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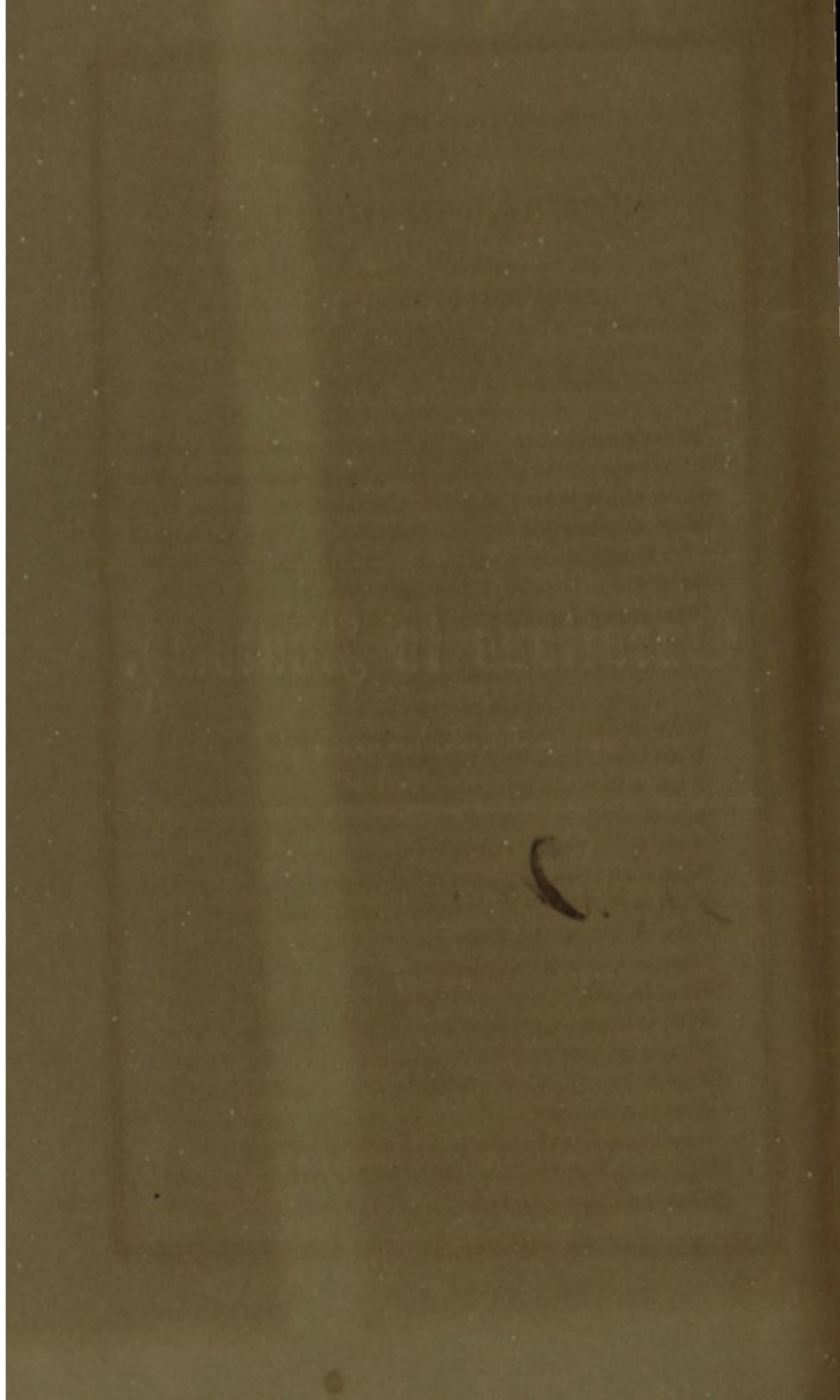
Questions in Anatomy.

BY PROF. FORD.

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QUESTIONS IN OSTEOLOGY.

BY

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These questions are raised to direct the attention of the student to some of the points most worthy of consideration. The answers will be given in the Lecture Room, and can be found in most of the ordinary works on Anatomy. They are written for the benefit of the students attending the Medical Department of the University of Michigan.

ANN ARBOR, Mich., Oct. 1, 1861.

- What is Anatomy.
- What is Zoology? what Zootomy.
- What is Comparative Anatomy.
- What is Special Anatomy.
- What is Descriptive Anatomy.
- What is Physiological Anatomy.
- What is Microscopical Anatomy.
- What is General Anatomy.
- What is Philosophical Anatomy.
- What is Transcendental Anatomy.
- What is Pathological Anatomy.
- What is Surgical Anatomy.
- What is Topographical Anatomy.
- What is a Skeleton.
- What is an Endo-Skeleton? a Neuro Skeleton.
- What is an Exo-Skeleton? a Dermo-Skeleton.
- What is a Sclero-Skeleton.

- What is a Splanchno Skeleton.
- What is a Natural Skeleton.
- What is an Artificial Skeleton.
- What is Osteology? Histology.
- What is Osteogeny.
- How many bones in the Human Skeleton.
- Why do Anatomists differ in the number.
- Are teeth properly called bones.
- Where shall we place the ear bones.
- What is the nature and object of sessamoid bones.
- What is the usual division by regions.
- What bones are found in the head.
- How many and what form the trunk.
- What number and names in the upper Extremity.
- What number and names in the lower Extremity.
- What is a bone.
- What is the composition of bone.
- What circumstances cause the composition to vary.
- How is bone nourished.
- What are Haversian canals? how large.
- What are osseous lacunæ? how shaped? size.
- What are canaliculi? how large.
- What is an Haversian rod? an ossicle?
- What immediately precedes bone.
- What precedes cartilage.
- What different modes of ossification.
- How early is the process first observed.
- At what period is it completed.
- Describe the process of formation and growth.
- How do they elongate? how enlarge.
- Does bone change like soft parts.
- What is the evidence of such change.
- When is bone most vascular.
- When most liable to fracture? why.
- What is meant by Diaphysis.
- What is an Epiphysis? its object.
- How are Epiphyses useful in the young.
- What varieties of osseous tissue are seen.

- What invests bone? its character and uses.
- What membrane lines the cavities? its nature.
- Is bone sensitive? Has it nerves.
- Has bone lymphatics.
- What fills the hollow bones.
- What fills the cancellated structure.
- What bones receive air into the interior.
- How is it in the case of birds.
- What example of very light skeleton.
- What of a very heavy skeleton.
- What change in skeleton in advanced age.
- Does their weight change with age.
- Is the animal matter strong when old.
- Is bone absorbed in old age? in disease.
- What part is most apt to be absorbed.
- Will bones bend and not break.
- Will a callus bend or yield to pressure.
- Is exostosis true bone.
- When arteries are said to be ossified is it bone.
- Is true bone formed in soft parts in disease.
- For what purpose are bones used.
- What are the principal forms of bones.
- What is the general conformation of long bones.
- What advantage from large extremities.
- What bones have a medullary canal.
- When is it formed? What is its object.
- What are the principal uses of flat bones.
- Where are the short bones most abundant.
- What advantage results from that.
- What are foramina? What are canals.
- What are sinuses. What sinuosities.
- What are fossae? pits.
- What is the form of glenoid cavity.
- What is the form of cotyloid cavity.
- What are tuberosities? tubercles.
- What are spines? processes.
- What are heads? necks.
- What is an apophysis.

- Into what parts are bones of the trunk divided.
- What element characterizes all higher animals.
- What is a vertebra? meaning of the term.
- What are the essential parts of a vertebra.
- What modifications are observed.
- What purpose does it serve?
- What is meant by true vertebra? What by false.
- How early does ossification begin.
- Describe the process of formation of vertebra.
- How many parts at birth.
- How many accessory parts.
- At what period is it completed.
- What exception to the general rule.
- Of what parts does a vertebra consist.
- Describe the form of the body; its structure.
- What processes to each? their use? their structure.
- What is the spinal canal.
- How is it completed? what between the bones.
- What openings in it? how formed.
- What occupies the spinal canal.
- What features characterize the cervical vertebræ.
- What distinguish the dorsal.
- What peculiarities in the lumbar.
- What do the false vertebræ form? number.
- How are the vertebræ connected.
- What parts articulate? what motion.
- What is the form of the vertebral column.
- Describe the first cervical vertebra.
- Describe the second one; its peculiarities.
- What is there peculiar in the seventh.
- How are the bodies of the vertebræ connected.
- What bones form the thorax? what its shape.
- What is a Rib? How many.
- What is a true rib? a false one.
- What parts of a rib are named? Describe each.
- What parts of a rib articulate? with what.
- Describe the first rib: its position.
- Which rib is the longest? its direction.

- What is peculiar in the eleventh and twelfth.
 Do the ribs ever vary in number.
 What is their structure.
 What covers the inner surface.
 What part of cervical vertebra corresponds to rib.
 Why are ribs developed early.
 What true rib has the shortest cartilage.
 Which the longest? direction of cartilage.
 How are the cartilages of the false ribs arranged.
 What purpose do the cartilages serve.
 What is the sternum? where placed.
 What its form, structure and use.
 What bones articulate with it? what cartilages.
 What muscles are attached to it.
 How many centres of ossification.
 What defect sometimes from mode of growth.
 What bones form the Pelvis? its shape? how divided.
 What distinction between male and female pelvis.
 How many vertebræ represented in the Sacrum.
 How many in the coccyx? where is it situated—form.
 What is the situation of the sacrum? form.
 What foramina and what passes through them.
 With what does it articulate.
 At what angle does it join the lumbar vertebra.
 What kind of union with innominata.
 How many curves in vertebral column.
 What advantages arise from the curvatures.
 What causes the lateral curvature in the dorsal region.
 With what does the innominatum articulate.
 What are its primary divisions.
 What is the position of the ilium.
 What parts of the ilium are named? Describe each.
 What is the position of the ischium.
 Describe each part named.
 Describe the parts and position of the Pubis.
 What and where is the spine—crest—angle—ramus.
 Where is the acetabulum? How is it formed.
 Where is the margin strongest? where deficient.

- What advantages arise from its form.
 Where is the thyroid foramen? its object.
 What muscles attached to crest of the ilium.
 What to its anterior spinous processes.
 What muscles attached to dorsum ilii.
 What to inner surface of the bone.
 What is attached to spine of pubis? to crest.
 What to body pubis? what to ramus of pubis.
 What muscles to tuberosity of ischium.
 How many primary points of development.
 How many accessory ones.
 When is the bone consolidated.
 What muscles attached to innominata.
 How is the lower extremity divided.
 How early does ossification of femur begin.
 When does the first epiphysis appear.
 How many epiphyses? where situated.
 At what period is the bone consolidated.
 What is the structure of different parts.
 What are the principal parts named.
 What is the form of the shaft.
 What and where is the linea aspera.
 What eminences at the upper part of the bone.
 Describe the shape and position of each.
 How does the neck vary? how long.
 What is the form of its lower extremity.
 Describe the condyles and tuberosities.
 With what bones does the femur articulate.
 What muscles attached to great trochanter.
 What to the trochanteric fossa.
 What to the lesser trochanter.
 What to the different parts of linea aspera.
 What muscles attached to the lower end.
 Where are the crucial ligaments attached.
 How many muscles connected to femur.
 What is the patella and its form.
 With what does it articulate.
 What is attached to its apex.

- What muscles are connected to patella.
- What are the bones of the leg.
- How is the tibia situated.
- How is it divided? shape of the shaft.
- What is the form of the upper end.
- What parts are named at the upper end.
- What and where is the spine of tibia.
- Where is the spinous process? shape.
- What parts at lower end of tibia? The form.
- With what does tibia articulate.
- How many points of development.
- When is the bone fully formed? structure.
- How many and what muscles attached to this bone.
- What is the position of the fibula.
- What is its shape? how divided.
- How do the ends differ in form.
- With what do the ends articulate? names.
- What is the form of the shaft.
- How is it connected with the tibia.
- How many points of development.
- How many muscles attached to it? names.
- How many bones in the foot.
- How is the foot divided.
- What are the tarsal bones.
- What is the position of each one.
- With what does the astragalus articulate.
- What is the shape of its several surfaces.
- What is the position and form of the os calcis.
- With what bones does it articulate.
- What is attached to its posterior part.
- What bone above os calcis? what in front.
- How many points of development for os calcis.
- Where is the scaphoid? its general form.
- What bone posterior to it? what anterior.
- What is the form of its posterior surface? its anterior.
- Where is the cuboid? its shape.
- What does it join behind? in front? inside.
- Describe its surfaces and articulations.

- How many and what cuneiform? which way is small end.
 Which is the largest? which the smallest.
 With what do they articulate posteriorly? anteriorly.
 With how many does each tarsal bone articulate? what ones.
 How many metatarsal? their position.
 Which is largest? which longest? which most posterior.
 What is the shape of each end.
 How many phalanges.
 How many to each toe? the form of each.
 Where are the sessamoid bones.
 How many bones in the upper extremity.
 How are they divided.
 What are the bones of the shoulder.
 Where is the clavicle situated.
 With what does it articulate? name the parts.
 How do the ends differ? describe each.
 What is its general form? its structure.
 What muscles are attached to it? where.
 By what ligaments is it connected.
 What position does the scapula occupy.
 What is its general form? how thick.
 With what bones does it articulate.
 What parts of the scapula are named.
 Where are they situated? describe each.
 What muscles are attached to the spine of the scapula.
 What ones to base? to coracoid process.
 How many muscles connected to it.]
 What is the form of the humerus.
 What parts are named on upper third.
 Describe the head and tuberosities.
 Where is the anatomical neck? surgical neck.
 What is the form of the lower end.
 What are the parts named? the position of each.
 Which condyle is the longest.
 Which ridge most prominent.
 What class of muscles from inner condyle.
 What class from outer condyle.
 What muscles attached above the middle? where.

- What epiphyses of humerus? how large.
 What are the bones of the forearm.
 What parts at upper end of ulna.
 How are its articulating surfaces placed.
 What is the form of the bone.
 What parts at its lower end? shape.
 What is the situation of the ulna.
 With what bones does it articulate.
 What is attached to styloid process.
 Describe the olecranon and coronoid processes.
 What muscle attached to each.
 Where are the greater and lesser sigmoid cavities.
 With what do they articulate.
 How much of lower end is epiphysis.
 Where is the radius situated.
 What parts at upper end? shape.
 What is the form of body? lower end.
 With what bones does it articulate? by what parts.
 How many points of development.
 When do they unite? which one first.
 How are ulna and radius connected.
 How are the bones of the hand divided.
 How many carpal? metacarpal, phalanges.
 How are the carpal bones arranged.
 What ones in each row? shape of each.
 Which ones articulate with radius.
 Where is the principal motion of wrist.
 How many points of development for each.
 Which metacarpal is longest.
 Which the largest? the smallest.
 What is the shape of each end.
 With what does each articulate.
 How many phalanges? sessamoid.
 What the peculiarities of each row of phalanges.
 What bone of forearm corresponds to tibia.
 What tarsal bone corresponds to scaphoid.
 What one to cuneiform? to pisiform.
 What tarsal to each of second row of carpal.

- What is the typical number of carpal.
 Which ones are double.
 What is meant by connate.
 What by confluent as applied to bones.
 How many bones of the head? how divided.
 What are the names of the cranial bones.
 What are the names of the facial bones.
 Which ones are common to both.
 What is the structure of the cranial bones.
 What bone articulates with the atlas? by what part.
 Where is the occipital bone situated.
 What is the form of the occipital bone.
 With what bones does it articulate? where.
 How many angles has it? how situated.
 What is the most prominent part of the bone.
 What lines running from it? which way.
 What openings in the bone and where.
 What parts pass through the openings.
 What in front of basilar process.
 What does it join? what its form.
 What grooves and fossa on inner surface.
 Where are the parietal bones situated.
 What is the form of the parietal.
 Where is the longest angle situated.
 What bones do they join.
 What parts are named on this bone.
 Where is the frontal bone? its shape.
 How many points of development.
 How is it divided? what form of frontal portion?
 Where is its orbital portion placed.
 What bone between the orbital portions.
 With what bones does this articulate superiorly.
 What does it join laterally? what inferiorly.
 What parts are named on its outer surface.
 What on the inner surface.
 What are the frontal sinuses.
 Where is the ethmoid bone situated.
 What is its general shape? its structure.

- What is the appearance of the upper plate.
 What projects upwards from it? how high.
 What is attached to it.
 What part of the orbit does the ethmoid form.
 What part of nasal fossa.
 Where is the remainder of the bone situated.
 What portions of it are named? to what united.
 Where is the sphenoid bone situated.
 What are its principal divisions.
 What is its central part called? its structure.
 What is the shape of its upper surface.
 What is in front of the sella turcica? behind.
 How many wings on each side? how united.
 Which one in front? its shape, its connections.
 What process at inner part of lesser wing.
 What foramen at its base? where does it open.
 What opening between the wings? its shape.
 What surfaces of greater wing? shape of each.
 Where are these surfaces situated? what help form.
 What foramina at base of great wing? the order.
 What processes project downwards? where situated.
 Which is the widest? the longest.
 What space between them? its shape.
 What foramen at their base? what goes through it.
 Where is the hamular process? what passes around it.
 Where is the azygous process? what joins it.
 How many and what processes on the bone.
 With what bones does the sphenoid articulate.
 What muscles are attached to this bone? where.
 What occupies the sella turcica? its size.
 What pass through the different foramina.
 What bones form the base of the skull.
 What fossae at the base and for what purpose.
 What foramina at the base in the different bones.
 What parts pass through the different openings.
 What bones form the lateral walls of the cavity.
 What are fontanells? how are they formed? where.
 What are "ossa triquetra?" where found.

- Where is the temporal bone situated.
- What are its primary divisions.
- Where is each portion situated.
- What process from the squamous portion.
- What fossa at its root? its object.
- What opening between the squamous and mastoid portion.
- What process of bone around the opening.
- What is attached to the auditory process.
- Describe the mastoid portion of the bone.
- What fossa and groove at its inner side.
- Where is the petrous portion situated.
- What is the form of this portion.
- What openings in it and where? what canals through it.
- What pass through the openings.
- What processes from this portion? where.
- What muscles attached to temporal bone? where.
- What bones join the temporal? how many.
- What bones form the base of the skull within.
- What ones form its lateral boundaries.
- How is the base of the skull divided within.
- What bones form the anterior cerebral fossa.
- What ones form the middle? the posterior.
- What bones form the cerebellar fossæ.
- What is received into these fossæ.
- What foramina at the base of the skull.
- Which of these transmit nerves.
- How many cranial nerves? the names of them.
- At what opening does each nerve leave.
- What blood vessels enter the cranium.
- At what opening do they enter? in what bones.
- What vessels carry off the venous blood.
- What are the principal sinuses? where terminate.
- How are the bones of the head connected.
- How are the sutures formed.
- What purpose do they serve.
- What are the principal ones.
- Which table of the bones forms the suture.
- What is between the tables.

- What cavity in the frontal bone? its nature.
 Do bones grow at the edges.
 How many and what facial bones.
 Where are the nasal bones situated.
 How long, wide and thick are they.
 What bones do they join? what cartilage.
 Where are the malar bones situated.
 What parts are named on malar.
 What part of orbit does malar form.
 What bones unite with it.
 Where are the lachrymal bones situated.
 What are the size, form and use.
 What bone above, behind, below, in front of lachrymal.
 What is lodged in the groove? how large.
 What muscle is attached to it? where.
 What position does superior maxilla occupy.
 What is the form and structure of this bone.
 What surfaces are named upon it.
 What foramina and what pass through them.
 What cavity in the bone? where does it open.
 What part of the orbit does this form.
 What part of the nose is formed by it.
 What processes and their position.
 How are these bones joined together.
 With what other bones do they unite.
 Where is the palate bone situated.
 What parts are named and how placed.
 What foramen in and what passes through it.
 What part of the palate formed by this bone.
 What part of the nasal fossa? what part of orbit.
 How many turbinated bones? where situated.
 Where is the vomer? what is its shape and use.
 With what does it articulate.
 What is understood by nares.
 What is position and form of posterior nares.
 What are meati? how many.
 What bounds the lower meatus.
 What the middle? the upper.

- What openings into upper meatus.
 What into middle? what into lower.
 What is the use of the sinuses and cells.
 What kind of membrane lines them.
 With what does inferior maxilla articulate.
 How is it divided? the form of the body.
 What parts upon the ramus? the form of each.
 What openings in the bone? where and for what.
 What passes through them? their size.
 What muscles attached, and where? how many.
 How is it developed? how many pieces.
 How does the form change with age.
 Where is the os hyoides situated.
 How is it divided? the form of each part.
 What muscles are attached to it.
 What is the general structure of the facial bones.
 How many points of development for each.
 What bones form the orbital cavity.
 Where is each bone situated.
 What openings into that cavity.
 What bones form the hard palate.
 What bones bound the posterior nares.
 What is the shape and position of os hyoides.
 What is the shape of orbital cavity.
 What bone forms the upper boundary.
 What forms the outer boundary.
 What bones form the lower boundary.
 What forms the inner boundary.
 What openings into the orbit.
 What pass through these openings.
 What bones form vertex of skull.
 What bones form temporal region.
 What openings in facial surface of skull.
 What pass through the several openings.
 What openings in the hard palate.
 What pass through them.
 What is meant by facial angle.
 What is usual size in different races.

- What is the usual capacity of cranium.
- What is the maximum in cubic inches.
- What are teeth? how many sets.
- How many in each set.
- What classes of teeth in each set.
- What is the form of each class.
- How many in each class.
- How is each tooth divided.
- What structures in each tooth.
- Describe the structure and composition of enamel.
- What are its properties and position.
- Where is the dentine found? what other name.
- What is the structure of dentine.
- Where is the cementum or crusta petrosa.
- What its structure thickness and uses.
- What occupies the cavity of tooth? its nature.
- How are teeth held in place? nature of attachment.
- What is the nature of the investing membrane.
- How early is the first provision for the teeth manifested.
- What and where is the first appearance.
- When is the papillary stage completed.
- When is the follicular stage completed.
- When does the saccular stage appear.
- Describe the progress and character of each stage.
- What part of the tooth is first formed? last formed.
- What element is first deposited? where.
- How is the eruption accomplished.
- When do the first of the first set appear.
- When is the first set completed.
- By what process are they removed.
- When does this naturally occur.
- What is the first provision for the second set.
- Describe the position and process of their development.
- How many teeth and rudiments at 6 years of age.
- When do the second set begin to appear.
- When are they completed.
- Why are we furnished with two sets of teeth.
- Is there ever a third set.

- Do teeth change like bones.
What is meant by articulation.
What classes are usually made.
What is meant by synarthrosis.
What is meant by suture? what varieties.
What is meant by schindylesis? where.
What is meant by gomphosis.
What is amphi arthrosis? what example.
What is meant by diarthrosis.
What is arthrodia? give an example.
What is enarthrosis? what examples.
What is ginglymus? where shown.
How are bones connected.
What tissues in an ordinary joint.
What tissue forms the ligaments.
What are its properties and structure.
Where is cartilage found? how thick.
What are its structure and properties.
Where is synovial membrane found.
To what general class does it belong.
What are its properties and uses.
What is the structure of fibro? cartilage.
Where is this principally found? its properties.
Where is the nodding motion of the head made.
Where is the rotary motion made.
What bones form the shoulder joint.
What bones form the elbow joint.
What motion in the elbow joint.
What bones form the wrist joint.
What motion have we there.
What bones form the hip joint? the shape.
What bones form the knee joint.
How do these bones articulate.
What bones form the ankle joint.
What motion between tarsal bones.
What motion at metacarpo-phalangeal articulation.



