its relief?

Inflammation.

1. Why have we a tendency to adhesive inflammation in some cases, to suppurative in others?

2. What are the changes which take place in the bloodvessels and their contents as consequences of acute inflammation?

Inflammation—*continued.*

3. What are the early symptoms of inflammation of the hip-joint?

4. Describe the appropriate treatment.

5. What are the different causes of an inflammation of the tibia which may end in abscess, caries, or necrosis of this bone?

Inguinal.

1. What is inguinal aneurism, and its probable causes?

2. Describe the several affections of the inguinal glands connected with primary venereal sores, and the treatment proper for each.

3. Describe the cause of oblique inguinal hernia.

4. In a case of strangulated inguinal hernia, state the symptoms which would lead you at once to perform an operation, and those by which you would be induced to postpone it.

5. State the diagnosis between femoral and inguinal hernia.

Insensibility.

1. To what may insensibility be due? The diagnosis in the living adult.

2. How would you treat such cases respectively?

Intestinal.

1. State the various causes and forms of internal acute intestinal obstruction.

2. Describe the symptoms which would indicate the probable seat of the obstruction, whether in the large or small intestine; and the conditions which would generally determine the nature of the treatment, medical or operative.

3. Describe the post-mortem conditions of the intestinal canal above and below the seat of obstruction.

Iridectomy.

1. What are the morbid conditions in which the operation of iridectomy is required?

2. How would you perform the operation?

3. Explain the mode of action of iridectomy in the cure of glaucoma.

Iritis.

1. What is iritis?

2. What are the varieties, diagnostic marks and results of iritis, if it proceeds unchecked by treatment?

3. Describe the symptoms of the following forms: (1) simple idiopathic; (2) serous; (3) suppurative; (4) syphilitic; (5) traumatic; (6) rheumatic.

Iritis—*continued.*

4. What treatment should be pursued to arrest its progress?

5. Mention the treatment to be adopted in each kind in its various stages.

Knee-Joint.

1. Mention, in order, the parts which would be divided in amputating through the knee-joint.

2. State the general plan of treatment to be advised in a case of a recently incised wound of the knee-joint.

3. Describe the local signs indicating an acute inflammation of a joint after such a wound, the changes which occur in and around the joint when the progress is unfavourable.

4. Describe the appropriate treatment of such a case.

5. What are the consequences of a wound of the knee-joint, and what morbid changes may occur within the joint from the injury?

Laceration.

1. What are the symptoms indicating a laceration of the posterior tibial artery, without external wound, in the upper third of the leg?

2. Describe in detail what would be the proper treatment of such a case?

Lachrymal.

1. Describe the true lachrymal fistula, symptoms, and the modes of treating it.

2. To what disease is the lachrymal gland subject?

Laryngotomy.

1. Mention the varieties in the origin and course of the blood-vessels, to be regarded in the operation of laryngotomy?

2. Mention the cases in which you would perform laryngotomy.

Larynx.

1. Describe the anatomical characters of the various diseases of the larynx, their diagnosis and treatment.

Lens.

1. Enumerate the dislocations of the lens, their causes, results and treatment.

Ligature.

1. Describe the steps of an operation for applying a ligature on an artery.

2. State the position in which you would place the limb, extent, and direction of the incision through the skin.

3. Name the anatomical structures divided, and to be avoided in its performance.

4. If a ligature be placed around the brachial artery, by what vessels would

Ligature—*continued.*

the collateral circulation be carried on?

5. Mention the circumstances which require it.

Lipoma.

1. Describe the characters of a well-marked case of lipoma of the testicle, and the treatment suitable in each of its stages.

Lithic.

1. What are the causes assigned for the redundancy of lithic acid in the urine?

2. Sir B. Brodie's prescription in cases of lithic acid deposits in the urine.

Lithotomy.

1. What are the chief causes of death after lithotomy?

2. In what cases of stone in the bladder would you prefer lithotrity to that operation?

3. State in their normal order the parts cut through in performing the lateral operation of lithotomy.

4. What blood-vessels are in the way of the knife?

5. How avoided?

Lithotrity.

1. What are the accidents and risks incidental to lithotrity?

2. How are they to be avoided, and, if they occur, how are they to be treated?

Loose Cartilages.

1. What are the diagnostic symptoms of loose cartilages in the knee-joint?

2. What other diseased condition of the joint presents similar symptoms, and what is the treatment to be adopted in each of these diseases?

3. What are the characters of the loose cartilages which occasionally form in joints?

4. Describe the train of symptoms which the presence of one of these bodies usually gives rise to, and the treatment you would adopt.

5. Explain the origin of these bodies.

Lower Jaw.

1. In how many ways may the lower jaw be dislocated?

2. Describe the altered relations of the parts when the dislocation is forwards.

3. Mention the muscles which are put on the stretch by the displacement.

4. Describe the method of reducing laxation of the lower jaw.

5. Describe the operation for removal of one half of the lower jaw, mentioning, in order, the structures divided.

Medical Regulations.

1. Name the books and registers which the Medical Regulations require to be kept at every regimental hospital, by the M.O. in charge.

2. Name the regulation contents of the box of apparatus for the treatment of fractures and the reduction of dislocations supplied to regiments.

3. Mention the names of the different diets in the scale ordered by the Medical Regulations.

4. State the composition of any one of them.

5. Name the several kinds of hospital equipment and transport laid down in the Army Medical Regulations for time of war, and the proportion of each allotted to a battalion 850 strong.

Mercurial.

1. Describe a case of mercurial erythismus.

2. Name the authority who first described that affection.

3. Give an outline of the general treatment you would have recourse to in mercurial erythismus.

4. Mention the cases in which you would employ mercurial fumigation.

5. In what diseases do you usually have recourse to mercurial treatment?

Morbus Coxæ.

1. Describe the successive pathological conditions in morbus coxæ, from its commencement to its termination in spontaneous cure.

2. What dislocation does this disease of the hip-joint resemble?

3. What kind of anchylosis will probably ensue?

Mortification.

1. Define the term mortification.

2. State how mortification of a part may be produced.

3. How should it be treated?

4. When you should, and when you should not, amputate in mortification?

5. Describe the different forms of mortification, their signs and progress.

Muscæ Volitantes.

1. What ophthalmic pathological conditions give rise to the symptoms usually designated muscæ volitantes?

2. State how these diseased conditions are to be severally distinguished from the physiological muscæ volitantes, occasionally noticed in perfectly healthy eyes.

Musket-Ball.

1. A musket-ball in passing through a

Musket-Ball—*continued.*
limb pushes aside without penetrating its main artery ; name the several dangerous consequences which may result from this accident.

Myeloid.
1. Describe the characters of a myeloid tumour.
2. Describe the local appearance and symptoms of myeloid disease.
3. Mention its microscopic character.
4. State the treatment, and the probable result.
5. In what tissues, and at what period of life, does it occur ?

Myopia.
1. State the nature of the defect myopia, any ascertained causes, or objective signs of its existence.
2. How is the imperfection of sight to be remedied ?

Nævus.
1. Name the varieties of nævus as developed in the integument.
2. In a small nævus on a child's face, what plans of treatment have been recommended ?
3. Describe minutely their special anatomy, and appropriate treatment.

Necrosis.
1. What is necrosis ?
2. Describe the usual symptoms of necrosis of the first phalanx of a thumb or finger, the pathology, and the treatment you would adopt in its several stages.
3. In what bones is necrosis most frequently met with ?
4. What are the conditions, local and general, commonly observed in a case of acute necrosis of the tibia ?
5. Describe the usual results of such an attack, and the treatment to be pursued in its various stages.

Nodes.
1. Why are nodes rare in infancy ?

Œdema.
1. Give the morbid anatomy, causes, diagnosis, and treatment of acute œdema of the glottis.

Œsophagotomy.
1. Under what circumstances has œsophagotomy been performed ?
2. Describe the operation, and mention the parts with which the operator is concerned.

Œsophagus.
1. What are the various causes, symptoms, different forms, and treatment

Œsophagus—*continued.*
of each form of stricture of the œsophagus ?
2. How would you distinguish them clinically from one another ?

Onychia.
1. Mention the different forms of onychia.
2. Describe the characters of onychia maligna, and its treatment.

Operation.
1. In the event of a patient refusing to submit to an operation, what course should a surgeon pursue ?
2. Should an operation be performed during the continuance of shock ?
3. Describe the operation by which the bones of the wrist and carpal joints, including the heads of the metacarpal bones, may be removed without wounding any large bloodvessels or nerves, and with the least possible injury to other structures.
4. What are the measures that a surgeon should adopt in order to prevent the occurrence of a fatal termination in the cases in which air has been accidentally introduced into the veins during an operation.
5. Describe Chopart's operation through the tarsus, and the relative position of the various parts cut through in this amputation ?

Ophthalmia.
1. Describe the symptoms of purulent ophthalmia in infants, the morbid conditions of the eye to which it may lead, and the treatment usually advisable.
2. Describe ophthalmia tarsi, and its treatment.
3. At what age is pustular ophthalmia most frequently met with, and what is the treatment ?
4. Give the pathological anatomy, symptoms, and treatment of strumous ophthalmia.
5. What are the symptoms of phlyctenular ophthalmia ?

Ophthalmoscope.
1. Give an account of the appearance of the fundus of the healthy eye, as observed with an opthalmoscope ; and of any morbid changes occasioning blindness which you may have seen by the aid of the same instrument, with their treatment.
2. State what you know about the direct and indirect methods of examining the eye by the ophthalmoscope ; particu-

Ophthalmoscope—*continued.*

larly mention how the two methods of examination are conducted, and the effects of each as regards the appearance presented to the observer.

3. Describe and explain the appearance of the normal healthy fundus oculi, as seen by the ophthalmoscope in a blonde individual.

Optical.

1. What are the optical effects produced by removing the crystalline lens, as in an operation for cataract, according as the eye operated upon has been previously emmetropic, myopic, or hypermetropic?

2. State the conditions upon which myopia, presbyopia, and hypermetropia respectively depend; and describe the optical appliances needed for correct vision in either case.

3. Explain the manner in which the spectacles with convex lenses, in the optical and ophthalmoscopic case, are used for determining degrees of myopia and hypermetropia.

4. Give examples illustrative of their mode of application to the purposes just mentioned.

Osteitis.

1. Give the anatomical characters of the form of osteitis which results from exposure to the fumes of phosphorus.

Osteo.

1. Describe the nature, effects, and proper treatment of osteo-myelitis after gunshot injuries of long bones, or of amputations consequent upon them, and the reasons for your practice.

Ozœna.

1. What are the symptoms and causes of ozœna, at what period of life is it most frequently met with, and what local treatment should be adopted when general measures fail to relieve it?

Palate.

1. Explain the cause of the congenital deformity known as cleft palate, including its varieties, and the treatment suitable for each.

Palmar.

1. What treatment would you adopt in a wound of the deep palmar arch?

2. Describe the disease termed contraction of the palmar fascia.

Paracentesis.

1. Name the conditions following injuries to the chest which render the operation of paracentesis thoracis necessary.

Paracentesis—*continued.*

2. Give an account of the circumstances which would determine in your mind the proper period for its performance.

3. Describe accurately the proper way of performing the operation.

4. What are the indications for the necessity of performing paracentesis pericardii?

5. What symptoms would demand paracentesis abdominis, and how would you perform the operation?

Periostitis.

1. Describe the local symptoms of acute periostitis; state the possible results on the bone affected; mention the treatment in its various stages, and at what period of life it usually occurs.

Phagedenic.

1. Describe the local conditions of a phagedenic or sloughing sore on any part of the body, the general condition of a patient affected by such a sore, its usual progress, and the treatment to be pursued.

2. Describe the characters of the edges of granulation and discharge of a phagedenic ulcer.

Pharyngotomy.

1. State the object of the operation of sub-hyoidean pharyngotomy.

Phimosis.

1. What operations would you resort to to remedy the evils attending on a phimosis.

2. Give your opinion of the relative merits of the two operations.

3. Describe the affections known as phimosis and paraphymosis, explain their causes and possible consequences, and state their treatment.

Phlebitis.

1. Distinguish between idiopathic and traumatic phlebitis.

2. Give the pathology and treatment of traumatic phlebitis.

Phlegmonous.

1. Describe the causes, local condition, and general symptoms of a case of phlegmonous erysipelas of the forearm, and state the local and general treatment of such a case.

2. Describe the local symptoms which precede and accompany the formation of phlegmonous suppuration.

Polypi.

1. What diseases may be mistaken for polypi of the nose?

2. Describe the various polypi of the

Polypi—*continued.*

nose and its communicating cavities, whether of a mild or malignant character.

3. What is the structure of ordinary nasal polypi?

4. From what parts do they usually grow?

5. To what inconveniences do they give rise?

Popliteal.

1. Describe the symptoms of popliteal aneurism.

2. What are the different modes of treatment in popliteal aneurism for its arrest?

3. Give the conditions which justify amputation of the limb in a case of popliteal aneurism, and the dangers after amputation.

4. What fluctuating or fluid swellings may present themselves in the popliteal space?

5. Describe their characteristics, and state briefly the treatment appropriate to each.

Presbyopia.

1. Show how, when presbyopia exists, its degree and the means of correcting it are to be ascertained.

2. Name the conditions giving rise to presbyopia.

3. Explain how glasses remedy it.

4. What is the difference between presbyopia and hypermetropia?

5. A patient is affected with hypermetropia and presbyopia: explain the principles on which you would proceed to ascertain the presence and degree of each of these affections.

Primary Syphilis.

1. Describe the ectrotic treatment of primary syphilis.

Prostate Gland.

1. What are the diseases of the prostate gland, the symptoms and treatment of each disease?

2. Describe the early symptoms, consequences and treatment of enlarged prostate gland in an old man.

3. Describe the pathological changes which they produce in the urinary organs generally.

Psoas Abscess.

1. Describe the symptoms in a case of psoas abscess; its diagnosis, the treatment to be pursued, and the probable result.

2. What post-mortem conditions would be observed in a fatal case?

Puncture.

1. In a case of puncture, both of a large artery and its contiguous vein, what is the treatment to be adopted in the case of each vessel?

2. By what process does nature effect it as regards each vessel?

3. Describe the conditions which may probably ensue from a puncture of the femoral artery in the middle of the thigh.

4. What steps should be taken in the case of accidental puncture of the humeral artery?

5. Describe the treatment to be pursued in a case of punctured wound, with copious hæmorrhage, in the palm of the hand.

Pus.

1. Does serum effused from whatever cause into a serous cavity ever become pus; whether the cavity communicate with, or is shut off from, the external air?

2. Does the formation of pus in a serous cavity take place with equal readiness in a shut as in an open cavity?

3. State the chemical, physical, and microscopic characters of pus.

4. What are the local and constitutional symptoms and indications of the formation of pus?

Pyæmia.

1. Give an account of pyæmia, as a complication of gunshot wounds, in military hospitals, mentioning in your reply: (1) the classes of wounds which appear to be most liable to the supervention of pyæmia, and the probable explanation of this special liability; (2) the train of symptoms by which it is usually ushered in and accompanied to its termination; (3) the circumstances in campaigning which favour its development; (4) the means of prevention; (5) the treatment.

Ranula.

1. Give the nature, symptoms and treatment of a case of ranula.

Reparation.

1. State the method of reparation of a (1) long bone, in a case of simple fracture; and the same in the case of (2) muscle; (3) tendon; (4) skin; (5) mucous membrane; (6) serous membrane; (7) nerve, transversely divided.

Retention.

1. What are the most common causes of retention of urine in the child, in the adult, in the old man?

2. Mention the most eligible treatment to be adopted according to each cause.

Retinitis.

1. Enumerate and describe the different forms of retinitis.

Rheumatic.

1. Describe the symptoms of chronic rheumatic arthritis of the hip-joint.

2. Describe the pathological changes of structure to which it usually leads in any joint so affected, and the treatment.

Rickets.

1. Describe the abnormal conditions of the skull which result from rickets.

Rifle-Balls.

1. Mention the principal kinds of fracture of the femur caused by rifle-balls and shell-splinters, their occasional complications, the influence of the seat of injury, the treatment to be pursued in each.

2. What are the series of symptoms, local and general, which may be expected to occur when a lung has been penetrated by a rifle-ball, and the treatment to be adopted?

3. Describe the natural process of the cure in a case of recovery.

4. Name the various accidents which may arise out of a wound of this nature and delay the cure, or induce a fatal result.

Rifle-Bullet.

1. A man was wounded by a rifle-bullet, which entered at the anterior margin of the deltoid muscle and passed out behind the shoulder; in its course it comminuted the head, as well as an inch and a half of the upper extremity of the humerus: (1) state what treatment should be pursued in such a case, and what would be the probable result; (2) describe the characteristic features of a gunshot wound inflicted by a rifle-bullet at high speed, and explain the causes to which they are due.

Rifle-Shot.

1. A soldier is wounded in the upper arm by a rifle-shot, and the (1) humerus, (2) radius and ulna are fractured; what conditions of injury would induce you to amputate the limb?

2. State your reasons for considering amputation necessary when the conditions exist which you have named.

3. Assuming a case of comminuted gunshot fracture of the (1) humerus, (2) radius and ulna, in which you decide to try and save the limb, what will be your course of treatment?

4. What various complications may

Rifle-Shot—*continued.*

arise in the course of the treatment of such a case, and how may they best be guarded against?

Rupia.

1. Describe the symptoms of rupia, the usual cause of the eruption, and the treatment for its relief.

Rupture.

1. What will be the symptoms of rupture of the urethra?

2. What treatment should be adopted in such an injury?—(1) partially lacerated; (2) completely torn across.

3. What is the usual condition of the urethra subsequently?

4. Describe the symptoms of rupture of the intestine, the result of a blow or fall, and state under what conditions such a rupture might possibly not prove fatal.

5. From what sources may the extravasated blood have been derived in rupture of the urethra?

Ruptured.

1. What would be the symptoms of ruptured brachial artery, the result of direct violence, without an external wound, and the treatment in such an injury?

2. Describe the symptoms and the treatment to be adopted in a case of ruptured intestine, the result of external violence, without external wound.

3. What pathological conditions would be observed after death?

4. Describe the symptoms of a case of ruptured kidney, diagnosis, prognosis, treatment to be pursued, and the results that may ensue.

Sacro-Iliac.

1. Name the diseases of the sacro-iliac joint, their diagnosis, and treatment.

Sarcoma.

1. What are the histological features of sarcoma?

2. What is the definition of sarcoma?

3. Specify the points of distinction between carcinoma and sarcoma.

Scalds.

1. Describe the characters, the local and constitutional treatment, of scalds.

2. Give the treatment of scald of the glottis.

Scar.

1. Describe the formation of a scar.

Scirrhous.

1. By what external symptoms may a scirrhous tumour of the breast be distinguished?

Scirrhous—*continued.*

2. Under what circumstances would an operation for its removal be advisable?

3. Describe the microscopical characters of scirrhous.

4. How are scirrhous and medullary cancer distinguished in the living subject?

5. How is chronic ulceration of the breast distinguished from scirrhous?

Scrofulous.

1. Describe the symptoms of incipient scrofulous disease of the hip-joint.

2. In what structures does the disease commence?

3. What are the progressive changes which occur when the disease runs its course unchecked?

Shock.

1. What do you understand by the terms shock and collapse?

2. State the symptoms of each, and explain how they are induced.

3. Give short illustrative cases, and point out the treatment you would adopt.

Sight.

1. Show by what means the defects of long sight and short are respectively corrected.

Sinus.

1. Define a sinus, and explain what are the obstacles to its healing.

2. Describe the various modes of treating a sinus under different circumstances, and give your reasons for adopting any particular method of treatment.

Spina Bifida.

1. What is spina bifida?

2. Why is spina bifida most frequent in the lumbar portion?

3. What are the effects usually produced by it?

4. Give the treatment.

Spinal.

1. What are the conditions which have been observed in fatal cases of spinal concussion?

2. Compare the symptoms of spinal concussion with those due to fracture accompanied by complete division of the spinal cord.

Squinting.

1. Describe the operation for the cure of squinting.

Stabbed.

1. A man is stabbed between the fifth and sixth ribs on the right side: what would be the evidence, physical and general, that the costal pleura had been

Stabbed—*continued.*

perforated—that the lung had been injured?

2. Describe the treatment of such a case.

Staphyloma.

1. What is staphyloma?

2. Mention its causes, pathology, and treatment.

3. What condition of refraction is generally found associated with staphyloma posticum?

Stiff Joint.

1. What are the usual conditions of joints, which are said to be stiff, after strains or other mechanical injuries?

2. What steps ought to be taken to prevent these conditions?

3. When they have occurred, what are the most effective modes of removing them?

Strabismus.

1. Mention the different forms in which strabismus is met with, the causes, and the treatment where a surgical operation is not required.

2. What is the principal cause of convergent strabismus, and why is it important that the operation should be performed at an early age?

Strangulated.

1. In a case of strangulated hernia, in which the swelling has been removed by the taxis, but the strangulation still continues, state what may be the causes of the continued strangulation, the circumstances which would influence your judgment as to its nature, and the operation to be resorted to in different cases.

2. Describe the symptoms which would lead you to suspect the existence of a strangulated hernia, and the characters which such a tumour would present.

3. What objections have been urged against the operation for strangulated hernia, without opening the sac?

4. State the local and general symptoms of a strangulated hernia in the inguinal canal, and describe the operation for its relief.

Stricture.

1. Describe the principal changes, morbid appearances, usually met with in the urethra, in the bladder, and in the kidneys, in a case of long-standing organic stricture of the urethra.

2. Describe the treatment which your observation and experience would lead you to adopt for the relief and cure of permanent stricture of the urethra.

Stricture—*continued.*

3. On what morbid changes may stricture of the rectum depend?

4. Describe the diagnostic characters of each variety, and its appropriate treatment.

5. What difficulties and complications may occur in, and follow after, the treatment of organic stricture of the urethra by gradual dilatation?

Structures.

1. What anatomical structures are divided in a section of the upper arm three inches above the elbow-joint?

2. What structures are divided in cutting off the hand by a section through the radio carpal articulation?

3. What structures do you divide if you take away the foot by a section through the ankle-joint?

4. Name the muscles, arteries, and nerves which would be divided in circular amputation in the middle of the thigh.

Suppuration.

1. What is suppuration?

2. Under what circumstances of injury of the head is suppuration within the skull likely to take place?

Synovitis.

1. What are the causes of acute synovitis of the knee-joint?

2. In synovitis of the knee-joint, what structures restrain the swelling in certain parts of the joint?

3. Mention the signs and symptoms by which it is characterised.

4. State how you would treat it.

Syphilitic.

1. Describe the symptoms, the morbid anatomy, diagnosis, prognosis, affections, most likely to be confounded with syphilitic sarcocele.

2. Give an outline of the treatment.

3. Describe the general appearances of an ordinary syphilitic sore, its period of incubation, and subsequent effects on the body.

4. Mention the different forms of secondary syphilitic eruption.

5. How would you diagnose hereditary syphilitic struma from the non-syphilitic, and how would you treat a case?

Talipes.

1. What is talipes equinus?

2. What structures are in fault in that deformity?

3. State in detail the treatment to be pursued to effect a cure.

4. Name the muscles by which the

Talipes—*continued.*

deformity is produced or maintained in each.

Testicle.

1. State the various swellings near the testicle, and how distinguished.

2. What are the symptoms of cystic disease of the testicle, and the appearance of the part on section?

3. Name the distinguishing signs of syphilitic testicle under the following heads: (1) age; (2) history; (3) general health; (4) progress; (5) pain; (6) surface; (7) consistence; (8) testicle affected, one or both; (9) epididymis; (10) glands; (11) termination; (12) weight; (13) veins of scrotum; (14) fluid in tunica vaginalis; (15) curability by treatment.

4. Name the distinguishing signs of cancerous testicle under the same heads.

5. Name the distinguishing signs of tubercular testicle under the same heads.

Thigh.

1. A man was wounded on the inside of the upper part of the thigh with a knife; the external wound soon healed; shortly afterwards an arterial thrill was observed in the large veins in the immediate neighbourhood of the wound. Describe what had taken place, and the treatment to be adopted in such a case.

Throat.

1. If the throat be cut across between the os hyoides and the thyroid cartilage down to the vertebræ, what parts would be divided, and in what order?

2. Describe the treatment to be pursued in a case of cut throat, when the trachea or larynx has been laid open; the complications likely to arise in such an injury, the prognosis, and (when fatal) the causes of death.

Thyroid.

1. State the diseases of the thyroid gland, and give the appropriate treatment for each case.

Tinea.

1. Describe the appearances, progress, and consequences of tinea tarsi, its pathology, and treatment.

Toe-nail.

1. Give the morbid anatomy, causes, and treatment of ingrowing toe-nail.

Tongue.

1. What are the symptoms of acute inflammation of the tongue?

2. State those demanding active surgical interference.

Tongue—*continued.*

3. Enumerate the circumstances under which it occurs.

4. Describe the diseases which affect the tongue, and state the treatment you would adopt for each of them.

Tonsils.

1. Describe the diseases of the tonsils in children.

2. Mention the causes of their frequency.

3. State the effects, immediate and remote, of their enlargement.

4. Point out the best local and constitutional treatment of diseased tonsils.

Tracheotomy.

1. Make a list of the instruments and materials for first dressings, required for tracheotomy.

2. Describe the operation of tracheotomy, and mention the dangers incident to its performance.

3. Describe all the varieties in the origin and course of the bloodvessels to be remembered in performing the operation of tracheotomy.

4. State the principal points to be attended to in performing it for the removal of foreign bodies from the air-passages; nature and form; loose or impacted.

5. How is the opening to be kept pervious to admit air?

Traumatic.

1. Up to what period of life can a traumatic separation of the epiphyses occur at the lower end of the femur?

2. What are the morbid appearances, diagnosis, prognosis, and treatment in such cases?

3. Give a description of the course usually followed by traumatic tetanus when it supervenes on a gunshot wound.

4. What is understood by the terms trismus, emprosthotonos, pleurosthotonos, opisthotonos?

Trephining.

1. What are the conditions which render trephining necessary?

2. Write a list of all that should be prepared for the performance of trephining.

3. Give the method of performing the operation, with the local and general treatment of the patient up to a favourable or fatal issue.

Tumour.

1. Mention the most common tumours within the scrotum that you have met with.

Tumour—*continued.*

2. State how you would diagnose each of those.

3. Describe the treatment which you would adopt in each case, your reasons for adopting such treatment, and the result which you would expect that it would effect.

4. State the characters, structural and vital, which distinguish malignant and benign tumours.

Ulcer.

1. What is an ulcer?

2. Nature of the disease termed warty ulcer of the penis?

3. Describe the different forms of ulcer, the characteristic appearances of each, and the treatment required.

4. Describe the characteristics of the chief forms of ulcer affecting various parts of the mouth, and their treatment.

Ulceration.

1. In what does ulceration essentially consist?

2. State the phenomena of ulceration of the skin, and describe the process by which the ulcer is healed.

3. State the symptoms of ulceration of cartilage in the knee-joint, the changes which it undergoes in the process, and the treatment of that disease.

Union.

1. Describe the process of union by the first intention, and of union by second intention.

2. Write what you know about recent improvements in the treatment of wounds, particularly those for preventing the occurrence of suppuration, and obtaining union by the first intention.

Urethra.

1. What are the symptoms of a complete transverse laceration of the urethra in the perineum?

2. How would you treat the injury, and what would be the most probable results?

Urinary.

1. Why does urinary infiltration not occur at the neck of the bladder?

2. Describe the local and general symptoms, pathology, and treatment of a case in which urinary infiltration supervenes upon an abscess in the perineum connected with stricture of the urethra.

Varicocele.

1. Describe varicocele.

2. Give the predisposing causes, and diseases resembling varicocele.

Varicocele—*continued.*

3. By what signs is varicocele of the spermatic veins distinguished?

4. Describe the operations proposed for the cure of varicocele.

Varicose.

1. Describe the nature of varicose veins, the causes which may have produced them, and the consequences of that condition as affecting the lower limb.

2. Mention the modes of treatment for the cure of varicose veins.

3. State the merits and demerits of each of them.

4. With what diseases associated?

Venesection.

1. Describe the steps of this proceeding (venesection) at the fore part of the elbow.

2. What points have to be kept in view as regards the arterial and venous circulation of the forearm when the bandage is applied above the elbow?

3. What purpose is aimed at in causing the patient to grasp an object tightly with his hand?

Vertebra.

1. Describe the symptoms and course of a case of scrofulous disease of the upper cervical vertebra.

2. At what period of life does it usually occur?

3. What are the pathological changes observed after death?

Vision.

1. How is vision adjusted to varying distances?

2. Describe and explain the different conditions of vision which follow the use of atrophine when employed so as to produce paralysis of the accommodatory function, according as the eyes thus acted upon are emmetropic, myopic, or hypermetropic.

3. How are the several defects of vision depending upon faulty refraction distinguished from those dependent upon an insufficient power of accommodation?

Vision—*continued.*

4. Explain the principles upon which the diagnosis of emmetropic, myopic, and hypermetropic vision, by means of a convex lens, is founded.

Whitlow.

1. How many kinds of whitlow are there?

2. How are they distinguished?

3. How are they to be treated?

4. What are the pathological changes which occur in whitlow?

Wound.

1. Describe the characters of a wound inflicted during life, and produced after death.

2. Describe the local and general treatment of a lacerated wound of the scalp; give the distinguishing marks of common and erysipelatous inflammation attending such an injury.

3. A man has a penetrating wound of the chest and lungs: mention the complications that may arise in the progress of the case, and the treatment you would adopt.

4. Describe the wound which is usually made in a suicidal attempt to destroy life by cutting the throat with a razor.

Wounds.

1. Name concisely the leading characteristic features of the various wounds—viz., incised, punctured, gunshot—caused by the implements of warfare, and their general treatment.

2. Enumerate the dangers to be dreaded in lacerated wounds.

3. State the causes of death in cases of lacerated wounds.

4. Describe generally the antiseptic treatment of wounds as practised by Professor Lister.

Wry Neck.

1. In what cases of wry neck is subcutaneous section of the sterno mastoid suitable?

2. State the different causes of wry neck, with their diagnosis and treatment.

X.

ZOOLOGY.

Actinia.

1. Describe the structure and reproduction of actinia.

Alternation.

1. What is meant by the term alternation of generations?

2. In what groups of animals does it occur?

Amœba.

1. Describe the anatomical and physiological characters of an amœba.

Amphibia.

1. Describe the respiratory apparatus of amphibia.

2. State the subdivisions of the amphibia.

3. What are the leading subdivisions of the anurous amphibia?

Animal.

1. What are the primary groups of the animal kingdom, and the classes of which they are composed?

2. What are the most striking differences between animals and plants?

3. Give the dentition of the following animals: cat, dog, horse, sheep.

4. In what characters of structure and function do plants and animals agree?

5. Describe the chief modifications of the organs of respiration in the different classes of animals.

Apes.

1. What are the principal features which distinguish the skeleton of man from that of the higher apes?

Aphis.

1. What are the peculiarities in the reproductive process in the genus aphis?

2. To what class and order does the genus aphis belong?

3. Give its distinctive characters and habits.

Articulata.

1. Describe the respiratory system in articulata.

2. Enumerate the articulata used as food.

Aves.

1. Enumerate the orders of the class aves.

Aves—*continued.*

2. Give the principal characters of the class aves.

3. Mention some of its most abnormal members.

Batrachians.

1. Describe the principal modifications of the respiratory apparatus in batrachians.

2. Describe the metamorphosis of tailless batrachians.

Bats.

1. Describe the history and characters of the bats.

Beaver.

1. What is the area of distribution of the beaver?

Bee-hive.

1. Describe the economy of a bee-hive, the differences between its inhabitants, and their mode of increase.

Bird.

1. Mention the principal peculiarities in the skeleton of a bird compared with that of a quadruped.

2. Describe the principal modifications of the respiratory apparatus in birds.

3. Give the mechanism of the flight.

4. Describe the peculiarities in the structure and habits of birds.

Blood.

1. Mention the distinctive peculiarities of the blood in birds, fishes, and reptiles.

2. Describe the course of the blood in these classes.

Bone.

1. State how you would distinguish the bone of a mammal, bird, reptile, and fish.

2. Compare the bones of the hind-leg of the horse with those in the ox.

Carnivora.

1. What relation have the teeth of carnivora to the nature of their food?

Cephalopods.

1. What are the characters of cephalopods? and state their distribution at the present time and at former periods.

2. Why placed highest amongst invertebrate animals?

Cestoid.

1. Name the cestoid worms known to infest man, and state what you know of their development and history.

Cetacea.

1. What are the distinguishing characters of the group cetacea?

Cheiroptera.

1. What are the primary divisions of the cheiroptera?

Cilia.

1. Describe cilia, and the phenomena of ciliary motion.

Cirripidia.

1. Give a general account of the structure and mode of development of the cirripidia.

2. Describe the organisation of the sessile and pedunculate cirripidia.

Cœlenterata.

1. Give the characters of the class cœlenterata.

2. Mention its primary divisions.

Crustacea.

1. Describe the general structure of the class crustacea, and those of its principal modifications.

2. Describe the arrangement of the nervous system in crustacea.

3. Explain the respiratory apparatus in crustacea.

4. What are the distinguishing characters of pœcilopod crustaceans?

Darwin's.

1. Give Darwin's theory of natural selection.

Distoma.

1. Describe the anatomy of the distoma hepaticum, and give an account of the life-history of one of the trematodes.

Earthworm.

1. Explain the structure of the earthworm.

2. Describe the segmental organs of the earthworm.

Echinodermata.

1. Write a brief description of the several vascular systems in the echinodermata.

2. Enumerate the principal groups of the echinodermata.

Edentata.

1. Describe the chief features of the organisation of the edentata, and give an account of their geographical distribution.

Egg.

1. Describe the sources and the mode of formation of the yolk, the white, and the shell of a bird's egg.

Elephant.

1. What is the area of distribution of the elephant?

Entozoa.

1. What are the distinctive characters of entozoa?

2. Enumerate the species under the organs they principally affect.

Equus.

1. What are the essential characters of the genus equus?

2. How many species are known in a wild state, and where are they found?

Eye.

1. What are the chief modifications of the eye in the different parts of the animal kingdom?

2. Give an account of the structure of the eye in birds.

Fauna.

1. Give a general account of the fauna of Asia.

2. What are the most remarkable characteristics of the fauna of Australia?

3. What are the most characteristic features of the fauna of Africa?

4. What is the general nature of the fauna of the Parmian strata, and what physical conditions does it bespeak?

5. Give an account of the present state of our knowledge regarding the Cambrian fauna of Britain.

Feather.

1. Describe the structure and mode of development of a bird's feather.

Fecundation.

1. How is the process of fecundation effected in fishes and insects?

Fishes.

1. Describe the modifications of the respiratory apparatus in fishes.

2. What are the principal subdivisions of the class pisces?

3. Mention examples of fishes belonging to each group.

4. Give their principal distinctive characters.

5. Describe the organ of hearing in fishes.

Fowl.

1. Describe the digestive canal of the common fowl.

2. Describe the structure of the gizzard in a domestic fowl.

3. What is the nature of the hard palate of the domestic fowl?

Frog.

1. Give an account of the development of a frog.

2. Describe the heart and circulation in a frog.

3. What changes take place in the circulating organs during transition of tadpole into frog?

4. Describe the scapular arch and sternum of a frog.

Gasteropods.

1. How is the function of respiration performed in the case of the air-breathing gasteropods.

2. Give a short account of the nature of the alimentary canal in gasteropods.

Gills.

1. Compare the form of the gills in the lamprey, shark, and salmon.

2. What is a gill, and what is a lung?

3. What use do they fulfil?

4. Are they ever combined in the same animal?

5. Give an example.

Guinea-worm.

1. Describe the structure, development, and mode of reproduction of the guinea-worm.

Heart.

1. Describe the chief modifications of the structure of the heart in animals.

2. Describe the differences in the form and structure of the heart in a cartilaginous and in an osseous fish.

3. Describe the mechanism of the heart in a turtle.

Helix.

1. Give the principal characters of the genus helix.

Herring.

1. Give an account of the herring family, and notice the species that are of the most importance to man.

2. Describe the digestive canal of a herring.

Horn.

1. How does the horn of an ox differ from the horn of a deer?

Human Race.

1. Enumerate the principal varieties of the human race, state their distinctive characters and geographical distribution.

Hybernation.

1. What is meant by hybernation?

2. In what animals does it occur, and what functional conditions do they present during it?

3. How is it explained?

Hydræ.

1. Describe the modes of reproduction in hydræ, inclusive of their structure.

Hydrozoa.

1. Describe fully the anatomy, histology, and development of any member of the class hydrozoa.

Hymenoptera.

1. By what features is the order hymenoptera characterised?

Infusoria.

1. Describe the organization of the infusoria, and their relations to other animals.

2. Describe the phenomena which accompany the congregation and the fission of the higher infusoria.

Insecta.

1. Give the distinguishing characters of the class insecta, with the leading characters of the orders.

2. What are the principal modifications of the mouth of insecta; of the respiratory apparatus in insecta; and of the nervous system in insecta?

3. What are the principal distinctive characters of the classes of insecta?

4. Describe the organs of circulation of insecta.

Insectivora.

1. Give an account of the organization, and point out the affinities of the insectivora.

Insects.

1. Give an account of the metamorphosis of insects, and point out its chief differences in the different orders and parts of the same order.

2. Give examples of the orders.

3. How is respiration performed in the larvæ of those insects which inhabit water?

Invertebrata.

1. What are the principal distinctive characters of the classes of invertebrata?

2. Describe the various modifications of the organ of vision in the invertebrata.

3. Give an account of the auditory organs of the invertebrata.

4. Trace the gradual development of the liver through the principal series of invertebrata.

Lamellibranch.

1. Describe the gills of a lamellibranch.

2. What is the crystal style of a lamellibranch?

3. With what other structures would you homologate the gill of a lamellibranch mollusc, and why?

Leech.

1. Describe the circulating system of the leech.

2. Describe its mouth and digestive system.

3. To what class of animals does the leech belong?

4. Where is it chiefly obtained from?

Lion.

1. What is the area of distribution of the lion?

Lobster.

1. Describe the nervous system of the lobster.

2. In what respects chiefly does a lobster differ from a beetle?

3. Describe the organ of hearing in the lobster.

4. How does the embryogeny of the crab differ from that of the lobster?

Mammals.

1. Give a sketch of the geographical distribution of some of the larger divisions of mammals.

2. Enumerate the principal aquatic mammals, stating their chief peculiarities.

3. Describe the chief modifications of the structure and development of the teeth in mammals, and give the general characters of the dentition of the several orders.

4. Enumerate the principal genera of mammals indigenous to the British Isles, referring each to its order.

5. Give an account of the structure of the internal ear in mammals.

Marsupials.

1. What is the geographical distribution of marsupials?

Microscopically.

1. How can you distinguish microscopically a piece of wood; bone; claw and bone of bird; horn of ruminant; shell of a lamellibranch; tooth of mammal?

Mollusca.

1. Give the distinctive characters of the class mollusca.

2. Define the orders of the class mollusca, and give examples.

3. Describe the respiratory system in mollusca.

4. Describe their organ of hearing.

5. What classes of mollusca possess an odontophore?

Nautilus.

1. Contrast the structure of the ammonite and the nautilus.

2. Compare the gills of the nautilus with those of argonauta.

Ophidia.

1. Describe the poison apparatus in ophidia.

Optic.

1. What are the positions of the optic lobes in the brains of the perch, frog, alligator, turkey, and mouse?

Organism.

1. How can you discriminate original from adaptive characters in any organism?

Pachydermata.

1. Give a short account of the larger pachydermata.

Primates.

1. Give a classification of the primates.

2. Give their essential distinctive characters, and their geographical distribution.

Protozoa.

1. What is the primary classification of protozoa?

2. What is the work of the protozoa in rock-building?

Pseudopodia.

1. What is the nature, and what are the functions of pseudopodia?

Quadrumana.

1. What is the geographical distribution of the quadrumana?

2. Into what groups are the quadrumana divided?

Reptilia.

1. Describe the respiratory apparatus of reptilia.

2. Give the plan of circulation in the reptilia.

3. State the subdivisions of the true reptilia.

4. Describe the cervical region of the vertebral column in reptilia.

Rhizopod.

1. Describe a rhizopod.

Rodents.

1. What relation have the teeth of rodents to the nature of their food?

Rotifera.

1. Give an account of the rotifera.

Round-worm.

1. Describe the general structure of the round-worm.

Ruminantia.

1. What are the distinctive and dental characters of the order ruminantia?

2. Describe their digestive apparatus.

3. What is the structure of the horns of the different genera of ruminantia?

4. Describe the act of rumination, and the principal modifications in the struc-

Ruminantia—*continued.*
ture of the digestive organs presented in the class.

Salpa.
1. Give an outline of the structure and life-history of a salpa.

Sea-Urchins.
1. Describe the sea-urchins.
2. To what class and order do they belong?
3. Describe the shell or test of a sea-urchin, with its appendages.

Silk.
1. What animals produce silk; and by what organs is the silk formed?

Skeletons.
1. Compare the skeletons of a duck, hawk, pigeon.

Snail.
1. Describe the organs of circulation of a snail.
2. Describe the respiratory organs in a common snail.
3. Compare and contrast the structure of a whelk with that of a snail.

Spermatozoa.
1. What animals have motionless spermatozoa?

Sponges.
1. State what you know of the reproductive processes in sponges.
2. How are sponges characterised structurally?
3. What reasons are urged for placing sponges among the cœlenterata?
4. To what division of the animal kingdom do sponges belong?

Spontaneous.
1. What is meant by spontaneous generation?

Star.
1. Describe the locomotive apparatus of a common star-fish.
2. Describe the structure of an ordinary star-fish, under the following heads:

Star—*continued.*
(1) the alimentary system; (2) the water-vascular system; (3) the nervous system; (4) the reproductive system.

Stomach.
1. What is meant by a simple, a complex, and a compound stomach?

Tænia.
1. Describe the structure and development of the genus tænia solium—tape-worm.

Thread.
1. What is the structure of a thread-cell?
2. What is the highest group of animals armed with a thread-cell?

Tiger.
1. What is the area of distribution of the tiger?

Tunicata.
1. Give the characters of the class tunicata.
2. Contrast a bryozoon with a tunicata.
3. Describe the nervous system of a tunicata.

Vermes.
1. By what characters are vermes divisible into groups larger than classes?

Vertebrata.
1. Give the distinctive characters of the five classes of vertebrata.
2. What classes of the veretebrata have quadrate bones?
3. What are the chief peculiarities of the structure of the vertebral columns in the different classes of vertebrata?
4. Describe the structure of the heart in vertebrata.
5. Give an account of the principal modifications of the respiratory apparatus in vertebrata.

Vultures.
1. Give an account of the peculiarities of the vultures.

THE END.

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