A guide to the examinations at the Royal College of Surgeons of England, for the diplomas of Member and Fellow / by Frederick James Gant.

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TO THE EXAMINATIONS
AT THE
ROYAL COLLEGE OF SURGEONS
OF ENGLAND

FREDERICK J. GANT

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BY THE SAME AUTHOR.

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FOR THE

DIPLOMAS OF MEMBER AND FELLOW.

BY

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FOURTH EDITION.

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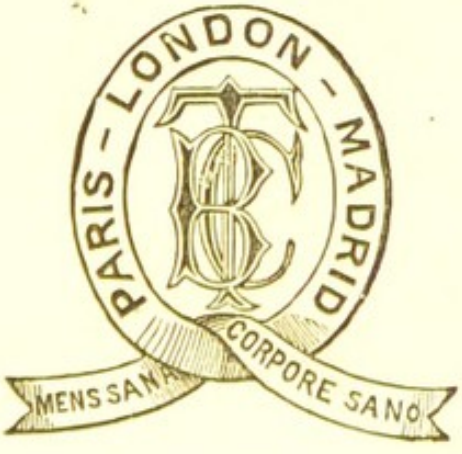

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1881.

ADVERTISEMENT

TO THE

FOURTH EDITION.

ANOTHER Edition of the Guide being required to meet the continued demand of Students preparing for the Professional Examinations at the Royal College of Surgeons of England, the opportunity has been taken of incorporating all the numerous changes which have been recently introduced into the course of these Examinations —whether for the Diploma of Member or of Fellow.

These alterations, and the additions to this Manual, relate chiefly to the following subjects :

Physiology, in the Primary Examination for the Membership ; and in the corresponding First Examination for the Fellowship. The series of Anatomical and Physiological Preparations has been revised by Dr. J. G. Garson, assistant in the Museum.

The nature of the Practical Examination in Physiology and Histology is abundantly illustrated by the *vivâ voce* Questions put to several Candidates, for either Diploma.

In Surgery, for the Pass Membership, the character of the Practical Examination is exhibited in like manner.

The Clinical Examination of Patients is further developed in the Second Examination for the Fellowship ; a series of Cases being given.

Pathology—also a Practical Examination—is fully exemplified by the Questions to which several Candidates were submitted, for either Diploma.

As pertaining only to the Diploma of Fellow ; in the

Second (Pass) Examination, Operations on the dead subject are represented in the form of a fairly complete series, which the Candidate must himself practise; and Surgical Anatomy—now made a separate Examination on the body, immediately after Operations—is another special feature of this Edition.

The Examination-Papers comprise the whole Series, dating from the commencement of the Examinations in their present form, January, 1869, as pertaining both to the Primary and the Pass, and whether relating to the Diploma of Member or of Fellow. These Papers will enable the Student to exercise and test his own knowledge with regard to the Questions, as set in the "Written." Any standard text-book on each subject will suffice for reference in this *self*-examination. But to facilitate the Student's preparation in this way, paged references to various Text-books are appended to the Questions in the Examination-Papers. In Physiology and Histology the works of Carpenter, Foster, and the Manual by Harris and Power, are given as the sources of reference; Mr. D'Arcy Power, of St. Bartholomew's Hospital, having made the requisite applications of these well-known Text-books to the Questions on both these subjects. In Surgery, the author's work, "Science and Practice of Surgery," 2nd edit., is paged in the Examination-Papers for either Diploma.

But reading for Examination must always be largely supplemented by that personal and practical knowledge which so eminently characterises the whole of the College curriculum, and which is specially indicated in *this* Edition of the Guide.

F. J. G.

March, 1881.

CONTENTS.

A GUIDE

TO THE

EXAMINATIONS AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,

FOR THE

DIPLOMAS OF MEMBER AND FELLOW.

No one disputes the national importance of the Royal College of Surgeons, as the central home of biological science in this country—a science which represents the structure and functions of organised beings in health and disease, and the laws relating thereto. The possession of an absolutely unrivalled Museum of Anatomy—human, comparative, physiological, and pathological—has long since rendered it simply impossible for any other institution to overtake the College in its vast material resources for *teaching* the science of life; and systematic expositions of these resources by Professors Owen, Quekett, Huxley, and Flower, have, for a long period of years, attracted the profession in this and from foreign countries, with men of science in general, as students of Hunter's grand conception. Periodic Orations have commemorated this epoch in the history of natural science. At the same time, the successive advancements and aspects of modern Surgery have been exhibited in yearly short courses of original Lectures by some of the most distinguished Surgeons, past and present. But now it is desirable, and cannot be uninteresting, to inquire into what the College, as an *Examining Board*, has done meanwhile, and is doing, to sustain and extend the educational character of the Profession, and to protect the just rights of the Public in regard to the qualifications of men who are licensed to practise Surgery. To all who are preparing, or about to prepare, for the Professional Examinations at the College,

a proper knowledge of the nature and direction of such Examinations cannot fail to be useful.

For this purpose, in the year 1870, I requested permission, which was readily granted by the President, to visit the College during the two Examinations for the Diploma of Member—the Primary Examination on Anatomy and Physiology, and the Second or Pass Examination on Surgical Anatomy and the Principles and Practice of Surgery. I then followed through the two Examinations, First and Second, for the Diploma of Fellow. Since the period referred to, I have repeatedly pursued a similar course of observation up to the present time. The Guide —as originally published—is now made complete; exhibiting the whole course of Examination in further detail, and comprising the Examination Series of the Anatomical and Pathological Preparations and Specimens, the Surgical Instruments and Apparatus—all according to the descriptions entered in the College Catalogues; and also the Questions submitted to candidates, in the "Written" Examinations, for the Membership and for the Fellowship, according to the Examination-Papers during the period from January, 1869—when the present form of Examination was instituted, up to date.

In the present Edition (1881), paged references to various Works on Physiology, including Physiological Anatomy, and Surgery, are appended to the Questions, in *all* the Papers; thus to promote the self-examination of students who are preparing for the College.

EXAMINATIONS FOR THE DIPLOMA OF MEMBER.

PRIMARY EXAMINATION.

AT THE END OF SECOND WINTER SESSION.

ANATOMICAL AND PHYSIOLOGICAL EXAMINATIONS, of four hours' duration: in Anatomy, two hours—from 1 to 3 p.m.; in Physiology, two hours—from 4 to 6 p.m.

ANATOMY.—Candidates *must* answer four (*and not more than four*) out of the six questions. Candidates unable to answer four questions, must report the fact to the Presiding Examiner, and are not allowed to proceed with their examination.

1. Describe the Fibula, with its muscular and ligamentous attachments.
2. Describe the Deep Cervical Fascia.
3. Describe the Masseter; its relations, attachments, and uses.
4. Give the dissection necessary to expose the Superior Profunda Artery. Describe its course and anastomoses.
5. The abdomen being opened, give the steps to be followed for removal of the Liver, and describe its under surface when dissected.
6. Give the cutaneous distribution of the Nerves of the lower extremity below the level of the crest of the Ilium and Poupart's ligament.

PHYSIOLOGY.—The same regulations with regard to questions, as for Anatomy.

1. Describe the minute structure of Bone. What is its chemical composition?
2. Describe the mucous membrane of the Duodenum. What changes does the food undergo in this part of the alimentary canal?
3. Describe the phenomena of the Coagulation of the Blood, and the circumstances by which it is modified.
4. Describe the movements of Respiration. How are they performed, and in what way are they modified by age and sex?
5. What is meant by the term "Common Sensation"? How is the degree of tactile sensibility estimated? and

to what extent does the acuteness of sensibility vary in different parts of the body ?

6. Describe the minute structure of Nerve-fibres. Classify nerves according to their functions. Give examples of each class.

The practical examination on Anatomy, which is most conclusive as the test of qualification, was instituted at the College in November, 1858, and has been gradually developed since that period ; and a report of the Court of Examiners, adopted by the Council in January, 1870, leaves no doubt of its design. It is to test the student's own *personal* knowledge of Anatomy, as the result of practical work or instruction. A similar Examination on Physiology was recently added.

Practical Examination on Anatomy and on Physiology.—In the room, or theatre converted into a room, where the examination is held, four tables are arranged ; on two of which are distributed a series of recent dissections and anatomical preparations of dissection, the latter under spirit in flat glass receptacles, showing the regional and visceral anatomy of the body. This department of anatomy is supplemented by ordinary museum preparations arranged around the room. Textural anatomy, and the minute structure of organs, are provided for by four microscopes, and a useful series of microscopic preparations. At each of the four tables, two examiners are engaged with a student or candidate for diploma. But the same candidate is examined at only *two* tables ; on Anatomy, a quarter of an hour ; on Physiology, a quarter of an hour ; a total period of thirty minutes. The other two tables are devoted to Physiology, and to physiological anatomy.

Anatomy.—The general features of the Anatomical Examination may be here noted. It is essentially *objective.* Accordingly the *questions* asked are principally in the form of " What's this ?" the examiner pointing at the same time to the object of his query. It will be evident that by this mode of examination a wide range of matter can be gone over in a limited time, as well as thus eliciting the student's knowledge of anatomical objects and facts. Occasionally only, the student is asked to *describe* an object before him ; for that would imply the power of describing, and a facility of descriptive language, neither of which might be readily at command under the trying circumstances of an examination.

An enumeration of the following series of dissections and preparations will suffice to indicate the principal objects by which the candidate's practical knowledge of anatomy is tested.

Regional Anatomy.—Triangles of the neck, showing principally the relation and distribution of the blood-vessels; parotid region and side of the cheek, showing the course and opening of Stenson's duct; occipital region, showing the deep muscles, recti and obliqui; anatomy of the axilla; bend of the elbow; palm of the hand; Scarpa's triangle, showing the relation and distribution of the femoral vessels and anterior crural nerve; popliteal region, showing its boundaries, and the relation and course of the popliteal vessels and nerves; sole of the foot.—*Ligaments:* Temporo-maxillary articulation, ligaments, and inter-articular cartilage; a section-view. Articulations and ligaments of the first two cervical vertebræ, one with the other, and as connected with the occipital bone; articulations and ligaments of the clavicle, shoulder-joint, elbow-joint, ligaments of the wrist and hand; hip-joint, knee-joint, showing the relative position of the crucial ligaments; head of the tibia, with the semilunar cartilages, showing their relative shape and size, as determining whether they formed part of the right or left knee-joint; ligaments of the ankle-joint, and of the foot.—*Bones:* Separate, and articulated in the skeleton. (See further, Examination Series, p. 24). It will be in the recollection of those members of the College who underwent the examination some years since, that osteology then formed the only test of the student's objective knowledge of anatomy.

Physiology.—In this division of the practical examination, the anatomical portion is still objective, but supplemented by *questions* relative to the *functions* of the various organs and tissues.

The preparations and specimens for examination are comprised in the following series:

Visceral Anatomy.—Dissections and preparations of the brain. Lungs and heart, with their vessels in relative position, as seen when the anterior wall of the thorax is removed. Heart: section-view, showing the course of the blood through its cavities. Stomach and liver: longitudinal section of the former organ when distended, showing its curvatures and fundus, orifices, cardiac and pyloric, and commencement of the duodenum; longitudinal section of the gall-bladder. Liver: showing its ligaments, lobes,

and fissures ; portal vein, hepatic duct, and hepatic artery, with their relative position at the transverse fissure. Intestinal canal : longitudinal section of the jejunum, presenting its valvulæ conniventes. Kidney, injected : longitudinal section, showing the relative position of the renal vessels and uretur at the hilus ; also, the relative appearance and thickness of the pyramidal and cortical portions. Bladder, and urethra with penis, opened anteriorly, showing openings of the ureters, neck of the bladder, prostatic sinus, veru-montanum and sinus pocularis, with the openings of the common ejaculatory ducts ; remainder of urethra, and trabecular structure of corpora cavernosa. Perineum, its ischio-rectal fossæ, and their boundaries. (See further, Examination Series, p. 39.)

Developmental Anatomy.—Ossification of the bones ; fœtal circulation, &c.

Histology.—As already stated, a series of specimens are used, in order to test the student's objective knowledge of histology. Having regard to the great importance of textural anatomy, and of the minute structure of organs, in relation to pathology, this portion of the practical examination on anatomy has been considerably extended.

On one occasion, the following series of microscopic specimens were used ; *each* candidate being required to name and describe four such specimens : (1) Cellular cartilage. (2) Ossifying cartilage. (3) Bone, transverse section. (4) Bone, longitudinal section. (5) White fibrous tissue. (6) Yellow elastic tissue. (7) Tesselated epithelium. (8) Salivary gland. (9) Tongue. (10) Stomach. (11) Small intestine. (12) Liver. (13) Kidney. (14) Lung. (15) Muscle striated. (16) Muscle non-striated. (17) Skin. (18) Hair. (19) Tooth, longitudinal section. (20) Tooth, transverse section. (21) Spinal cord, transverse section. (22) Uric acid. (23) Urate of ammonia. (24) Triple phosphates. (25) Oxalate of lime. (See further, Examination Series of Specimens, p. 46.)

Specimens.—Blood, milk, urine, and other secretions, &c., with chemical reagents.

Form of Examination in Histology and in Physiology.—The course of this part of the examination is indicated by the questions put to each of *four* candidates :

Candidate 1 : *Four microscopic* specimens usually having been recognised, questions arise from each kind of specimen submitted for inspection. The candidate is afterwards examined upon other *preparations* as

relating to physiology. (1) Describe the arrangement of the vessels around the air-cells of the lungs. What form of epithelium exists in the cells? What form of epithelium on the bronchial mucous membrane? How much air is changed in ordinary respiration? What is the amount of residual air in the lungs? What is respiratory capacity? Under what circumstances does it vary? Give the structure of a bronchial tube. What membrane covers the lung? What is its structure? Its function? (2) What is this?—Coagulum of blood? What does it consist of? How much fibrin in 1000 of blood? The proportion of corpuscles? The proportion of red and white corpuscles? The circumstances which modify this proportion? (3) White fibrous tissue. The characters of the fibres? Where is this tissue found in the body? In what parts the yellow elastic tissue?

Candidate 2: Four specimens under microscope. Then—(1) Eye. What are the ciliary processes? What are the layers of the choroid? The use of the lens? Its modifying action according to near and distant vision? How accomplished? Structure of the ciliary muscle? What cranial nerve controls its action? The use of the iris? Its condition in distant vision? What is spherical aberration? (2) Tongue. Point out the papillæ. Name and distinguish them. What is the structure of the epiglottis; and the form of epithelium on it? Its function? Show the vocal cords. Give their structure. What muscle separates them? (3) Heart, with cavities open. Name them. Show auriculo-ventricular opening, right and left. What are the valves? Their function? Show aorta. What are its valves? Their function? What is the cause of the second sound of the heart?

Candidate 3: Four specimens under microscope. Then—(1) Liver. Structure of a lobule. What is the function of liver-cells? What are the constituents of bile? The test for biliary salts? Pettenkofer's test? What are the uses of bile? (2) Digestion. What are the movements of the food in the stomach? Their purpose? The action of the gastric juice? Its chemical re-action? The acids present in this fluid? Has it any effect on starch? What is peptone? What is the action of saliva on food? What is the re-action of pancreatic secretion? Describe the structure of solitary glands of intestine. Their function? (3) Blood, and circulation. What are the corpuscles? The red—their size? their

structure? The white—their size? their structure? What are the differences between arterial and venous blood? What is the quantity of blood in the body? How estimated? Do some organs receive more blood than others? Which most? What part of the brain is most vascular? Is there any increased supply of blood to the stomach during digestion? What may be the physiological explanation of the hyperæmia? What is the influence of vaso-motor nerves? Do all the organs vary in the quantity of blood received under different circumstances? What is the effect of dividing the sympathetic nerve in the neck? Any effect on the eye? Any effect on the amount of sweat?

Candidate 4: Four specimens under microscope. Then—(1) Urine. Average quantity in twenty-four hours? Average specific gravity? What variations under different circumstances? What is the composition of urine? What its re-action? Test a sample of urine, and take its specific gravity. What is urea? What its source in the body? What is the structure of the kidney? Its cortical and pyramidal portions? Describe a Malpighian body. What is the secretory portion of the kidney? The evidence of secretory power? The effect of blood-pressure? (2) Milk. What is its specific gravity? What are its constituents? On standing, what does milk divide into? The difference between butter and cream? Any envelope to a milk-globule? What average quantity of mother's milk required for a child three months old? Is there any difference between woman's milk and cow's milk? How would you make the latter resemble the former for administration to an infant? (3) Ossification of the humerus. How old is this specimen? What features indicate the age? How is the epiphyseal head united with the shaft? What arrangement of cells precedes advancing ossification of the shaft? (4) Recognise the duodenum; portions of small and large intestine.

SECOND OR PASS EXAMINATION.

AT THE END OF FOURTH YEAR.

EXAMINATION ON SURGICAL ANATOMY, AND THE PRINCIPLES AND PRACTICE OF SURGERY; from 1.30 to 4.30 o'clock, p.m.—Candidates *must* answer at least four —including one of the first two—out of the six questions.

1. Give the relations of the Right Common Iliac Artery, and state by what arteries the collateral circulation is established after ligature of that vessel.
2. Enumerate the structures which must necessarily be divided in Excision of the Scapula.
3. To what Visceral Complications may Severe Burns of the Skin give rise, and at what stage of the case are they most likely to appear?
4. What is Spina Bifida? Describe the Anatomy of the deformity, and the means you would adopt for its relief.
5. Describe the symptoms of a Foreign Body impacted in the Larynx, and state how you would relieve the Patient.
6. Describe the formation and treatment of Fistula in Perineo in the Male.

PRACTICAL EXAMINATION IN SURGERY, AND USE OF SURGICAL INSTRUMENTS AND APPARATUS.—The title of this portion of the Pass Examination, must not lead the candidate to suppose that Practical Anatomy is excluded. The questions often test the candidate's anatomical knowledge, and even more fully than in the practical portion of the Primary Examination; it being the more recent intention of the examiners that the student should thoroughly keep up his knowledge of anatomy after the first two years. There are two tables, on each of which lies a man stripped for the purpose of surgical examination. Two other tables are provided for such "patients" as may be better examined in the recumbent position. In the centre, another table is spread with an assortment of surgical instruments, and ranged round the room in compartments are bandages, splints, trusses, and other surgical apparatus indicated by placards—*e.g.*, made bandages, splints for arm, thigh, &c. The nude re-

cumbent *figures* are well-formed and well-developed ; but they present very different degrees of muscular development and contour, selected apparently for different objects of surgical examination. Thus, one man is of spare muscular development, but in his body the various bony prominences in the upper and lower extremities stand out conspicuously. He is an excellent subject for *topographical* anatomy. Another man, of ample muscular form, is more suitable for amputation and the application of splints. Red chalk is provided, so that the student shall mark the course of the arteries, or of other adjacent parts, and the relative position of internal organs. Wooden knives—in the shape of large scalpels and amputating knives—are used for the various representations of surgical operation, in the ligature of arteries, excisions, and amputations.

The prevailing character of this examination on Surgery, like that on Anatomy, is eminently practical, and designed to elicit the student's personal knowledge. He is asked to *point out* this, or *to do* that ; occasionally only to give his reasons for something he had stated. In *both* these examinations, while one examiner puts the student through his exercises, another makes notes of the questions ; then they jointly determine the merit of the answers, and indicate their judgment on another paper—not by the terms "good," "moderate," or "bad," but, as recently, by the more exact method of relative "numbers." The numerical system has the advantage of indicating intervening degrees of merit ; and the number of marks the candidate obtains may represent the *minimum* sufficient, or ascending degrees of merit. At the expiration of *ten* minutes, announced by a bell-stroke, the student leaves the table where he has been engaged, taking with him the question-paper of his examination to a second table, whereby the examiner is enabled to see what questions have been asked, in order to avoid any repetition. According to the sum-total of marks in his favour, the candidate passes ; or if adverse, he has "failed to acquit himself," &c., as the official notification subsequently announces.

The following questions illustrate the nature of the practical pass-examination on Surgery :

Lower Extremity.—In synovitis of the knee-joint, point out the situations where the swelling presents. What structures restrain or prevent the appearance of swelling in certain parts of the joint? Put your finger on the in-

sertion of the ligamentum patellæ, and name the prominence of bone. Mark, with chalk, on the skin, the course of the anterior tibial nerve, from its commencement to the ankle-joint. Under what muscle does the external popliteal nerve pass below the head of the fibula? Point out the most common situation of fracture of the tibia. Point out the situation of fracture in the fibula and internal malleolus, constituting Pott's fracture. Twist the foot in the direction it then assumes; and why is it so turned? What splints would be used for a broken leg—fracture of both bones? Apply M'Intyre's splint. Apply side-splints. Apply Dupuytren's splint for fractured fibula. These questions included the bandaging of the limb to secure the splints. Lay hold of the foot, and mark the line of incision as for Chopart's amputation. Between what bones of the tarsus do you disarticulate? Do the same as for Hey's amputation. Lay hold of the second toe, and feel for the joint in amputation at the metatarso-phalangeal articulation. Mark the line of incision. Mark the course of the superficial femoral artery. Where would you compress the common femoral with your finger, and compress the artery? Apply a tourniquet. For flap-amputation of the thigh, in its middle third, direct how the leg should be held. Take this spatula and show where you would enter the knife, how transfix the limb, and where bring out the point of the knife. Indicate the lines of the flaps. Prepare the bone for the saw. Apply the saw. What main artery will require ligature, and where would you find that vessel? For ligature of the posterior tibial artery, laterally, under the gastrocnemius, mark the line of incision; what muscle will be divided, and where will the artery be found? Apply lateral splints to the leg, and bandage from the foot. Put your finger on the internal abdominal ring; also into the external abdominal ring. What point of bone can be felt in the latter ring? Describe the course of oblique inguinal hernia. Show how to reduce the hernia. Select a proper truss; apply it. Make the requisite measurements with a tape, so that an instrument-maker in London may forward to you in the country a proper-fitting truss. Put your finger on the saphenous opening in the thigh. What bounds it externally? Show how to reduce a femoral hernia, indicating the directions in which compression should be made, successively. Apply a spica bandage, also a double spica bandage.

Upper Extremity.—Compress the brachial artery with your fingers. Mark, with chalk, the course of the artery from the armpit to the bend of the elbow. Name the superficial veins in the arm, pointing them out severally. Apply a bandage, as for bleeding at the bend of the elbow. Place the arm in the direction it assumes from dislocation of the humerus into the axilla, or forwards, or backwards. What is the position of the arm in fracture of the clavicle? Point out the acromion. Reduce a dislocation of the forearm backwards, placing your knee in position for counter-extension.

Neck.—Place the head as for tracheotomy. Mark the incision. Where should the trachea be opened? What vessels are in the way or proximate? Put your finger on the seventh cervical vertebra, and how do you know it? Compress the subclavian artery with your thumb, in the third part of its course.

Thorax.—Point out the situation of puncture for paracentesis thoracis. Mark, with chalk, the arch of the aorta; also the outline of the heart, and the apex where it strikes the wall of the chest. Point out where you would tap the chest, which margin of the intercostal space you would avoid, and why? Amputation of the breast: Place the arm in position, mark with red chalk the incisions, show how you would raise the breast, and to what depth, and how to remove any diseased axillary glands. The treatment of hæmorrhage in the operation, and secondary.

Abdomen.—Point out the situation of puncture for tapping the abdomen. Why is that spot selected? Mark the lineæ semilunares. Mark the course of the abdominal aorta, and its termination. Also of the external iliac arteries. What is the relative position of the iliac veins? Where would you puncture the bladder above the pubes? Where, per rectum?

Instruments.—Select the instrument for puncturing the bladder per rectum. The instruments for lithotomy. Apply a trephine to the skull, placing the centre-pin in position. When should the latter be withdrawn? Apply a ligature to an artery, represented by the end of a bougie. Plug the nares, anterior and posterior, in the skull. Name various instruments on the table, and describe their uses.

Form of Examination.—Two candidates were recently examined as follows:

Candidate 1: (1) Name the structures in the middle

line of the neck, from the chin to the sternum. Is the trachea of equal depth in the neck? Do any natural movements affect the length of the trachea in the neck? What is the effect of deglutition? What that of deep inspiration? (2) Name the bones in the wrist-joint. Mention the articulation of these bones? What synovial incumbrances are there in the radio-carpal and ulnar articulations? Point out and name the tendons around the wrist. What do the radial extensors pass over to their insertion? (3) Mark Poupart's ligament, and the boundaries of Scarpa's triangle. Mark the incision for ligature of the superficial femoral artery. What is the course of the artery? Where is the profunda given off? How would the collateral circulation be carried on, after operation?

Same Candidate, Second Table: (1) What is this?—a double roller. Make a capelline bandage on the head of this man. (2) Instruments.—Name lithotomy scoop; how is it used? Name gorget, retractors, bull-dog forceps, serrefine, œsophageal probang, and for the removal of what kind of foreign bodies is it used? Nasal speculum, clamp for internal hæmorrhoids, bullet-forceps, actual cautery. (3) Inguinal region.—Name the structures exposed on dissection. What are the origins and insertions of the external oblique muscle? How is the sheath of the rectus muscle formed? What are the coverings of the spermatic cord?

Candidate 2: (1) Compress the femoral artery in the groin. What is the relation of the femoral vein? Compress the artery in the middle third of the thigh. What is Hunter's canal? What nerve accompanies the artery in the canal? What is the relation of the vein? What are the relations of the artery and vein in the popliteal space? (2) Put your finger on the gall-bladder. Mark the position of the cæcum. Mark the colon throughout its course. What is Amussat's operation? (3) Indicate the regions of the abdomen. What operations are performed in the hypogastric region? In tapping the abdomen, what precautions would you take? (4) Mark the course and extent of the axillary artery.

Same Candidate, Second Table: (1) Mark incision for ligature of the external iliac artery. What structures are divided and exposed in the operation? How is the internal abdominal ring formed? (2) Point out the crural ring. What are the boundaries of the crural canal? What

is the usual stricture in operating for femoral hernia? How is the saphenous opening formed? (3) Abscess in the axilla—mark incision. What parts would you avoid? Indicate the course of the long thoracic and subscapular arteries. (4) Excision of the knee-joint—mark the incision. In applying the saw, is there any danger to the popliteal artery? Might the limb in a young person eventually become shorter after operation? Why?

CLINICAL EXAMINATION.*—This examination consists in the diagnosis of, and statement of the treatment appropriate for, injury or disease, as exhibited by *patients* in the average course of surgical practice. It forms part of the Practical Examination in Surgery, and the use of Surgical Instruments and Apparatus. The cases are such as may be seen mostly in the out-patients' room of any general hospital, and would be almost certainly met with during the period of Dressership required by the regulations of the College.

Thus, among the cases brought forward in the first two clinicals, were: an unreduced dislocation of the elbow-joint, of some duration; bony anchylosis of the hip-joint, consequent on arthritis, in a middle-aged man; a suppurating inguinal bubo; a synovial cyst in the popliteal space; an indolent ulcer of the leg, with the marks above of recent subcutaneous ligature in three or four parts of the long saphena vein. Candidates are requested themselves to examine, and state verbally what they find in these cases. For example, the hip-joint case presented some shortening and eversion of the leg, with immobility of the hip-joint, so that in raising the limb on the pelvis, the latter moved with it, and showed a characteristic fold in the abdominal wall, above the groin. This condition was also attended with some obliquity of the pelvis, and lateral curvature of the spine in the lumbar region, towards the sound side. The man's general health was good, or certainly not reduced as by recent and acute disease of the joint. After such examination, the diagnosis was asked, and then the treatment—by the mechanical support of a high-heeled shoe. The other cases were gone through in like manner.

As further illustrating the kind of cases submitted to the candidate for his judgment, the following were the subjects of examination on a more recent occasion: Angular curvature of the spine, with double lumbar

* Instituted at the College, April 18th, 1871.

abscess ; the disease of five or six years' duration, and consequent on direct violence from a sack of coals having fallen on the back, and the patient being scrofulous. Fracture of the tibia and fibula just above the ankle-joint ; the foot had been forcibly everted by slipping on a doorstep, five years since. Union of both fractures. Recurrent cancer of breast, and near cicatrix of operation for removal of the primary tumour, two years ago, in a man seventy-six years of age ; apparent cause, a fall on that part, one year before the appearance of the growth. Chronic teno-synovitis of the flexor tendons, just above the wrist ; hand not involved. Suppurating inguinal glands, from a sprain. Fatty tumour of small size, in the posterior triangle of the neck. Tumour of antrum, with protrusion of the eyeball, and projection of the growth into the nasal fossa ; small fistulous opening over the lachrymal sac, the sight unaffected ; enlargement of the cervical glands ; date of the disease, six months, and apparently referable to a blow on the bridge of the nose sixteen years previously ; the patient's age, thirty-one. Caries of ulna just below the olecranon, in a boy seven years old. Enchondroma or cartilaginous tumour close above the outer condyle of the femur ; from three to four years' duration, in a youth seventeen years of age. Necrosis of the humerus, in the upper third of its shaft. Two fistulous openings on the inner aspect of the arm, presenting fungous granulations. Disease of the shoulder-joint, with marked flattening of the deltoid muscle. Epithelial cancer of the tongue ; two months from date of its first appearance, in a man aged fifty-six.

The *histories* indicated in connection with these various forms of injury and disease relate to some of the particulars which the candidate must himself ascertain by questioning the patient, after having examined the case. Then, in stating his diagnosis, he may mention the reasons for his opinion, if requested thus to supplement that opinion.

One feature in these practical examinations seems especially worthy of notice—it is the freedom from any embarrassment or difficulty to the candidate, assuming him to be well prepared. This agreeable circumstance is partly due to the *objective* character of the examination, whereby readiness of language and much descriptive power are not at all essential to success ; and the composure of the student is aided by the calmness and

considerate bearing of the examiners. In one case, a candidate who laboured under great impediment of speech, but who evidently possessed the requisite knowledge, was facilitated by answering in writing; just a word or two on a piece of paper with a pencil being quite sufficient to the questions—"What's this?" and "What's that?"

PATHOLOGY AND SURGERY.—This concluding subject of the practical pass-examination is held in the Council-room and large library adjoining. It is oral or *vivâ voce;* and each candidate is subjected to examination at two tables for a period of *ten* minutes at each table, making *twenty* minutes' examination instead of half an hour, as had been the period. Pathology being so directly supplemental to Practical Surgery, this part of the College examination is most important. The College Museum, in its magnificent pathological department, might be further enriched by contributions from the Hospitals, where duplicate specimens of value for the purpose of testing the student's knowledge are constantly accumulating.

Form of Examination.—The questions put to two candidates, severally, will illustrate the course of this examination :—

Candidate 1 : (1) Necrosis of the tibia. What is this specimen? Point out the sequestrum. What is the external sheath? From what structure is new bone formed, chiefly? Are there any other sources? In what probable period would the changes have occurred in the specimen? Mention the causes of necrosis. Is acute or chronic inflammation the more common cause? What are the consequences of chronic inflammation of bone? (2) Calcareous degeneration of an artery. What is this? At what period of life is arterial degeneration most common? What is the chemical composition of the deposit? What effects are produced on the artery? What influence on the circulation? The consequences of arterial degeneration?

Same Candidate, Second Table : (1) Fracture of base of the skull. Point out the injury. The cause? How does indirect violence produce fracture of the base? (2) Fracture of the neck of the femur, extra-capsular. Point out the nature of the injury, and its relation to the capsule. Was it caused by direct or indirect violence? Signs of the fracture? Diagnosis from intra-capsular fracture? In which fracture would the limb

be most shortened; and to what amount? Difference with regard to age of the patient? How is impacted fracture of the femoral neck produced.

Candidate 2: (1) Fracture of lower ends of tibia and fibula. State the nature of the specimen. What is the displacement of the fragments? What is the position of the os calcis? For what dislocation of the foot might this displacement be mistaken? What splint should be used to prevent traction of the heel backwards? What should be the position of the leg to the thigh? Under what circumstances might you have to perform tenotomy, by division of the tendo Achillis? (2) Atheroma of aorta. What is this degeneration? The seat of the change in the coats of the artery? What is the structure of the middle coat of the vessel?

Same Candidate, Second Table: (1) Phlebitis. State the changes which the coats of the vein have undergone. To what is the coagulum due? Do clots form after death? How would post-mortem clot-formation be distinguished? (2) Depressed fracture of the skull. Mention the form of fracture. Is there any repair in the specimen? What would be the immediate effects of depressed fracture? What are the symptoms of concussion? The treatment of compression? (3) Iritis. Its symptoms? What vessels form the vascularity? The treatment of simple Iritis?

EXAMINATION ON THE PRINCIPLES AND PRACTICE OF MEDICINE.—Candidates presenting themselves for the final examination for the membership or fellowship will be examined in Medicine, unless claiming exemption under the published regulations of the College. But a candidate who has passed an examination in Medicine for the membership will not be required to pass any further examination in Medicine for the fellowship.

These regulations cannot be too widely known, for they concern most candidates for the diploma of Member, and many candidates for that of Fellow.

The following questions illustrate the nature of this examination:

From 1.30 to 3 p.m.—1. Give a short account of scarlet fever, and its varieties; your treatment of particular cases of the disease, and the method you would adopt to prevent its propagation. 2. Enumerate some of the commoner forms of the cutaneous diseases of the scalp, and their treatment. 3. Mention the principal Pharma-

copœial purgative agents, and give the composition and doses of each.

Oral or vivâ voce Examination in Medicine.—This examination is held immediately at the termination of the *vivâ voce* in Pathology and Surgery. The candidates who have undergone the *written* examination in Medicine enter the adjoining room, or small library, and are subjected to questions by the examiners in Medicine. Each candidate is submitted to this additional test for *ten* minutes.

The kind of oral examination by which the candidate's medical knowledge is thus further tested, will be seen in the following series of questions, as relating to four candidates. Such questions frequently arise out of some point in the written examination, wherein it seemed that some error or deficiency had been shown. What are the signs of aortic regurgitation? What is the character of the pulse, and the cause of it? What condition of the left ventricle results? What is cirrhosis of the liver? What are its symptoms or signs, and its consequences? What are the signs of ascites? In the female, how would you diagnose ascites from ovarian dropsy? What other causes are there of hæmatemesis besides cirrhosis? What are the different kinds of ulcer of the stomach? What is the situation of the small circular ulcer, and the usual age of the patient? What are the characters of the cancerous ulcer, and the probable age of the patient? How would you diagnose this ulcer before hæmatemesis occurs? Another candidate might be asked as follows: Diabetes mellitus—What is Frayling's test, and what the advantage of it? What is this pathological specimen? —Typhoid ulceration of the intestine. What are its characteristic appearances? How is the ulcer produced? What are the abdominal symptoms of typhoid fever? What kind of dejections are passed? What are the febrile symptoms? What the characters of the eruption? How many spots usually, and their situation? What is the appearance of the tongue? What the average duration of the fever? The period of incubation? What are the causes of a fatal issue? The symptoms of peritonitis from perforation of the intestine? What the treatment, and of intestinal hæmorrhage? A third candidate might be questioned in another direction: What is this skin eruption, depicted in a coloured lithograph?—herpes zoster. What is its nature and common situations? What is this eruption? — molluscum.

Another drawing showing congenital syphilitic eruption. Another, showing impetigo. What is this specimen?—aortic valvular disease. What is the character of the pulse (Corrigan's)? What are the signs of mitral incompetency? What is there peculiar in the patient's appearance? A fourth candidate may be submitted to the following questions: What are the signs of pericarditis? State the diagnostic signs of pleurisy and pneumonia. The tests for sugar in the urine, Trommer's test more particularly? The kind of diet, and the reasons for it? Why is brown bread ordered? What is this specimen?—an injected lung, showing a cavity at the apex, and abundant tubercular deposit. What are the signs of a cavity? Name the sound of the percussion note. The signs of pneumothorax, from rupture of a cavity? What are the consequences? Describe the signs arising from the presence of air and fluid in the pleural cavity.

Results of the preceding Examinations for the diploma of Member.—Primary examination.—*Example.*—Number of candidates, 103, 11 of whom had been up once previously, and 5 of the 11 twice before, the present occasion being their third trial. 43 of the whole number referred to their anatomical studies for three months. All these were candidates for the first time. Second or pass-examination.—*Example.*—Number of candidates, 40, only 1 having been up on a previous occasion. 9 were referred for six months. The one previously referred, passed.—Medicine: Number of candidates, 24, 10 of whom were referred for a period of not less than three months. The average number of candidates, and the results of examination, in one year, is shown by the following table:

Primary Examination on Anatomy and Physiology.

Date.	Number of Candidates.	Passed.	Referred for three months.	Referred for six months.
1879. July 7th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, and 17th ..	201	128	50	23
November 10th, 11th, and 12th	71	52	16	3
1880. January 7th, 9th, 12th, 13th, 14th, and 15th	140	77	53	10
April 5th, 6th, 7th, 8th, 9th, 12th, 13th, and 14th	173	146	26	1
,, 26th, 27th, 28th, 29th, 30th, May 3rd and 4th	154	108	43	3
May 8th, 10th, 11th, 12th, 13th, 14th, and 15th	157	95	54	8
	896	606	242	48

Pass Examination on Surgical Anatomy and the Principles and Practice of Surgery and Medicine.

Date.	Number of Candidates.	Passed.	Approved in Surgery to qualify in Medicine.	Approved in Surgery and afterwards qualified in Medicine.	Total No. of Diplomas.	Referred for six months.
1879. July 21st	24	11	0	0	11	13
,, 22nd	25	15	0	4	19	10
,, 23rd	25	13	3	2	15	9
,, 24th	25	16	2	0	16	7
,, 25th	25	18	2	0	18	5
,, 28th	25	16	1	1	17	8
,, 29th	25	10	3	0	10	12
,, 30th	24	16	4	0	16	4
,, 31st	25	20	2	0	20	3
Nov. 17th	24	13	1	1	14	10
,, 18th	24	17	0	19	36	7
,, 19th	25	17	3	2	19	5
,, 20th	25	18	2	0	18	5
1880. Jan. 19th	23	15	1	1	16	7
,, 20th	25	14	1	8	22	10
,, 21st	26	18	2	5	23	6
,, 22nd	27	10	2	1	11	15
,, 23rd	26	15	1	1	16	10
April 20th	25	15	1	5	20	9
,, 21st	25	16	3	3	19	6
,, 22nd	23	12	1	1	13	10
May 18th	28	17	0	6	23	11
,, 19th	27	13	0	0	13	14
,, 20th	29	13	4	2	15	12
	605	358	39	62	420	208

The following general remarks will, I trust, not be unacceptable. As regards the *written* examination, the general characteristics of a "good" paper may be gathered from some of the most satisfactory, and which I have had the opportunity of carefully perusing. Each element of any question was answered successively, and nothing foreign to the question introduced. Conciseness and brevity are not only good qualities in a paper, but they enable the well-informed student to answer all the six questions, and with due allotment of space to each, instead perhaps of his being compelled to restrict his answers to the modicum requirement of only four questions, and possibly with an inadequate consideration of even these. Disregard of conciseness might lead the student unwittingly to be beaten by time, and the mere length of a paper is no measure of its sufficiency.

Throughout the course of *practical* examination in Anatomy and Surgery, it has seemed to my judgment that

students failed to acquit themselves satisfactorily mostly in topographical or external anatomy, and in the use and application of surgical apparatus. The former deficiency would appear referable to neglect on the part of the students to handle and observe for themselves the configuration of the body in the living, or even in the dead subject. Most dissectors' manuals give directions for observing, and a descriptive examination of, the various prominences and depressions to be seen and felt on the surface of the body, *before* commencing the dissection of the part in hand. But the student, in his eagerness to get the skin off and begin dissection, overlooks this very important preliminary knowledge of anatomy, and its relation to that beneath the surface. It should, however, always be remembered that the surgeon in practice approaches the body from its exterior, and that the topography of the surface guides to the interior. The "crammed" student soon betrays his ignorance by looking up to the ceiling for recollection when asked questions which can only be answered by using his unused eyes to see and his hands to feel. I once heard a candidate betray his want of practical knowledge by a chance word. While pointing out the parts lying within the sheath of the common carotid artery, he said, "Behind, and between the artery and the internal jugular vein, there *will be*—instead of there is — the pneumogastric nerve." In regard to surgical apparatus, the want of practical knowledge must be referred to inadequate instruction in the Hospitals.

EXAMINATIONS FOR THE DIPLOMA OF FELLOW.

FIRST EXAMINATION.

ANATOMY AND PHYSIOLOGY.—Examination of 6 hours' duration: in Physiology, 3 hours—from 11 a m. to 2 p.m.; in Anatomy, 3 hours—from 3 to 6 p.m.

ANATOMY. — *Three* of the four questions *must* be answered.

1. Describe the Veins of the Head and Neck, including those of the spine, but omitting those within the cranium.

2. Describe the convolutions and fissures seen on the outer surface of one hemisphere of the Brain.

3. Describe the dissection necessary to expose the whole length of the Thoracic Duct. Give its course, relations, and tributaries.

4. Give the dissection required to display the parts concerned in Inguinal Hernia. Describe fully the Inguinal Canal and its contents in both sexes.

PHYSIOLOGY.—The same regulations with regard to questions, as for Anatomy.

1. Describe the development of the internal Ear in Mammals.

2. Describe the microscopic appearance of the Cells of the Parotid and Sublingual Glands as seen in sections made from glands which have been at rest, and in sections from corresponding glands which have been subjected to prolonged excitation. What inferences may be drawn as to the action of such cells from these appearances, and by what experiments may these inferences be corroborated?

3. Give the structure of one of the large Serous Membranes, and describe its relations to the Lymphatic System. State the modes in which Lymphatics arise, and the forces by which the movement of the fluid in them is maintained.

4. Describe the extrinsic and intrinsic innervation of the Heart.

PRACTICAL EXAMINATION ON ANATOMY, AND ON PHYSIOLOGY.—The arrangements of the room are the same as in the Practical Examination for the Diploma of Member. Thus each candidate is examined at two Tables;

but, on Anatomy, twenty minutes ; on Physiology, twenty minutes ; a total period of *forty* minutes—instead of half an hour. This examination has the same *objective* character as that for the Diploma of Member, its design being principally to elicit the candidate's personal knowledge of anatomical objects and facts. Hence the common form of question, "What's this or that muscle, artery, or nerve ?" But, unlike the examination for the membership, the candidate, as a more advanced student, or as a member, is far more frequently required to *demonstrate* by pointing out and naming the structures presented to view, or perhaps to *describe* the parts seen in an anatomical preparation or a recent dissection. Sometimes, in explanation of statements made, *reasons* are asked. Of this threefold mode of testing the candidate's knowledge, the latter seems to offer the chief difficulty. The Physiological part of this examination takes the same form as for the Diploma of Member.

The examination series comprises—1. Regional dissection in the recent subject, and elaborately prepared parts in spirit under flat glass covers, which are removed as occasion requires for examination. 2. Visceral preparations, some injected and displayed in like manner. 3. Developmental anatomy—*e.g.*, of the fœtus, ossification of the bones. 4. Histology, presented by an admirable and highly useful series of mounted specimens under the microscope, eight of which instruments are in use. (See Examination Series, pp. 39 and 46.)

ANATOMY.—The nature of the anatomical objects submitted for examination, and of the questions proposed, may be gathered from the following summary :

Base of the skull showing the foramina, nerves, and vessels transmitted, represented by coloured wax rods ; point out and name the several structures thus indicated. What is this bone ?—the palate bone. The right or left, and why ? Name its processes and foramina. Point out the situation of the spheno-palatine ganglion. In the skull, point out the course of the palatine nerves, and of the vidian nerve. Lateral section of the orbit, showing eyeball, muscles, nerves ; sphenoid and temporal bones continuous, showing portio dura, &c. Point out the lenticular ganglion : name its connections with nerves ; the nerves supplying the muscles of the eyeball. Select the bones of the internal ear, and describe their relative position and connections. Describe the structure of the Eusta-

chian tube. What are its functions? Describe the distribution of the auditory nerve. Parotid region: describe the relations of the parotid gland, superficial and deep, and show where the duct enters the mouth. Side view of the muscles of the face and neck in the triangular spaces: point out and name the muscles seen. Another preparation, showing also vessels and nerves: what is this or that part seen? Occipital region, showing recti and oblique muscles, nerves, and vessels: name the parts. Constrictors of the pharynx: describe their origin and junction in the pharynx. Vertical section of pharynx posteriorly; showing its openings anteriorly, laterally, and inferiorly: point out and name them. Section of nose and mouth: name the parts seen. Larynx, showing intrinsic muscles: name them. Anatomy of the axilla; the bend of the elbow; the forearm; the palm of the hand; severally subjected to examination. Form a collection of small bones, pick out the bones of the carpus, name them severally, and place them in relative position. Anatomy of Scarpa's triangle in the thigh; the popliteal space; the leg; the sole of the foot; severally subjected to examination. Is this a male or female sacrum, and why? What are the relative directions of the neck of the femur, in the male and in the female? What anatomical mark of distinction is there common to all dorsal vertebræ, and which exists in no other vertebræ? When the abdominal muscles suddenly contract, what action is there on the testes, and why?

Vertical antero-posterior section of the head through the longitudinal sinus, enclosing the encephalon: point out and name the parts seen. Base of the brain: point out the (apparent) origins of the cranial nerves, naming them from before backwards. What parts are supplied by these nerves—*e.g.*, by the third and seventh? Specify the muscles supplied by the portio dura. Section of a portion of the vertebral canal, enclosing the cord and spinal nerves: what region does the portion belong to, and why? Lateral section of the thorax, enclosing heart and lungs, &c.: point out the origin, course, and distribution of the phrenic nerve, &c. Anterior view of the thoracic organs, vessels, and nerves: name the parts seen. The diaphragm, showing its upper surface, and circumferential attachments: point out and name the apertures, and the structures passing through them, also the nerves. What shape does the diaphragm assume in inspiration and expiration, respectively? What causes air to enter

the lungs? What is the pressure of the atmosphere on the square inch? Pyloric orifice of the stomach, opened duodenum, with gall-bladder, and pancreas: specify these structures, describe their relative position, and relations to surrounding parts. Section of the kidney injected: point out the renal vessels and ureter as seen at the hilus, and their relative position; an opened calyx and its connection with a papilla; the structure of the pyramidal and cortical portions. What is the structure of a Malpighian body? Side view of the pelvis, and intrapelvic organs: describe the parts seen.

PHYSIOLOGY.—In Physiology, the nature of the practical examination may be seen from the questions indicated with reference to the following subjects: *Urine*—average specific gravity, quantity in twenty-four hours; urea, formula of chemical composition, qualitative and quantitative; with what inorganic compound is urea isomeric? how to determine the quantity of in urine; excretion of, as affected by nitrogenous and non-nitrogenous food, or by exercise; uric acid, its composition, forms of crystal. *Milk*—composition of; changes it undergoes in stomach; cause of coagulation of casein; source of lactic acid; conversion of casein into peptones; what change of peptone in liver? what is glycogen? *Bread*—its proximate constituents; gluten, its composition; fermentation of dough; changes starch undergoes. *Eye*—the layers of the retina? Rods, length and diameter of; structure of a rod. Cones, structure; difference from a rod. *Ear*—how is sound conveyed to the sensorium? Action of ossicula in transmission; cause of intensity; cause of pitch. *Epiglottis*—its structure; mucous membrane, its epithelium and glands; function of epiglottis. *Velum palati*—its structure and functions. *Eustachian-tube*—structure and openings, function of; state of during deglutition; what muscle opens the pharyngeal aperture? *Membrana tympani*—shape of; what muscle acts upon this membrane; the use of tension; action of stapedius muscle; peculiarities of the joint between the malleus and incus?

HISTOLOGY.—A series of highly useful mounted specimens are submitted to examination under the microscope by each candidate. They comprise principally textural anatomy, and the minute structure of some important organs. Thus, I noticed white fibres of fibrous tissue; fat-cells; blood-corpuscles; muscular fibres, voluntary and involuntary; cartilage cells, and intercellular matrix;

$CO(NH_2)_2$

kidney injected, showing arrangement of the vessels, and structure of Malpighian bodies; choroid coat of the eye. (See further examination, Series of Specimens, p. 31.) A candidate having recognised any such specimen, would be asked questions of a physiological character pertaining thereto. For example: blood-corpuscles gave rise to questions as to their relative proportion in the blood; the salts of the blood, and their relative proportions; the kind and quantity of gases present; the difference between arterial and venous blood; the changes produced by respiration, and the source of carbonic acid in the blood. In like manner, the minute structure of the kidney led to questions respecting its functions as an excreting organ.

The average character of this examination is shown with regard to *four* candidates, as follows:

Candidate 1: *Four microscopic specimens*, relating to tissues or organs, having been recognised, questions arise from each kind of specimen submitted for examination. The candidate is afterwards examined upon other *preparations*, as relating to physiology. (1) Kidney. What is the secretory element? What part of the epithelium? Describe method of injecting a kidney. How could you experimentally reduce blood-pressure in this organ? (2) Presbyopia. What is it? How would you detect presbyopia in a person reading a book? What distance of vision would be evidence of presbyopia? (3) Describe the structure of the lens. The arrangement of the fibres. (4) Retina. Which layer of the retina is affected by light? Where are the cones most abundant? The situation of the yellow spot? Structure of retina at this spot? (5) Milk. What are its constituents? Are they formed in the gland? What is casein?

Candidate 2: Four specimens under the microscope. Then—(1) Eye. Structure of the cornea? Structure of the conjunctiva? What is the use of the iris? Show with chalk on board, how rays of light falling on the lens produce an image on the retina. What is spherical aberration? What changes take place in the eye-ball in looking at a near object? Are the eyes turned in any particular direction? (2) Ossification of cartilage. What changes take place in the cells; and in the intercellular substance? How does the shaft of a long bone grow in thickness; how in length? (3) Urine. Name its constituents. What is the pigment matter derived from?

What is the urea derived from? How to estimate the quantity of urea excreted in twenty-four hours. Is more urea excreted in a child or in an adult of equal weight? (4) Elastic tissue; its structure? What is the function of the vocal cords? How is the voice produced? How is its pitch regulated? What muscles tighten the cords? (5) Heart. Point out the auriculo-ventricular openings. Indicate the openings of the coronary arteries.

Candidate 3: Four specimens under the microscope. Then—(1) What is the chemical reaction of contents, in the small intestine? What, in the large intestine? What, in the stomach? Structure of mucous membrane in small intestine? In large intestine? The function of the solitary follicles? (2) Spinal cord. What are its functions? Give experimental proof. What nerve-centres are there in the cord? Is there a micturition centre? Give the experimental proof. (3) Heart. Point out its cavities. How are the coronary arteries supplied with blood? What is the position of the semi-lunar valves in contraction of the ventricles? Structure of the tricuspid valve? Structure of muscular fibres of the heart. The position of the nucleus in the cell. Why are the fibres striated? What determines whether muscular fibres are striated? Period of time in contraction of auricles? In contraction of ventricles? Give experimental proof. What is a cardiograph? How to use it? What is a sphygmograph? Trace, with chalk on board, a normal pulse-wave. What is the predicrotic wave? How are the several elements of a pulse-wave produced? The causes of cardiac impulse? (4) Yellow-elastic tissue. Where found in the human body? (5) Structure of cartilage in the bronchial tubes?

Candidate 4: Four specimens under microscope. Then—(1) Spinal cord. Draw on board a section of the cord. What is the position of the anterior horns to the surface? What that of the posterior horns? The relation of nerve-roots to the horns? Where is the ganglion on the posterior root? Structure of the ganglion. Indicate afferent, and efferent fibres. The relation of afferent fibres to cells? Show the course of reflex action. Give an example of reflex action. Is sensation ever combined with reflex motion? Give an example of reflex motion without sensation. If the cord were destroyed, would intestinal movement continue? Are there any ganglia in connection with the intestine, for producing

reflex action? (2) Urine. Its chemical reaction in man? In herbivora? The constituents of urine? Composition of urea? Quantity eliminated in twenty-four hours? (3) Section of eye-ball transverse. Name the structures divided. (4) What are the characters of hæmo-globulin? (5) Ovum. Its size in woman?

By the regulation of January 11th, 1866, students may pass the first examination, or that on Anatomy and Physiology, for the fellowship, at the end of their third year—*i.e.*, between the first and second or pass examinations for the membership; and this regulation is found to considerably facilitate the arrangements of those who desire to take the higher diploma of Fellow.

SECOND EXAMINATION.

PATHOLOGY, THERAPEUTICS, AND SURGERY, from 1.30 to 5.30 o'clock p.m.—*All* four Questions *must* be answered.

1. Mention the several effects, immediate and remote, of severe contusions of the Perineal region, in the male.

2. In a case of Popliteal Aneurism, what methods of treatment would you consider? Describe fully the conditions by which you would be guided in the choice of any particular plan.

3. Discuss the Pathology of Erysipelas. State the evidence upon which your view of its nature is based.

4. Mention the several Morbid Products which may be found in the Urine. How are these to be distinguished, and what diagnostic inferences may be deduced from their presence?

CLINICAL EXAMINATION OF PATIENTS.—For the purpose of conducting this portion of the *practical* examinations, patients are brought to the College for examination by the candidates, instead of being examined, as formerly, at the bedside, in the various recognised hospitals. It will be obvious that an examination, so conducted, must be somewhat restricted in its range, both as to the choice of cases of disease or injury which shall have a fairly marked typical character, and in patients who are able to undergo such examination, however judiciously they may be selected. The examination is partly written and partly oral. The candidate is required to examine two patients, and take notes in the form of a short clinical report of symptoms, or signs, and diagnosis. The time allowed is *thirty* minutes for each case. Then follows the *vivâ voce*

examination in two or more cases, for a period at the discretion of the examiner. All the members of the Court of Examiners attend.

The kind of cases submitted for examination is further indicated by the following series, on *one occasion:*

1. Femoral hernia, in male, right side, size of large melon; apparently enterocele, reducible, of thirty years' duration. 2. Double syphilitic sarcocele, fistulous opening in each; commencement of swelling a year and a half ago, and twelve years since primary disease. 3. Caries of right elbow-joint, in boy, eight years of age; fistulous opening above inner condyle of humerus, disease of eight months' duration, not of traumatic origin. 4. Multiple sarcomata, of small size, on scalp, near axilla, and one on tongue, ulcerated; disease of ten weeks, in a man aged forty-nine. 5. Palatine tumour, myeloid or cancerous, size of an egg, firm consistence; an incision seemed cartilaginous or gristly, some dark bloody fluid escaped. Disease commenced, or was first noticed, four months ago, with sore throat, and then pain in right temporo-maxillary articulation; the patient felt a small, hard lump in the adjoining portion of the hard palate, behind the velum; the tumour, at first insensitive, is now tender. 6. Teno-synovitis, chronic, in palm and above wrist of right hand, in a young man. Disease of six months' duration, and no history of injury. 7. Teno-synovitis, chronic, of extensor tendons, in the lower third of the left arm. Swelling, in that situation at the back of the arm, is considerable, somewhat œdematous, but scarcely painful, and attended with weakness in using the hand. Is consequent on a sprain of the wrist twelve years since, and a rheumatic attack four years ago. 8. Epithelioma, near outer angle of orbit. Commenced as a small, red, flat lump; painless until lately. Fourteen months' duration, in a man aged sixty-two. 9. Tumour, apparently lymphoma, principally axillary and subpectoral, partly supra-clavicular, in a man aged sixty-four. Is firm, somewhat elastic, no marked lobulation, no discolouration of integument, and not painful. Duration, five months. 10. Chronic bursitis, forming a tumour over tuberosity of ischium, on both sides. The tumours are each about the size of an orange, generally firm, with harder nodules in its substance, and enlarging slowly for the last nine years, the patient being a man aged thirty-nine. 11. Hydro-sarcocele, on the left side, the size of a cocoa-nut; vaginal

sac much thickened. Consequent on orchitis, eighteen months ago, from injury to the testicle, on horseback. 12. Multiple lipoma, subcutaneous; tumours, from size of a chestnut to a small orange, flattened, and slightly lobulated or branched, and scattered over both arms; with adipose formation, beneath the integument, around both thighs. The tumours first appeared, in the former parts, about twenty years since; and in the latter situation, five years afterwards. The patient, a man, aged forty-nine. 13. Elephantiasis of scrotum; the tumour is smooth, and of bluish or livid colour, and extends down to the knees. There is an ulcerated cavity below. The penis is entirely concealed in the mass; but the margin of the prepuce appears, and is beset with warts. The growth began in the fundus of the scrotum, which became thickened soon after a kick on that part; this injury dating back eighteen years. The man is now forty-eight. By suspension, and compression with Martin's bandage, the mass has gradually been much reduced; being three inches less in length and circumference.

The following Cases and series of Questions will illustrate the general nature of this examination. Of four cases two were well marked by their positive signs, the other two being a test of diagnosis, principally in virtue of their negative signs as compared with other forms of disease or injury.

1. Disease of the hip-joint, without dislocation, in a boy. The candidate, having examined this case, was asked: What is its nature? Point out the signs. What is the state of the joint? In what stage is the disease? How would the articular cartilage disappear? Might the acetabulum be affected? What kind of anchylosis will probably ensue? Why more probably fibrous? What dislocation does this disease of the hip-joint resemble? In morbus coxæ, does dislocation ever ensue? Are any of the viscera likely to be affected? What organs? What is the constitutional character of the patient? Why scrofulous? What is your prognosis in the present case? What treatment? If excision, mark the situation and length of the lines of incision. What vessels or nerves might be wounded in the transverse cut? 2. Sinus-openings, discharging just above the fold of the groin; the thigh is drawn up, but not inverted; the hip-joint is freely movable, and without pain; the patient a man of middle age, with marked hectic. Is this disease

of the hip-joint? You say it is—why so? If not—why not? 3. Injury of hip-joint, in a man, aged sixty. There is some pain in the joint when moved, and inability to raise the limb from the bed; but there is no shortening nor eversion, and no crepitation can be felt in the joint, nor is there any discoloration about the hip or in the groin, although it should be remembered this might have disappeared, some time having elapsed since the accident. Is this a fracture of the neck of the femur? If not—why not? What treatment? If a fracture—how long would you keep the patient in bed at this age? 4. Secondary syphilis. Copper-coloured, scaly eruption, in a young man. Name the eruption. What appearances are characteristic? What treatment?

Operations on the Dead Subject.—In the college theatre, converted into a room, two adult subjects are provided, and instruments laid out on adjoining tables. Two examiners are engaged with each candidate. An operation having been named by the acting examiner, the candidate is requested to select the instruments, and to place the part in position; he is also to ask for an assistant, when necessary, and direct him what to do; *e.g.*, as to the holding of a limb in position for amputation, or the compression of a main artery. During the operation, a question may be put occasionally by the examiner, with reference to the steps or course of the procedure, and in amputations, respecting the arteries to be ligatured. Lastly, to indicate the dressing of the wound. A second operation is then to be performed in like manner. Two operations are the required number for each candidate; a third is sometimes required, when either of the two has not proved satisfactory. There is no specified period for the examination of each candidate.

The following operations may be taken as illustrative of the requirements in this portion of the practical examination:—they comprise principally, amputations, excisions, and the ligature of arteries. Usually, of the two operations required of each candidate, one is an amputation or excision, the other the ligature of an artery. Owing to the number of candidates, a large series of operations may be performed on the *same occasion;* and, as any one candidate is, therefore, liable to be called upon for some such (two) operations, they may be mentioned almost indiscriminately:—(1) Amputation of the great toe; (2) At tarso-metatarsal articulation; (3) Amputa-

tion of finger, at either phalanx ; (4) At meta-carpo phalangeal articulation ; (5) Amputation of thumb, at carpo-metacarpal articulation ; (6) Ligature of radial artery, in lower third ; (7) In upper third ; (8) Ligature of ulnar artery, in lower third ; (9) In upper third ; (10) Excision of elbow ; (11) Ligature of common carotid ; (12) Amputation at wrist-joint ; (13) Ligature of subclavian, in outer third ; (14) Amputation of forearm ; (15) Ligature of innominate ; (16) Amputation of arm ; (17) Ligature of axillary artery, below pectoral muscle ; (18) Ligature of brachial, in lower half ; (19) Amputational at shoulder-joint ; (20) Trephining ; (21) Tracheotomy ; (22) Ligature of external iliac ; (23) Amputation at tarso-metatarsal articulation—Hay's operation ; (24) Chopart's amputation, mid-tarsal ; (25) Ligature of superficial femoral, in Scarpa's triangle ; (26) In Hunter's canal ; (27) Syme's amputation at ankle-joint ; (28) Ligature of dorsalis pedis ; (29) Ligature of anterior tibial, in upper half ; (30) Teale's amputation of leg, in lower half ; (31) Amputation below the knee ; (32) Ligature of posterior tibial, at ankle ; (33) Ligature of posterior tibial, in calf ; (34) Amputation at knee-joint ; (35) Ligature of popliteal ; (36) Excision of knee ; (37) Amputation of thigh, in middle third ; (38) Excision of hip-joint ; (39) Incision for femoral hernia ; (40) Incision for inguinal hernia ; (41) Sounding for stone in the bladder.

SURGICAL ANATOMY.—This portion of the practical examination—now separate—is held immediately *after* the performance of operations ; by *vivâ-voce* questions, relating chiefly to the parts operated on, as to the structures successively divided or exposed, supplemented by sections of other parts, *e.g.* in cut-throat down to the spine. Each candidate is thus examined for a quarter of an hour.

The parts, and the questions with reference thereto, are fully exemplified by the examination of four candidates—two being engaged on either dead subject.

Candidate 1 : Ligature of the external iliac artery. Point out and name the parts seen in dividing the abdominal wall, to reach the vessel. Demonstrate the boundaries of the inguinal canal. What structures are divided to expose the canal ? How is the external abdominal ring formed, and what are its boundaries ? What is the internal ring, and show it ?

Candidate 2 : Parts exposed in Chopart's amputation,

including the vessels divided in the flap. Indicate and name them. Parts seen in excision of the hip-joint. Point out the lachrymal sac, and pass a probe down the nasal duct. Indicate where the facial artery crosses the lower jaw.

Candidate 3 : An amputating knife transfixed through the middle of the thigh, just in front of the femur. Name the parts transfixed. Is the femoral artery included? What nerves would be found in the anterior flap made by transfixion in this part of the thigh—middle third? Knee-joint opened anteriorly, by transverse incision. Indicate the several parts exposed. Is the articular surface higher on the inner or outer condyle of the femur? In the posterior or articular surface of the patella, which portion is broadest, corresponding to the outer or the inner condyle? Is the synovial sac higher in the outer or the inner side? Point out the attachments of the crucial ligaments. What is the shape of the inter-articular cartilages; what their difference? Indicate the attachment of these cartilages. In relation to crural hernia ; what is the deep arch? Indicate the boundaries of the crural ring. What occasional relation may the deep epigastric artery have to the ring?

Candidate 4 : Tracheotomy ; name the parts divided? Mark (with chalk) the course of the internal mammary artery in the thorax and abdomen. Mark the position of the heart in relation to the thoracic parietes. Indicate the spot for paracentesis thoracis. A penetrating wound, in the third intercostal space, just to the right of the sternum ; what artery would be wounded? In fracture of the olecranon, what is the altered appearance of the elbow, when examined before the supervention of swelling? Mark the course of the musculo-spiral nerve. Indicate the situation of the pronator quadratus muscle. What vessels and nerves supply it?

Pathology and Surgery.—This concluding part of the practical examination takes place immediately after the operations, and it is held in the Council-room and large library adjoining. Four tables are placed, and two examiners at each, with osseous specimens, comprising diseased joints and bones, and spirit-preparations of other parts. The candidate passes a *quarter* of an *hour* at each of two tables, making *half* an *hour's* oral or *vivâ voce* examination—a longer period by ten minutes than in the corresponding examination for the membership.

The questions are principally and primarily objective; a specimen of diseased joint, for example, being handed to the candidate as the starting-point for questions respecting its pathology and surgery. *Senior* candidates are not unfrequently asked, in the first instance, what *cases* they may have seen more particularly in their practice, as fractures or dislocations, and the object for examination is then selected accordingly.

The nature of this examination will be sufficiently exemplified by the following series of questions submitted to two candidates:

Candidate 1: What is this osseous specimen? A fracture of the neck of the femur. Why so? Was the fracture extracapsular or intracapsular? Is it impacted? Was there any injury to the great trochanter? What age probably was the patient? Mention the signs of extracapsular fracture. Also those of impacted fracture. The treatment of these conditions. What is this? A fracture of the neck of the humerus? What would the signs be? The treatment? Compound dislocation of the elbow-joint and its treatment. Chronic cystitis: what are its symptoms, and the condition of urine? What is the cause of its alkalinity? What are the elements of carbonate of ammonia? The treatment? Enlarged prostate: give the symptoms; the treatment for retention; the kind of catheter; how to teach the patient to use it. Glaucoma: what are its symptoms? The diagnosis of acute and chronic glaucoma; treatment, by what operation? Describe iridectomy. Describe the appearances in the human eye as shown by the ophthalmoscope in health and disease. Describe Syme's operation at the ankle-joint. Also Pirogoff's. What conditions are relatively favourable for one amputation rather than the other? Are there any objections to Pirogoff's operation? What is this osseous specimen? Rheumatic arthritis of the hip-joint. What are the characteristic appearances? What the signs? The treatment? What are the distinctive morbid appearances of scrofulous disease of the joint? At what age probably would it occur? What is this specimen? The scapula showing the glenoid cavity of an old dislocation. In amaurosis what are the various ophthalmoscopic appearances? What are the various specific forms of iritis? The characteristic appearances of rheumatic iritis? Its treatment?

Same Candidate, Second Table: Spina bifida—what is

it? What are the contents of the sac? How ascertained? Usual seat in the spinal column? The prognosis of this malformation? In what condition may life be prolonged for an indefinite period? What are the causes of death? What is encephalocele? Its situations? Its diagnosis from congenital cystic tumour; and from malignant tumour? The prognosis? What treatment in spina bifida; in encephalocele? Specimen of anchylosis of upper cervical vertebræ; what changes have taken place? The probable constitutional condition? Scrofula; what osseous affections are liable to occur? What chemical changes take place in scrofulous ostitis? The nature of a strumous node? Syphilitic ostitis; its characters? Rheumatoid ossific deposit; its characters? Fracture of the skull; what are the modes of repair?

Candidate 2: Colles's fracture; what is this specimen? What is the displacement? The varieties of this fracture? The usual signs? The signs when impacted? Treatment? What should be the position of the hand? The best form of splint? What loss of movement often remains after union? Hernia cerebri; name the lesions in this condition. Intra-cranial suppuration; the usual period after injury to the head? Its symptoms? State of the wound, when present? The situations of intra-cranial suppuration? What are the pathological changes leading to sub-cranial suppuration? The character of Pott's puffy tumour of the scalp? Senile gangrene; its premonitory symptoms? What are the pathological changes in the arteries of the leg? The appearances of this gangrene? Its usual extent? How is the gangrenous part limited, and separated? Why no hæmorrhage in the process of disjunction? Treatment, local measures; would amputation be justifiable? Constitutional measures; dietetic and medicinal?

Same Candidate, Second Table: Fracture of the base of the skull; how was this probably caused? Situations of fracture in the base? What are its signs? The diagnostic significance of escape of sub-arachnoid fluid from the ear? What would be the prognosis in such case? The causes of death? What is the physiological cause of death from injury to the medulla oblongata or the cord, between the origin of the pneumogastric and phrenic nerves? Fracture of the femur in upper or middle third of the shaft; is there ever union without any shortening? If not, why not? Is the frac-

ture ever transverse? If both limbs are of equal length by measurement, would that be absolute proof of there being no shortening? Caries of tarsus; what is this specimen? Why caries? Give your definition of caries. The usual seat in the osseous texture? State some typical examples of caries? Scrofulous testis; a section showing deposit. What is this specimen? The usual seat of deposit? Is it inter-tubular or intra-tubular? Acute glaucoma; what are its symptoms? Its duration before blindness? Describe the operation of iridectomy. What after-treatment?

EXAMINATION ON THE PRINCIPLES AND PRACTICE OF MEDICINE—from 1.30 to 3 p.m.—1. In what diseases may albumen and blood in the urine occur together, or separately? How do you treat the respective cases? 2. Describe the appearance of a lad who is the subject of well-marked inherited syphilis; also mention some of the complaints amenable to treatment to which he is liable. 3. Mention the various agents employed to produce anæsthesia by inhalation, and their mode of administration.

Oral or vivâ-voce examination.—It takes place immediately after the termination of the examination on Pathology and Surgery: the candidates passing on to the adjoining small library. Each candidate is submitted to various questions for a *quarter* of an *hour*, by the two examiners in medicine.

Both examinations in Medicine are compulsory, as for the diploma of Member, excepting under the conditions claiming exemption, according to the published regulations of the College. But a candidate who has passed an examination in Medicine for the membership will not be required to undergo any further examination in Medicine for the fellowship.

Results.—On the occasion of the foregoing examinations for the diploma of Fellow, the following results may be interesting.—Primary examination: The number of candidates was 59, being the largest number known on any one occasion. 18 were members of more than eight years' standing, and therefore were not required to produce certificates of professional examination, or of having passed the preliminary examination in general knowledge. 9 were members of less than eight years, or junior members. 19 had passed the primary or anatomical examination for the membership; the remainder had not passed any professional examination. This fact is significant, as showing

that a large proportion of candidates came up at once for the fellowship without previous membership, and it is an increasing number. 10 of the whole number were referred to their studies for six months—*i.e.*, 49 passed. Of the 10, 1 was a senior member, 3 were juniors, 2 had passed the Anatomy for the membership, and 4 no professional examination. This result shows that the examination is made more rigorous to those who had undergone no previous professional examination.—Secondary or Pass-examination : 21 went in, being 17 out of the 59, and 4 who had passed the anatomical at a previous date. 14 were senior members, 6 juniors, and 1 not a member, but who came up at once for the fellowship. 2 candidates, 1 senior and 1 junior, were referred for twelve months. This period is never made less excepting under very special circumstances, as the recall of an army surgeon to India.

The average number of candidates, and the results of examination, in one year, is shown by the following table :—

First Examination.

Date.	Number of Candidates.	Passed.	Referred for six months.
1879. November 25th and 26th ..	32 ..	18 ..	14
1880. May 24th, 25th, 26th, and 27th..	68 ..	37 ..	31
	100	55	45

Second Examination.

Date.	Number of Candidates.	Passed.	Referred for one year.
1879. November 29th	12 ..	5 ..	7
1880. May 29th	19 ..	11 ..	8
	31	16	15

In conclusion, I would offer the following general remarks with regard to the fellowship examination :—

Respecting the *written* examination, the qualities of a good paper, whether anatomical or surgical, may be gathered from those which I have carefully perused. Each element of any question should be answered, and in successive order ; but nothing foreign to the question introduced. Conciseness and brevity are valuable qualities, and especially as enabling the candidate to answer all the questions, instead of the modicum number, and with due allotment of space to each, in the time allowed for ex-

amination. In the surgical paper by *senior* members, some reference to the candidate's own experience of cases may not unreasonably be expected, just briefly stated by way of illustration. Some evidence also of more special reading than could perhaps be gathered from a general text-book on Surgery would indicate that higher and larger range of thought and aspiration which should distinguish a Fellow of the College. References, therefore, to standard authorities on Pathology and Surgery, and to their original observations, can scarcely fail to be acceptable.

In the *practical* examinations, operations on the dead subject are only an undressed rehearsal, as it were, of the representative procedures on the living body, as *surgical* operations. Due allowance therefore must be made for the different, and in some respects unfavourable circumstances in which candidates are placed at the College. Moreover, the want of an adequate supply of subjects in the schools restricts the opportunities for practice even on the dead body. These, and perhaps other reasons, combine to render the Operations at the College the least satisfactory part of the whole course of Examination.

EXAMINATION SERIES

OF

ANATOMICAL AND PHYSIOLOGICAL PREPARATIONS FOR THE DIPLOMA

OF

MEMBER OR OF FELLOW.*

OSSEOUS SYSTEM.—(1) Articulated skeleton. (2) Separate bones. (3) Prepared bones: two ribs softened in acid; right scapula softened; left humerus calcined; portion of tibia, showing periosteum reflected; portion of tibia and fibula, with interosseous membrane; and a transverse section of same.

CARTILAGES.—(1) Articular.—Glenoid cavity of right scapula, with long tendon of biceps muscle. Lateral section of lower end of right humerus, showing articular surface, with ulna and radius; anterior aspect. The same; posterior aspect. Lateral section of lower ends of tibia and fibula, with articular surfaces. Two sections of lower ends of tibia and fibula, and their articular surfaces. Scaphoid and three cuneiform bones, articular surfaces and sections. Antero-posterior vertical section of ankle and foot—through tibia, astragalus, os calcis, scaphoid, internal cuneiform, and first metatarsal bones, and phalanges of great toe. (2) Connecting fibro-cartilages.—Transverse and vertical sections of lumbar vertebræ, showing intervertebral substance. Section of pelvis at inlet, showing sacro-iliac synchondrosis and symphysis pubis, with their cartilages. Section through symphysis, showing the dentated cartilaginous plates. (3) Inter-articular cartilages.—Upper articular surface of tibia with semi-lunar cartilages and attachments of crucial ligaments.

LIGAMENTS.—Ligamenta subflava. Transverse ligament of atlas. Orbicular ligament of upper radio-ulnar articulation. Temporo-maxillary ligaments; capsular ligament of lower jaw; the inter-articular cartilage.

* Chiefly from Catalogue by L. Jones Moseley, Esq., late Anatomical Assistant to the College. N.B.—Those preparations in this series which relate particularly to the Viscera, Special Senses, and Development are used in the Physiological part of the Examination.

Stylo-maxillary ligament, and muscles of soft palate. Capsular ligament of shoulder-joint; coraco-clavicular, coraco-acromion, and coraco-humeral ligaments; transverse scapular ligament. Ligaments of elbow-joint—vertical antero-posterior section of elbow-joint, showing attachments of ligaments in the coronoid and olecranon fossæ of the humerus. Orbicular ligament of radius and insertion of tendon of biceps muscle. Ligaments of elbow and forearm. Ligaments of wrist and hand. Lateral ligaments of fingers: sections of metacarpal bones and phalanges. Hip-joint laid open, showing ligamentum teres. Ligaments of knee-joint, showing synovial membrane on its outer and upper side; the insertion of quadriceps extensor tendon and the ligamentum patellæ. Knee-joint; showing lateral, transverse, and crucial ligaments. Posterior aspect; lateral and crucial ligaments, expansion of tendon of semimembranosus into semilunar cartilages, and ligamentum mucosum. Crucial ligaments and semilunar cartilages of knee-joint. Ankle-joint and foot; ligaments, with insertions of tibial and peroneal tendons, and of tendo Achillis. Tarsal interosseous ligaments. Metatarso-phalangeal joint of great toe laid open, showing sesamoid bones.

Muscular System.—Muscles of head, face, and neck, Muscles of orbit. Front view of orbit; showing insertions of recti and obliqui muscles. View of internal wall of orbit; showing tensor tarsi muscle and pulley of superior oblique muscle. External muscles of mastication. Internal muscles of mastication. Levator palati and internal pterygoid muscles. Muscles of pharynx, and extrinsic muscles of the tongue and larynx. Muscles of the tongue, and intrinsic muscles of the larynx. Diaphragm, thoracic aspect. View from the abdominal aspect. Hand; interossei muscles, palmar aspect. Palmar interossei of hand. Dorsal interossei of hand. Femur; neck, and trochanters, showing insertion of muscles. Knee; showing insertion and origin of muscles around.

Separate muscles and tendons: — Temporal muscle, radiated. Digastric, double bellied. Rectus femoris, bipenniform. Extensor longus digitorum, penniform. Semitendinosus, fusiform. Tendo Achillis.

Bloodvessels.—Arteries and veins. Neck and face; branches of external carotid. Superficial palmar arch; with distribution of nerves and anatomy of palm of hand. Superficial and deep palmar arches. Finger injected,

showing vascularity of matrix, &c. Elbow ; front, superficial veins and nerves. Relations of superficial and deep vessels and nerves in front of elbow. Leg ; transverse section, showing vessels. Ankle and foot ; dissection showing arteries.

NERVOUS SYSTEM.—(1) Spinal cord, shown by removal of arches of lower cervical and upper dorsal vertebræ, and membranes removed. Connections of spinal cord with trunk of the sympathetic nerve. (2) Brain. Base of brain, with membranes. The same, after removal of membranes.

Dissection of corpus callosum. Left lateral ventricle, with descending cornu. Left ventricle exposed, and descending cornu of right dissected out, showing hippocampus major. Lateral ventricles, with velum interpositum and descending cornu exposed. View of left ventricle, third ventricle, corpora quadrigemina, and portion of hippocampus, with optic tract between it and optic thalamus. Anterior pillars of fornix, third ventricle, pineal gland, corpora quadrigemina and fourth ventricle, shown by a section through both hemispheres of cerebellum. Antero-posterior vertical section of head and neck, showing left hemispheres of encephalon and left halves of pons, medulla oblongata, and spinal cord. The same, without the cord. Base of skull, with cranial nerves, dura mater removed on left side. Olfactory nerves, distribution on perpendicular plate of ethmoid bone. Distribution of same nerves on superior and middle turbinate bones. Orbit ; nerves and ophthalmic ganglion, side view. The same, upper view. Dissection, showing the orbital nerves, ophthalmic ganglion, Gasserian ganglion, with the three divisions of the fifth nerve, the facial nerve, and its junction with the infra-orbital ; the vidian nerve and spheno-palatine ganglion ; also the external carotid artery, with its facial branch and its terminal branches, viz., the temporal and internal maxillary ; the membrana tympani and ossicula of the ear, &c., &c.

A dissection of a portion of a head to show nerves of orbit ; ophthalmic ganglion ; Gasserian ganglion ; and the divisions of fifth nerve ; internal carotid artery ; and eighth and ninth nerves. Second division of the fifth, and branches, with spheno-palatine ganglion ; vidian nerve with its sympathetic branch, and its branch communicating with the facial nerve. Second division of the fifth from internal aspect, with Meckel's ganglion ; vidian nerve, and

its branches to sympathetic and facial, and the nasal and palatine branches of the second nerve ; the sympathetic nerve is seen ramifying on the internal carotid artery, and the muscles of the soft palate are exposed, together with the internal pterygoid muscle. Branches of the third division of the fifth, seen from above as they pass over and under the external pterygoid muscle. A dissection of the third division of the fifth, showing the branches to the temporal, masseter, and buccinator muscles ; also the inferior dental nerve and its mylo-hyoid branch ; the lingual and the temporo-auricular, with its junction with the facial. A dissection of the third division of the fifth, showing its motor and sensory roots ; the otic ganglion with the lesser petrosal nerve ; the lingual branch with the corda-tympani nerve coming off the facial, passing between the malleus and incus, and joining the lingual ; the inferior dental and its mylo-hyoid branch, and the temporo-auricular with the middle meningeal artery passing external to it. The two roots of the third division of the fifth ; the lingual branch joined by the corda-tympani, which is seen coming off the facial, and passing between the ossicula of the middle ear ; the inferior dental with its mylo-hyoid branch, which in this case passes through a canal in the ramus of the jaw ; and the temporo-auricular with the meningeal artery passing internal to it. A dissection to show the Gasserian ganglion and the three divisions of the fifth ; with the supra-orbital branch of the first ; the infra-orbital branch of the second ; the temporal cut short ; the buccal, the lingual with the corda-tympani traced to its origin, and the submaxillary ganglion ; the inferior dental, with its junction with the lingual and its mylo-hyoid branch ; and the temporo-auricular branches of the third. The distribution of the hypoglossal nerve is also shown. Dissection of under surface of tongue and its muscles, showing the distribution of the lingual and hypoglossal nerves ; the submaxillary ganglion and the ducts of Wharton, one being reflected outwards and forwards. Dissection of perineum to show distribution of pudic nerves, and the pudendal branch of the small sciatic passing below the tuberosity of the ischium. Dried larynx.

Organs of Special Sense. — Upper surface of the tongue, tonsils, posterior view of larynx, and part of œsophagus. Outer surface of auricle of ear and cartilages of the same. Front view of organ of hearing, left side, the

semicircular canals and cochlea laid open. A vertical transverse section of head through the centre of the superior maxillary bones, displaying nasal cavities from behind. External cartilages of the nose.

ORGANS OF DIGESTION.—A section showing side view of nose, mouth, pharynx, and larynx ; also the muscles of the orbit, the semicircular canals of the ear and the temporo-maxillary articulation laid open from above. A horizontal section through the angles of the mouth and the occipito-atloid articulation, showing upper surface of tongue and upper part of pharynx and larynx. A vertical transverse section through the external auditory canal, laying open the back of pharynx, and bringing into view the posterior nares, base of tongue and epiglottis. Superficial dissection of side of face to show the salivary glands and their relations. Deep dissection, displaying salivary glands and ducts. Parotid gland with its duct, and the portion of buccinator muscle it pierces to enter the mouth. Injected œsophagus showing the arrangement of its muscular fibres and outer surface of mucous membrane. View of external surface of stomach, with portion of duodenum and pancreas. Dissection displaying the stomach laid open, the pyloric valve and part of duodenum, with commencement of valvulæ conniventes ; the liver with section of gall-bladder ; the pancreas and the ducts and vessels in connection therewith. Pyloric valve as seen by two vertical sections across lower end of stomach and upper part of duodenum. Vertical section across pyloric valve. Portion of small intestine distended and opened laterally to show valvulæ conniventes in action. The same injected. Transverse section of small intestine, distended to show the valvulæ conniventes in action. The same injected. Distended cæcum to show ileo-cæcal valve. Distended and dried cæcum showing ileo-cæcal valve and opening of appendix vermiformis. Rectum showing its longitudinal and transverse muscular fibres, the two sphincters and part of the levator ani and coccygeus muscles. Two dissections of rectum giving external and internal views of the muscles in connection with it. Liver of child with gall-bladder injected. The same ; gall-bladder injected, the ductus communis, portion of duodenum and part of diaphragm. Adult liver and gall-bladder. The same ; with part of duodenum and pancreas, and the gall and pancreatic ducts. Dissection to show the pyloric valve and valvulæ conniventes by

openings in duodenum; also a section of gall-bladder and duct, and the pancreas. Transverse section of pyloric end of stomach, showing the valve closed; also sections of gall-bladder and pancreas, showing their ducts with their openings into the duodenum.

THE THORAX.—Front view of thorax, showing the viscera in situ, with vessels injected; the liver and gall bladder are seen beneath the diaphragm. Front view of thoracic viscera of a child, the pericardium laid open. Posterior mediastinum, and parts contained. Dissection of heart, with auricles and ventricles laid open to show valves; the roots of the pulmonary artery and aorta and the terminations of the venæ cavæ and pulmonary veins are displayed. Dissection of heart, with auricles removed and ventricles opened, to show auriculo-ventricular valves; the pulmonary artery and aorta are opened at the side to show the semilunar valves. Heart, with its vessels injected, dried, and painted. Heart, with the carotid and subclavian arteries and descending aorta, with their branches; the internal jugular, subclavian and descending cava and branches; the larynx, trachea, and thoracic duct. Preparation of fœtal circulation, injected, dried, and painted. Fœtal heart, seven months, showing ductus arteriosus. Fœtal thoracic viscera, injected.

ORGANS OF VOICE AND RESPIRATION.—Cartilages of larynx and hyoid bone (female, aged). Section of trachea, with its bifurcation. Lungs distended, showing their form during inspiration. Thyroid and thymus glands. Spleen. Supra-renal capsules.

URINARY ORGANS.—Section of kidney, with vessels injected. The same, one half removed. Bladder and urethra laid open, seen from above; the ureters entering bladder, prostate with the vasa deferentia and vesiculæ seminales and ducts; membranous portion of urethra, Cowper's glands, bulb, crura, and under part of penis are dissected out. Section of bladder and prostate, from above.

MALE ORGANS OF GENERATION.—Upper surface of prostate: under surface of prostate, with third lobe and entrance of spermatic ducts; urethra laid open to show roof with bristles inserted into the lacunæ. Bladder, prostate, vesiculæ seminales, vasa deferentia, and ureters. Vertical longitudinal section of penis, showing cavernous and spongy bodies, the septum and artery. Transverse section of penis, and penis laid open from below to show

lacunæ of urethra. Transverse section of penis through glans. The same, to show cavernous body extending into the substance of the glans. Tranverse section through body of penis. Dissection of penis, showing its relative position under pubic arch; also obturator membrane. Horizontal section of prostate, to show the openings of ejaculatory ducts; and two antero-posterior sections of testicle. Testicle seen from the front, tunica vaginalis being laid open. Testis, epididymis, spermatic cord and artery. Section of bladder and prostate, with bristles in the openings of ureters; vesiculæ reflected outwards, and unravelled; right testicle, with tunica vaginalis reflected; left testicle, with tunica albuginea reflected and epididymis unravelled. Dissection of all the organs of generation, in their relative positions; right testicle denuded of its tunica vaginalis.

Female Organs of Generation.—Generative and urinary organs of a child, fifteen months. Lower part of abdomen and pelvis of a child laid open to show generative and urinary organs in situ; section of right kidney, to show its pelvis; bladder opened, and right side removed, left side with hypogastric artery reflected outwards and downwards, bristles inserted in the ureters, and a glass rod passed through the urethra; the vessels are injected, and a b rstle is inserted in the right Fallopian tube. Uterus, Fallopian tubes, and ovaries of a child; and left half of uterus with Fallopian tube and ovary of adult, anterior view. Vertical section through bladder and urethra, vagina and uterus laid open from above. Fallopian tubes, ovaries, and rectum of a girl aged fourteen. Vertical section through bladder and urethra, vagina and uterus, and rectum of a woman aged twenty-one. Similar section, including symphysis pubis and external organs of an aged woman.

Pelvis.—Side view of pelvis with viscera in situ; the section carried through the obturator foramen, an inch external to symphysis pubis. Side view of pelvis, section carried through the middle of sacrum and symphysis. Vertical antero-posterior section of pelvis, carried through the viscera.

Additional Dissections and Preparations.—Dissection of back of head and neck, showing recti and obliqui muscles. Front of sternum, with articulations of clavicle and attachment of costal cartilages; section of right side to show interior of articulations. Back of

sternum, showing triangularis sterni muscle. Hand, showing thecæ of the flexor tendons. Dissection of sole of foot, showing superficial layer of muscles; posteriorly these muscles have been removed, with a portion of os calcis, showing the nerves and vessels above them. Dissection of sole of foot; the superficial layer of muscles has been removed, leaving the nerves and arteries. Fœtus and placenta injected to show circulation. Heart opened, showing valves, &c. Bones of upper extremity of child, eighteen months; section to show epiphyses. The same of lower extremity. Sub-occipital region, relative anatomy. Axilla. Bend of the elbow. Superficial and deep nerves at bend of the elbow. Front of thigh. Popliteal space. Knee-joint, showing subcruræus. Constrictor muscles of pharynx, seen from behind. The same, side view. Muscles of larynx. Intrinsic muscles of larynx. Œsophagus, showing muscular layers, longitudinal and transverse. Ascending and descending colon, showing relation to kidneys. Digestive tract of child, eighteen months.

Microscopic Specimens in Physiological Examinations.—Hyaline cartilage. Ossifying cartilage. Transverse section of bone. Longitudinal section of bone. White fibrous tissue. Yellow elastic tissue. Tesselated epithelium. Choroidal epithelium. Salivary glands. Tongue. Injected capillaries. Stomach. Small intestine. Large intestine. Kidney. Lung. Liver. Striated muscle. Non-striated muscle. Skin. Hair. Tooth, sections longitudinal and transverse. Spinal cord. Transverse section of nerve fibres. Cerebellum. Ovary with ova in situ. Uric acid. Urate of ammonia. Triple phosphate. Oxalate of lime.

Extra specimens for Fellowship.—Section of retina. Section of cornea. Section through all the tissues of the eye. Section through entrance of optic nerve. Iris. Epiglottis. Soft palate with racemose glands. Liver for high powers, showing hepatic cells. Rectum of frog with Auerbach's plexus. Spleen. Developing tooth. Omentum. White fibro-cartilage. Ossifying membrane. Muscular fibres of tongue.

New specimens are every now and then being added to the examination cabinet of Histology, so that all the tissues and organs in the body may be represented.

In the spring of the year (1877), the microscopical collection has been enriched by a large number of specimens

of normal tissues and sections of healthy organs. As they are prepared and stained according to the most modern methods, they have superseded the old-fashioned, coarsely-injected specimens hitherto employed for examination. The candidate now has the advantage of seeing specimens prepared in the same manner as in all probability is adopted at his school. Still, with the avowed object of encouraging independent microscopic research, the Board of Examiners always endeavour to test each individual candidate on his knowledge of recent tissues; therefore, the following fresh specimens are always exhibited, being prepared on the spot :—Blood corpuscles. Buccal epithelium. Liver cells. Fresh striated muscular tissue. Fresh unstriated muscular tissue. Nerve fibrillæ. Capillaries, from pia mater or mesentery. Other subjects if required.

EXAMINATION SERIES

OF

PATHOLOGICAL PREPARATIONS AND SPECIMENS

IN

SURGICAL EXAMINATIONS

FOR THE

DIPLOMA OF MEMBER OR OF FELLOW.

The Figures correspond to those in the College Catalogue.

(15.) HEALING by Granulation.—A portion of a leg and of a large healthily granulating sore upon its anterior aspect. Part of the tibia is exposed, and is increased in vascularity ; granulations have arisen from the surface of another part.—*Hunterian.*

(24 A.) Ulceration of Skin.—Presented by T. B. Curling.

(94.) False Membrane from the Peritoneum, minutely injected, showing looped arrangement of the new vessels. —Presented by Sir A. P. Cooper.

(96.) Organised Lymph.—Portion of lung with adhesions, consisting of elongated, broad, and very thin layers of false membrane, between the two layers of pleura. The pleura pulmonalis is thickened and opaque at the part on which the false membrane is attached.—*Hunterian.*

(99.) Organised Lymph.—Portions of liver and diaphragm, with long, slender, and very delicate bands and threads of false membrane extended between their adjacent surfaces. Both the peritoneal surfaces to which the adhesions are attached are thickened and opaque.—Presented by Sir William Blizard.

(109.) Caries of Vertebræ.—The lumbar vertebræ of a person who died with lumbar abscess. The lower part of the body of the second lumbar vertebra, and the intervertebral substance beneath it, have been destroyed by ulceration. The remaining parts have approximated, producing a slight projection backwards into the vertebral

canal. The anterior ligament and periosteum of the vertebræ, both above and below the diseased part, are reflected. They are thickened and consolidated, and appear to have been widely separated from the spine by a collection of pus and thick curd-like substance, some of which remains adherent.—*Hunterian.*

(137.) Mortification from Cold.—Two fingers which mortified from cold in an Arctic expedition, and were amputated. They are black, dry, and shrivelled, and part of the cuticle has peeled from them.—Presented by Sir A. Fisher.

(142 A.) Dry Gangrene of both hands.—Presented by J. Gay.

(142 B.) Senile Gangrene of the foot.—Presented by E. Cock.

(150.) Cyst attached to Epididymis.—An apparently healthy testicle, with a thin-walled, transparent, and nearly globular, membranous cyst three quarters of an inch in diameter, attached to the middle of the posterior margin of the epididymis. The cyst appears to have been enclosed within the spermatic cord, the constituents of which are partially expanded around it. It has the usual characters of cysts in which seminal fluid is contained.—From the Museum of Sir A. P. Cooper.

(157 A.) Cyst from back of the neck.—Presented by Sir W. Blizard.

(157 D.) Sebaceous Cyst from the lumbar region, opened, and the contents removed.—Presented by Sir W. Fergusson.

(185.) A large flat fatty Tumour, uniform in its substance, and with a deeply lobulated outline. It was removed from a woman's shoulder, and is a characteristic specimen of the most common form of fatty tumour. There is an imperfect cicatrix on the skin covering the tumour, as if some escharotic had been applied.—Presented by Sir W. Blizard.

(186 A.) Fatty Tumour, of discoid form, lobulated at the edges.—Presented by H. Smith.

(191 B.) Fatty Tumour from the Groin.—Presented by J. Hilton.

(199 A.) Cartilaginous Tumour.—Presented by Sir W. Fergusson.

(205.) Cartilaginous Tumour from near the Parotid Gland, showing gelatinous softening in parts, and cavities.—Presented by Sir W. Blizard.

(218.) Fibrous Tumour.—A tumour which was attached to the capsule of the hip-joint. It has a regularly oval outline, is rather flattened, has a nearly smooth surface, and measures about three inches in its chief diameter. It consists of a firm, tough, and compact, greyish basis, traversed in various directions by curving and interweaving bundles of opaque white fibres.—Presented by W. Lynn.

(219 A.) Fibrous Tumour from the Os Calcis.—Presented by H. Hancock.

(222 B.) Fibrous Tumour from beneath the skin of the gluteal region.—Presented by E. Cock.

(231 E.) Epithelioma of Skin of Leg.—Presented by R. T. Gore.

(231 F.) Epithelioma in Cicatrix of a Burn.—Presented by J. Hilton.

(283 A.) Section of a Melanotic Tumour from the Skin of the Back.—Presented by John Hilton.

(283 B.) Warty Melanotic Growth from the Skin of the Leg.—Presented by H. Smith.

(334.) Right Femoral Artery and Vein, mortification of the leg having occurred. The artery is plugged with coagulum, and the vein is partially occluded.—*Hunterian.*

(335.) Bifurcation of Abdominal Aorta, and Vena Cava from specimen 334. Thrombosis of the right common and external iliac arteries.—*Hunterian.*

(364.) The front of a Knee with an enlarged Bursa over the Patella.—The interior of the bursa appears fasciculated with interlacing bands of shining fibres. Its walls are consolidated with the surrounding textures.—*Hunterian.*

(366 B.) An Enlarged and Consolidated Bursa from over the Patella.—Presented by T. Wormald.

(366 C.) Enlarged Bursa Patellæ.—Presented by E. Cock.

(367 B.) Enlarged Bursa over the first metatarso-phalangeal articulation.

(384.) Vertical Section of a Knee-joint, showing atrophy of the bones from long disease. Ossific union of the femur and tibia at a right angle, with union of the patella to the outer condyle of the femur.

(384 A.) Section of Right Knee-joint, showing partial anchylosis, with eccentric atrophy of the bones.—Presented by Dr. J. Thurnam.

(384 B.) Eccentric Atrophy of Left Tibia.—Presented by Dr. Thurnam.

(500.) Double Fracture of the Olecranon, without union.—Presented by R. Liston.

(506 A.) Intracapsular Fracture of Neck of Femur.—The upper part of a femur, the neck of which was fractured within the capsule shortly before death. The fibrous investment of the neck is torn on only the anterior part; its upper, lower, and posterior parts are entire, and hold the fragments close.—Presented by Edward Stanley.

(506 B.) Intracapsular Fracture of the Neck of the Femur.—Presented by T. Carr Jackson.

(529 A.) Fractured Neck of the Femur.—Presented by J. Hilton.

(536 A.) Transverse Fracture of the Patella, with separation of the fragments, and ligamentous union; in which muscular masses of bone are formed.—Presented by R. R. Robinson.

(536 B.) Section of a Patella, fractured transversely and united by ligament.—Presented by R. Partridge.

(536 C.) Fracture of Patella, with ligamentous union.—Presented by R. Partridge.

(536 E.) A similar specimen.

(539.) Fracture of Patella.—The outer and lower margin has been obliquely broken off. The portions lie close together, but are not united.—From the Museum of Joshua Brooks.

(541.) Patella fractured transversely in an irregular line through its middle.—The lower portion is fractured vertically. The transverse fracture is united by fibrous tissue; the vertical one is partially united by bone.—From the Museum of Robert Liston.

(543.) Transversely fractured Patella, of which the parts are in close apposition, and in part united by bone.—A small piece of the inner angle of the upper portion perished, and was in process of separation.—From the Museum of R. Liston.

(568.) Inflammation of Bone, with superficial formation of new bone: section of a Tibia macerated and dried.—It shows that the disease, which has all the appearance of an ossified venereal node, is almost confined to the anterior part of the tibia, only a small similar deposit existing on the posterior surface. The medullary tissue appears healthy. Except in the part beneath the ulcer of the integuments, the surface of the new bone is smooth, not porous, but marked by a few longitudinal grooves and large apertures for the transmission of vessels.

In one situation its surface is bounded by a sharp projecting edge, is very irregular and spongy, or lung-like, and appears to have been penetrated by more blood-vessels than any other part.—*Hunterian.*

(597.) Inflammation of Bone, resulting in expansion of its walls, and induration by the formation of new bone in the expanded substance. Section of a Tibia, of which the whole shaft is enlarged and increased in weight.—Its surface is, for the most part, smooth, hard, and marked by superficial transverse branching grooves. The enlargement appears to be chiefly consequent on the separation and expansion of the outer layers of the walls. The outlines of parts of the original outer and inner layers, which have retained their compactness, can be traced on the surface of the section. They are separated by a coarse cancellous texture, the principal lamellæ of which have a longitudinal direction, and which in many parts has become, by thickening and coalition of its lamellæ, nearly as solid and as hard as ivory. A similar process of hardening and consolidation by thickening of the lamellæ has taken place in the cancellous tissue of the medullary tube; so that the texture of the tibia is nearly uniform throughout. At the posterior and upper part of the shaft are two small oval apertures through its walls. They lead to a large chambered cavity in the interior, which probably contained pus; there are some similar cavities of smaller size in the lower part of the shaft, which do not open externally.—From the Museum of Robert Liston.

(598.) Section of Femur, showing similar results of Inflammation.—Presented by Sir W. Blizard.

(685.) Necrosis, and Formation of New Bone.—Tibia, of which nearly all the anterior and posterior walls of the shaft underwent necrosis. The dead portion is surrounded by an irregular deep groove, and its anterior part is perforated by numerous small apertures, through which the cancellous tissue appears more than usually vascular. A large quantity of new bone has been produced. The case which it forms is incomplete at the anterior and inner part, where the outer layers of the original wall perished, and, at the outer part, is continuous with that portion of the wall of the original shaft which survived. A periosteum invests all the new bone, and is continuous with the periosteum surrounding the epiphyses and the surviving portion of the shaft, as

shown at the back of the preparation. Near the union of the shaft with the epiphyses are several small round apertures, some of which pass through the new bone. The superior internal articular surface of the tibia, and the cartilage covering it, are perforated by a small round aperture with smooth edges, through which pus escaped from the head of the bone into the knee-joint. The necrosis was of six months' duration. Amputation performed—From the Museum of R. Liston.

(721 A.) Necrosis of Lower Jaw.—Presented by J. Adams.

(722 A.) Necrosis of Jaw in consequence of Exposure to Phosphorous Fumes.—Presented by T. B. Curling.

(731.) The Bones of a Finger, showing destruction of the interior of the first phalanx, with expansion of the walls of the bone, probably consequent on necrosis of the cancellous tissue.—Presented by R. Liston.

(742 A.) Necrosis of Femur.—Presented by Sir W. Fergusson.

(743.) Necrosis, and Formation of New Bone.—Tibia, in which, after necrosis of nearly the whole length and thickness of the shaft, an almost complete case of new bone was formed around the sequestrum. The epiphyses, with which the case of new bone is firmly and smoothly connected, are unaltered. The interior of the case is compact and nearly smooth; its exterior also is hard, but more rugged. There are several apertures in it, especially along its anterior part, through which the size and form of the enclosed sequestrum may be seen. The surface of the sequestrum is, in nearly every part, rough, comprising only a few scattered portions of the superficial laminæ of the original shaft.—Presented by Sir Everard Home.

(743 C.) Left Tibia and Fibula, showing necrosis of nearly the entire shaft of the former bone, in the form of two sequestra, enclosed in an involucrum or sheath of new bone, continuous posteriorly, but having large cloacæ or openings in front. New bone, in scaly deposit, has been thrown out on the surface of the fibula.

(759 A.) Section of Ankle-joint, showing Necrosis of Os calcis: disease of the Articulation.—Presented by J. Hilton.

(763 B.) Necrosis of Tarsal Bones.—Presented by R. Quain.

(775.) Cartilaginous Tumour or Enchondroma.—

Fingers, with the heads of the metacarpal bones, in which are several cartilaginous tumours. Two or three of these tumours are connected with the ends of the metacarpal bones; there are two on the phalanges of the fore-finger, two on those of the second finger, three or four on the third, and one is contained within the first phalanx of the little finger. All the tumours are globular, or approach that form; they are from one half inch to an inch and a half in diameter, nearly smooth on their surfaces, and each is covered with a thin layer of cellular tissue. A section of one on the fore-finger shows that it is composed of cartilage, like those in the preceding specimens, but more vascular. The section of the little finger displays a similar tumour in the medullary tissue of the first phalanx, and the commenced expansion of the surrounding wall; and it is most probable that some of the tumours which exhibit a more distinct swelling than this presents originated in the same manner within the phalanges, and in growing have either expanded or burst through their walls. The tumours had been growing eleven years, the patient a girl, aged thirteen years and a half; and the hand was amputated.—From the Museum of Sir A. P. Cooper.

(786.) Bones of a Fore-finger, showing enchondromatous tumour of first phalanx.—Presented by R. Liston.

(872 B.) Old Dislocation of Shoulder-joint.—Presented by A. Doran.

(906 A.) A vertical and longitudinal section of a left Foot, injected, showing Inflammation of the Synovial Membrane, and complete destruction of the cartilages of the Ankle-joint. From a man aged thirty-seven.—Presented by J. Hilton.

(919 D.) Excision of Knee-joint, portions of bones removed.—Presented by Sir W. Fergusson.

(926 B.) Excision of Elbow-joint for disease, portions of bone removed.—Presented by Sir W. Fergusson.

(939.) Suppurative disease of the Hip-joint: Morbus Coxarius: Coxalgia.—The head of the femur has been almost entirely removed by ulceration, and a small portion of its lower border alone remains; its exposed surface presents a healthy cancellous tissue. There are traces of superficial ulceration of the neck, and new bone has been deposited about the attachment of the capsular ligament, and along the linea aspera. The acetabulum is extensively ulcerated; all its margin is destroyed, and at its

floor a wide irregular opening into the pelvis nearly separates the pubic and ischiatic portions from the iliac portion of the os innominatum. The tissue of all the bones is light, dry, and spongy. The patient was twenty-five years old. Disease induced by the kick of a horse, eighteen months previously; death from exhausting discharge.—From the Museum of R. Liston.

(989.) Caries of Spine.—A vertical section of the lumbar and part of the dorsal portion of a child's vertebral column, with the spinal cord. The bodies of the twelfth dorsal and first lumbar vertebræ, with their intervertebral cartilage, are wholly removed, and those of the eleventh dorsal and second lumbar are in great part removed, by ulceration. The bodies of the other lumbar vertebræ appear to contain tuberculous matter in their cancellous spaces. The rest of the intervertebral cartilages, and the other adjacent tissues, are healthy. The parts above and below the ulcerated vertebræ coming together, a considerable angular curvature of the spine is produced; but, through the enlargement of the spaces between the arches of the vertebræ, the spinal canal is not diminished in calibre. The spinal cord and the roots of the nerves appear healthy.—*Hunterian.*

(989 A.) Disease of Spine: Angular Curvature.—Presented by J. Hilton.

(991.) Caries, and Angular Curvature of the vertebræ—lower dorsal and upper lumbar—in a child. Tuberculous matter deposited in cup-shaped cavities on the bodies of the vertebræ, with destruction of the intervertebral fibro-cartilages.—Presented by Sir W. Blizard.

(1033 A.) Tumour of Lower Jaw; part of left Ramus, from the interior of which has grown a Tumour about the size of a hen's egg.—A small portion of the tumour projects through the interval, but the greater part through the external wall of the ramus. A vertical section nearly through its outer part shows the interior structure to be that of a multilocular cyst. The cavities are mostly of small size, and divided from each other by strong fibrous septa, containing numerous spicules and plates, with no very definite arrangement.

(1035.) Osseous Tumour of Lower Jaw.—Part of the right side of a lower jaw, with sections of a large bony tumour at its angle. The angle of the jaw rests in a deep groove in the middle of the upper surface of the tumour, and in some situations their respective substances

are continuous. The tumour projects both below and on each side of the jaw, is of irregular shape, measures nearly three inches in its chief diameter, and is deeply nodulated. It is composed throughout of bone, uniform in texture, and as hard and heavy as ivory.—Presented by J. F. South.

(1067.) A Round Tumour in the Base of the Tongue. —Œdema and thickening of the mucous membrane of the palate, epiglottis, and larynx.—*Hunterian.*

(1070.) Enlargement of the Tonsils.—*Hunterian.*

(1261.) Fistula in Ano.—Part of a rectum, vagina, and perineum. Portions of whalebone are placed in a fistulous passage which has a small external opening near the margin of the anus, and extends upwards for an inch and a half by the side of the rectum, becoming wider as it ascends. At its upper part it opens abruptly into the rectum by a short and narrow passage, which is directed at a right angle to the rest of its course. The adjacent tissues are healthy.—*Hunterian.*

(1262.) A similar specimen, with external Hæmorrhoids. —The lower part of a rectum, with the anus, at the margin of which are two large hæmorrhoids. A portion of porcupine's quill is passed through a small, round, ulcerated aperture in the coats of the rectum into a cavity external to it, which opens by a large aperture in the skin at the margin of the anus. The coats of the rectum are thickened and consolidated with the surrounding tissues. – *Hunterian.*

(1279 A.) Rectum, showing internal Hæmorrhoids.

(1280.) Hæmorrhoids.—The lower part of a rectum with large hæmorrhoids around the margin of the anus. The hæmorrhoids are nearly separated into two rows (the smaller ones lying above the larger), by a constriction extending round the rectum at the situation of the lower margin of the sphincter ani.—*Hunterian.*

(1284.) Rectum and Anus, showing thickening and contraction, with prominent folds of the mucous membrane which probably cover internal piles ; also external piles, around the anus, covered by thin integument, slightly excoriated.—*Hunterian.*

(1299.) Inguinal Hernia, on the left side, in a woman. The sac contains a portion of strangulated and adherent jejunum. Minute injection of the vessels could not pass into the herniated intestine, owing to the tight state of the strangulation.—Presented by J. Howship.

(1328.) Inguinal Hernia. — Part of the pelvis and abdominal walls of a young child, with the sac of an inguinal hernia, nearly two inches long, on the right side. The testicle is directly below the hernia; the cavity of the tunica vaginalis is closed above, and has no connection with the hernial sac.—From the Museum of John Howship.

(1337.) An Inguinal Hernia, with Hydrocele of the Tunica Vaginalis.—The hernial sac is placed directly above that of the hydrocele, and projects a little into its upper wall; it contains omentum adherent to its inner surface. The testicle is situated in the middle of the posterior wall of the tunica vaginalis sac.—*Hunterian.*

(1383 A.) Artificial Anus of Colon.—Presented by W. Allingham.

(1570 B.) Arteries and Veins of the upper part of the Thigh, showing gun-shot wound of the superficial femoral vein, and involving the profunda artery; with a false aneurism from the latter vessel, containing firm laminated coagulum.—Presented by Deputy Inspector-General J. R. Taylor.

(1570 C.) Traumatic Aneurism of Femoral Artery.—Presented by W. R. Beaumont.

(1610.) Abdominal Aorta, in a state of fatty and calcareous degeneration, in the form of patches having a superficially tuberculated appearance.—*Hunterian.*

(1612.) Atheromatous and Calcareous Degeneration of Aorta, with destruction of the inner coat of the artery, over several patches of the deposit, presenting the appearance of shallow ulcers.—*Hunterian.*

(1614.) Abdominal Aorta and Iliac arteries, showing similar changes.—*Hunterian.*

(1637.) Aneurism of the Superficial Femoral Artery, an inch below the origin of the Profunda.—Section of the sac shows that all three coats of the vessel enter into its formation; and that there is some thickening of the inner coat, with abundant yellow deposit beneath; the middle coat is thinner than natural; the outer coat of usual thickness, but indurated. The remainder of the artery is of ordinary size, and appears healthy.—Presented by R. Liston.

(1638 A.) Fusiform Aneurismal Dilatation of both Popliteal Arteries.—Presented by J. P. Perrin.

(1719 A.) Varicose Veins of Leg.—Presented by H. Hancock.

(1729 A.) Thrombosis of Femoral Vein, and Vena Cava. —Presented by J. F. Goodhart.

(1982.) Sacculated Urinary Bladder, from Stricture of the Urethra.—In consequence of the Stricture, the muscular coat of the bladder is hypertrophied; and in the posterior wall there are many pouches of the mucous membrane, unusually regular in form and size, pushed between the fasciculi, but not protruded far enough to be prominent externally. The prostate is enlarged.—*Hunterian.*

(2000.) Polypoid Growths in the Neck of the Bladder, and Prostate Urethra.—Hypertrophy of the muscular coat of the bladder, and dilatation of the ureters.—Presented by J. G. Crosse.

(2005.) Cancer of the Bladder.—A bladder, with the prostate gland, and other adjacent parts. The posterior wall of the bladder has been removed to show two vascular, tufted, shreddy, and flocculent growths from the mucous membrane near the orifice of the ureter, and one of much smaller size from the membrane an inch above the prostate. The larger growths are close together; they are of a spheroidal form, about three-quarters of an inch in diameter, and attached by narrow bases; the branching filaments and tufts of which they are composed, and which when recent were of a bright red colour, float free within the cavity of the bladder. Among the filaments some small portions of a soft, probably medullary, substance are here and there entangled. The rest of the mucous membrane is healthy, the muscular coat is a little hypertrophied; and the prostate gland is healthy. The patient, aged sixty-five years, for sixteen years had lead-palsy. Death from recurring hæmorrhage.—Presented by Sir E. Home.

(2012 A.) Bladder Hypertrophied and Sacculated, containing a large Calculus.—Presented by T. Wormald.

(2044 A.) Puncture of Bladder per Rectum, in a case of Stricture of the Urethra.—Presented by E. Cock.

(2108 A.) Fracture of Base of Skull, with large clot of blood effused between the bone and dura mater.—Presented by J. Adams.

(2199.) Section of Boy's Head, showing Polypi Nasi, in situ.—One growth is attached by a slender pedicle to the inferior spongy bone—the lower margin of its anterior half; another such growth is attached to the middle spongy bone—its lower and anterior margin. The cells

of the ethmoid bone are completely filled with a firm, elastic, pale, and semi-transparent growth, like fœtal cartilage; and the mass projects forward as a round tumour into the upper part of the nasal fossæ. The section of this growth resembles a cartilaginous tumour—enchondroma.—*Hunterian.*

(2208.) Nasal Polypi.—Several specimens showing some of the various forms of gelatinous nasal polypi, and their various modes of attachment to the spongy bones.—From the Museum of Sir A. P. Cooper.

(2208 A.) Nasal Polypi.—Presented by J. Hilton.

(2241.) Soft Cancer of the Globe of the Eye.—The cornea is thickened and opaque.—*Hunterian.*

(2249 A.) Medullary Cancer of Eye-balls. Presented by E. Canton.

(2324.) Hydrocele of Tunica Vaginalis.—Testicle, with its tunica vaginalis, exhibiting the enlargement and distension of the latter, constituting simple hydrocele. It shows, also, the kind of recess, half-partitioned from the main cavity, which the distended sac forms by the side of the epididymis.—*Hunterian.*

(2325.) Double Hydrocele of the Tunicæ Vaginales.—In front of the spermatic cords, their component parts are separated.

(2338.) Hydrocele of the Tunica Vaginalis, with enlarged Testis and Epididymis.—Deposit of flaky lymph, and sloughing aperture in the tunica, from the application of a caustic for cure of the hydrocele. The sac of an inguinal hernia is seen at the upper part of the spermatic cord.—Presented by Sir W. Blizard.

(2345 A.) Testicle with Hæmatocele.—Presented by T. Wormald.

(2376 B.) Fibroid Deposit in Testicle.—Presented by T. B. Curling.

(2386 A.) Section of a Tumour in the Testicle, of cystic cartilaginous nature.

(2415 A.) Cystic Medullary Disease of Testicle.—Presented by E. Cock.

(2420 A.) Testicle and Spermatic Cord, containing deposits of tubercular matter.—Presented by J. Hilton.

(2465 A.) Strumous Disease of Testicle, and Varicocele.—Presented by T. B. Curling.

(2479 A.) Hypertrophied Bladder, and Enlarged Prostate.—Presented by J. Adams.

(2485 A.) Enlarged Prostate, Hypertrophied Bladder,

Calculus; and Puncture per Rectum.—Presented by T. Wormald.

(2491.) Part of Bladder with enlarged Prostate, especially of middle lobe.—The muscular coat of the bladder is hypertrophied, and its mucous membrane sacculated. The enlargement has especially affected the prostate in the situation of the middle lobe, which projects in a broad nipple-like process, behind and over the vesical orifice of the urethra, giving the orifice the form of a narrow crescent with its horns turned backwards.—Presented by Sir E. Home.

(2521.) Enlargement of the Prostate Gland, affecting all its Lobes.—Calculus in the prostatic urethra, just over the caput gallinaginis. Thickening of the muscular coat of the bladder. Death from retention of urine.—*Hunterian.*

(2536.) Stricture of Urethra.—Penis, having the urethra laid open from below. There are two narrow and very close strictures—one about an inch and a half, the other four inches from the external orifice of the urethra. At these parts the canal of the urethra, which in both instances is gradually and regularly narrowed as it approaches the stricture, is not laid open. The whole of the rest of the surface of the urethra is uneven and corrugated, as if by numerous little cord-like thickenings of its walls. It presents, also, a multitude of small orifices and shallow depressions, some of which are probably dilated lacunæ. Behind the second stricture the canal is enlarged and strongly fasiculated. The caput gallinaginis is effaced. At the left side of the membranous portion there is a small cavity, the remains, probably, of an abscess in the adjacent tissue; it does not communicate with the urethra. The patient was thirty-six years old. Signs of stricture for six years before death.—From the Museum of J. Howship.

(2610 B.) Epithelioma of Penis.—Presented by Sir W. Fergusson.

(2610 C.) Epithelioma of Penis.—Presented by E. Cock.

(2759 A.) Cystic Tumour of Breast.—Presented by Sir W. Fergusson.

(2763 A.) Proliferous Cystic Tumour of Breast.—Presented by Dr. Masfen.

(2788 C.) Schirrus of Breast, with Blood-cyst.—Presented by J. Birkett.

(2858 A.) Atrophy of Bone.—The upper part of a skull, which has become much thickened, but it is light and

porous, and hardening has taken place to a considerable extent, especially on its inner surface. The average thickness of the walls is three-quarters of an inch, and the channels for the meningeal arteries are very deeply marked.

(2876 B.) Rickets, affecting Tibia and Fibula.—Presented by G. W. Mackmurdo.

(2877.) Rickets.—A Tibia and Fibula, the shafts of which, in consequence of rickets, are remarkably curved inwards and flattened. At the most prominent part of its curve, which is just above the junction of its middle and lower thirds, the shaft of the fibula is an inch and a quarter in width, but not more than two lines in thickness. Just below this part an irregular process of bone has grown from the outer border of the tibia, and is received in a corresponding cavity on the inner border of the fibula, so as to form a kind of false-joint between them. There is a similar smaller growth on the inner margin of the tibia. In other respects the bones are healthy.—*Hunterian.*

(2887.) Fracture of Skull, with depression and bony union.—The upper part of a skull, in which there has been a circumscribed fracture, with central depression of the lower and anterior part of the left parietal bone. A piece of bone was removed from the posterior margin of the fracture, but the portions were imperfectly, if at all, elevated. They have, however, united firmly, and, by the closeness of the union, and the smooth roundness of their margins, it is probable that the patient lived a long time, although one narrow portion of bone projects inwards half an inch below the level of the surrounding parts.—From the Museum of John Heaviside.

(2890.) Fracture of Skull, incomplete and comminuted, with bony union.—Part of a skull, on which a deep oblique wound was inflicted near the middle of the frontal bone. A portion of the outer table and diploe was broken into three pieces, and nearly detached, but complete reunion has taken place, though the deeper edge of the wound remains open. The inner table of the skull was not injured. —From the Museum of John Heaviside.

(2893.) Incised Fracture through the whole thickness of the Left Parietal Bone ; partial closure.

(2895.) A Skull.—A portion of the frontal bone, including both tables, removed by an oblique incised wound. Partial closure of the wound.

(2897.) Fracture of Skull, complete and comminuted,

with bony union.—A skull, on which a very broad deep wound was made through the front of the frontal bone. The wound is more than three inches long, and its edges are nearly an inch apart. The same kind of healing has occurred as in the preceding specimens, and portions detached from one of the margins of the wound have been re-united. Another obliquely penetrating wound, about an inch long, in the occipital bone, is similarly healed.—From the Museum of John Heaviside.

(2901 G.) Base of the Skull, its posterior half, showing fracture of the occipital bone from gun-shot wound.—Trephine applied between the occipital protuberance and the lambdoid suture, on the left side of the bone. From this point a fissure extends downwards and forwards, close to the left condyle, and into the jugular foramen.

(2904.) Fracture of Rib, union, without displacement.—A second rib, fractured through its middle, and united, without displacement of the portions. The situation of the fracture is indicated only by a rough thickening of the borders and the inner wall.—*Hunterian.*

(2905.) An eleventh Rib, fractured through its middle, and united without displacement, but with considerable thickening, and the formation of ridges of bone on both its borders.—*Hunterian.*

(2906.) A nearly similar specimen.—These three were probably taken from the same person.—*Hunterian.*

(2915.) Fracture of Os Innominatum; little displacement, and ossific union, with great accumulation of bone around. The articular cartilage of the acetabulum is cracked in a stellate form.—Presented by C. J. Howship.

(2923.) Fracture of Clavicle, union, with displacement.—A left clavicle, fractured through the middle of its shaft, and repaired, with considerable displacement. The scapular portion has passed behind the sternal one, and the bridge of bone uniting them is smooth and flat.—*Hunterian.*

(2923 A.) Comminuted Fracture of Clavicle, united.—Presented by Dr. J. Thurnam.

(2924.) A Clavicle, fractured obliquely through the middle of its shaft.—The scapular portion has passed directly under the sternal one, and in this position they are smoothly united by intermediate new bone.

(2924 A.) A left Clavicle, fractured obliquely through the middle of the shaft.—The scapular portion has passed

behind the sternal one. Firm union. The bone has been longitudinally bisected.—Presented by Sir Stephen L. Hammick.

(2929.) Fracture of Humerus, union, with displacement, and atrophy of upper fragment.—A right humerus, which was fractured transversely just below its tubercles. The upper end of the shaft appears to have been drawn forwards, and is united by a short bridge of bone to the anterior border of the head and neck. The head and its tubercles are reduced to a disc-like mass, less than an inch in thickness, and having externally a smooth flat surface continuous with the outer wall of the shaft. The articular surface of the head is ulcerated at its centre, and bone is irregularly accumulated around its margin.—*Hunterian.*

(2930.) Fracture of Humerus, transversely, just below the tuberosities; bony union. Oblique fracture through the lower part of its shaft; united, with slight lateral displacement.—*Hunterian.*

(2933.) Fracture of the Left Humerus, obliquely, just below the Head and through the Tubercles.—The shaft is drawn forwards, upwards, and inwards; the outer surface of its upper end is united by bridges of bone to the broken surface of the head and neck, and the anterior fourth of the head rests in a cavity on the top of the shaft.—Presented by J. Howship.

(2954 A.) Fracture of Lower End of Radius.—Presented by R. Partridge.

(2955.) Extra-capsular Fracture of Neck of Femur; impacted; union.—A femur, from a woman twenty-four years old, which was fractured through the base of the neck and the great trochanter. The portions are smoothly united, and with but little addition of bone. The neck appears to have been driven down between the trochanters; its axis is now nearly at a right angle with that of the shaft, and the head is below the level of the great trochanter.

(2955 D.) Double Fracture of the Femur.—The upper one passes obliquely across the neck, from the superior and back part to the anterior intertrochanteric line, with displacement of the fragment downwards and forwards, and deposit of new bone on the upper and anterior surface of the neck; the lower fracture extends obliquely through the upper third of the shaft, from two inches below the great trochanter, downwards and inwards, with consider-

able displacement, the end of the lower fragment being drawn up to within half an inch of the trochanter. This injury occurred in a man seventy-five years old. Ossific union has taken place.

(2959 C.) Fractured Neck of Femur.—Presented by E. Cock.

(2959 D.) Fracture of Neck of Femur.—Presented by J. Adams.

(2965 D.) Gun-shot Fracture of the upper end of the Femur, detaching the great trochanter and adjoining portion of the neck; with an oblique fracture below the trochanter, from the anterior surface of the shaft downwards and backwards, to the middle of the linea aspera. —Presented by Deputy Inspector-General J. R. Taylor.

(2965 E.) Comminuted Gun-shot Fracture, extending from the small Trochanter obliquely downwards and forwards. — Union, with much new bone between the fragments, and displacement to an angle of about 130°. —Presented by Deputy Inspector-General J. R. Taylor.

(2973 A.) Left Femur, which has been fractured near the middle of the shaft, and united.—Presented by Dr. Henry Hunt.

(2976.) Right Femur, of which the shaft was broken near the junction of the middle and lower thirds.—Their portions considerably overlapped each other, the lower one having passed far upwards behind the upper one, but they are united by a strong intermediate mass of bone, and though there is great shortening of the limb, there is no eversion of the condyles.—*Hunterian.*

(2985.) Transverse Fracture of the Patella, with a band of ligamentous union. Hypertrophy of the two fragments of bone.—Presented by Sir W. Blizard.

(2990.) Left Tibia and Fibula, showing fractures, firmly united, with displacement of the lower fragments upwards, and their approximation inwards.—*Hunterian.*

(2992.) Fracture of Tibia and Fibula, just below the middle of their shafts. Considerable longitudinal displacement, but firm union; the end of the lower portion of the fibula being fixed to that of the upper portion of the tibia.—Presented by Sir W. Blizard.

(3089.) Vertical Section of Shaft of the Femur, showing expansion, hypertrophy, and induration—sclerosis—of the compact tissue of the walls of the bone. Their inner surface is covered with laminated new bone, en-

croaching on the cavity of the medullary canal.—Presented by Sir W. Blizard.

(3090 A.) Femur, Enlarged and Indurated by Inflammation.—Presented by G. W. Mackmurdo.

(3091.) Section of a Femur, showing expansion, hypertrophy, and sclerosis, as in specimen 3089.

(3128.) Syphilitic Ulcer, of the chronic tuberculated form, perforating both tables of the frontal bone, on the right side. On the left side of the bone, a larger portion of bone has been removed by caries or necrosis.—*Hunterian.*

(3134.) Syphilitic Caries of the upper part of the Skull, involving both tables.—*Hunterian.*

(3183.) Necrosis of Tibia.—A tibia, of which a large portion of the shaft, including more than half its anterior wall, suffered necrosis. The dead portion is completely separated, but is retained within an imperfect cavity formed by the remaining portions of the shaft, and by the new bone deposited upon them, some of which has grown so as to project over the margins of the sequestrum. No new bone has been formed opposite that part of the sequestrum which comprises the superficial layers of the original shaft.—*Hunterian.*

(3273 A.) Subcoracoid Dislocation of Humerus.—Presented by G. Busk.

(3275.) Dislocation of Humerus, unreduced, and new articulation.—The head of the humerus was dislocated downwards, forwards, and inwards, many years before death, and was not reduced. It became flattened and enlarged, and its articular surface rested on a deep concave surface of new bone deposited on the front and inferior costa of the scapula, immediately below and on the inner side of the glenoid cavity. A large irregular prominence of new bone is directed backwards and upwards from the great tuberosity of the humerus : it is probable the elongated supra-spinatus and infra-spinatus muscles were attached to it. The glenoid cavity has lost its original form, its outline and surface are irregular, and all its articular cartilage is removed. The humerus appears to have moved freely in its new articulation.—From the Museum of J. Howship.

(3284.) Comminuted Fracture of the Tibia and Fibula, at their lower ends, with displacement of the Tibia forwards and outwards, over the astragalus. Slight displacement of the malleoli forwards. Ossific union, and

anchylosis of ankle-joint, consequent on destruction of their articular cartilages by ulceration.—Presented by A. White.

(3319.) Disease of Hip-joint, affecting chiefly the head of the femur; and new bone has been formed at the bottom of the acetabulum. By adaptation of the nodulated surface of the acetabulum with the anterior part of the head of the femur, the limb was much inverted. The projections of new bone below the small trochanter, and a similar one on the os pubis, may have served for the attachment of the muscles which were stretched, and perhaps ligamentous.—*Hunterian.*

(3327.) Bony Anchylosis of Hip-joint, with mal-position of Limb.—The femur is directed almost straight forwards, but the form of that part of it which is not enclosed in the acetabulum is little altered. The border of the acetabulum has grown out over the base of the head of the femur, but its notch is preserved, a plate of bone united to the femur replacing that portion of the cotyloid ligament which extends across the notch. A section through the ilium and the head and neck of the femur, shows that the substance of the acetabulum and that of the head of the femur have so completely coalesced that their original outlines can be nowhere traced. —*Hunterian.*

(3327 A.) Part of an Os Innominatum.—The acetabulum is reduced in depth, and its circumference is diminished, by a great accumulation of new bone upon and by the sides of its posterior border. The surface of the new bone is slightly concave, and part of it, on which probably the dislocated head of the femur rested, is smooth. The adjacent bone is healthy.—Presented by Sir W. Blizard.

(3327 B.) Section of Anchylosis of Hip-joint.—Presented by Mr. Stokes.

(3332.) Chronic Rheumatic Arthritis of Hip-joint.—The acetabulum is much increased in depth by an accumulation of new bone upon the whole of its border, and especially upon its lower part, where a kind of ridge, shallow and grooved, is formed, and served as a support for the base of the head of the femur. A portion of the cotyloid ligament which is preserved shows that this accumulation of bone has taken place external to it, not in its substance. Part of the articular cartilage of the acetabulum has been removed; that covering its upper

third remains, and appears healthy. The exposed surface of the rest of the bone is hard, in most parts compact, in some polished, but in all parts perforated by numerous minute round apertures, that made it look like worm-eaten wood. Bone deposited on each side of the groove over which the tendon of the psoas muscle passed formed a deep channel for it. New bone is also formed in the situation of the ligament closing in the notch of the acetabulum. The head of the femur is flattened and conical, as if a portion of its upper surface had been removed; its base is greatly enlarged by an accumulation of new bone around it, especially at the lower and back part, where a ridge is formed corresponding with that already described as projecting from the lower border of the acetabulum. The articular cartilage remains on the part of the head which corresponded with that portion of the acetabulum on which also the cartilage remains; the rest of the surface of the head is hard, and in part polished, but perforated with numerous minute holes. — From the Museum of Robert Liston.

(3333.) Part of an Innominate Bone, with the acetabulum in almost exactly the same state as in spec. 3332.

(3334.) Another specimen of Chronic Rheumatic Arthritis of Hip-joint.—From the Museum of Joshua Brookes.

(3344.) Bony Anchylosis of Elbow-joint. The bones of an elbow-joint, so closely and smoothly united by bone, that only traces of the forms of their articular surfaces can be discerned.—Presented by Sir W. Blizard.

(3349.) Right Humerus, Radius and Ulna, firmly and smoothly united by bone. Atrophy of the bones, but their tissue is healthy.—*Hunterian.*

(3368 A.) Cervical Vertebræ, second, third, and fourth; with osseous outgrowths on the anterior surfaces of their bodies, which, passing across the intervertebral spaces, have united the bones together.

(3372.) Dorsal Vertebræ. — The six lower, showing laminar osseous outgrowths, uniting the bodies of these bones.—*Hunterian.*

(3377.) Four Dorsal Vertebræ, showing union of their bodies by osseous outgrowths, and thin layers of fasciculated bone unite the arches of the vertebræ, these layers having large apertures in the middle line like the ligamenta subflava.—*Hunterian.*

(3378.) Two Lumbar Vertebræ, showing ossific union

of their bodies, and of the arches, spines, and articular processes.—*Hunterian.*

(3378 A.) Lumbar Vertebræ and Sacrum united by bone. —Presented by G. W. Mackmurdo.

(3379 A.) Part of Vertebral Column, with Exostosis.

(3408.) Lateral Curvature of Spine. An adult vertebral column, in the superior dorsal portion of which there is a considerable curvature to the right. Both the lumbar and the superior dorsal portions are, in compensation, slightly curved to the left. The bodies of the vertebræ are somewhat rotated; the left articular processes of those affected by the chief dorsal curve are turned forwards, and the right articular processes of the lumbar and superior dorsal vertebræ backwards; so that, in both cases, that side of the vertebra which lies in the concavity of the curve is turned forwards. The grooves by the sides of the spinous processes are all narrower on the right than on the left side. Many of the vertebræ are slightly thickened and nodulated at the margins of their bodies and articular processes; and the *grain* of the texture of the bodies of those which are engaged in the chief curvature is oblique in the direction of, and in adaptation to, the curve.—*Hunterian.*

(3422 A.) Part of Spinal Cord, with Angular Curvature.—Presented by T. Spencer Wells.

PATHOLOGICAL PREPARATIONS AND SPECIMENS

IN

EXAMINATION ON MEDICINE.

(218.) Fibrous Tumour, which was attached to the capsule of the hip-joint, from the Right Hon. W. Windham. —Presented by W. Lynn.

(949 A.) Chronic Rheumatic Arthritis of Knee-joint.

(993.) Caries of Spine.—The last three dorsal, and the first four lumbar, vertebræ of an adult. The intervertebral fibro-cartilage between the first and second vertebræ has been removed by ulceration, and the adjacent parts of their bodies are ulcerated, and broken up into portions which are nearly loose. New bone has been formed on the margins of the bodies of these two vertebræ, and in smaller quantity, and irregularly, on those adjacent to them. Ulceration has taken place, to a small extent, on the anterior part of the body of the third lumbar vertebra.—From the Museum of Robert Liston.

(1166.) Cancer of Stomach.—A stomach of which the bloodvessels have been minutely injected. Around the cardiac orifice, and extending for a short distance along the lower curvature, is a flat, sponge-like tumour (probably either an epithelial or a medullary cancer), of moderately firm consistence, having an uneven surface projecting into the cavity of the stomach, and a deeply sinuous elevated margin. The lymphatic glands immediately adjacent to the tumour are enlarged, and contain a soft pulpy substance. The coats of the stomach on which the tumour rests, and immediately adjacent to it, appear healthy. The middle of the stomach presents a very close hour-glass muscular contraction.—From the Museum of John Howship.

(1207.) Ulceration of Large Intestine. A cæcum, with the ascending colon, and part of the ileum, inverted. Mucous membrane removed by ulceration and sloughing. The disease becomes rather less intense towards the ileo-cæcal valve, and except that its coats appear to have been too vascular and swollen, the ileum is healthy.

These appearances of the intestine are probably the result of acute dysentery.—Presented by Sir William Blizard.

(1214.) Ulceration of Intestine in Typhus (Typhoid) Fever.—Portion of ileum, exhibiting advanced stage of the disease. The borders of Peyer's patches, and the mucous membrane generally, are less swollen ; the villi are smaller. In many places, large sloughs have separated from the patches of glands, exposing the sub-mucous tissue, or the circular muscular fibres, either apparently healthy, or else a little thickened and granular. In other places, large flocculent, shrivelled-up, and dirty-brownish sloughs remain attached in the places of the glands, and hang in loose shreds into the cavity of the intestine. The solitary glands and the smaller Peyer's patches are less diseased than the larger. Wherever sloughs have separated, the sloughing has extended a little under the swollen and elevated border round the patch, which border therefore appears like a thin margin overhanging the base of the ulcer.—*Hunterian.*

(1214 B.) A Portion of Ileum, Injected and Inverted.—There is a large oval typhoid ulcer, corresponding to one of Peyer's patches, from which the slough has separated, and which appears about to heal. There are also several circular ulcers formed by the ulceration of the solitary glands. The increased vascularity of the thickened mucous membrane around the edges, and the dense white, and but slightly vascular tissue of the base of the ulcerated surfaces are beautifully shown in the preparation.—Presented by Dr. S. J. Goodfellow.

(1228 A.) Tuberculous Ulceration of the Ileum, from a Bushwoman.

(1232.) Portion of Colon, from a person who is said to have recovered from dysentery, but the ulcers have more of the tuberculous than the dysenteric characters. Two of them, elongated and oval, have their margins and bases becoming smooth, as if nearly cicatrised. Beneath the peritoneum covering the larger of these two ulcers, are some appearances of small tubercles. The other ulcers are small, round, or oval, with level bases, and elevated smoothly rounded margins turned in over the borders of their bases, and nearly healthy in their apparent texture. —*Hunterian.*

(1246.) Portion of an Ileum, showing Peyer's patches and the solitary glands swollen and elevated. In some of

the former are small deep ulcers, and some of the solitary glands appear superficially ulcerated.—Presented by Dr. Baly.

(1360 A.) Strangulation of portion of the Ileum by a Constricting Band.—Presented by J. Walker.

(1361 A.) A portion of small Intestine and Cæcum, from a patient who died of Internal Strangulation.—There are two small diverticula from the ileum, both of which appear to be formed of all the coats of the intestine, serous, muscular, and mucous. They are situated very near each other, and about two feet from the ileo-cæcal valve. One arises very obliquely from near the mesenteric border of the intestine, and is directed downwards. Its first portion is not more than a quarter of an inch in diameter, but it afterwards dilates into a flat-shaped blind extremity; its length is two inches. The second arises from the convex free margin of the intestine, two inches above the other. It is three-quarters of an inch long, widest at its commencement, and tapers gradually to an extremity which is continuous with a strong, round, fibrous cord, also about three-quarters of an inch long, which by its other end is firmly adherent to the surface of another portion of the intestine, about a foot higher up. This diverticulum and cord form a constricting band, under which the strangulated portion of intestine, with its mesentery, had passed. This consists of about two feet of the lower end of the ileum, from immediately above the ileo-cæcal valve to the upper diverticulum. At p.-m. examination it was found to be in a state of great engorgement, having much recent lymph effused upon it, especially round the seat of stricture, and lying in the upper and posterior part of the left side of the pelvis. On the cæcum, about two inches from the ileo-cæcal valve, is a small rounded pouch of intestine, having an aperture of communication that would only admit a small probe. The vermiform appendage is adherent in its whole length to the outer surface of the cæcum, and its extremity is united by a short fibrous band to the side of the small pouch just mentioned.

The diverticulum which caused the stricture by the adhesion of its extremity to another portion of intestine appears to correspond in situation and structure to the diverticulum verum of Meckel, resulting from the non-closure of a portion of the fœtal vitilline duct; but the second pouch on the ileum, and that on the colon, must have had a different orifice.—Presented by R. R. Robinson.

(1364.) Intussusception of the Jejunum.—*Hunterian.*

(1366.) Portion of Ileum, with Intussusception.—The intussuscepted part has been carried downwards; its lower orifice is turned towards the attachment of its mesentery, and is narrow and elongated.

(1368 C.) Portion of Intestine, showing an intussusception of the ileum a few inches above the ileo-cæcal valve. The intussuscepted part has passed through the valve, and entered the ascending colon.—Presented by George Skinner.

(1396.) Section of Liver, presenting nodulated appearance, produced by breaking and tearing through the substance of the liver. The peritoneal coat is thickened, and shreds of false membrane are attached along the anterior margin of the organ.—Presented by Sir James Paget.

(1408.) Medullary Cancer of Liver.—Portion of a liver, in which are numerous round and irregular masses of a soft, probably medullary, substance. The masses nearly fill the liver, and project upon its surface : many like them have been removed from smoothly circumscribed cavities in its substance, in which they were imbedded; some appear to be surrounded by distinct membranous capsules. —*Hunterian.*

(1421 A.) Hydatid Cyst in Liver.—Presented by W. J. Bowden.

(1447.) Gall-stones.—A gall-bladder, with two large calculi distending it just above the cystic duct. In other parts its walls are thin, though not distended; its inner surface is not reticular, but fasciculated by muscular fibres strongly developed beneath it. The cystic duct is of natural size.—*Hunterian.*

(1507 B.) Heart, showing recently deposited reticulated lymph, from pericarditis. Presented by Sir Stephen L. Hammick.

(1509.) Pericarditis.—Heart of a child, the whole surface of which is covered with a thin and delicate reticular layer of soft lymph. The bloodvessels are injected, and injection appears to have passed in several places into the lymph.—From the Museum of Sir A. P. Cooper.

(1524.) Heart, showing aneurism of the posterior wall of the left ventricle, near the septum, and just below the mitral valve. The sac is crossed by a main branch of the left coronary artery. The left ventricle is generally dilated, and somewhat hypertrophied, and the endocardium is here thickened.—Presented by G. Langstaff.

(1537.) Endocarditis.—Portion of the base of a heart, with large, coarsely granulated masses of brownish-yellow lymph firmly adherent to the mitral, and one of the aortic, valves. The mass on the mitral valve extends down the tendinous cords to one of the fleshy columns; that on the aortic valve has a somewhat conical form, and is half an inch in length, its apex projecting quite across the orifice of the aorta.—*Hunterian.*

(1544.) Mitral and Aortic Valves, with the adjacent parts.—The mitral valves are thickened and opaque, and their borders, more thickened than any other part, appear rigid. The tendinous cords and the summit of the fleshy columns are similarly thickened, opaque, tough, and white; the aortic valves are shrivelled, and their margins are curved backwards and irregularly thickened.—*Hunterian.*

(1549.) Portion of Aorta, with its valves, which are a little thickened and opaque. Two of them are so united by their adjacent edges that they present a continuous curved margin, like that of one valve. Their united edges form a prominent ridge, passing from the middle of their free border to the wall of the artery; and along this ridge a large quantity of calcareous matter is deposited in coarsely accumulated granules. This *cross-bar* probably indicates a congenital union of the valves.—*Hunterian.*

(1556 A.) Calcareous Deposit in Aortic Valves.—Presented by Duncan Gibb, M.D.

(1559.) Part of a Heart, showing dilatation and hypertrophy of the left ventricle. The aortic valves in the right ventricle are thickened and opaque, and long fibrinous growths are attached around the corpora Arantii; in the centres of two of the valves are circular ulcerated apertures, with lymph on their margins.—Presented by G. Langstaff.

(1560.) Dilatation of the first portion of the Aorta, close to the valves, with calcareous deposit beneath the lining membrane. Perforation of two of the valves, the margins of the ulcers being thickened with adherent lymph. The ulceration extends beneath one of the valves to the adjacent part of the artery.—Presented by Sir Everard Home.

(1624 B.) Portion of Thoracic Aorta, the coats of which are considerably dilated.—There is an abundant deposit of atheromatous and earthy matter throughout the thickened internal coat, and its surface is in many places

fissured, or removed in irregular patches.—Presented by Sir Stephen S. Hammick.

(1641.) Dilatation of Arch of Aorta.—A section of the arch of an aorta, exhibiting an irregular aneurismal dilatation extending from an inch above the valves to the commencement of the descending or thoracic aorta. The dilatation appears to have occupied all the circumference as well as the whole length of this part of the artery; but both before and beyond the situations mentioned, the artery has its natural size, and the dilatation begins and ends abruptly with well-defined borders, like those of the mouth of an aneurism. The dilated part of the artery measures in its greatest calibre between two and three inches in diameter, and its length is about nine inches. The internal surface of the dilatation is uneven, superficially tuberculated, and opaque, and there are abundant deposits of fatty and earthy matter beneath it; all the arterial coats are dilated together, and at the back of the preparation are dissected into three layers; here also are shown two small pouches pushed outwards from the general dilatation. In the distal part of the dilatation a large quantity of laminated coagulum appears to have reduced the channel for the blood to the ordinary size of the aorta; and some of this coagulum extends into the left subclavian artery, and fills its cavity. The orifice of the aorta and its valves are healthy.—*Hunterian.*

(1663.) Aneurism of Arch of Aorta, with the Trachea.—The posterior wall and parts of the upper and lower walls of the arch, from the origin of the arteria innominata to the commencement of the thoracic aorta, are dilated into a large, elongated, transversely oval and flattened aneurismal sac, which is partially filled with laminated coagulum. The sac pressed backwards upon the trachea, and burst into it just above the bifurcation, with a small smooth-edged oval opening. The artery before and beyond the aneurism is slightly dilated; the trunks given off from the arch are healthy. The outer part of the sac, which was probably closely adherent to the left ribs, has been removed.—*Hunterian.*

(1756 B.) Empyema, resulting in Gangrene of the Lung. —Presented by Dr. Moxon.

(1775.) Emphysema of Lungs.—Part of a lung, in the edge of which many of the air-cells are dilated, and have coalesced. The diseased part projects in a multilocular or sacculated swelling, bounded by the pleura, which is

opaque and somewhat thickened from previous inflammation. From a man æt. 65, who suffered from asthma for nearly six years.—From the Museum of George Langstaff.

(1806 A.) Section of the two Lungs from a middle-aged man, in an advanced state of tuberculosis, injected. Near the apices of both lungs are large cavities. The pleura is thickened, and was adherent to the parietes of the thorax.

(1808 A.) Phthisis Pulmonalis.—Section of a lung which had collapsed, and was compressed by air and fluid in the pleural cavity. Tuberculous matter is thickly deposited in the lung in the forms of both granules and infiltration. There are also numerous cavities of various, but chiefly small sizes ; and one of these in its progress by ulceration has extended through the pleura pulmonalis, making in it a smooth-edged oval aperture, opening into the opposite wall of the same cavity.

In the inflammation of the pleura, which followed the escape of air and pus into its cavity, a thick firm layer of lymph has been deposited over the whole surface of the collapsed lung, and of the costal pleura. The further collapse of the lung appears to have been hindered by a strong old adhesion, which fixed a part of the pleura on its upper lobe to the opposite part of the costal pleura.—Presented by Sir James Paget.

(1843.) Larynx, showing thickening of the mucous membrane, and deposit of lymph, from "putrid sore throat."—*Hunterian.*

(1843 A and B.) Two Specimens of Laryngeal Diphtheria.—Presented by H. J. Butlin.

(1876.) Dilatation of Kidney.—Section of a kidney, in which the pelvis and its branches are dilated, in consequence of obstruction to the secretion of urine. It shows the gradual flattening and pressing outwards of the points of the papillæ, which takes place when the calyces, with which they project, are dilated around them, and which constitute the first degree of expansion or dilatation of the kidney. A slight elevation at the centre of each dilated calyx marks the former projection of the papillæ, and from the centre of this elevated part the straight bloodvessels between the trunks of the tubuli uriniferi are seen radiating in every direction towards the circumference of the calyx.—Presented by J. G. Crosse.

(1886.) Granular Degeneration of the Kidney—Bright's

Disease.—Section of a kidney affected with granular degeneration. It is rather smaller than natural. The outer layer of its cortical substance is very thin, and its surface is coarsely and irregularly granular, and in some situations pitted and seamed, as if it had been drawn inwards.—Presented by John Quekett.

(1902 C.) Cystic Disease of the Kidney.—Presented by J. Hutchinson.

(1903 A.) Cystic Kidney.—Section of a kidney much enlarged, and of which the secreting structure has been almost, but not entirely destroyed by the development within it of very numerous thin-walled cysts with fluid contents.—Presented by Sir James Paget.

(1942.) Renal Calculi.—A kidney, the bloodvessels of which are injected. The pelvis and calyces are dilated, and three of the latter are obstructed by calculi.—From the Museum of George Langstaff.

(1946.) Kidney, showing dilatation of the pelvis and commencement of the ureter, which contain two large calculi having a branched form adapted to their receptacle. The substance of the kidney is much atrophied.—*Hunterian.*

(2053.) Apoplexy.—The base of a brain, with the lateral ventricles exposed from above. Both the ventricles were distended with blood, which flowed into them through a rupture of the left middle cerebral artery, just below the left corpus striatum ; portions of the coagula remain. The substance of the left corpus striatum, through which the blood passed, and all the adjacent part of the brain, appear to have been extensively lacerated by the effusion of blood. A distinct small effusion in the posterior lobe of the right hemisphere is exposed on the lateral surface of the specimen.—From the Museum of John Howship.

COLOURED LITHOGRAPHS OF SKIN DISEASES :

(3.) Eczema Polymorphicum, showing the eruption on the forearm, and which has the ichorous, crustaceous, pustular, and vesicular characters.

(60.) Scabies Vulgaris, or common Itch, as often manifested in the sensitive skin of a child.—The polymorphic character of the eruption, consisting of papulæ, vesiculæ, pustulæ, and excoriations, is well exhibited ; and the concentration of the disease in the interdigital fossæ, and in the grooves of flexion of the palm and of the front of the wrist.

(83.) Impetigo Conferta.—Coloured lithograph of im-

petigo of the face. The patient was a delicate youth, aged seventeen. He was brought up in the country, and placed in an office in London, fell into bad health ; having been on one occasion heated by exercise, he was exposed for some time to the cold. The eruption appeared upon his face as a small clustered spot (impetigo figurata), but it gradually increased until it occupied the extent shown in the plate. At about four months from its first outbreak he fell into the water, and the eruption became much aggravated. At the time the eruption is represented the entire face is somewhat swollen ; the eyelids are almost closed by the swelling ; and the skin was so stiff that opening of the mouth or movement of the jaws gave rise to bleeding. This is the form of eruption to which the Greeks gave the name *Melitagra*, from the dried honey-like appearance of the crusts. The disease quickly gave way to appropriate treatment, and the patient was finally cured by a sea-voyage.

(132.) Pemphigus Vulgaris.—This eruption was recurrent, and it occurred in a boy seven years old, and of scrofulous constitution.

(142.) Herpes Zoster, or Intercostalis.—This typical form of herpes is shown in its characteristic progressive stages—as nascent vesicles clustered on an erythematous base ; as fully-developed vesicles, discrete and confluent, transparent and opaque, colourless, yellowish in various degrees, or purplish ; and lastly, as incipient scabs.

(168.) Dermato-syphilis Erythematosa, in an infant eleven months old.—The disease commenced at the age of six weeks, by excoriation of the mucous membrane of the mouth, and at the angles of the lips, nose, and eyelids, with aphthæ, hoarseness, and mucous accumulation in the nose and air-tubes. Three months afterwards, the eruption appeared in the form of small circular spots, which rapidly enlarged and became blended into larger blotches, slightly elevated, distinctly circumscribed, and gently rounded at the margin. A few of the original spots remained isolated, and formed circular discs, somewhat depressed in the centre, as on the left buttock.

(208.) Papular and Tubercular Syphilis on the Face and Neck.—The papulæ are soft and but little elevated, and assume the circinate or annular type. In certain situations the papulæ affect the bulk of tubercles, and on the forehead they are united by an erythematous and infiltrated base, and form a broad tubercular and pro-

minent blotch that suggests the characteristics of elephantiasis tuberosa. The patient was a man, aged fifty ; at twenty-two he had a hard chancre with suppurating bubo, both of which healed in three weeks ; these were not followed by secondary symptoms. Twenty-eight years later he had occasional suspicious connection, but no local disease ; and six or eight weeks after the last of these connections he was exposed to cold, followed by a severe febrile attack, at the height of which the whole body became suffused with an exanthematous eruption resembling roseola. The exanthem persisted for five months, in spite of treatment, and at the end of that period was roused into activity by a hot bath ; then the eruption assumed the papulous character, and appeared for the first time on the face.

(239.) Syphilitic Eruptions, papular and tubercular, on the face and neck.—The papules are soft, and little elevated, and have the circinate or annular type of form. In some parts they are more tubercular, as on the forehead. The patient, a man fifty years of age, had a distinctly syphilitic history of many years' duration.

(253.) Chronic Ulcerative Dermato-syphilis of the Face.—The patient was forty years of age, and had been suffering under this disease for many months ; his nose was swollen and inflamed, the swelling and redness extending upwards to the eyes, and, on the right side, involving the inner canthus and upper eyelid, outwards upon the cheeks, and downwards to the middle of the upper lip. The mucous membrane was equally swollen, and caused a partial obstruction of the nostrils. Around the base of the nose was an extensive superficial ulceration, coated by a thin scab, and on the right cheek were several tubercular risings, having the characteristic colour of syphilitic tubercles.

(337.) Lepra Alphoides, in a young girl, showing two blotches of this eruption, the lower and smaller one exhibiting the retrograde stage—spreading circumferentially and healing in the centre.

(349.) Retrograde or Healing Lepra, on the front of the trunk of the body.

(428.) Phytosis Circinata—showing a variety of the ring-like patches. The same general characters are apparent in all.

(454.) Spilus, or Hairy Nævus.—Photograph of a child, showing a hairy nævus that occupied the greater part of

the side of the face. It covered the right ear, and was continuous with the hairy scalp. The child had numerous similar patches of small size distributed over the body.

(474.) Acne Dorsi—in a man æt. twenty-six.—The eruption appeared at the age of seventeen, and has continued ever since. His constitution was feeble, and the affection presents all the common and recognised forms of acne ; *e.g.* comedones, or follicles choked with epithelial sordes and inspissated sebaceous substance ; these are distinguished as grey or black puncta ; small papulæ with black puncta in the centre of their summit—acne punctata ; red, conical papulæ, with and without pustular heads, and with a more or less inflamed base—acne coniformis ; purplish indurated papulæ of considerable bulk, and remarkable for their chronic character—acne indurata ; brown stains or maculæ, and pitted cicatrices of various extent and depth.

(482.) Sycosis affecting the Follicles of the Beard and Whiskers, and also those of the Eyebrows and Temples.—The patient, aged twenty-three ; the disease had existed seven years, probably appearing first as simple acne. The eruption was gradual, occupying for three years the right side of the face only, and then spreading to the left and involving both sides equally.

(493.) Molluscum Adenosum—Molluscum Sebaceum—Molluscum Contagiosum (*Bateman*) — showing hypertrophy of the sebiparous glands, with accumulation and inspissation of their contents.—From a child between three and four years of age, of strumous constitution, and the disease had existed for seven months. The characters are : globular tubercles with central hilum, their pale colour and lobulated form, and their evident construction of a thin layer of skin stretched tightly over a contained globular mass. On the neck two are confluent.

(503.) Tubercular Eruption on the Face and Neck ; oblong papulated tubercles on the neck, circular primitive tubercles on the temple, the ear, and around the mouth, and large prominent tumid blotches on the cheek and forehead. The greater part of the face is in a state of erythematous congestion, which has extended to the eyelids, producing eversion of the lower lid, while crusts, indicative of superficial ulceration, are seen on the bridge of the nose and on one of the circular blotches near the ala nasi.

(506.) Phytosis Circinata, showing a variety of the ring-like patches of this eruption.

(513.) Phytosis Favosa, favus, tinea favosa, tinea lupinosa.—The cup-like, sulphur-yellow crusts consist of phytiform substance, presenting the appearance of a fungous vegetation. They form extensive patches by coherence (favus confertus), a few others remaining isolated (favus dispersus). The relation of the fungus to the hair-follicles is exhibited by the crusts being perforated with one or two hairs; and where the disease has exhausted itself, and the crusts have been shed, the skin appears thinned from atrophy, and hairless, owing to the destruction of the follicles. The patient was a boy aged ten, and the disease had continued for seven years.

(526.) Phytosis Versicolar, pityriasis versicolar.—The morbid pigmentation of the skin is uniformly diffused over the neck, the sides of the thorax, and the front of the abdomen; and it assumes the character of small oblong islets in the hypochondriac region, flanks, and upper arms. The nipple on one side is encircled by a broad patch of discoloration, and partially so on the opposite side. The patient was a man thirty-two years of age, and the eruption had existed unchanged for a period of six years.

(577.) Molluscum Adenosum, molluscum sebaceum, molluscum contagiosum.—Hypertrophy of the sebiparous glands, with accumulation and inspissation of their contents. The pathological features are: the globular tubercles with central hilum, their pale colour and lobulated shape, and their structure, as consisting of a thin layer of skin, stretched over a contained globular mass. On the neck, the little tumours present various stages of growth, and two have become united into a confluent tumour. The patient was a child three or four years old, of scrofulous constitution, and the disease had lasted for several months.

Entozoa:

(65.) Ascaris lumbricoides.
(87.) Trichocephalus dispar.
(90.) Oxyuris vermicularis.
(95.) Trichina spiralis.
(108.) Tænia solium.
(110.) Tænia solium, larvæ from muscle of a pig.
(116.) Tænia mediocanellata.
(123.) Tænia mediocanellata, in muscle of a calf.
(127.) Tænia echinococcus.
(171.) Bothriocephalus latus.

EXAMINATION SERIES

OF

SURGICAL INSTRUMENTS AND APPARATUS.

INSTRUMENTS.—Trephines, Skulls for Operation, Hey's Saw, Elevators, Forceps, and Brush—Jaw-Saws—Trachea-Tubes—Wire-spring Speculum for the Eye—Cataract-triangular-bladed Knife—Couching Needles—Bellocq's Sound for plugging Posterior Nares—Nasal Polypus Snare—Bivalve Speculum for Nose or Ear—Trumpet Ear Speculum—Hainsby's Spring-Compressor of cheeks, after Operation for Hare-Lip—Tongue Spatula—Laryngoscope, mirror and reflector—Tonsil Guillotine—Fergusson's gag for mouth—Œsophagus Sponge Probang—Ditto Expanding Brush-Probang—Ditto Hook-Probang—Trocar and Canula for Paracentesis Abdominis—Hydrocele Trocar and Canula—Smaller Instrument for exploratory puncture of Abscess—Aspirator—Breast-pump—Hypodermic-injection Syringe—Candle and Mirror, for examining hydrocele by transmitted light—Pronged forceps for Piles—Anal Speculum, bivalve and tubular—Rectum-Bougies—Bladder-Rectum Trocar and Canula for Puncturing per Rectum—Cock's Catheter—Bladder Sounds—Lithotomy Staff, curved and straight; Knife; Gorget and Director; Forceps for Stone Extraction; Scoop—Urethral calculus forceps—Lithotrite—Catheters, silver and gum elastic—Prostatic Catheter—Catheter for washing out Bladder—Urethral Bougies, gum elastic—Female urethra dilator, three-bladed—Hernia Knife, curved and straight, and Director—Smith's Hæmorrhoidal Clamp—wooden Amputating Knives, for Flap and Circular Operations—Knife for Hip-joint Amputation—Common Saws—Butcher's Saw—Fergusson's Lion-forceps—Bone forceps—Cutting Pliers, straight, angular, and curved-bladed—Gouges—Artery-forceps—Torsion forceps—Tenacula—Dissecting forceps—Hilton's forceps for evulsion of nail—Bullet-forceps—Serrefines—Bistouries, straight, curved, sharp-pointed, blunt-pointed—Tenotomy Knives—Scalpels—Directors—Aneurism or Ligature-Needle—Retractors—Suture-Needles—Suture-Silk and Wire—Hare-Lip and Varicocele Pins; Pliers for cutting pins or wire—Scissors, straight and angular—Hooks—Seton-needle—Actual Cauteries, bladed and button-ended—Bleeding-lancets—Stethoscopes—mop-stick to represent bone, for application of saw in amputation.

SURGICAL APPARATUS, arranged as in Examination room :

Candidates are required to restore the different apparatus to their places after having used them.

Made Bandages. *Thigh.* *Leg and Foot.* *Arm.* *Straight Splints.*

Inguinal.	Many-Tailed.	Bleeding Poles	Long Thigh Splints.	M'Intyre Splint.	Leg Splints	Upper-Arm Splints.	Fore-Arm Splints.	Concave (Split Splints).
Suspensory.	6-Tailed.	Trusses.	Short Thigh Splints.	Ham.	Fibula Splint.	Elbow, angular, in wood and wire.	Pistol Splint.	Flat.
Chin.	4-Tailed.	Tourniquets.		(Hunter's) Slipper.	Cradle.		Hand.	Laths.
	T Bandage.	Aneurism Tourniquet.			Artificial Leg.		Gordon's Radius.	

The whole Repeated, in same order, on other Half of Room.

Bandages, etc., in Baskets thus *Labelled :*—1. Flat Pads, Large. 2. Flat Pads, Small. 3. Arm-pit Pads. 4. Perinæal Pads. 5. Tapes and Webbing. 6. Tapes and Webbing, with Buckles. 7. Handkerchiefs. 8. Lint and Tow. 9. Bandages, Flannel and Calico, Broad. 10. Flannel and Domett Bandages, middle size. 11. Calico Bandages, middle size. 12. Calico Bandages, Narrow. 13. Made andages. 14. Many Tailed and T Bandages. 15. Materials—Leather—Plaster—Oil-Silk—Gutta Percha. 16. Sheets. 17. Blocks for Ligatures. Thread. Tubing for Ligatures. Probes. Measuring Tapes.

EXAMINATION PAPERS.

FROM JANUARY, 1869, TO NOVEMBER, 1880.*

DIPLOMA OF MEMBER.

Anatomical and Physiological Examination.†

1869.

January 9th.

1. The Rectus Abdominis Muscle :—Describe its position, its connexions, the peculiarities of its structure, and the arrangement of its sheath.

2. Name the structures, subservient to the circulation of the blood in fœtal life, which, after birth, lose their function, and remain as vestiges. Describe the position and character of each (vestige) in the adult.

3. The Pancreas :—State how the gland may be brought into view in its place, after the abdomen has been opened ; and how the Duct may be shown. Describe the effects in digestion which are assigned to the secretion of the gland. (F. 231—237 ; C. 158—164.)

4. Healthy Urine :—Name its constituents. State its specific gravity, and the normal quantity passed in twenty-four hours by an adult. (F. 367—370 ; H. and P. 102 ; C. 464, 467, 468.)

5. Name the Commissures of the Brain ; and state the position and connexions of each.

6. The Retina :—Describe its position and connexions. State the difference of sensibility to light in different parts ; mention the point which is least sensible ; give proof of its being so. (F. 473, 481 ; C. 728, 733.)

* This period is selected as dating from the *commencement* of the Examinations in their present form, and as showing a fair average of the kind of Questions. At a later period—January, 1875—Two Questions, *specially* in Physiology, were included in the Six Questions.

† Recently (1880), *two* separate papers are set : one in Anatomy, and one in Physiology.

References have been made to the following books :

For Physiology and Histology.

C. Carpenter's Human Physiology, by Henry Power, M.B., F.R.C.S. Churchill, London, 1881.

F. A Text-book of Physiology, by M. Foster, M.D., F.R.S., Third Edition, Macmillan and Co., London, 1880.

H. and P. Manual for the Physiological Laboratory, by Vincent Harris, M.D., and D'Arcy Power, B.A, Oxon. Baillière, Tindall, and Cox, 1880.

In Anatomy, the Index to any of the ordinary Text-books will supply corresponding references to the Questions, as set in the Papers for this part of the Written Examination.

April 3rd.

1. 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.

2. Describe and account for the production of the Sounds and the Impulse of the Heart. (F. 139, 151—154; C. 282—284.)

3. The Dura Mater within the Cranium:—State its structure. Enumerate its Processes, and mention their position with reference to the Cerebrum and Cerebellum. Describe the course of the superior Longitudinal Sinus and of the Lateral Sinus.

4. What is meant by "Reflex Action"? Give examples of its manifestation. (F. 536—545; C. 602.)

5. The Deltoid Muscle:—State its connexions with bones (origin and insertion). Name its principal artery and nerve; and mention how they would be shown in dissection. Name also the parts which the muscle covers.

6. State the conditions under which the Coagulation of the Blood is retarded, and those under which it is hastened. State also by what means the Coagulation may be indefinitely protracted or altogether prevented. (F. 12—26; H. and P. 97; C. 249.)

April 10th.

1. Name the Muscles which are supplied by the Median and Ulnar Nerves respectively; and mention the Digital Branches which are given from each of those nerves.

2. The Bile.—State the estimated average quantity formed in twenty-four hours; the chemical composition; and the purposes the secretion is believed to serve. (F. 228; H. and P. 100; C. 166.)

3. Mention the Muscles which are in contact with the capsular ligament of the Hip-joint. Name those muscles which rotate the femur outwards, and those which rotate it inwards.

4. Urea.—State its chemical composition; the sources from which it is derived; and the kind of food under the use of which the quantity in the urine is found to be largest. (F. 689, 401—406; C. 469.)

5. Supposing an incision drawn from the middle of the forehead over the pinna of the Ear to the middle of the Occiput above the superior curved line of the occipital bone,—name in order, from before backwards, the several

structures divided from the surface to the bone (including the Arteries and Nerves).

6. State how the production of Animal Heat is accounted for. Mention the usual temperature of a healthy Adult, and of a Child. (F. 426—438, 512, 499.)

April 24th.

1. Name the Joints in which Interarticular Fibro-Cartilages occur; and describe the shape, the position, and the connexions of each fibro-cartilage.

2. State the position and connexions of the Vocal Cords (true). Name the Muscles which have influence on them; and describe the position, the connexions (origin and insertion), and the action of each muscle upon the cord. (F. 603.)

3. The state of Ossification of a Vertebra at the time of birth; and the progress of change afterwards up to complete ossification.

4. Describe the changes the Chyle undergoes in its passage from the intestine to the blood. (F. 283, 289; C. 203.)

5. State the functions of the Skin. Describe its Glandular Structure and the Excretory Ducts. (F. 359; H. and P. 57; C. 490.)

6. State the effects upon a Secreting Gland of the division or lesion of that portion of the Sympathetic Nerve from which it is supplied. (F. 239; C. 850).

May 8th.

1. The Sterno-mastoid Muscle.—*a*. Name (without describing) the Bloodvessels and the Nerves it covers, and the Nerves which cross over it. *b*. Mention the source from which it derives its own nerve-supply. *c*. State the influence of the Sterno-mastoid, supposing the muscle of one side only to be in action.

2. Describe the structure of the Mammary Gland. Name the constituents of Milk; and state the relation they bear to the principles required for food. (F. 397; H. and P. 81, 91—93; C. 967—973.)

3. Name in order the parts that would be divided in removing the Hand at the Wrist-Joint, by an incision made straight through the joint.

4. Name the forms under which Epithelium occurs; and state the peculiarities it presents in any one internal organ. (H. and P. 21—23, 75, 79.)

5. State the changes which the Atmospheric Air and

the Blood respectively undergo during respiration. (F. 309—327 ; C. 365, 259.)

6. State the extent of the lower Epiphysis of the Humerus. Mention the condition of that end of the bone at the usual period of birth ; and the manner of its ossification.

July 10th.

1. Describe the Articular Surfaces of the Os Calcis ; and mention the bone with which each articular surface is in contact. State the position and the connexions of the Ligaments which bind the Os Calcis to other bones.

2. Describe the structure of a Tooth. State the number of the permanent teeth, their classification, and the periods at which they commonly make their appearance. (H. and P. 77 ; C. 53.)

3. Name (in the order in which they occur from the surface to the vertebræ) the parts included in the space bounded above by the Hyoid Bone, and below by a line drawn along the upper margin of the Sternum and the Sterno-Clavicular Joints.

4. Describe the position and connexions of the Duodenum ; also the structure of its Mucous Membrane—viz., valvulæ conniventes, villi, epithelium, and glands. State the changes the food undergoes in that part of the alimentary canal. (H. and P. 51 ; F. 237 ; C. 169.)

5. The Ovary.—Describe its position, connexions, and structure. (H. and P. 67 ; C. 874.)

6. State the functions assigned to the different parts respectively of the Organ of Hearing. (F. 513—521 ; C. 762, 769.)

November 6th.

1. Describe the position, connexions, and structure of the Auriculo-Ventricular Valves, and explain the mechanical function which they exercise in the circulation of the blood through the heart. (F. 148—151 ; C. 273.)

2. Describe the sounds of the Heart, and state the causes to which they are attributed. (F. 151—154 ; C. 283, 284.)

3. Describe the Diaphragm.

4. State the means by which Animal Heat is produced and maintained in the human body. (F. 426—438 ; C. 509.)

5. Describe the Course of the External Carotid Artery,

and *name* its branches. Describe the course and distribution of the Facial Branch of the Carotid; and mention the arteries with which it anastomoses.

6. Name the constituents of Normal Urine, and state their relative proportions. (F. 368—370; H. and P. 102; C. 468.)

1870.

January 15th.

1. Name the bones with which the Astragalus is in contact; and mention the shape of its articulating surfaces. Describe the ligaments which connect the Astragalus with other bones.

2. Mention the sources from which the Vena Portæ derives its blood; and explain how this Blood is rendered available for the performance of certain functions in the animal economy.

3. Describe the various structures which surround the Elbow-Joint, and are included in a space extending two inches above and two inches below the Condyles.

4. State the functions generally attributed to the Spleen. (F. 399, 400; C. 211, 218.)

5. Describe the peculiarities of the 1st, the 7th, and the 12th Ribs.

6. Describe the functions of the Soft Palate and Uvula. (F. 609.)

April 2nd.

1. Describe the position of the Lenticular Ganglion; mention the nerves with which it is connected, the branches which are derived from it, and their course and distribution.

2. Mention the average quantity of Urine passed by an adult in twenty-four hours; state its specific gravity, and its chemical composition in health. (F. 368—370; H. and P. 102; C. 464, 467.)

3. State the position of the Cœliac Axis, name its branches, and describe their course and distribution.

4. Name the nerves of the Larynx, and describe their origin, course, distribution, and functions.

5. Name the Muscles connected with the Lower Jaw; and describe the attachment of each to that bone.

6. Describe the physical and chemical qualities of the Blood in the right and left side of the Heart. (F. 309—324.)

April 8th.

1. Describe the Arch of the Aorta, and its relations to contiguous structures. Name the vessels which arise from it, and describe their course as far as the upper opening of the chest. State the principal irregularities which occasionally occur in the origin and course of these vessels.

2. Describe the structure of the Placenta, and the mode of its attachment to the Uterus. Describe the circulation of blood through the Placenta between the Mother and the Fœtus. (C. 892.)

3. Describe the shape and structure of the Trachea, Bronchial Tubes, and Air-Cells. (H and P. 55 ; C. 344.)

4. How is the Heat of the Fœtus maintained *in utero?* and how is it produced and maintained after birth ? (F. 426—428, 624 ; C. 513.)

5. Describe the position, shape, and attachments of the Deltoid Muscle. Name the different structures which are exposed on reflecting the Deltoid from its attachments to the Scapula and Clavicle.

6. State the origin and insertion of the Internal Pterygoid Muscles, and their precise action in Mastication.

May 7th.

1. Describe the course and relative position of the Brachial Artery. Name the branches it gives off, and trace the Profunda branch to its termination.

2. Mention the different Secretions which imbue the Food in the mouth and in the stomach during Mastication and Digestion. State the chemical composition of each secretion, and its physiological purpose. (F. 216—218 ; C. 135.)

3. Describe the structure of the Uterus, and mention the changes which take place in the organ during gestation. (H. and P. 68 ; C. 887.)

4. Describe the Fifth Pair of Nerves within the Cranium, and mention the openings by which it leaves the cavity. Describe the course, distribution, and function of the Third division of the Fifth Pair. (F. 698.)

5. Describe the position, attachments (origin and insertion), and the precise action of the Pterygoideus Externus Muscle.

6. Describe the coverings of the Testicle. Mention the different structures which compose the Spermatic Cord ;

and state whence they are derived, and where they terminate.

July 16th.

1. Describe the structure of the Lungs. (H. and P. 55; C. 345.)
2. State the tissues in the Human Body where ciliary movements exist, and name any easily-observed illustration of such movements in the Animal Kingdom. (H. and P. 107.)
3. Describe the Knee-Joint.
4. What are the functions of the Spinal Cord? (F. 536—555; C. 596—610.)
5. Describe the Prostate Gland; its structure, investments, and attachments. (H. and P. 63.)
6. Mention the average quantity of Blood in a healthy adult which is propelled from the left ventricle at each contraction; the number of pulsations per minute; the average quantity contained in the body; and the time required for its passage through the Heart. (F. 139—151; C. 299, 300.)

November 5th.

1. Describe in their relative position the muscles, nerves, and bloodvessels which are brought into view by removing the Gastrocnemius and Soleus muscles.
2. Mention the various Secretions contributing to the process of Digestion. State whence they are derived; and the chemical constitution and special function of each. (F. 215—283; C. 136, 146, 161, 169.)
3. Give the dissection required to expose the Submaxillary Gland. Notice all the parts brought successively into view in the course of the dissection; and describe the form, size, relations, and minute structure of the gland. (H. and P. 46.)
4. Describe the functions of the Skin; and state what physiological effects result from their suppression. (F. 359—366; C. 489, 495.)
5. State the origin and course of the Vertebral Arteries, and their distribution within the cranium. Describe also the mode in which the circle of Willis is formed.
6. On what form of lever do the greater part of the Muscles act in moving the Limbs? and state the mechanical advantages and disadvantages resulting from the use of that form of lever. Give some of the best-marked instances of this kind in the human subject.

1871.

January 14*th.*

1. State what muscle separates the Teres Minor from the Teres Major? describe the spaces left between the three muscles, and the vessels and nerves which pass through the spaces in question.

2. How is death produced by starvation? Describe the appearances observed after death from this cause. (F. 409.)

3. Describe the constituents of the Root 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.

4. Describe the mechanism of Deglutition in its various stages, from the Mouth to the Stomach. (F. 364; C. 118.)

5. Give the course, relations, and distributions (including anastomoses) of the Ulnar Artery.

6. Mention the organs to which the Pneumogastric Nerves are distributed; and describe their special function in each organ. (F. 599.)

April 1*st.*

1. Describe the Atlas and Axis with the Articulations and ligaments connecting them with each other and with the occipital bone.

2. Describe the structure of the Capillaries and Veins and the mechanism of the systemic capillary and venous circulation. (H. and P. 43; F. 122, 132.)

3. Give the origin, course, and distribution of the following nerves:

1. Glossopharyngeal.
2. Hypoglossal.
3. Internal Pudic.

4. What is meant by Excito-motory Action? Describe how the excito-motory circuit is completed, and give instances exemplifying this action in health and disease. (F. 447, *et seq.*, 115.)

5. Give the dissection required to expose the Internal Mammary Artery and its branches; noticing (but not otherwise describing) the parts brought into view or removed in the process. Then state the course, relations, distribution, and anastomoses of the trunk and its branches.

6. Enumerate the various kind of Cartilage, give examples of each kind, and a description of its minute structure and properties. (H. and P. 29.)

April 8th.

1. Describe in their relative positions the parts exposed by removing the whole of the Glutæus Maximus.

2. Describe the process of Absorption ; the agents by which it is effected ; and define the terms imbibition, exosmosis, and endosmosis. (F. 283, 292.)

3. Give the course and relations of the Profunda Femoris, name its branches, and trace out the course of the internal and external circumflex arteries, and state the anastomoses they form in the neighbourhood of the hip-joint.

4. Describe the minute structure of Bone, and its mode of development in Cartilage, and give the course of ossification in the Humerus. (F. 234 ; H. and P. 31—33.)

5. Give the origin, course, and distribution of the Ophthalmic division of the Fifth pair of nerves, and its branches.

6. What are the effects of a transverse section in the dorsal region of one lateral half of the Spinal Cord, and also those of a longitudinal section ? (F. 550.)

April 22nd.

1. Give an exact description of the Inter-articular Fibro-cartilages in the human body, including their minute structure, connections, and functions. (H. and P. 30.)

2. The Tympanum—its boundaries, the parts contained within it, and their functions. (F. 514—516.)

3. Give the origin and insertion of the following Muscles, and state whence each derives its Nervous supply :—Rectus Femoris — Plantaris — Flexor longus digitorum—Extensor brevis digitorum—Buccinator—Stylopharyngeus. And state the exact relations of the last-named muscle.

4. Describe the minute structure of Nerve fibre, distinguishing the varieties it presents, and mentioning instances where each variety is met with. (H. and P. 37.)

5. Describe the Lachrymal Apparatus and the mode in which the tears are conveyed into the nose. (The answer to include a description of the minute structure of the Lachrymal Gland.)

6. Describe the changes undergone by the Chyle in its passage from the intestine into the blood. (F. 288, *et seq.*)

May 6th.

1. Mention the bones which enter into the formation of the Orbit ; the foramina in its walls, and the parts passing through them in their relative position.

2. Describe that part of the process of Digestion which is effected in the Stomach. (F 220—228, 235.)

3. Mention the Muscles which surround the upper third of the Radius and Ulna; their relative positions, and the nerves supplying them.

4. State the different kinds of Epithelium by which the following mucous surfaces are covered :—Nasal Duct —Superior Meatus of the Nose—Pharynx and Œsophagus—Gall-bladder—Pelvis of Kidney—Ureter, and Bladder. (H. and P. 47, 54, 63.)

5. The deep Cervical Fascia—Describe its extent, connexions, and arrangement; specifying particularly its relations to the muscles and bloodvessels of the neck. (F. 3.)

6. Describe the Superior Cervical Ganglion of the Sympathetic—its form, situation, and connexions. What effects result from its action? (F. 439.)

July 15th.

1. Describe the Shoulder-Joint; its osseous configuration, cartilaginous surfaces, synovial membrane, and ligaments. And give the relations of the various muscles and tendons immediately surrounding it.

2. Describe the relations, structure, and functions of the various valves met with severally in the Heart, Arteries, and Veins; and state in which veins valves are absent.

3. The Sterno-mastoid muscle—its situation, attachments, action, and relations to immediately surrounding parts.

4. What is the structure of Adipose Tissue, and what uses does it subserve? State where it is usually most abundant, and in what situations it is always absent. The answer to include the microscopic characters of the tissue, and the chemical composition of fat. (H. and P. 28, 100; C. 43.)

5. Describe the thoracic portion of the Sympathetic Nerve, and the distribution of its branches.

6. The Choroid coat of the Eye—its minute structure, relations, extent, connexions, and function. The ciliary processes are to be included.

November 4th.

1. Describe the anatomy of the Colon, including its minute structure. State its position in reference to the

exterior of the Abdomen ; and mention the internal parts and structures with which it is in close relation.

2. State how the first act of breathing is induced in the new-born infant, and explain the physiological effects of Respiration. (F. 625.)

3. Describe the dissection required to expose the Internal Maxillary Artery ; then give its course, relations, and branches, in the order in which they arise, and their distribution.

4. Give the position, attachments, and function of the Ciliary Muscle. Describe its Microscopic structure. (F. 462—464 ; C. 723.)

5. Describe the Os Hyoides, and mention the muscles and ligaments connected with it, and state the nerves by which the former are respectively supplied.

6. Enumerate the various Excretions—Give the principal constituents of each, their mean amount in the healthy adult subject in twenty-four hours, and the sources whence each of these constituents is derived. (F. 358—381 ; C. 464, 492.)

1872.

January 13th.

1. Describe the Articular Surfaces of the Knee-Joint:—the investing cartilage, synovial membrane, ligaments, and fibro-cartilages. State the functions of these parts respectively.

2. State the various ways in which Nerves terminate peripherally ; and give a special description of the terminal arrangement or organ in each case ; and mention an instance of the parts or tissues in which the various modes of termination may be most readily observed. (C. 710, 945, 310.)

3. Describe the Prostate Gland :—its anatomical relations and minute structure ; and its functions. (H. and P. 63.)

4. Give the dissection required to expose the External Circumflex Artery, noticing in proper order the parts brought into view. Then describe the distribution of its branches and the anastomoses which they form.

5. How is Vision adjusted to varying distances ? (F. 462—464 ; C. 722.)

6. Describe the Tongue, including its mucous surface, muscles, and their action, and the distribution of its vessels and nerves. (H. and P. 45 ; C. 709.)

March 30th.

1. Describe the structure, connexion, and relations of the Iris ; trace from their origin to their distribution its arteries and nerves.

2. Describe the adult male Bladder ; its position when contracted and distended, its connexions, and the structure of its muscular and mucous coats. (H. and P. 63.)

3. Describe in detail the action of the heart. How do you account for its sounds and impulse ? (F. 139—141, 151—154 ; C. 277.)

4. 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.

5. Describe the Pancreas ; its situation, shape, and structure, the composition and uses of its secretion. (H. and P. 53, 101 ; C. 161.)

6. Give the physical characters and chemical composition of Urea ; state how its presence may be detected in the urine and other fluids. (H. and P. 101 ; C. 80.)

April 6th.

1. Describe the Occipital Bone :—noticing (1) its relations and mode of connexion with other bones ; (2) the foramina existing in it, or into whose formation it enters, naming, but not further describing, the parts passing through them ; (3) the muscles attached to it, and their points of attachment. Then give its mode of development and ossification.

2. How much Food—solid and liquid—is required daily by a man under ordinary circumstances ? (C. 101.) Mention the principal causes which determine the quantity and quality of food necessary to maintain health ; how do you explain the operation of these causes ? Write out a diet scale for a man in active work. (F. 411—419 ; C. 103.)

3. Describe the structure and functions of the Soft Palate, including the anatomy of the muscles connected with it, and the arteries and nerves supplying it.

4. What parts are brought into view on the removal of the Deltoid Muscle ?

5. Give the origin, course, connexions and distribution of the Portio dura.

6. State the chemical composition and the characters of "Glycogen ;" state where it is principally found ; give the tests by which it is recognised, and a procedure by which

it may be procured in an isolated state. (H. and P. 99, 108; F. 383—390; C. 85.)

April 20th.

1. Describe the boundaries of the posterior Mediastinum; and its contents in their relative position.

2. Describe the structure of Veins, and the forces by which the venous circulation is carried on. (H. and P. 43; F. 132; C. 333.)

3. Describe the ligaments of the Hip-Joint; and mention the muscles in contact with its capsule.

4. Give an account of any experiments with which you are acquainted, illustrating the influence of the Pneumogastric Nerve upon the action of the Heart. (F. 170; C. 285.)

5. Describe the ligaments connected with the Clavicle; and mention the parts which pass beneath it in their relative position.

6. Describe the Ciliaris muscle and its action. (F. 462—464; C. 723.)

May 4th.

1. Give the dissection required to expose the Quadratus Femoris; and mention the parts in immediate relation with it.

2. Describe a process by which Fibrine may be separated in a tolerably pure state from the blood; and give its physical and chemical characters. (F. 13, 96; C. 241.)

3. Describe the inner wall of the Tympanum.

4. Describe the Brachial Plexus from its origin to the clavicle; and mention the parts that must be removed in order to expose it.

5. How would you proceed to demonstrate the presence of Lithic Acid in the Urine, of Sugar in the Liver, and of Sulphocyanides in the Saliva? (H. and P. 102, 103.)

6. 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.

July 13th.

1. Describe the Internal Iliac Artery, stating its point of origin, length, direction, and relations. Then enumerate its branches in the order in which they arise; and give the course, relations, and distribution of the Internal Pudic Artery.

2. Describe the Muscular Tissue of the Heart, including an account of the general arrangement of the fibres, their minute structure, and their mode of action as contrasted with that of other involuntary muscles. (H. and P. 36 ; C. 274.)

3. Describe the Metatarso-phalangeal articulation of the Great Toe, and the tendons in connection with it, in their relative positions.

4. Enumerate the various forms of Cartilage, describing the minute structural characters of each ; and mention the Joints in which Interarticular Cartilages are found. (H. and P. 29 ; C. 44.)

5. Describe the Superficial Veins of the Hand and Forearm ; and give the course and relations of the Cephalic and Basilic Veins.

6. Explain the effect of complete division of the Spinal Cord between the second and third Cervical Vertebræ in one of the higher Animals. (F. 549—553.)

November 2nd.

1. Mention in their order, from without inwards to the Peritoneum, the parts found in the space bounded above by the twelfth Rib ; below, by the opposite portion of the crest of the Ilium.

2. Describe the structure and functions of Serous Membranes. (H. and P. 23 ; C. 196.)

3. Describe the Axilla ; its shape, boundaries, and contents, in their relative position.

4. Describe as fully as you can the phenomena presented by the Circulation of the Blood as may be seen in some transparent part under the microscope.

5. If a needle were carried directly backwards from the centre of the Cornea through the Axis of the Eye, in what order would the parts be pierced ?

6. How are the acts of Inspiration and Expiration accomplished ? Describe the changes produced in the air by Respiration. (F. 301—309 ; C. 349, 365).

1873.

January 11th.

1. Describe the origins and insertions of the three Constrictors of the Pharynx, and their relations to each other. Mention whence they derive their Nervous supply ; and explain their mode of action.

2. Describe the arrangement of the Seminiferous tubes

in the body of the testicle and in the Epididymis; and trace the Vas Deferens to its termination. (H. and P. 65, 66.)

3. The side view of the Pelvis :—Give the relations of the several parts shown in this section, including the connections of the Pelvic Fascia and Peritoneum.

4. Enumerate the functions of the Sympathetic System of Nerves; and give examples illustrative of each function. (C. 849.)

5. Enumerate the bones entering into the formation of the Orbit; and describe their respective positions and connections.

6. Describe the microscopic appearance, properties, and uses of Areolar tissue, and of elastic and non-elastic Fibrous tissue. Give examples of each. (H. and P. 27, 26, 25.

April 5th.

1. Describe the Sphenoid Bone; state its position in the skull, and the bones with which it articulates.

2. What are the proofs that the Blood is a living fluid? What are the proofs that it circulates? and what is its composition? (F. 26.)

3. Enumerate the muscles attached to the Scapula; and describe the exact points of their attachment.

4. If the Musculo-spiral branch of the Brachial Plexus of Nerves was 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.

5. Describe the Articular Surfaces of the bones forming the Ankle-joint, and the ligaments which connect them together.

6. Describe the minute structure and functions of the Retina. (H. and P. 73; C. 728.)

April 26th.

1. Give the dissection necessary to display the Parotid Gland. State what structures would be cut away, and what parts would be exposed, if the entire gland were removed.

2. Describe the position, relations, and structure of the Cæcum. State what is known of its functions.

3. Mention, in their respective relation to each other, all the structures which occupy and close the upper outlet of the chest.

4. Describe the arrangement and relation of the several structures which enter into the formation of a Lobule of the Liver. (H. and P. 53, 54 ; C. 534.)

5. Describe the course, relations, and distribution of the Nerves met with in the dissection of the Dorsum of the Foot.

6. How is the voice produced and modulated ? State by what muscles the Rima Glottidis is influenced, and how they act in changing its shape. (F. 601—606 ; C. 826.)

May 10*th*.

1. Describe the origin, course, and distribution of the Superior and Inferior Mesenteric Arteries, and the Anastomoses they form.

2. Describe the arrangement of the Tubuli Uriniferi in the Cortical and in the Medullary portions of the Kidney (C. 456). State how the Capillary Arteries and Veins are distributed in this organ. Give an Analysis of the Urine. (H. and P. 61 ; F. 369 ; C. 468.)

3. On removing the Trapezius Muscle, what are the nerves, arteries, and muscles brought into view ?

4. Describe the situation and structure of the Lachrymal Gland ; its ducts, and where they open ; the character and course of its secretion ; and state where it enters the Nostril.

5. Name (without describing them) the several Muscles attached to the different portions of the Inferior Maxilla ; state by what Nerves these Muscles are supplied.

6. Describe the structure, secretion, and functions of the Pancreas. (H. and P. 63 ; F. 231 ; C. 158.)

July 12*th*.

1. Describe the course and relations of the Right Subclavian Artery ; and state the difference which exists between it and the Left.

2. Describe the relations of the Stomach when empty and when distended ; its bloodvessels, its nerves, and the structure of its mucous membrane. (H. and P. 49 ; C. 142.)

3. Describe the dissection necessary to display a side view of the Muscles of the Tongue, and the structures cut through in carrying it out.

4. Describe the Ciliary body of the Human Eye ; its situation, connections, and structure, and the dissection necessary to expose it. (C. 723.)

5. Describe the Ligaments of the Knee-joint; their several attachments, together with the Interarticular Cartilages, and their uses.

6. Describe the structure of a mature Graäfian Vesicle, the mode in which the Ovum enters the Fallopian tube, and how it finally becomes attached to the Uterus. (H. and P. 67; C. 874.)

November 8th.

1. Give the Anatomy of the Prostate Gland; describing its size, form, situation, connections, and structure. (H. and P. 63.)

2. Describe the changes which occur, both in the position and the internal conditions of the Eyeballs, during near and distant vision, mentioning the parts concerned in affecting those changes. (F. 458—464; C. 722.)

3. Describe the form, structure, and attachments of the Valves in the Heart and Great Arteries; and explain in what manner the valves perform their offices. (C. 273.)

4. Describe the first, seventh, and twelfth Ribs, mentioning their peculiarities.

5. Describe the Astragalus, mentioning the bones with which it articulates, and the ligaments connecting them.

6. Describe the Diaphragm, and its functions. (F. 301, 305, 273.)

1874.

January 10th.

1. Describe the Fibula. With what bones does it articulate?

2. Give the dissection necessary to expose the cervical portion of the Internal Carotid Artery.

3. Describe the mechanism of tranquil and forced Respiration; of coughing, vomiting, and sneezing. (F. 301—305, 357; C. 349, 353, 363.)

4. Describe the Anterior Crural Nerve; enumerate its branches, and give their distribution.

5. Enumerate in their order, from the skin upwards, the parts displayed in the dissection of the Perineum.

6. Describe the Salivary Glands and their Ducts; and state the chief properties and uses of the Saliva. (H. and P. 46; F. 216; C. 132.)

April 4th.

1. Describe the Venous Sinuses within the Cranium, and the course and relations of the Great Vessel which

receives their blood on the right side from its commencement to its termination.

2. Mention the parts in contact with the Levator Ani Muscle.

3. Give the origin, course, distribution, and relations of the Interosseous Nerves.

4. From what sources does the Portal Vein receive its blood? Describe its distribution, and trace the course of the blood onwards into the general circulation. (C. 434.)

5. Describe the form and relations of the Popliteus Muscle; and mention, in the order in which they appear, the parts which must be removed to expose it.

6. Explain the effect of complete division of the Spinal Cord immediately above the origin of the Phrenic Nerve. (F. 549—553.)

April 25th.

1. Describe the course and relations of the Veins which terminate in the Inferior Vena Cava above the junction of the common Iliac.

2. Describe the Os Hyoides; and name the muscles attached to it, specifying the parts of the bone to which each muscle is attached.

3. Mention in their relations to each other the parts seen on removal of the Flexor brevis digitorum Muscle.

4. Describe the process of Growth in a long Bone.

5. Describe the Wrist-joint, and the lower Radio-ulnar articulation.

6. Describe the changes produced in Air by Respiration, and the means by which these changes are effected. (F. 301—309; C. 365.)

May 9th.

1. Describe the Lachrymal Gland, its position, and the Anatomy of the various structures engaged in conducting the tears from the gland to the nose.

2. Describe the mucous surface of the Duodenum; and state what changes the food undergoes in that part of the Intestine. (H. and P. 51; F. 228—238; C. 158—164.)

3. Describe the attachments, and the relations in front and behind, of the Quadratus Lumborum Muscle.

4. What is the normal temperature of the Blood? and how is that temperature maintained? (F. 426—438.)

5. Trace the Supra-scapular Artery from its origin to

its termination, noticing the dissection necessary to display it, and naming its various anastomoses.

6. Describe the Radius, including its articular surfaces: and mention the various muscles and tendons, in their proper relations, attached to and in connection with it.

July 11th.

1. Enumerate the Muscles employed in the act of Deglutition ; and state whence each muscle derives its nervous supply. (F. 264 ; C. 118.)

2. Describe the structure of Arteries, the properties they possess during life and after death, and the influence they exercise upon the Circulation. (C. 304.)

3. Describe the first Dorsal Vertebra ; and state with precision what are its peculiarities.

4. Describe the structure of an Intestinal Villus, and the changes which have been observed in it during the act of absorption. (H. and P. 51 ; F. 286 ; C. 178.)

5. Describe the course and relations of the Innominate Veins ; and mention the veins which directly terminate in each.

6. Upon what evidence is our knowledge of the functions of the Anterior and Posterior Roots of the Spinal Nerves founded ? (F. 448 ; C. 597.)

November 7th.

1. Describe the course and distribution of the branches of the Ophthalmic division of the fifth nerve. (F. 598.)

2. What are the anatomical peculiarities by which the Fœtal circulation is distinguished ? and what purposes do they respectively serve ? (F. 624 ; C. 929.)

3. Describe the Ischium ; name the muscles attached to it, or in relation with it ; and state what are their respective uses.

4. Describe the minute structure of the female Breast. State what is the microscopic appearance, and what are the chemical constituents of human Milk ; and why it is regarded as a typical food. (H. and P. 81, 91—93 ; C. 966.)

5. Give the dissection necessary for the display of the internal Mammary artery ; name its branches, and point out the chief anastomoses which they form.

6. State what is usually understood by Reflex nervous action ; and give some simple examples of it. (F. 115 ; C. 604.)

1875.

January 12th.

1. What evidence exists of the influence of the Nervous System on the functions of Secretion and Excretion? Explain how such influence may be exerted; and illustrate the subject by examples. (C. 137, 154, 446, 488, 860.)

2. How much Oxygen is consumed by a healthy adult person, under ordinary circumstances, daily? What are its principal purposes in the system? and in what forms is it chiefly eliminated? (C. 404, 369.)

3. Describe the Diaphragm, its attachments, relations, and actions.

4. Describe the Thyroid and Cricoid Cartilages. Enumerate the muscles connected with them; and state the exact attachment of each.

5. Mention in order, from before backwards, the several structures which are in contact with the first rib.

6. Mention the structures exposed on removal of the Palmar Fascia; and describe their relative position.

April 3rd.

Candidates *must* answer four (including one of the first two) out of the six questions. (See *New* Regulation, 1880.)

1. Describe the coagulation of the Blood; and state what is the constitution, physically and chemically, of the component parts into which it is resolved when coagulated. (C. 241; F. 12—26.)

2. Describe the distribution of the Pneumogastric Nerve in the Thorax; and state what are its functions in regard to the thoracic Viscera. (F. 599.)

3. Describe the articulations of the Atlas with the Occipital bone and the Axis; and the Ligaments connecting these bones.

4. Give the attachments and nervous supply of each of the Muscles which flex and extend the Thumb.

5. Describe the course, relations, and anastomoses of the branches of the Facial Artery which arise below the inferior maxilla.

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

April 24th.

1. Enumerate the refractive media of the Eye; and

describe how a ray of light is affected in passing through them. (F. 456—458; C. 720.)

2. Describe the mucous membrane and glands of the Stomach, in the Cardiac, Pyloric, and central portions respectively. (H. and P. 49; C. 144.)

3. Describe in detail the dissection necessary to display the Internal Maxillary Artery, from its origin to the pterygo-maxillary fossa; and name the Nerves exposed to view in the dissection.

4. Describe the Sterno-clavicular and Acromio-clavicular joints; and mention the other ligaments attached to the Clavicle.

5. Describe, in their relative position, those parts of the Heart and great vessels which are exposed on laying open the pericardium.

6. Enumerate, in order, the several structures that must be removed to expose the whole of the exterior surface of the Knee-joint, with its ligaments.

May 8th.

1. Describe the changes which food undergoes, from its entrance into the mouth until it reaches the termination of the small intestine. (F. 276—282; C. 131, 168.)

2. Give examples, in the human body, of the three kinds of lever; explain the action, and specify the advantages of each.

3. Describe how the arch of the Foot is formed; on what points it rests in standing; and what ligaments and muscles contribute to its support.

4. Enumerate, in their respective relations, the various structures which are brought into view on removal of the Gluteus maximus muscle.

5. Describe the arterial anastomoses around the Elbow-joint; and mention the sources from which the anastomosing branches are derived.

6. Describe the origin, course, relations, and distribution of the Spinal accessory nerve.

July 10th.

1. Describe the physical and chemical characters of Chyle, and the changes it undergoes in its course from the Intestines to the Thoracic duct. (F. 284; C. 199.)

2. Describe the structures of the fibres of a Voluntary muscle, and of the heart; and the phenomena of contraction in Voluntary and Involuntary muscle. (H. and P. 36; F. 67—70; C. 275, 780.)

3. Describe the course and relations of the Occipital Artery; and mention, in order, the parts which must be removed to expose it from its origin to the back of the head.

4. Describe the Medulla Oblongata; and trace the columns of the Cord through the Medulla to the centres above it. (C. 573, 576.)

5. Describe the relations of the Pancreas, and the dissection necessary to expose it.

6. Describe the attachments, relations, and uses of the ligamentum teres of the Hip-joint, and of the crucial ligaments of the Knee-joint.

November 6th.

1. Describe the changes which the Blood undergoes in passing through the capillaries of the skin and of the Lungs. (F. 309—324, 360; C. 258.)

2. What is the minute structure of Adipose tissue? and what purposes does Fat serve in the animal economy? (H. and P. 27; C. 44.)

3. Describe the portions of the bones which form the Elbow-joint, and the Ligaments which connect them.

4. How would you proceed to display the muscles of the Tongue? Give their respective attachments and nervous supply.

5. Describe the structure of the Scalp, including its arteries and nerves.

6. In what region is the Cæcum situated? Describe its connections with the adjoining parts of the Alimentary Canal, and its structure.

1876.

January 15th.

1. What is the action of the Arteries in the Circulation of the Blood? What evidence can you offer of the influence of the nervous system on this action? (F. 125, 132, 183—202; C. 304.)

2. Describe the structure of the Pancreas, and state the effects of the Pancreatic Juice on the chief constituents of the food. (H. and P. 53; F. 231—237; C. 158.)

3. Describe the articulation between the Lower Jaw and the Skull; and name the parts in relation with the ligaments of the joint.

4. Name the Muscles attached to the Radius. Give

the precise points of their connection with that bone; and state their action.

5. Describe the course and relations of the Profunda Femoris Artery; and give the Anastomoses of its branches.

6. Name the Muscles and Tendons of the Sole of the Foot in the order met with in dissection.

March 31st.

1. Describe in detail one complete revolution of the Heart's action. (F. 139; C. 277.)

2. Trace the changes by which the temporary are replaced by the permanent teeth; and state the period at which each of the permanent teeth generally appears. (H. and P. 78.)

3. State all the points of difference between a Dorsal and a Cervical and Lumbar Vertebra respectively. Mention the Ligaments by which two Dorsal Vertebræ are connected.

4. Give the attachments and relations of the Muscles supplied by the Anterior Tibial Nerve.

5. Describe in order the parts seen on removal of the Deltoid Muscle.

6. Describe the Rectum. What are its relations to the other viscera of the pelvis? How is it supplied with Bloodvessels and Nerves?

April 21st.

1. Compare the effects of active and prolonged exercise with the ordinary changes which take place in the body during rest. (F. 420—426.)

2. Describe the structure and functions of the true Vocal Cords. How is speech effected? (H. and P. 26; F. 606; C. 826.)

3. Describe the ligaments by which one of the Middle Ribs is united to the Vertebral Column.

4. Describe the course, relations, and distribution of the Musculo-Spiral Nerve.

5. Describe the boundaries of the Popliteal Space and its contents in the order in which they appear on dissection.

6. Describe the course and relations of the Œsophagus.

May 5th.

1. Describe the structure of the Crystalline Lens, and the changes which occur in it during accommodation. (C. 722.)

2. State the average quantity and specific gravity of the Urine. Enumerate its chief constituents, and the circumstances which affect their proportion. (H. and P. 102—103; F. 367—369; C. 468.)

3. Describe the Os Trapezium.

4. Describe the Sterno-Mastoid muscle. How is it supplied with Bloodvessels and Nerves? What parts come into view when it is reflected?

5. Having removed the Stomach and Intestines only from the abdomen, mention in order the parts seen on the posterior wall of the cavity.

6. Describe the dissection necessary to expose from above the third Ventricle of the Brain; and enumerate the parts which bound that cavity.

July 7th.

1. Describe the structure of a Lobule of the Liver. What are the essential constituents of Bile, and the tests by which its presence can be recognised. (H. and P. 53—54, 100, 101; F. 228—231; C. 433.)

2. Give the average Temperature of the human body. By what means is it maintained and regulated? (F. 426—438; C. 499.)

3. Describe the Hyoid Bone. Give its relation to the surrounding parts, and the precise attachment of muscles to it.

4. Describe the course, relations, and distribution of the Internal Pudic Artery.

5. Give the relations and connections of the Spleen, and the course and relations of its Artery and Vein.

6. Describe the course and distribution of the Superior Maxillary Nerve.

November 3rd.

1. State the facts and experiments which prove the existence of Motor, Sensory, and Vaso-motor Nerves. (C. 541, 544, 850.)

2. Describe the mechanism and movements of Respiration; and name the chief muscles and nerves concerned in the process. (349—352.)

3. Describe the Os Calcis and its articulations. Mention the muscles attached to it.

4. Give the dissection requisite to expose the Brachialis Anticus; and mention the parts in relation with it.

5. Describe the formation of the superficial and deep

Palmar Arches; their respective branches, and the dissection required to display them.

6. Describe the course and relations of the Colon, including the Cæcum and Sigmoid Flexure, and the arteries by which it is supplied.

1877.

January 12th.

1. Describe the Coagulation of the Blood, and mention the various circumstances which accelerate or retard it. (C. 242.)

2. Describe all the characters by which the Duodenum is distinguished from the lower portion of the Ileum.

3. Describe the various structures which form the Hip-Joint. Name and Classify the Muscles which act upon the Joint, specifying the nervous supply and action of each.

4. Give the course and relations of the Axillary Artery and the dissection necessary to expose it. Name the branches arising from its first part, and describe their anastomoses.

5. The superficial muscles of the calf being removed, describe the parts brought into view between the lower border of the Popliteus and the Heel.

6. Describe the course and relations of the Vena Portæ outside the Liver. Mention the Veins which directly and indirectly form it, and the several communications which exist between it and the general circulation.

April 6th.

1. Describe the minute structure of a very large and a very small Artery (C. 305). What endowments do their component tissues respectively confer upon Arteries? (C. 306.)

2. How long would a Man be likely to survive when entirely deprived of Food and Water? (C. 116). What would be the relative loss of weight before death ensues? (C. 112); the condition of the temperature? (C. 111); the symptoms? (C. 111); and appearances after death? (C. 113.)

3. Describe the Astragalus, and mention in order the Tendons in contact with it.

4. Describe the attachment of the Muscles to the Metacarpal Bone and Phalanges of the Index-Finger.

5. Describe the origin, course, and relations of the Gluteal Artery. Name its branches and their anastomoses.

6. Describe the course and relations of the Duodenum.

April 27th.

1. Describe the structure of Sweat-glands; the composition of their Secretion, and its uses. (H. and P. 57, 359—361; C. 489.)

2. Give the evidence by which it may be demonstrated that the Spinal Cord is both a Nerve Centre and a Conductor. (F. 536—547; C. 596.)

3. Describe the Ischium.

4. Describe the External Jugular Vein; and state what veins open into it.

5. Give the dissection required to expose the whole of the External Popliteal Nerve. Mention its branches, and their distribution.

6. Describe the folds of the Peritoneum which are called Omenta; and state what parts are contained in them.

May 11th.

1. Describe the Minute Structure of the female Breast, and the composition of Milk. (H. and P. 81, 92, 93; F. 397—399; C. 906.)

2. What is Rigor Mortis; and what changes take place in the Muscular Fibre? State the circumstances which influence the period of its advent, duration, and degree. (F. 61—86; C. 780, 809.)

3. Describe the upper third of the Femur.

4. Give the origin, insertion, and nerve supply of the two Pterygoid Muscles. What parts pass over, under, and through the external Pterygoid?

5. Enumerate the Meningeal Arteries of the Brain. State the vessels from which they are derived, and the foramina by which they enter the skull. Give the course of the middle Meningeal Artery within the cranium, and name its branches.

6. Describe the relations of the Urinary Bladder in both sexes, and the arteries by which it is supplied.

July 7th.

1. Describe the structure and function of a Lymphatic Gland. (H. and P. 69.)

2. Explain why a distant and a near object, lying before

the eye, cannot be, at the same time, distinctly seen. What is the mechanism by which a sharply-defined image of each in turn is formed on the Retina? (F. 462—464.)

3. What are the distinctive characters of the Male and Female Pelvis?

4. Describe in order the parts brought into view in the back of the Forearm by the removal of the superficial layer of muscles.

5. Describe the dissection required to expose the Profunda Femoris Artery; and give its branches, their distribution and anastomoses.

6. Describe the course, relations, connections, and distribution of the Glosso-Pharyngeal Nerve.

November 2nd.

1. Upon what evidence is our knowledge of the functions of the anterior and posterior roots of the Spinal Nerves based? (C. 544 *et seq.*)

2. Describe the structure of the Mucous Membrane of the Stomach, and the composition and uses of the Gastric Juice. (C. 142, 147.)

3. Describe the Sterno-clavicular and Acromio-clavicular joints, enumerating the parts in relation with them.

4. Trace the Obturator Nerve from its origin to its distribution, and mention any varieties occasionally met with.

5. Describe the relations of the Flexor Longus Pollicis muscle in the forearm, and the dissection necessary to expose that part of it.

6. Describe the origin, course, distribution, and anastomoses of the Arteries and Veins of the Thyroid body.

1878.

January 7th.

1. State the functions of the Pneumogastric Nerve in relation to the Heart (C. 154), Larynx (C. 361, 591), Lungs (C. 359), and Stomach (C. 154.)

2. Describe the changes which take place in the Ovaries and Uterus at each Catamenial period. (C. 877.)

3. Describe the Elbow-joint, and mention the structures in contact with it.

4. Describe the Diaphragm—its attachments, relations, and action.

5. Describe in order the parts met with in the dissection required to expose the Deep Palmar Arch.

6. Describe the Innominate Veins—their formation, course, and relations. Mention the Veins entering them.

March 29th.

1. Describe an act of Respiration, and the changes which the Blood and Air undergo. (C. 350, 365, 258.)
2. Describe the Mucous Membrane of the dorsum of the Tongue. (C. 709.)
3. Describe the Ethmoid bone and its articulations.
4. Describe the Scalenus Anticus muscle, its attachments and relations.
5. Describe the course, relations, and branches of the anterior Tibial Artery from its origin to the ankle-joint.
6. Describe the dissection required to expose the trunk of the Musculo-Spiral Nerve. Give its branches and their distribution.

April 23rd.

1. Mention the Forces concerned in the Venous Circulation, and describe their action. (C. 335.)
2. Give the minute anatomy of the Nasal Mucous Membrane. (C. 715.)
3. Describe the attachment of Muscles to the Tibia, and mention the Nerve-supply of each.
4. Describe the Anastomoses of the Scapular Arteries, and the dissection required to expose them.
5. Give the relations and distribution of the Portio Dura Nerve outside the Stylo-mastoid foramen.
6. The Pharynx being opened from behind, describe the parts brought into view without further dissection.

May 10th.

1. Describe the structure of the Bronchial Tubes. (C. 344.) What purposes are served by the several tissues which are found in them?
2. What is meant by the Vaso-motor Centre? Give the evidence of its existence. (C. 309, 578, 610, 651, 676.)
3. Describe the Articulations and Ligaments of the Seventh Rib, and the Attachments of Muscles to it.
4. Give the dissection required to expose the Glutæal and Sciatic Arteries outside the Pelvis.
5. Describe the course and distribution of the Ulnar Nerve in the Palm, and the dissection necessary to expose it.
6. Describe the entire Lachrymal Apparatus.

July 5th.

1. Define what is meant by Blood-pressure, and state the chief causes of its variation. (C. 319 ; F. 136.)
2. Describe the structure of the different transparent media of the Eye, and the part they play in the physiology of vision. (C. 721.)
3. Describe the Intrinsic and Extrinsic muscles of the Tongue.
4. 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.
5. Trace the Facial artery from its origin to its termination, and give the distribution and relation of its branches.
6. Give the dissection required to expose the trunk and branches of the small Sciatic Nerve.

November 1st.

1. Describe the minute anatomy of a Peyer's Patch (C. 180, 198) ; and contrast the structure of the small and large Intestine.
2. What is the average amount of fluid required by the body daily ? (C. 402.) Mention the chief circumstances by which the demand for it may be modified ; the several channels by which fluid is eliminated, and the conditions which may lead to variation in the amount discharged by each channel.
3. Describe the Occipito-Atlantal joint, and all the Ligaments which unite the Skull to the Vertebral Column.
4. Describe the dissection required to expose the Transversalis Abdominis and the Fasciæ connected with it.
5. Give the dissection required to expose the Radial Artery from the Styloid process to its termination.
6. Describe the Fornix and its relations.

1879.

January 6th.

1. Describe the ossification of a Long Bone in its entirety. (C. 51.)
2. Give an account of the Gases contained in the Blood, and of the experiments by which their combination with its other elements is ascertained. (C. 258.)
3. Describe the structure of the Knee-joint, including

the bones, cartilages, ligaments, and synovial membrane ; and explain its movements.

4. Describe precisely the muscular attachments on the Os Pubis, and name the nerves supplying each muscle.

5. 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.

6. Give the position and relations of the Submaxillary Gland ; trace its duct into the mouth, and state the nature and uses of its secretion. (C. 135.)

April 4th.

1. What are the functions of the Facial Nerve ? What would be the effects of division of this nerve on the organs of special sense ? and how would these effects be produced ? (C. 589, 624, 770.)

2. What are the peculiarities of the circulation within the Cranium ? (C. 338, 682.) State the position, composition, and functions of the Cerebrospinal Fluid.

3. Describe the muscles attached to the Fibula, with their nerve-supply.

4. Describe the position of the Heart in the chest, and the relations of the several valves to each other and to the walls of that cavity.

5. Describe the anatomical relations of the Rectum, and the origin and course of its arteries and veins.

6. Describe accurately the articular and muscular mechanism by which the Arm is raised from the side from the vertical downward to the vertical upward position. In mentioning any muscle, note its attachments and nerve-supply.

April 25th.

1. Describe the Mucous membrane of the Duodenum, and contrast Gastric with Pancreatic digestion. (C. 147, 158 ; F. 265, 279.)

2. Give an account of the structure, chemical composition, and functions of the coloured and colourless Blood-corpuscles. (C. 225, 231 ; F. 11, 30, 123, 313.)

3. Describe the articular surfaces of the bones entering into the formation of the Ankle-joint, the ligaments and synovial membrane of the joint. What movements does it admit of, and by what muscles are these effected ?

4. The skullcap being removed, describe the dissection

necessary to expose the lateral and third Ventricles, and give the boundaries of those cavities.

5. Enumerate the structures forming the Spermatic Cord at the external abdominal ring ; and trace each to its origin and termination.

6. Mention the structures in contact with the Interosseous Membranes of the Forearm and Leg.

May 7th.

1. Explain the formation of the Pulse at the Wrist. Describe a normal Sphygmographic tracing (C. 313 ; F. 141, 163). What modifications may the Pulse present in health ? Why is it absent in the Capillaries, and under what circumstances does it occur in the Veins ?

2. Describe the structure and functions of the Iris and Ciliary Muscle (C. 734, 723 ; F. 466). By what nerves are they supplied, and what would be the effects upon them of the division of each of these nerves ?

3. Describe the Sternum ; including in your description the attachments of the muscles and ligaments connected with it.

4. What are the relations of the Pancreas ? In what ways may this viscus be exposed after the abdomen has been opened ?

5. Give the dissection required to expose the third portion of the Subclavian Artery, and the relations of this part of the vessel.

6. Describe the anatomy of the Upper and Lower Lips, including the muscles inserted into them.

July 7th.

1. Describe the mechanism of one act of tranquil Respiration (C. 350 ; F. 296). What muscles and nerves are concerned in it ? (C. 352 ; F. 303.) What would be the effect of division of the Nerves concerned, and of stimulation of their cut ends ?

2. What is the nature of the fluids termed, respectively, Lymph, Chyme, and Chyle ? (C. 199—204 ; F. 276, 284.) Describe the course of the fluid absorbed by the villi of the small intestines, and the changes it undergoes during its passage to the Blood. Give an account of the structure of a Lymphatic Gland. (C. 194—199 ; F. 286).

3. Describe the first Cervical Vertebra : — including the Joints it helps to form, and the Ligaments which connect them. What Muscles are attached to it ?

4. Give the course, relations, and branches of the Lingual Artery.

5. What Dissection is required to expose the external surface of the Obturator Membrane?

6. Describe the Cardiac and Pyloric orifices of the Stomach, the Ilio-Cæcal Valve, and the Anus. Explain the muscular and nervous mechanisms by which they are, respectively, regulated.

November 7th.

1. Describe the Structure of the Mammary Gland (C. 966; F. 397). Give the physical characters and chemical composition of Milk. (C. 970; F. 397.)

2. Describe the motions and sounds of the Heart (C. 277, 283; F. 139—156). What events are synchronous with each sound?

3. Describe the Hip-joint, including the constituent bones, ligaments, and synovial membrane. What are its Movements? and by what Muscles are they effected?

4. State how you would remove the Brain from the skull in a post-mortem examination. Mention the structures which it would be necessary to divide in the process.

5. Describe the male Urethra; giving the position, attachments, and actions of the Muscles connected with it.

6. What dissection is necessary to expose the Cæliac Axis after the Abdomen has been opened? Describe the course and anastomoses of its branches.

1880.

January 5th.

ANATOMY.

Candidates *must* answer four (and not more than four) out of the six questions.*

1. Describe the Clavicle, and mention the various structures attached to, and in relation with it.

2. Describe the ligaments of the Elbow and superior Radio-ulnar articulation; and mention the structures in immediate relation with them.

3. Describe the boundaries and contents of the Posterior Triangle of the Neck.

4. Describe the arrangement of the Peritoneum in the *female* Pelvis, giving its relations to the several organs.

* Candidates unable to answer *four* questions must report the fact to the Presiding Examiner, and are not allowed to proceed with their Examination.

5. Describe the Posterior Mediastinum and its contents.

6. The Orbit having been unroofed, describe all the parts met with successively down to the level of the optic nerve.

Physiology.

Candidates *must* answer four (and not more than four) out of the six questions. (*See* Note on p. 115.)

1. What do you understand by the term Protoplasm? (C. 32, 908; F. 110.) Describe the different forms of Epithelial cells, stating where they are found. (C. 36.)

2. Give the structure of a Capillary Bloodvessel, and state the conditions which modify the Capillary Circulation in any part or organ. (C. 326, 331, 849.)

3. What is the average Temperature of the body? (C. 498; F. 426). How is this maintained and regulated? (C. 499.)

4. What are the functions of the Third division of the Fifth pair of cerebral nerves, and of the Portio-dura of the Seventh? (C. 586, 589.) Give the evidence on which your statements are founded.

5. Describe the structure of a lobule of the Liver (C. 434). What are the functions of the Liver? (C. 439; F. 249, 383.)

6. Give the changes which take place in the Circulation of the Blood at birth, and state the cause or purpose of each. (C. 931.)

April 2nd.

Anatomy.

1. Describe the Calcaneum.

2. Describe the arrangement and attachments of the Perinæal Fasciæ.

3. Give the attachments of the Trapezius muscle; state what structures are exposed upon its removal.

4. Give the dissection required to expose the first portion of the Subclavian Artery on the right side.

5. Describe the course and relations of the Portal Vein; name its tributaries, and mention their anastomoses with the systemic veins.

6. The Brain being removed from the skull, how would you proceed to expose the Corpora Quadrigemina?

Physiology.

1. Give the physical characters and chemical composi-

tion of the Blood; describe its Corpuscles (F. 28). What purposes do they fulfil? (C. 230, 254.)

2. Mention the average period of eruption of the temporary and permanent Teeth. Describe the minute structure of a Tooth. (C. 53.)

3. Give a description of the microscopical appearances presented by a transverse section of the Spinal Cord in the cervical region (C. 565). What are the functions of the Cord? (C. 596; F. 546.)

4. Describe the course and minute structure of a Renal tubule (C. 457). What functions have been ascribed to its several parts? (C. 460.)

5. How is the circulation of the Blood maintained? (C. 271; (F. 121.) What is the average velocity of the Blood in the larger arteries and veins, and in the capillaries? (C. 323, 329.) By what means has this been ascertained? (C. 324; F. 129.)

6. What is the structure of Adipose Tissue? What are its uses in the economy? and what are the circumstances that lead to variations in its amount? (C. 44, 414, 511.)

April 23rd.

ANATOMY.

1. Describe the First Rib, naming the structures in immediate relation with it.

2. Describe the ligaments connecting the Skull with the Spinal Column.

3. Describe the coverings and coats of the Testicle.

4. Give the dissection necessary to expose the Posterior Tibial Artery; describe its course and relations, and name its branches and their anastomoses.

5. Describe the Pelvic Fascia in the male, its attachments, arrangement, and relations.

6. Describe the course, relations, and distribution of the Musculo-Spiral Nerve.

PHYSIOLOGY.

1. Describe an act of Deglutition, mentioning in the order of their action the muscles engaged, and their nervous supply. (C. 117.)

2. Describe the structure of a lobule of the Lung (C. 344). State the changes which the air and blood respectively undergo in Respiration. (F. 296; C. 365, 258.)

3. Describe the conditions requisite for the performance

of a simple Reflex act (C. 602, 541 ; F. 115). Give examples of reflex acts occurring without sensation, and of others associated with sensation ; in each case specifying the several parts concerned. (603, 635, 358.)

4. Give the physical characters of Urine (C. 463 ; F. 367). What are its normal constituents ? (C. 464, 468.) State the circumstances which cause variations in them within the limits of health.

5. Describe the structure of a Graäfian follicle, and give the changes that take place in it after the discharge of an ovum. (C. 875.)

6. How may the function of a Nerve be determined ? (C. 541.) What are the functions of the first four Cerebral Nerves ? (C. 714, 581, 728, 588.)

May 7th.

ANATOMY.

1. Describe the Inferior Maxilla, and state the changes it undergoes from infancy to old age.

2. Describe the Inferior Radio-ulnar and the Radio-carpal articulations ; state the movements of which they are capable, and name the muscles by which these movements are effected.

3. Describe the course, relations, and anastomoses of the External Circumflex Artery, and give the dissection necessary to expose it.

4. Describe the entire Lachrymal apparatus.

5. Describe the membranes of the Spinal Cord, and mention the points of difference between them and the membranes of the brain.

6. Describe the course and relations of the Inferior Vena Cava, and name its tributaries.

PHYSIOLOGY.

1. Describe the structure of the mucous membrane of the Stomach (C. 142). Give the composition and action of the gastric juice. (C. 146.)

2. What are the essential parts of a Secreting Gland ? What circumstances modify secretion ? Illustrate your statements by reference to the salivary and sudoriparous glands. (C. 428, 137, 489, 491.)

3. Describe the structure of the Urinary Bladder. What muscles and nerves are engaged in the act of micturition ? (C. 488 ; F. 378, 543.)

4. Describe the structure and functions of the Vocal Cords (C. 828 ; F. 602). Enumerate the intrinsic muscles

of the larynx, giving the nerve-supply and action of each. C. 829.)

5. Give the structure and connexions of the valves of the Heart. What are their functions? (C. 272; F. 148.)

6. Describe the structure of Striated Muscle (C. 783). Give the physical and chemical changes which accompany the act of contraction. (C. 793; F. 51.)

July 2nd.

ANATOMY.

1. Describe the First Dorsal Vertebra and its articulations.

2. Describe the External Oblique Muscle of the abdomen and its aponeurosis. Give their attachments and relations.

3. Describe the Male Urethra.

4. Give the dissection necessary to expose the Deep Plantar Arch, describing the parts seen in succession.

5. Give the course, relations, and distribution of the Ulnar Nerve below the elbow.

6. Name the arteries distributed to the Brain. Give the course and anastomoses of each.

PHYSIOLOGY.

1. What are the proximate constituents of Wheat flour; what changes do these constituents undergo in the conversion of flour into bread, and how is their digestibility affected by these changes?

2. Describe the action of the Heart; and give the evidence that the blood circulates through the vessels. (C. 277; F. 139—156.)

3. How is the nervous system concerned in tranquil Respiration? (C. 356.) What are the phenomena presented by the nervous and vascular systems in death by Asphyxia? (C. 389; F. 332.)

4. What varieties of Cartilage are found in the adult, and in what situations? Describe the structure and uses of each variety.

5. Explain what is meant by the following terms: Cell; Tissue; Organ; Organism; Organic and Inorganic matter; Proteid; Peptone; Ferment; Carbohydrate; Hydrocarbon. Give examples of each.

6. Give the structure of the epithelium and papillæ of the Tongue. By what nerves is the Tongue innervated, and what are their functions?

EXAMINATION ON SURGICAL ANATOMY

AND THE

PRINCIPLES AND PRACTICE OF SURGERY.*

1869.

January 16th.

1. Describe the position of the Subclavian Artery in its third division; and the position in relation to the artery of other structures in its immediate neighbourhood (p. 529, vol. i.).

2. State the signs which distinguish a Femoral Hernia from an Inguinal Hernia (p. 510, vol. ii.).

3. State the symptoms of Ulceration of Cartilage in the Knee-joint, and the treatment of that disease (p. 810, vol. i.).

4. Dislocation of the Radius and the Ulna backwards at the Elbow. State the position of the displaced bones; the lesions attending their displacement; and the method to be preferred for its reduction. Mention also the period of life at which the displacement is most liable to occur (p. 747, vol. i.).

5. Describe the 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, giving the reasons for its adoption (p. 287, vol. i.). For any medicines that you may think useful, write the prescriptions in full.

6. Syphilitic Lepra.—Describe its diagnostic marks, and the condition of general health which commonly accompanies it. Give an outline of the probable previous symptoms of the case, and of the treatment (p. 260, vol. i.). For the medicines that may be required, write the prescriptions in full.

* The paged references are an Index to the Author's "Science and Practice of Surgery," Second Edition; Baillière, Tindall, and Cox, 1878.

April 17th.

1. Describe the diagnosis and the treatment of Fracture of the Acromion of the Scapula (p. 624, vol. i.).

2. Name, in their order from without inwards, the structures which fill the space between Poupart's ligament and the Pelvic bone. Describe the position and boundaries of the Femoral Ring; and name the Bloodvessels which are close to it, mentioning their position with respect to the ring (p. 526, vol. ii.).

3. Give the Diagnosis and the Treatment of each of the following forms of Hydrocele in very early life, viz.: —the common form, the congenital, and the encysted (p. 812 *et seq.*, vol. ii.). Refer to any case or cases that have been under your observation.

4. Name the parts which are divided in an operation for Excision of the Elbow-joint (p. 61, vol. ii.).

5. Describe the Symptoms and the Treatment of Peritonitis following an operation for Strangulated Hernia (pp. 482, 465, vol. ii.). Prescriptions for medicines to be written in full.—Give the outline of any illustrative case you have observed; and if death occurred, state the leading facts of the dissection.

6. Describe Onychia maligna, and its treatment (p. 436, vol. i.). Prescriptions to be written in full.

May 1st.

1. State the extent to which the organs in the Pelvis of the male are covered with Peritoneum. Name, in their relative position, the parts which are in contact with the front of the Rectum; and define the place at which the operation for Tapping the Urinary Bladder through the rectum should be performed (pp. 601, 557, 784, vol. ii.).

2. Describe the causes, the most frequent situations, symptoms, and treatment of Abscess in Bone (p. 681, vol. i.).

3. Single Hare-lip.—State the most frequent position, and the probable cause of the defect. Describe the condition of the margins of the cleft; and the operation to effect a cure. Mention the deformity likely to remain after the operation has been performed; and any modification of the plan of operation adopted by surgeons to obviate that deformity (p. 287, vol. ii.).

4. Varicose Veins.—State the most frequent positions

in which the disease occurs; and describe the morbid changes the vessels undergo; the symptoms; and the treatment—mentioning the palliative management, and any operations intended to obliterate the vessels (p. 562, vol. i.).

5. Describe the circumstances which serve to distinguish a Cancerous tumour from other tumours of the Breast; and the means of identifying the cancerous character after its removal (p. 445, vol. ii.).

6. Strabismus.—Mention the different forms in which it is met with; the causes; and the treatment where a surgical operation is not required. Describe the Operation in detail (p. 240, vol. ii.).

May 15*th.*

1. The Omo-hyoid Muscle.—Describe its connection with bones (origin and insertion) and with the cervical fascia; also the relation the muscle bears to operations performed on large bloodvessels.

2. Describe the process of healing by Primary Adhesion (p. 360, vol. i.); and that by Granulation (p. 393, vol. i.). State the means by which a Surgeon can aid the healing process in each case.

3. Name the Fistulæ which are most frequently met with in different parts of the body (p. 88, vol. i.). Describe in detail the Fistula in one of those situations; stating how it originates, its distinguishing characters, and the plan of treatment (p. 559, vol. ii.).

4. Myopia.—State the nature of the defect; and any ascertained causes or objective signs of its existence. How is the imperfection of sight to be remedied? (p. 234, vol. ii.)

5. Carbuncle.—Describe the symptoms; the successive morbid changes; and the treatment, local and general, in different stages of the disease (p. 431, vol. i.). Prescriptions for any medicines to be written in full.

6. Describe the symptoms, local and general, of Congenital Syphilis; the order in which they usually occur; and the treatment. State the morbid changes of internal organs which have been observed in fatal cases (p. 265, vol. i.).—Prescriptions to be written in full.

July 17*th.*

1. Name the structures which must necessarily be divided or separated in the operation for the removal of the Superior Maxillary Bone (p. 344, vol. ii.).

2. Describe the symptoms, immediate and subsequent, which are likely to follow a wound (say with a penknife) of the Femoral Artery in the middle of the thigh. Mention the treatment which may possibly be required after such an injury (p. 513, vol. i.).

3. Describe the boundaries of the Axilla, and the relative position of the great bloodvessels and nerves contained within those boundaries.

4. Mention the injuries which may occur to adjacent structures by the Fracture of a Rib (say the sixth). Describe the symptoms attending each of these injuries, and the appropriate treatment (p. 616, vol. i.).

5. Mention, in successive order, from without inwards, the structures which form the wall of the Abdomen between the last Rib and the Crest of the Ilium.

6. Mention the symptoms, diagnosis, and treatment of the different forms of Iritis (p. 207, vol. ii.).

November 12*th.*

1. Name the muscles (giving their attachments) by which deformity is produced or maintained in the following affections, viz. :—1. Talipes equinus ; 2. Talipes varus ; 3. Talipes valgus (p. 838 *et seq.*, vol. i.).

2. Mention the causes which may produce Extravasation of Urine into the Perineum ; state the direction it takes, and the reasons for that direction ; state also the local and constitutional symptoms which attend it, and the treatment required (p. 787, vol. ii.).

3. Mention the structures which must be divided in the respective operations for Hydrothorax (p. 431), Ascites (p. 555), Hydrocele (p. 813), and Fistula in Ano (p. 562, vol. ii.).

4. Describe the appearances of an ordinary Syphilitic Sore ; and mention the different forms of Secondary Syphilitic Eruption (pp. 249, 259 *et seq.*, vol. i.).

5. Describe the Surgical Anatomy of the Sartorius Muscle in reference to deligation of the Femoral Artery (p. 542, vol. i.).

6. Describe the local symptoms of Acute Periostitis (say of the Tibia) ; state the possible results, and mention the treatment (p. 676 *et seq.*, vol. i.).

1870.

January 21*st.*

1. Describe the appearances and symptoms which indi-

cate Congenital Syphilis in an infant. Mention the treatment to be adopted in such a case (p. 265, vol. i.).

2. Mention the coverings of the Spermatic Cord in its course from the internal abdominal ring to the Scrotum. State from whence these coverings are respectively derived, and what relation they bear to an oblique Inguino-scrotal Hernia (p. 502, vol. ii.).

3. To what morbid changes are Bursæ liable? Give examples, and mention such modes of treatment as you think most eligible (p. 444 *et seq.*, vol. i.).

4. Describe, in their relative positions, and as they are brought into view by dissection, the structures which cover and occupy the space bounded by the posterior edge of the Sterno-cleido-mastoideus Muscle, the posterior belly of the Omo-hyoid Muscle, and the Clavicle; including the relative Anatomy of the Subclavian Artery (p. 529, vol. i.).

5. Describe the symptoms of fracture of the Neck of the Thigh bone, both within and without the Capsule, the treatment, and the usual result (p. 646 *et seq.*, vol. i.).

6. Explain anatomically the course which the blood takes to the lower extremity after the External Iliac Artery has been tied.

April 16*th*.

1. Describe the situation, extent, and attachments of the Superficial Perineal Fascia. Explain how it limits Extravasation of Urine in certain directions, and allows it to spread in others (p. 788, vol. ii.).

2. Describe the process of Hypodermic Injection; mention the apparatus employed, and the mode of using it:—also the quantity of Morphia and of Atropine respectively which may be injected. Write a prescription for a solution of a Salt of Morphia proper to be used in the process.

3. Describe the situation of the Femoral Artery in the middle third of the thigh, and its relation to surrounding structures. Describe the operation of placing a ligature on the artery in this region (p. 542, vol. i.).

4. Describe the symptoms indicative of inflammation of the Membranes or of the Substance of the Brain, which may follow fracture of the skull or other injuries to the head. Mention the probable result of such inflammation (p. 175, vol. i.).

5. Abscesses in the Female Breast.—Describe their causes, situation, progress, and treatment (p. 436, vol. ii.).

6. Mention the different structures which are necessarily cut in the lateral operation of Lithotomy. Mention also those contiguous structures which should be avoided in the operation (p. 685, vol. ii.).

April 29th.

1. Describe the usual form of Cancer affecting the Testicle. Mention other structures which become affected during the progress of the disease. State the treatment which may be employed, and the probable result (p. 833, vol. ii.).

2. Mention the circumstances attending a compound dislocation at the Ankle-joint which would induce you to amputate (p. 786, vol. i.).

3. Describe the relative position of the Subclavian Artery in the Third part of its course; and the different steps of the operation by which the vessel may be exposed (pp. 529, 531, vol. i.).

4. Mention the kind of accident which might produce Fracture of the Base of the Skull; and describe the symptoms which indicate such an injury. State the treatment to be adopted, and the probable or possible result (p. 159 *et seq.*, vol. ii.).

5. Describe all the symptoms which indicate a Fracture of the Clavicle in the Middle of the bone. State the position of the broken ends of the bone, and the cause of the deformity produced. Describe the treatment (p. 619 *et seq.*, vol. i.).

6. Myeloid disease.—Describe the local appearance and the symptoms in Myeloid disease. Mention its microscopic character. State the treatment, and the probable result (p. 148, vol. i.).

May 13th.

1. What is Spina Bifida? What are the effects usually produced by it? Give the treatment (p. 421, vol. ii.).

2. Describe the parts seen in exposing the Sterno-Mastoid Muscle, also those which are brought into view when the muscle is removed.

3. State the local distinctions, internally and externally, between oblique and direct Inguinal Hernia (pp. 502, 505, 506). State also the diagnostic signs of Femoral Hernia

(p. 510); and describe the operation for its relief when strangulated (p. 533, vol. ii.).

4. When the Femur is broken a little below the lesser trochanter, what is the position of the upper and of the lower fragment? To the action of what muscles is the distortion of each of them owing?

5. Describe the appearances of an ordinary Syphilitic Sore, and mention the different forms of Secondary Eruption (pp. 249, 259 *et seq.*, vol. i.).

6. Describe the position of the Thyroid Body in relation to surrounding structures. Describe also its bloodvessels, their origin, course, and termination.

July 22nd.

1. Describe the various forms of Cancer affecting the Rectum; the diagnostic characters, so far as they can be ascertained, of each form, and the symptoms, progress, and treatment of such cases (p. 587, vol. ii.).

2. Mention at what level the Omo-hyoid Muscle crosses the Carotid Artery. What parts cover the Artery above and below this level? State the relative position of vessels and nerves within, or immediately contiguous to, the Carotid Sheath (p. 524, vol. i.).

3. What is understood under the term "fungus" of the Testis? Describe its nature, the mode in which it arises, and the appropriate treatment (p. 830, vol. ii.).

4. Having opened the Abdomen in the male subject, and removed the Peritoneum from its anterior wall in the hypogastric and inguinal regions on one side, describe the appearance and exact position of the inner openings of the inguinal and crural canals in their natural condition. Notice also the normal and the irregular relations of each opening to the Internal Epigastric and Obturator Arteries respectively (p. 502 *et seq.*, p. 526, vol. ii.).

5. Describe a simple fracture of a long Bone, the lesions of other parts associated with it, the natural method of repair, the local or constitutional causes which may interfere with union (p. 579 *et seq.*); and notice the principal methods of treatment which have been followed in cases of Ununited Fracture (p. 606, vol. i.).

6. Describe the Surgical Anatomy of the Tonsil, naming the muscles and vessels in immediate relation with it.

November 11th.

1. Describe the course and relations of the left Common

Iliac Artery, and the steps of an Operation required to secure it (pp. 539, 541, vol. i.).

2. Define a Sinus ; and explain what are the obstacles to its healing. Describe the various modes of treating Sinuses under different circumstances ; and give your reasons for adopting any particular method of treatment (pp. 87, 88, 120, vol. i.).

3. State the boundaries of the Popliteal Space, and the relative situation of the parts contained within it (p. 547, vol. i.).

4. What are the diagnostic signs of Chronic Rheumatic Arthritis of the Hip-joint ? Describe the pathological changes observed in such cases after death (pp. 824, 796, vol. i.).

5. Describe the course of the Brachial Artery, pointing out its relative position with respect to the contiguous muscles, nerves, and veins (p. 534, vol. i.).

6. What are the local signs, most probable cause, and proper treatment of Post-pharyngeal Abscess ? (p. 366, vol. ii.)

1871.

January.

1. Describe the common forms of Ulcers (non-specific). State the causes by which they are produced, and their appropriate treatment (p. 207, vol. i.).

2. State what is meant by "*Reduction en bloc*" or "*en masse*" of a Strangulated Hernia. Describe the position of the sac and its contents where this complication has occurred, the symptoms attending it, and the treatment to be followed (p. 487, vol. ii.).

3. Give the signs of fracture of the Ribs, the various complications with which it is attended, and the proper mode of treatment in each case (p. 616, vol. i.).

4. Describe the appearances, progress, and consequences (if unchecked) of Tinea Tarsi ; its pathology and treatment.

5. Mention the parts that would be divided in the case of a wound down to the bone, extending across the cheek from the lower border of the Ala Nasi to the lobe of the Ear.

6. Carbuncle : its symptoms, pathology, and treatment (p. 431, vol. i.).

April 14th.

1. Pyæmia: its causes, symptoms, effects, and treatment (p. 297, vol. i.).

2. Ligature of the Posterior Tibial Artery in the lower third of the leg. Specify the extent, direction, and situation of your incision—the parts necessarily divided or to be avoided in the operation. Give the precise relations of the artery where tied (p. 551, vol. i.).

3. Describe the various forms of inflammation which affect the Conjunctiva; their symptoms, causes, and appropriate treatment (p. 197 *et seq.*, vol. ii.).

4. Mention in order the several tendons around the Knee-joint; and give the relations of each to adjacent parts.

5. Describe the symptoms, progress, and treatment of fracture of the Spine in the cervical and in the dorsal regions, and state the causes of death in such cases (p. 391, vol. ii.).

6. How may the production of "lymph" as the result of Inflammation be accounted for? (pp. 47, 79.) Describe its minute structure in its different forms, and the changes they may undergo (p. 73 *et seq.*, vol. i.).

May 12th.

1. Describe the inguinal Canal: its boundaries and relations to other structures, including hernial protrusions (p. 503, vol. ii.).

2. What are the causes, and the immediate and remote consequences of sudden Extravasation of Urine? What treatment would you adopt in such a case? (p. 787, vol. ii.)

3. Give the pathology of non-traumatic Aneurism from its commencement to its termination (p. 452 *et seq.*, vol. ii.).

4. Describe the operation known as Chopart's, and the relative position of the various parts cut through in this amputation (p. 116, vol. ii.).

5. How are Scirrhus and Medullary Cancer distinguished in the living subject? (p. 157.) What organs does each form specially affect, and at what ages usually do they respectively occur? (pp. 163, 164, vol. i.)

6. By what form of accident is dislocation of the Head of the Femur backwards usually caused? (p. 765.) Describe the two dislocations in this direction, the deformity existing in each, and the proper method of reducing them (pp. 762, 766, vol. i.).

July 21*st.*

1. Mention the Articular surfaces of the Superior Maxillary Bone ; describe the operation for its removal, and the parts cut through in the operation (p. 344, vol ii.).

2. Describe the operation of extirpation of the globe of the Eye, and state the injuries or diseases which render the operation advisable (p. 239, vol. ii.).

3. Name the parts cut through in the following operations—viz., Hare-lip (p. 288) ; Umbilical Hernia (p. 541) ; amputation of the Thumb at the Carpo-Metacarpal joint (p. 108, vol. ii.) ; and in ligature of the Ulnar Artery in the middle of the forearm (p. 538, vol. i.).

4. Enumerate the various kinds of Ulcer which occur on the Tongue ; state the cause and characteristic appearance of each (p. 298, vol. ii.), and write in full prescriptions for their appropriate treatment.

5. Give the Surgical Anatomy of the Ischio-rectal region, and describe the dissection necessary to display it.

6. Mention the diseases or other conditions which may render Laryngotomy or Tracheotomy necessary. Describe the mode of performing those operations, and state your reasons for preferring one to the other (p. 378, vol. ii.).

November 10*th.*

1. Describe the action of a Ligature and of Torsion in arresting hæmorrhage from a severed artery ; and state what is the effect of a ligature upon an undivided artery, as in an operation for Aneurism, and how the continuity of the artery is permanently interrupted after the separation of the Ligature (pp. 377, 383, vol. i.).

2. Give the Surgical Anatomy of the Ulnar Artery as far as the wrist ; and describe the operation for its ligature in the middle of the forearm, indicating the precise relations of the vessel at the point at which it is tied (pp. 537, 538, vol. i.).

3. Describe the symptoms, consequences, and treatment of chronic enlargement of the Prostate Gland (p. 738, vol. ii.).

4. Mention the different tissues and localities in which the formation of Pus causes the greatest local pain and constitutional disturbance (p. 84). State (giving examples) the circumstances that would induce you to open an abscess early, and those in which delay or non-interference would be preferable (p. 115, vol. i.).

5. Describe the deformity produced by simple dislocation of the Foot outwards at the ankle. Mention the structures which are necessarily broken or lacerated in this accident; state the mode of reduction and the means you would have recourse to under circumstances of unusual difficulty (pp. 783, 785, vol. i.).

6. Mention the various kinds of Cataract; give the diagnostic characters of each, and state the usual conditions under which the different forms occur; and describe the operation of Extraction (p. 214 *et seq.*, vol. ii.).

1872.

January 19th.

1. What are the causes of acute Synovitis? Mention the symptoms, pointing out those which are diagnostic of each variety; and describe the pathological changes and treatment (p. 791 *et seq.*, vol. i.).

2. Supposing a man to be stabbed in the median line of the Abdomen midway between the ensiform cartilage and the umbilicus, and the instrument to pass straight to the spine, mention in order the parts likely to be pierced.

3. Diphtheria—its nature, symptoms, complications, and treatment.

4. Describe the different methods and means that have been recommended in the treatment of cases of Apnœa from Drowning (p. 358, vol. ii.).

5. What are the symptoms, course, results, and treatment of Gonorrhœal Ophthalmia? (p. 200, vol. ii.)

6. Describe the course and relations of the Internal Jugular Vein on both sides of the neck; what veins open into it?

April 12th.

1. How would you distinguish, surgically, Chronic induration of the Breast from Scirrhus? (pp. 438, 445, vol. ii.) What are the microscopic appearances by which each is characterised?

2. Describe the operation of Excision of the Elbow-joint; and state under what circumstances it may be required (pp. 60, 84, vol. ii.).

3. What treatment should be adopted in a case of incised wound of the Cornea with protrusion of the Iris? Mention the consequences which may ensue, and the proper mode of dealing with them (p. 185, vol. ii.).

4. What are the causes which may impede the union of

a fracture of a long Bone? (pp. 585, 604) Describe the modes of treatment which might be resorted to in order to promote the cure of an Ununited Fracture (p. 606, vol. i.).

5. Describe deligation of the Right Carotid Artery in the first part of its course ; giving the exact relations of the parts concerned in the operation (p. 523 *et seq.*, vol. i.).

6. Mention the different forms of Nævus ; and the appropriate modes of treatment (p. 152, vol. i.).

April 26th.

1. Burns and Scalds.—State the differences between these two forms of injury ; the conditions which render them more or less dangerous ; the constitutional symptoms attending them when extensive ; the causes of death in fatal cases, and the pathological effects produced. Then describe the treatment you would adopt in severe cases (p. 420 *et seq.*, vol. i.).

2. Describe the terms Myopia, Presbyopia, Astigmatism, Hypermetropia. Describe the optical conditions upon which these defects in vision depend, and the appropriate means by which they may be remedied (p. 234 *et seq.*, vol. ii.).

3. Describe the various forms of fracture of the Neck and intertrochanteric portion of the Femur. Give their diagnostic marks, and the treatment (p. 646 *et seq.*, vol. i.).

4. What parts would be divided in a transverse wound of the Calf of the Leg at the junction of the upper and middle thirds, reaching down to the bones but not dividing the interosseous ligament ? The order in which the parts occur must be carefully given.

5. Describe the pathology, symptoms, and treatment of Caries of the Spine. State the circumstances under which recovery may take place, and the pathological changes accompanying recovery (p. 401 *et seq.*, vol. ii.).

6. Under what circumstances is Rupture of the Bladder likely to occur ? State what are the symptoms of this injury, together with its probable consequences, the prognosis, and treatment (p. 619, vol. ii.).

May 10th.

1. Enumerate the various Dislocations of the Head of the Thigh-bone ; and describe the position of the limb in each kind (p. 761 *et seq.*, vol. i.).

2. What are the symptoms of Chronic Rheumatic Arthritis? Describe the appearances which are observable in joints that have been affected with this disease; and mention the joints most liable to it (p. 796, vol. i.).

3. Mention the parts successively divided in making a dorsal flap in Chopart's operation, commencing the incision on the outer side of the foot (p. 116, vol. ii.).

4. What are the pathological changes which lead to the occurrence of Senile Gangrene? Describe the symptoms of the disease, including the premonitory, its usual progress, and the treatment (p. 560, vol. i.).

5. Name in order the structures that must be divided in the lateral operation of Lithotomy; and the parts liable to be wounded (p. 685, vol. ii.).

6. Describe the various kinds of Opacity of the Cornea, their causes, the prognosis, and treatment (p. 204, vol. ii.).

July 19th.

1. What is Chimney-sweeper's Cancer? and where does it usually occur? Describe the appearance, microscopic characteristics, and treatment of the disease (p. 809, vol. ii., and p. 178, vol. i.).

2. Describe the origin, course, and relations of the Anterior Tibial Artery; and the operation for arresting hæmorrhage in punctured wound of this vessel in the middle of the leg (p. 548, vol. i.).

3. State the different morbid conditions which render Lumbar Colotomy necessary. Describe this operation and the parts successively divided in performing it (p. 553, vol. ii.).

4. What are the diseases of the Testicle in which you would perform Castration? Describe this operation, the parts cut through in their order, and the derivation of the Arteries divided (pp. 835, 841, vol. ii.).

5. State how Fracture of the Humerus at the Elbow-joint is usually produced, and by what signs you would distinguish it from Dislocation of the Radius and Ulna backwards at the Elbow-joint (p. 631 *et seq.*, vol. i.).

6. What is Cataract? Give its different forms, and the operation appropriate for each variety (p. 214 *et seq.*, vol. ii.).

November 8th.

1. In injuries of the Head, under what circumstances would you feel warranted in using the Elevator or applying the Trephine? (pp. 158, 171, 172, vol. ii.)

2. Describe the operation for applying a ligature on the External Iliac Artery, and the parts cut through in its performance (p. 540, vol. i.).

3. Give an account of the descent of the Testicle ; and mention the affections resulting from imperfections in the process (pp. 841, 815, 507, vol. ii.).

4. Mention the boundaries of the Femoral ring. Describe the mode of formation of the Saphenous opening of the Fascia Lata. Enumerate the coverings of a Femoral Hernia, and state from what structures they are derived (p. 525 *et seq.*, vol. ii.).

5. Describe Syme's operation at the Ankle-joint, the parts cut through ; and state in what Pirogoff's method differs therefrom (pp. 117, 118, vol. ii.).

6. Describe the varieties of fracture of the upper end of the Humerus, their diagnosis, prognosis, and treatment (p. 627 *et seq.* vol. i.).

1873.

January 17th.

1. Describe the course to a favourable termination of the symptoms and treatment of a severe case of Carbuncle upon the Nape of the Neck (p. 431, vol. i.).

2. Give the relative Anatomy of the Arteria Innominata (p. 521, vol. i.). Supposing that vessel to be obstructed, through what arteries would the collateral circulation be carried on ?

3. Describe the process of union of a fracture of the Ribs, the symptoms of the injury, including those consequent on a wound of the lungs, and the appropriate treatment (pp. 616, 582, vol. i.).

4. In a case of Hernia, mention the symptoms which would induce you to operate at once, and the circumstances under which you would deem it prudent to delay an operation (p. 489, vol. ii.).

5. Mention the Muscles in contact with the Shoulder and Hip-joints.

6. What is Ectropion ? Mention the causes which produce it, and its effects upon the eye (p. 191, vol. ii.).

April 18th.

1. Name the varieties of Ulcers. Describe the characteristic appearances of each, and the treatment required for its cure (p. 207 *et seq.*, vol. i.).

2. Enumerate the parts divided in the Operations for

Fistula in Ano (p. 562), Tracheotomy (p. 379), Single Hare-lip (p. 288), and Strangulated Hernia within the Inguinal Canal (p. 516, vol. ii.).

3. Describe Glaucoma, and its treatment (p. 232, vol. ii.).

4. Give the various modes of arresting Hæmorrhage, either from an artery, a vein (pp. 375, 385), or a mucous membrane.

5. Describe the dissection necessary to expose the Posterior Tibial Artery from its commencement to the inner Ankle, with its relations to surrounding parts (p. 551, vol. i.).

6. State the complications which may attend a fracture of a Rib, and their appropriate treatment (p. 616, vol. i.).

May 16th.

1. What is the structure of ordinary Nasal Polypi? From what parts do they usually grow? and to what inconvenience do they give rise? Describe the treatment required for their removal (p. 273 *et seq.*, vol. ii.).

2. Describe in detail the operation of placing a ligature upon the Common Carotid Artery (p. 525); and state how the Brain would then be supplied with blood (p. 495, vol. i.).

3. Describe Epithelioma, its general and minute characters, the parts most liable to be attacked by it, and the treatment (p. 178 *et seq.*, vol. i.).

4. Name the Muscles, Arteries, and Nerves which would be divided in Circular Amputation in the Middle of the Thigh.

5. Describe the symptoms, course, results, and treatment of Purulent Ophthalmia in Infants (p. 200, vol. ii.).

6. Describe the mode in which fracture of the lower end of the Radius is produced, the deformity consequent on the fracture, and the proper mode of treatment. Mention the common result of this injury in persons advanced in life (p. 639 *et seq.*, vol. i.).

July 18th.

1. Under what circumstances may Blood be passed by the Urethra? By what signs would you distinguish its probable source? State the treatment which you would adopt (p. 725, vol. ii.).

2. What is Carbuncle? State in what conditions of the general health this disease usually occurs. Describe

its course from its commencement to its termination in a favourable case (p. 431, vol. i.).

3. Describe, in the order in which they appear, the parts met with in a dissection from the Skin to the Peritoneum, of that region of the abdominal wall which is bounded, below by Poupart's ligament, and above by a horizontal line drawn from the Anterior Superior Spine of the Ilium to the median line.

4. How does Dislocation of the Head of the Humerus into the Axilla usually occur? What are the chief signs upon which you would rely to distinguish this injury from others in the same region? (p. 741, vol. i.)

5. In what cases and under what circumstances may Tracheotomy be required? Describe the operation, and point out the difficulties and dangers that may arise in the course of it (p. 379, vol. ii.).

6. What fluctuating or fluid Swellings may present themselves in the Popliteal space? (p. 514, vol. i.) Describe their characteristics; and state briefly the treatment appropriate in each.

November 14th.

1. State the local and general symptoms of a Strangulated Hernia in the Inguinal Canal, and describe the operation for its relief (pp. 482, 516, vol. ii.).

2. Describe the operation for placing a ligature on the Radial Artery in the upper third of its course (p. 537, vol. i.).

3. Give the pathological anatomy, symptoms, and treatment of Strumous Ophthalmia (Keratitis) pp. 200, 203, vol. ii.).

4. State the symptoms, diagnosis, and treatment of the various fractures of the upper end of the Humerus (p. 627 *et seq.*, vol. i.).

5. What is Necrosis? Describe its causes, the pathological changes which ensue, the bones most liable to be affected, and the surgical treatment (p. 686 *et seq.*, vol. i.).

6. What is Talipes Valgus? With what condition of foot is it commonly associated? Describe the treatment (pp. 843, vol. i.).

1874.

January 16th.

1. Describe the method of Reparation in Simple Fracture of Bone (p. 582), in Laceration of Muscle (p. 441),

in Division of Tendon (p. 440), and in Sloughing of Skin (p. 393, vol. i.).

2. Mention all the symptoms of Concussion of the Brain ; and give an explanation of them (p. 167, vol. ii.).

3. Describe the Diseases of the Skin usually grouped under the term Vesicular ; and give their appropriate treatment (p. 260, vol. i.).

4. Describe the varieties of Primary Venereal Sores commonly met with, their probable consequences, and proper treatment (pp. 249, 250, 272 *et seq.*, vol. i.).

5. Describe the affections known as Phimosis and Paraphimosis ; explain their causes and possible consequences, and explain their treatment (p. 798 *et seq.*, vol. ii.).

6. What is Staphyloma? Mention its causes, pathology, and treatment (pp. 205, 210, vol. ii.).

April 17*th.*

1. Mention in order the various structures which must be divided in Syme's Amputation at the Ankle-joint (p. 117, vol. ii.).

2. Enumerate the various forms of Hydrocele of the Testicle and Spermatic Cord ; and describe the pathological anatomy, diagnostic symptoms, and treatment of that form which most commonly affects the Cord (p. 810 *et seq.*, vol. ii.).

3. Describe the operation for Extirpation of the Eyeball ; and mention in their order the parts divided (p. 239, vol. ii.).

4. What treatment would you adopt in a wound of the Deep Palmar Arch? (p. 506, vol. i.) Give the anatomical reasons which would guide your treatment in the difficulties that may arise.

5. Describe the operation of tying the Common Iliac Artery (p. 541, vol. i.). State by what channels the collateral circulation would be carried on.

6. Describe the usual Dislocation of the Thumb at the metacarpo-phalangeal joint ; explain the difficulty sometimes experienced in its reduction ; and indicate the appropriate treatment of this injury when simple and when compound (pp. 759, 760, vol. i.).

May 15*th.*

1. Enumerate in their order, from the skin inwards, the parts which are divided in the operation of Lateral

Lithotomy (p. 685); point out any arterial anomalies which may give rise to unexpected or unavoidable hæmorrhage. State what vessels or vascular tissues may be wounded in the operation apart from any anomalies (p. 686); and point out how best to avoid such hæmorrhage, and how to act when it occurs (p. 692, vol. ii.).

2. Describe the nature of the injury which the parts sustain in a Compound Dislocation of the Foot outwards. State the occasional obstacles to the reduction, how they are to be overcome, and how the foot should be kept in position (p. 786, vol. i.).

3. Describe the symptoms, diagnosis, and treatment of complete subcutaneous Rupture of the Popliteal Artery (p. 517, vol. i.).

4. Describe the operation for the removal of the entire Superior Maxillary Bone; and name the parts divided (p. 344, vol. ii.).

5. Describe the causes and kinds of Fistula in Ano, and the various modes of operation employed for their cure (p. 559 *et seq.*, vol. ii.).

6. Describe the treatment of a Penetrating Wound of the Cornea (p. 186, vol. ii.).

July 17*th.*

1. Describe the boundaries of Scarpa's triangle; and mention what tumours or swellings you may meet with in this region, and how you would distinguish them (p. 530, vol. ii., and p. 509, vol. i.).

2. In what stages of their course may burns prove fatal? State what are the causes of death in each stage (p. 422, vol. i.).

3. What are the causes and symptoms of Perineal Abscess? State how you would treat such a case, and what consequences may result from its neglect (pp. 791, 787, vol. ii.).

4. What injuries are likely to result from a violent fall on the Palm of the hand, with the arm raised and extended? Explain the mechanical mode in which such injuries are produced (p. 639, vol. i.).

5. Describe the operation of placing a ligature on the Brachial Artery in the middle of the arm; and state by what vessels the circulation is established collaterally, and how the separation of the ligature is effected (pp. 535, 377, vol. i.).

6. Describe, in their respective relations to each other,

the various parts which must be divided in Circular Amputation of the Leg, where the bones are sawn through immediately below the tubercle of the tibia.

November 13th.

1. Give the diagnosis, the anatomical and pathological characters, and the treatment of Adenoid tumours of the Breast (p. 441 *et seq.*, vol. ii.).

2. Describe what is meant by angular curvature of the Spine ; and what are the local changes which precede and accompany it (p. 401, vol. ii.).

3. Describe the Femoral ring (p. 526); and mention the parts exposed to injury in the operation for Femoral Hernia (p. 533, vol. ii.).

4. How is Hæmmorrhage arrested spontaneously, in a partially divided, a completely divided, and a torn artery? (p. 373 *et seq.*, vol. i.)

5. At what parts of the Lachrymal passages may obstruction occur? State what are the symptoms and treatment of such obstructions (p. 195, vol. ii.).

6. Describe the operation of tying the Brachial Artery in the middle of the arm (p. 535, vol. i.).

1875.

January 22nd.

1. Describe the operation of tying the External Iliac Artery (p. 540, vol. i.); and state how the collateral circulation would be established.

2. What muscles may act to displace the fragments in Fracture of the Lower Jaw, in various parts of the bone? (p. 613, vol. i.)

3. Describe the structure of, and mode of healing by, Granulations (p. 393, vol. i.).

4. What symptoms, before operating, would lead you to conclude that the contents of a Hernial Sac are in a state of Gangrene? (p. 483); and what treatment would you adopt in such a case ? (p. 493, vol. ii.)

5. When the Radius or the Ulna is broken alone, at what part of the bone, in either case, does the fracture usually occur ? State the reasons why these particular fractures happen, and how you would treat them (pp. 634, 639, vol. i.).

6. Enumerate the several causes of Retention of Urine

in the Male ; and describe the means you would adopt in each case for its relief (p. 783, vol. ii.).

April 16*th.*

1. Give an account of the relations and coverings of the descending Colon ; and then describe the several steps in the operation of Colotomy (p. 553, vol. ii.).

2. Describe the operation of tying the posterior Tibial Artery in the middle of the leg, mentioning the parts necessarily divided (p. 552, vol. i.).

3. In a case of compound fracture of the Leg, where you are doubting whether to amputate or not, what circumstances would guide your decision ? (p. 671, vol. i.)

4. How would you treat a punctured wound of the Plantar arch, with recurrent hæmorrhage ? (p. 518, vol. i.)

5. What are the varieties of stricture of the Rectum ? and what are the pathological conditions to which each kind may be referred ? (p. 584, vol. ii.)

6. What are the pathological changes which occur in the origin, progress, and termination of acute Abscess ? (p. 84, vol. i.)

May 14*th.*

1. Describe the course and relations of the internal Pudic Artery ; and specify the operations in which any particular branch of it is liable to be wounded (p. 686, vol. ii.).

2. Describe the operation of resection of the Elbow-joint ; and enumerate, in their proper order, the parts divided (p. 61, vol. ii.).

3. 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 circumstances, of the case (p. 459 *et seq.*, vol. ii.).

4. How may the Patella be fractured ? Describe the principle of the treatment of this injury, and the various appliances used. How do these fractures unite ? and on what does the subsequent efficiency of the limb depend ? (p. 660 *et seq.*, vol. i.)

5. Describe the structural changes which must precede completed bony Anchylosis (p. 810, vol. i.).

6. What is a Hæmatocele ? If subjected to incision, what are the pathological changes which precede the cure ? (p. 819, vol. ii.)

July 16th.

1. Describe the Ischio-rectal Fossa; mentioning the structures which bound and occupy that space.

2. 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?

3. In a case of severe Compound Fracture of the Leg, what indications would lead you to infer that traumatic Gangrene had commenced? and what would be your treatment under such circumstances? (pp. 217, 225, 598, vol. i.)

4. State the diseases which give rise to Extravasation of Urine, and the treatment to be adopted in its progress (p. 787, vol. ii.).

5. Describe the treatment of an Incised wound penetrating the Knee-joint; mention the consequences which may follow such an injury, and the treatment which may be required (p. 712, vol. i.).

6. What are the symptoms and appearances of a well-marked case of Syphilitic Iritis? How would you treat it? What may be the unfavourable permanent results? (p. 208, vol. ii.)

November 12th.

1. Describe the dissection required to expose the right common Carotid Artery. On what part would you place a ligature?

2. Mention the structures divided in a circular Amputation through the middle of the Arm.

3. Describe the symptoms and treatment of Delirium tremens following injuries (pp. 331, 341 *et seq.*, vol. i.).

4. What are the microscopic appearances presented by Articular Cartilage when undergoing the changes described as "Absorption"? (p. 809, vol. i.)

5. Give the Pathology, Diagnosis, and Treatment of Psoas Abscess (p. 406, vol. ii.).

6. What are the symptoms of a complete transverse laceration of the Urethra in the Perineum? How would you treat the injury? and what would be the most probable results? (p. 787, vol. ii.)

1876.

January 21st.

1. Describe the several relations of the Brachial Artery, and of the Veins and Nerves in front of the Elbow-joint

(p. 534); and state where and how you would perform Venesection at this part (p. 105, vol. i.).

2. Give the relations, having Surgical importance, of the Urinary Bladder in the male, under various modifying conditions (p. 607, vol. ii.).

3. What are the usual causes, the local indications, and symptoms of Acute Phlebitis? State how you would treat such a case, and what are the Pathological changes in and near the Vein which are likely to occur during its progress (p. 567, vol. i.).

4. What are the varieties of Cataract? how are they distinguished from each other? and to what pathological changes are they due? (p. 214 *et seq.*, vol. ii.)

5. Describe the two most frequent dislocations of the Shoulder-joint; and state how they may be distinguished from each other, and from other Injuries about the Joint (p. 738 *et seq.*, vol. i.).

6. Under what circumstances, and with what attendant symptoms, is the use of the Trephine justifiable in Injuries of the Head? Describe the operation of Trephining; and mention its risks, both immediate and remote (p. 178, vol. ii.).

April 13th.

1. Enumerate in their proper relations the various structures which would require division in excision of the Astragalus (p. 56, vol. ii.).

2. What are the structures exposed to view by the removal of the entire Sterno-Cleido-Mastoideus muscle? Mention the chief points of surgical interest associated with this region.

3. What causes may prevent union after simple fracture of the shaft of a long bone? (p. 585.) Describe the appropriate treatment under different circumstances (p. 606, vol. i.).

4. What may be the effects of a penetrating wound of the Cornea? How would you treat its various consequences? (p. 185, vol. ii.)

5. Describe the consequences of acute inflammation of cancellous tissue of bone, such as that of the Os Calcis, and the process of repair (p. 673 *et seq.*, vol. i.).

6. Describe the dislocation of the head of the Femur when resting in the Ischiatic Notch, and enumerate the parts likely to be lacerated. State and explain the nature of the deformity attending this injury (p. 763, vol. i.).

May 12*th.*

1. Describe the structures which would be divided by a tranverse incision extending through the Foot about an inch in front of the Ankle-joint.

2. Give the position and relations of the Stomach; and describe the operation for Gastrotomy (p. 552, vol. ii.).

3. Describe the pathology of the different forms of spontaneous Gangrene of a Limb (pp. 560, 219, vol. i.).

4. How do ligature, acupressure, and torsion act in arresting Hæmorrhage? (p. 377 *et seq.*); and what are their relative advantages under different circumstances? (p. 384, vol. i.)

5. Describe the different forms of Talipes; and state what muscles are specially concerned in the production of each (p. 836 *et seq.*, vol. i.).

6. What are the symptoms indicating the presence of a foreign body in the Trachea? Describe the probable consequences of its remaining there; and state what steps you would take to give relief (p. 352, vol. ii.).

July 21*st.*

1. Describe the boundaries of the Popliteal space; and name the structures met with in its dissection, and their exact relations (p. 546, vol. i.).

2. Mention the parts divided or exposed in the operation of ligature of the Common Iliac Artery (p. 541, vol. i.).

3. Give a brief account of such Tumours as depend upon the formation of Cysts; mentioning the chief varieties, and the modes of origin of such growths (p. 129 *et seq.*, vol. i.).

4. Mention the forms of Polypus Nasi; describe their structure and attachments, the symptoms to which they give rise, and the treatment (p. 273 *et seq.*, vol. ii.).

5. Describe the conditions of the Eyeball requiring its excision, and the Method of performing the operation (p. 239, vol. ii.).

6. Give the treatment suitable to penetrating wounds of the Elbow-joint, and the possible results in an unfavourable case (p. 712, vol. i.).

November 10*th.*

1. Name, in their respective relations, all the Structures which are divided in amputation through the Wrist-joint (p. 109, vol. ii.).

2. Give the relations of the Posterior Tibial Artery, from its commencement to its bifurcation (p. 551); and describe the operation of tying it in the middle third of its course (p. 552, vol. i.).

3. What is Enchondroma? Describe its characters, and mention the structures in which it is developed (p. 146, vol. i.).

4. What effects are likely to follow the lodgment of a foreign body in the Iris? Describe the treatment you would adopt for such an injury, and its consequences (p. 207, vol. ii.).

5. Mention the various complications of Acute Gonorrhœa; and describe the more prominent symptoms of each (p. 755, vol. ii.).

6. How is fracture of the base of the Skull usually caused? State and explain the symptoms which are regarded as characteristic of the injury (pp. 162, 159, vol. ii.).

1877.

January 19th.

1. Describe the Anatomical relations of the last four inches of the Rectum in the male, its structure, and the arrangement of its Bloodvessels.

2. Mention, in order, the parts which would be divided in amputating through the Knee-joint (p. 123, vol. ii.).

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 (pp. 423, 425, vol. ii.).

4. What are the Symptoms, Progress, and Results of Gonorrhœal Ophthalmia in the Adult? Describe the appropriate treatment (p. 200, vol. ii.).

5. Describe Acute Inflammation of Bone in Youth, its Symptoms, Pathology, and Treatment (p. 673 *et seq.*, vol. i.).

6. Mention the varieties of Urinary Calculus, and the circumstances which determine their composition (pp. 658, 665, vol. ii.).

April 20th.

1. Name the structures divided by a circular saw passing completely through the Hand across the centre of the palm.

2. Describe the Crural Arch, enumerate in order the

structures which pass through it; and give the steps of the operation for strangulated Femoral Hernia (p. 533, vol. ii.).

3. Of what value is the careful observation of the Temperature of Patients after surgical operations? (p. 51, vol. i.) State the range of Temperature, and briefly relate any case you may have watched in illustration of the subject.

4. Mention the Changes which the Urinary Organs may undergo in a fatal termination of a case of Organic Stricture of the Urethra (p. 767, vol. ii.).

5. Describe the signs of Fracture of the Surgical neck of the Humerus; explain these on Anatomical grounds, and give the treatment of this injury (pp. 628, 629, vol. i.).

6. Describe the characteristics of Sclerotitis; under what circumstances may it occur? and how would you treat it? (p. 206, vol. ii.)

May 18th.

1. Enumerate the structures surrounding the Shoulder-Joint, and describe how they are affected in the different dislocations of the Head of the Humerus (p. 738, vol. i.).

2. If a ligature be placed around the Innominate Artery, by what vessels would the circulation be carried on in the Head, Neck, and right upper extremity?

3. What is a Lumbar Abscess? Describe the Pathological Changes in a fatal case, and in one which recovers (p. 406, vol. ii.).

4. To what causes may Bubo in the Groin be attributed? and in what way does the Treatment depend on the nature of the cause? (pp. 254, 255, vol. i.)

5. Describe the Treatment of Hydrocele in a Child, an Adult, and an old Man, and the reasons for the plan selected in each case (p. 813 *et seq.*, vol. ii.).

6. What are the common causes of Ectropion and Entropion? Describe the Operations for their relief (p. 189 *et seq.*, vol. ii.).

July 20th.

1. Give the relations of the common Femoral Artery (p. 541, vol. i.); and mention the branches by which the collateral circulation would be carried on after ligature of that vessel.

2. Mention, in order, all the structures which must be divided in excision of the Eye-ball (p. 239, vol. ii.).

3. Describe the methods of Ossific Union of Simple Fracture under varying conditions of movement and co-aptation of the Fragments (p. 582, vol. i.).

4. Describe the Injuries of the Elbow-joint which are liable to be confounded with Dislocations (pp. 631, 632, vol. i.).

5. Describe the symptoms of inherited Syphilis, and mention the periods of life at which they are liable to appear, and the suitable treatment (pp. 265, 281, vol. i.).

6. 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 (p. 489, vol. ii.).

November 9th.

1. Describe the position and relations of the Prostate, and the effects produced by its enlargement (pp. 608, 739, vol. ii.).

2. Enumerate in order the parts which would be divided in Amputation of the Thumb at the Carpo-Metacarpal articulation (p. 108, vol. ii.).

3. What are the Pathological changes which occur in Whitlow? Describe the complications which may arise in severe cases (p. 435, vol. i.).

4. Describe the structure of a Varicose Vein; and the causes and consequences of that condition as affecting the lower limb (p. 563 *et seq.*, vol. i.).

5. What are the diagnostic symptoms, and the treatment of acute Glaucoma? (p. 232, vol. ii.).

6. What are the early symptoms of inflammation of the Hip-joint? Describe the appropriate treatment (pp. 817, 822, vol. i.).

1878.

January 18th.

1. What relations do the Median Nerve and its branches bear to the principal arteries of the Arm, Forearm, and Hand? (pp. 535, 538, vol. i.) What muscles would be paralysed by injury to this nerve in the arm?

2. Describe the operation of Tracheotomy—1st, at the lowest, and 2ndly, at the highest point at which the Trachea proper can be opened, mentioning the landmarks which guide the surgeon in the various stages of the operation, and the dangers incidental to it (p. 378, vol. ii.).

3. Give the pathology of the Disease which leads to Angular Curvature of the Spine, and the treatment you would adopt for the earlier stages of it (pp. 401, 408, vol. ii.).

4. What is Ectropion? Describe the inconveniences attending it, the causes producing it, and the modes of remedying it (p. 191, vol. ii.).

5. Give the Diagnosis, Treatment, and Prognosis of fracture of the Surgical Neck of the Humerus (p. 623, vol. i.).

6. Describe, first, the symptoms which would lead you to suspect, without local examination, the existence of a Strangulated Rupture, and then the characters which such a tumour would present (p. 482, vol. ii.).

April 12*th.*

1. Describe the Axillary artery, its course and relations (p. 531). Supposing this vessel to be ligatured in its third part, how would the collateral circulation in the arm be carried on? (pp. 536, 538, vol. i.).

2. What are the differences between the coverings and relations of an oblique and a direct Inguinal Hernia? (pp. 502, 505). What are the risks attending the operation for strangulated bowel, in either case? and how would you avoid them? (p. 516, vol. ii.).

3. Describe the disease usually called Fistula Lacrymalis, its causes, and the treatment to be adopted for its relief (p. 195, vol. ii.).

4. Describe and explain the symptoms of Fracture of the Spine, with compression of the cord, in the Middle Dorsal region. How would you treat such a case? (p. 391 *et seq.*, vol. ii.).

5. What do you understand by the healing of a Wound by the "First Intention"?—What by the "Second Intention"? Describe the nature of the process in each case (pp. 360, 393, vol. i.).

6. What is a Hæmatocele? under what circumstances may it occur? Give the treatment you would adopt immediately or in a chronic case (p. 819 *et seq.*, vol. ii.).

May 17*th.*

1. Describe the origin, course, and relations of the Internal Pudic Artery; and state in what accidents or operations this vessel or its branches may be wounded (pp. 686, 700, vol. ii.).

2. Describe "Chopart's Amputation" through the Foot; and name the structures in their relative positions which are divided in performing that operation (p. 116, vol. ii.).

3. Under what circumstances may Iritis occur? describe the characteristics of this disease in the acute form, and its appropriate treatment (p. 207 *et seq.*, vol. ii.).

4. How do you distinguish between an Adenoma and a Scirrhus of the Female breast, before and after removal by operation? (pp. 442, 441, vol. ii.; p. 156, vol. i.).

5. Describe the operations which may be adopted for Paracentesis Thoracis; what are the precautions to be taken in performing them? (p. 431, vol. ii.).

6. Describe the signs of a Dislocation of both bones of the Forearm backwards at the elbow-joint. For what injuries may this accident be mistaken? and how would you reduce and subsequently treat this dislocation? (pp. 751, 631, 632, vol. i.).

July 19th.

1. Describe the operation of tying the common Carotid Artery below the Omo-hyoid muscle (p. 525). State how the collateral circulation will be subsequently carried on (p. 523, vol. i.).

2. Describe the operation for the removal of the head of the Humerus. Enumerate in their order the parts divided in that operation. What vessels will probably require a ligature? (p. 66, vol. ii.).

3. What is the state of the Pulse in the following conditions? (*a*) Compression of the Brain (p. 170, vol. ii.); (*b*) Acute Peritonitis (p. 465, vol. ii.); (*c*) Delirium tremens (p. 342, vol. i.); (*d*) Recurrent hæmorrhage (p. 100, vol. ii.); (*e*) Senile Gangrene (p. 560, vol. i.). Give an explanation of the characters of the Pulse in each case.

4. What difficulties and complications may occur in, and follow after, the treatment of organic Stricture of the Urethra by gradual dilatation? How are they to be treated? (p. 770, vol. ii.).

5. Trace the pathological changes which occur in a case of Hip-joint disease, from its commencement to its termination in spontaneous cure (p. 816, vol. i.).

6. Describe the different Tumours to which the Eyelids are liable, and their treatment (p. 194, vol. ii.).

November 8th.

1. Describe the operation for removal of one half of

the Lower Jaw; mentioning, in order, the structures divided (p. 346, vol. ii.).

2. Give the relative anatomy of the Ulnar Artery from its origin to the annular ligament of the Wrist. Describe the operation of tying it in its upper third (p. 537 *et seq.*, vol. i.).

3. What are the usual displacements in fracture of the upper third of the Femur? Describe their cause, and the best mode of treatment (p. 653 *et seq.*, vol. i.).

4. Give the pathology, symptoms, and treatment of benign Fungus of the Testicle (pp. 829, 830, vol. ii.).

5. What are the symptoms of Phlyctenular Ophthalmia? Mention the class of persons liable to it, and describe its treatment (p. 198, vol. ii.).

6. Describe the mode of formation of Fistula in Ano, and its treatment (p. 559 *et seq.*, vol. ii.).

1879.

January 17*th.*

1. 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 (p. 368, vol. ii., and p. 119, vol. i.).

2. Mention in their order, the structures divided in performing "Syme's amputation" (p. 117, vol. ii.).

3. Contrast the symptoms and the condition of the Limb which result from sudden plugging of its main artery with those which result from plugging of its main vein. State the treatment in each case (pp. 221, 222, 554, 567, vol. i.).

4. Describe the consequences, immediate and remote, of a puncture of the Brachial Artery, during Venesection, and the appropriate treatment, pp. 106, 568 *et seq.*, vol. i.).

5. What consequences are likely to ensue from the impaction of a fragment of iron, say from an anvil, in the Cornea? How would you treat such a case? (p. 187, vol. ii.).

6. What are the signs and symptoms of a loose Cartilage in the Knee-joint? Explain the origin of these bodies, and the treatment you would adopt (p. 813, vol. i.).

April 18*th.*

1. Describe the Surgical relations of the male Urinary

Bladder, when contracted and when distended (pp. 607, 604, vol. ii.).

2. Mention, in their relations to each other, the several parts which are divided in a Circular Amputation through the upper third of the Forearm.

3. What constitutional symptoms would lead you to suspect Strangulation of Intestine? How would you investigate such a case? (p. 482, vol. ii.).

4. Give an account of chronic Enlargement of the Prostate Gland, its effects and treatment (p. 738 *et seq.*, vol. ii.).

5. What is the rationale of the process of cure of Aneurysm? How may that process be induced by surgical means? (p. 458 *et seq.*, vol. i.).

6. Describe the causes, symptoms, and treatment of acute Iritis (p. 207, vol. ii.).

May 16th.

1. Describe the Anatomy of the Hip-joint; and the lesions which occur in Dislocation of the Femur on to the dorsum of the Ilium (p. 761 *et seq.*, vol. i.).

2. Describe the Anatomy of that Region of the Abdominal Wall, which is bounded, below, by Poupart's ligament, and, above, by a horizontal line drawn from the anterior superior spine of the Ilium to the Median line (p. 503, vol. ii.).

3. A Tumour is found in the Popliteal space—to what may it be due? How would you proceed to determine its nature? (p. 514, vol. i.).

4. Describe the symptoms, progress, and treatment of a case of Extravasation of Urine following an injury to the Perineum (p. 787 *et seq.*, vol. ii.).

5. What local symptoms may accompany and follow a compound Fracture of the vertex of the Skull? (p. 152, vol. ii.).

6. What conditions does the Eye present in acute Glaucoma? Describe the treatment of such a case (p. 232, vol. ii.).

July 18th.

1. Describe the general arrangement of the Cervical Fascia, and point out how it determines the course of purulent collections in the neck.

2. After ligature of the Common Femoral Artery, by

what arteries would the collateral circulation be carried on?

3. Describe the anatomical conditions which characterise Talipes Varus and Valgus (pp. 840, 843, vol. i.).

4. Give the causes, effects, and treatment of acute Periostitis (pp. 675, 678, vol. i.).

5. Describe how you would investigate a case of Retention of Urine in the male, in order to discover its cause (p. 782 *et seq.*, vol. ii.).

6. In what parts of the Lachrymal Passages, and by what causes, may Obstruction be produced? Describe the symptoms and treatment of such cases (p. 195, vol. ii.).

November 14*th.*

1. Describe, in their position, the several parts in relation with the Quadratus Lumborum.

2. Describe the operation of tying the Subclavian Artery in the third part of its course (p. 531). Give the channels through which the collateral circulation would be afterwards carried on (p. 527 *et seq.*, vol. i.).

3. What are the usual complications of Scalp Wounds, and the appropriate treatment in each case? (p. 144, vol. ii.).

4. What consequences, proximate or remote, may follow a blow upon the Perineum? State what would be your early treatment in such a case (p. 787 *et seq.*, vol. ii.).

5. Describe the course, symptoms, and treatment of acute Inflammation of a superficial Bursa (p. 444, vol. i.).

6. What is the cause of Lateral Curvature of the Spine? Describe the anatomical changes which take place in this affection, the signs of the deformity, and the principles of treatment (p. 412 *et seq.*, vol. ii.).

1880.

January 16*th.*

1. Describe the several structures which must be divided in an amputation of the Thumb and its Metacarpal Bone (p. 108, vol. ii.).

2. Describe the course, relations, and anastomoses of the deep Epigastric Artery.

3. What is a Node? Give the anatomical characters of its various forms, and the treatment you will adopt in each case (pp. 675, 678, vol. i.).

4. Describe the defects of Vision which may exist, unconnected with disease. Explain their causes, and state how they should be remedied (p. 233 *et seq.*, vol. ii.).

5. Mention the causes of Perineal Abscess, its symptoms, course, and treatment (p. 790, vol. ii.).

6. Mention the various injuries which produce—(1) lengthening, (2) shortening of the Lower Extremity (p. 764 *et seq.*; p. 647 *et seq.*, vol. i.).

April 16th.

1. Describe the parts concerned in the operation for the relief of a strangulated Hernia in the inguinal canal. Give the steps of the operation (pp. 502, 516, vol. ii.).

2. Describe the relations of the lower third of the Brachial Artery (p. 534). Give the steps of the operation for tying it at the bend of the Elbow (p. 535, vol. i.). How is the collateral circulation carried on?

3. What are the local signs and constitutional symptoms of Suppuration beneath resisting structures? Where is such Suppuration likely to occur? Give the treatment (pp. 84, 114, vol. i.).

4. Describe the structure of the different forms of Nævus, and their appropriate treatment (p. 152, vol. i.).

5. How would you diagnose the nature of a Tumour in the anterior triangle of the Neck? (p. 385, vol. ii.)

6. Describe in detail the process of union of a simple fracture of Bone (p. 582, vol. i.).

May 14th.

1. Supposing a portion of the Musculo-spiral nerve, as it passes behind the Humerus, to be removed in an operation, describe fully the condition in which you would expect to find the limb a year afterwards.

2. Describe the relations of the common Carotid Arteries in the Neck (p. 523, vol. i.). How is the Circulation carried on after one of them has been tied?

3. What forms of Abscess may occur in connection with the mammary gland? How should they be treated locally and generally? (p. 436, vol. ii.).

4. Explain how Stricture of the Urethra may lead to Extravasation of Urine. Give the treatment you would adopt in such a case (pp. 766, 787, vol. ii.).

5. Describe the appearances and treatment of the various forms of Lupus (p. 268, vol. ii.).

6. Describe fully the treatment of a case of strangulated Hernia after operation (p. 496, vol. ii.).

July 16th.

1. Describe the relations of the Thyroid Body, and mention the various operations in which it may be directly or indirectly concerned (pp. 383, 378, vol. ii.).

2. Give a description of the Fasciæ of the Male Perineum, and state the chief surgical inferences to be drawn from their Anatomical arrangement (p. 788, vol. ii.).

3. Under what circumstances in Injuries of the Head would you consider Trephining indicated? Describe the operation (p. 178, vol. ii.).

4. Describe the ordinary consequences of Dissection Wounds, and the appropriate treatment (p. 323, vol. i.).

5. Give the clinical history of a case of Caries of the Tarsus, and describe the Pathological changes which occur in the course of the disease and in the subsequent repair (p. 683 *et seq.*, vol. i.).

6. To what causes may converging Strabismus be due? Under what circumstanecs would you consider an operation appropriate? and how would you perform it? (p. 240, vol. ii.).

EXAMINATION ON

THE

PRINCIPLES AND PRACTICE OF MEDICINE.

1869.

January 16*th.*

1. Describe the course of an attack of Pneumonia, the physical signs by which the several stages are characterised, and the means of distinguishing such an attack from one of Pleurisy or Bronchitis.

2. Mention the more important preparations of Opium, Belladonna, and Aconite contained in the British Pharmacopœia 1867; state the purposes for which they are severally employed, and the doses in which they should be given when administered internally.

3. What are the symptoms produced by poisonous doses of these medicines? and how would you treat such cases?

April 17*th.*

1. A patient has Dropsy arising from imperfection of the aortic valves. State the other usual symptoms which accompany this, and how you would treat them. Describe also the physical signs, and how you would distinguish aortic regurgitant from other forms of valvular disease.

2. Describe the various means by which Diaphoresis is produced. Name the different diaphoretic medicines contained in the British Pharmacopœia, and their composition.

3. Give the composition of the following mixtures of the British Pharmacopœia, with their ordinary uses and doses: Mist. Amygdalæ; Mist. Cretæ; Mist. Ferri Composita; Mist. Gentianæ; Mist. Sennæ Composita; Mist. Spiritus Vini Gallici.

May 1*st.*

1. When a patient is suddenly seized with bleeding by

the mouth, which are the various sources from which the blood may be derived? How would you distinguish hæmorrhage from the stomach from discharge of blood from the lungs?

2. How would you treat such cases of hæmorrhage, respectively? What remedies would you employ? and in what doses would you use them?

3. Give the composition, doses, and uses of the following preparations of the British Pharmacopœia, 1867:—Mistura Creasoti; Liquor Morphiæ Acetatis; Spiritus Chloroformi; Tinctura Chloroformi Composita; Tinctura Camphoræ Composita; Tinctura Opii Ammoniata.

May 15*th.*

1. Describe a case of Rheumatic Fever, with the treatment; and also the complications which are liable to occur during its course, with their treatment. Write the medicines in the form of a prescription.

2. What are the technical names for Ringworm, Itch, and Shingles? What is their nature? and how do you treat them?

3. Give the composition, doses, and uses of the following compounds in the British Pharmacopœia:—Pil. Assafœtidæ Co.; Pil. Colocynthidis Co.; Pil. Conii Co.; Pil. Hydrargyri Subchloridi Co.; Pil. Plumbi cum Opio; Pil. Rhei Co.; Pil. Saponis Co.; Pil. Scillæ Co.

July 17*th.*

1. Describe the symptoms of a case of Facial Paralysis; and mention the conditions upon which it may depend. How would you distinguish such a case of Paralysis from one of hemiplegia?

2. What is the condition of the Urine in a case of Dropsy after Scarlet Fever? and how would you treat such a case?

3. Mention the more important preparations of Potash contained in the British Pharmacopœia, 1867. State their chemical composition, the uses to which they are applied, and the doses in which they should be exhibited.

November 13*th.*

1. What are the symptoms and physical signs of effusion of fluid in the Chest? Describe the treatment of such a case by medicine; and if you have recourse to

paracentesis, state your reasons for the operation, and the mode of performing it.

2. You are called to a person (of any age) in Convulsions. How do you proceed to discover their cause? and then what is your treatment?

3. Enumerate the principal diuretic medicines in use. Give the preparations as contained in the British Pharmacopœia, with their composition and doses.

1870.

January 22nd.

1. You are called to a patient bringing up blood from the Lungs or Stomach. State what the different causes of the hæmorrhage may be, and how you would treat each particular variety of it.

2. What are the principal distinguishing signs of enlargement or tumour of the Liver; of the Spleen; of the Kidney; of the Ovary; of the Uterus?

3. For what purposes do you use the following remedies internally?—Aconite; Belladonna; Bromide of Potassium; Chloroform; Hydrocyanic acid; Ether; Indian Hemp; Stramonium; Lobelia. Give the preparations and doses you would use according to the British Pharmacopœia.

April 18th.

1. Mention the causes, mode of accession, and symptoms of Acute and Chronic renal disease (Albuminuria or Bright's disease), and describe the conditions of the Kidney after death.

2. What treatment would you adopt in such cases?

3. Enumerate the more important preparations of Mercury, Lead, and Zinc, contained in the British Pharmacopœia; state the purposes for which they are employed, and the doses in which they should be used, when given internally.

April 30th.

1. Give a short account of Scarlet Fever and its varieties, your treatment of particular cases of the disease, and the method you would adopt to prevent its propagation.

2. Enumerate some of the commoner forms of the cutaneous diseases of the Scalp, and their treatment.

3. Mention the principal Pharmacopœial purgative agents, and give the composition and doses of each.

May 14*th.*

1. Supposing you are called to a patient who has been suddenly taken ill, and is entirely unconscious, what are the different conditions upon which his state may depend? and how would you distinguish them?

2. How would you treat such cases respectively?

3. Mention the different preparations of Opium, Aconite, and Nux Vomica contained in the British Pharmacopœia. State the effects which those drugs produce, and the purposes for which they are employed, and mention the doses in which the different preparations should be given.

July 23*rd.*

1. Describe the course of an attack of Rheumatic Fever, and the symptoms and signs which characterise the different complications which may arise.

2. How would you treat such a case, both in its simple and complicated forms?

3. Mention the different remedies which are employed to procure rest and relief from pain; state the mode of action of each; the advantages and disadvantages of its use; the preparations which are contained in the Pharmacopœia, and the doses and modes in which they should be employed.

November 12*th.*

1. Describe the symptoms characterising the passage of a Gall-stone; and also those observed during the passage of a Urinary calculus into the bladder. Also state how you would treat each case.

2. Mention the commonest forms of cutaneous disease of the scalp in children, and their treatment.

3. State the preparations of Arsenic and Antimony contained in the British Pharmacopœia, with their doses. Write a prescription in full for a case of bronchitis, a case of diarrhœa, and a case of vomiting.

1871.

April 15*th.*

1. A robust man, forty-five years of age, is suddenly seized with a violent pain in the abdomen, attended with

sickness, shivering, and tendency to collapse. What may be the causes of the attack, and how would you treat it?

2. What do you understand by the term Croup? Describe the complaints included in it, and their treatment.

3. Enumerate the diuretic medicines contained in the British Pharmacopœia, mentioning their special uses and doses.

May 13*th.*

1. Describe a case of Tubercular Meningitis in a child, from the appearance of premonitory symptoms to the termination in death.

2. Give the symptoms of Diabetes Mellitus, with the methods of analysing the urine; also the treatment by medicines and diet.

3. Write a prescription in full for Hæmoptysis, Gastrodynia, and Dysentery; also a prescription for an aperient draught and a sleeping draught.

July 22*nd.*

1. Mention the duration of the incubation and subsequent stages in Small-pox, Measles, and Scarlet Fever, and describe the eruptions in those diseases, and state how you would severally distinguish them from each other.

2. When would you consider a patient who had had Small-pox or Scarlet Fever free from the risk of conveying the disease to others?

3. Mention some of the preparations of Iron and Lead in the Pharmacopœia, giving the doses and purposes for which they are employed. Write a prescription for a case of Hæmoptysis.

November 11*th.*

1. A day or two after exposure to cold a patient is taken with feverishness, difficulty of breathing, and uneasiness at the chest. What are the different forms of disease which may probably be commencing, and how would you severally distinguish them?

2. What are the chief Deposits which may be found in the Urine? under what circumstances do they severally occur, and how would you recognise each form?

3. Mention the remedies which are commonly described as Nervine Tonics, and state in what cases you would use them, and the doses in which they may be given. Write a prescription for the exhibition of one of these medicines.

1872.

January 20th.

1. A young woman is seized with pain in the abdomen, which you diagnose to be due to Peritonitis. Why do you come to this conclusion? State under what circumstances the attack might occur, and what would be your treatment.

2. A patient has Dropsy, which you believe to be due to mitral regurgitation. What are the signs and symptoms which lead you to this opinion? How do you treat the case? If the patient should die, state briefly the post-mortem appearances of the principal organs.

3. Write prescriptions in full for the following complaints:—Bronchitis, Diarrhœa, Chlorosis, Gastrodynia, Chorea, Eczema.

April 13th.

1. Describe a case of Paralysis of the Facial Nerve, and mention the causes upon which it may depend, and the treatment you would adopt for its relief.

2. What are the circumstances which would induce you to have recourse to Thoracentesis in a case of effusion in the Pleural Sac? State how you would perform the operation, and the changes that would follow it, supposing the case to terminate in cure.

3. Write prescriptions in Latin in full, and the directions in English, for a Diuretic mixture and a Purgative powder; and give the compositions and doses of the following preparations in the British Pharmacopœia:—Pulvis Jalapæ Compositus; Mistura Ferri Composita; Tinctura Camphoræ Composita; Liquor Morphiæ Hydrochloratis.

April 27th.

1. Describe the anatomical characters, diagnostic symptoms, terminations, and treatment of inflammation of the Cæcum.

2. Under what forms may Dropsy appear? What are the causes which give rise to it? State the principles of treatment.

3. Write Prescriptions in Latin in full, and directions in English, for an aperient draught and a sleeping draught. State the therapeutic uses and doses of the following drugs:—Gallic Acid; Strychnia; Tincture and Infusion of Digitalis; Liquid Extract of Ergot.

May 11*th.*

1. Describe the symptoms which are produced by the passage of a Gall-stone and of a Calculus from the Kidney; and mention the treatment you would adopt for their relief.

2. You are called to a patient who has been suddenly taken ill shortly before, and you find her much prostrated, complaining of pain in the abdomen, and lying with her lower limbs drawn up. What are the different causes upon which her state may depend? and what would you do for her relief?

3. Write a prescription in Latin in full, and the directions in English, for a Diuretic draught, and a mixture to allay nausea and vomiting. What are the preparations of the following substances contained in the British Pharmacopœia:—Lead, Arsenic, Silver; and for what purposes, and in what doses, would you use them?

July 20*th.*

1. Describe a case of Phthisis from the commencement of the disease to its termination. Give the physical signs and symptoms which may occur during the different stages of the complaint; also the appropriate treatment.

2. For what diseases might Enteric Fever be mistaken, and how would you distinguish them?

3. Name the drugs in the British Pharmacopœia used as diuretics. Give the indications for the employment of each, with their doses.

November 9*th.*

1. A person has a fit attended with more or less impairment of consciousness, and is found to have lost the use of the right arm and leg, and to be incapable of speaking. What is the probable nature and seat of the lesion of the Brain?

2. Describe the physical signs which indicate a copious effusion in one of the pleural sacs; and mention the circumstances which would induce you to have recourse to Paracentesis, and the mode in which you would perform the operation.

3. What are the proportions of the chief ingredients contained in the following preparations of the British Pharmacopœia 1867? For what purposes are they severally used, and in what doses would you employ them?

Tinctura Opii, Tinctura Camphoræ Composita, Confectio Opii, Pulvis Cretæ Compositus cum Opio, Solutio Morphiæ Hydrochloratis, Liquor Arsenicalis, Syrupus Ferri Iodidi, Syrupus Ferri Phosphatis, Vinum Antimoniale.

1873.

January 18*th.*

1. Give a short description of a case of Measles, of Scarlatina, and of Small-pox, which shall include the time of incubation, the duration of the premonitory fever, and the rash.

2. A young man is seized with violent pain in the abdomen accompanied by sickness. State the different causes which may have given rise to the attack, and the reasons for your opinion; also the treatment of the case.

3. Describe the methods for producing diaphoresis. Mention the remedies in the Pharmacopœia used for the purpose, and write two prescriptions for febrifuge mixtures fit to go to the chemist.

April 19*th.*

1. Describe the condition of the Lung in the different stages of Pneumonia; and mention the symptoms and physical signs which indicate the different stages. How would you treat such a case?

2. Mention the circumstances under which Acute Renal Dropsy occurs; describe the condition of urine in such a case, and state how you would treat it.

3. Mention the remedies that are used to procure sleep, and the doses in which they should be given; stating also the peculiar effects of each medicine. Write a prescription for a mixture to act upon the Kidneys (the prescription to be in Latin in full, the directions in English).

May 17*th.*

1. Describe a case of acute Rheumatism, and afterwards the complications which may arise during its progress, giving the reasons on which your opinion is founded. Give also the treatment of the simple and complicated forms.

2. Describe briefly the characters of Shingles, Ringworm, Itch, and Nettle-rash. Give their technical names, and treatment.

3. State briefly the physiological properties of Digitalis, Belladonna, Strychnia, and Arsenic. Mention their therapeutical uses, giving the preparations and doses contained in the Pharmacopœia.

July 19th.

1. A person suddenly becomes more or less unconscious and falls down, and on recovery is found to have lost the use of the left arm and leg; what are the conditions on which the seizure may depend, and the other symptoms which the patient may present?

2. What are the different kinds of Worms which infest the human body? Where are they chiefly found? and how do they probably gain access to the system? Mention the chief remedies which may be employed for their expulsion and destruction, and the doses and modes in which they should be given.

3. Mention the chief preparations of Mercury and Opium contained in the British Pharmacopœia; state the uses to which they are applied, and the doses in which they should be given.

November 15th.

1. Describe a typical case of Enteric Fever (Typhoid), and in the absence of a rash, distinguish it from acute Tuberculosis, Pyæmia, and Meningitis.

2. You are called to a patient suffering from an acute affection of the chest after exposure to cold. State your reasons, according to the symptoms and physical signs, for believing that the patient has Bronchitis, Pneumonia, or Pleurisy, or that he has a combination of these conditions. How would you treat him after your diagnosis has been made?

3. What do you understand by a Nervine Tonic? Give some examples from the Pharmacopœia, with doses of the medicines. Write one or two prescriptions for Epilepsy.

1874.

January 17th.

1. A person is suddenly seized with severe pain in the abdomen, sickness, and vomiting, followed by prostration of strength; what are the various causes upon which the symptoms may depend? How would you distinguish them? and what treatment would you employ in such cases?

2. What is meant by Hemiplegia, Paraplegia, and Locomotor Ataxy? Describe the symptoms of each disease, and the morbid conditions upon which they depend.

3. 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. Write a prescription for the administration of such a remedy.

April 18*th*.

1. Describe briefly a case of Acute Rheumatism, with the appropriate treatment. Afterwards state the complications which may arise, giving the diagnosis of pericarditis, endocarditis, pleurisy, and pneumonia, or any other complications which you may remember.

2. Describe a case of Diabetes, detailing the symptoms and treatment, both medical and dietetical, together with the tests for sugar. As far as time will allow, mention some of the theories as to its nature or causes.

3. Mention some of the more common aperient medicines contained in the Pharmacopœia. Write a prescription for an appropriate purge in renal dropsy; another for an occasional pill in chronic hepatic disease; and a third for a medicine suitable for habitual constipation in a young female.

May 16*th*.

1. Mention the incubative period, and describe the course and character of the fever and of the eruption, in Scarlet Fever, Measles, and Small-pox; and mention the complications which are most likely to arise in each disease.

2. Mention the different circumstances under which blood may be expectorated or vomited; and state how you would distinguish the several sources.

3. Mention the proportion of opium contained in the following preparations of the British Pharmacopæia:

Pulvis Ipecacuanhæ Compositus;
Pulvis Cretæ Aromaticus cum Opio;
Pulvis Kino Compositus;
Tinctura Opii;
Tinctura Camphoræ Composita;
Tinctura Opii Ammoniata;
Pilula Saponis cum Opio;
Confectio Opii:

and the proportion of Morphia in the Liquor Morphiæ Hydrochloratis. State the doses in which the different preparations may be given, and the purposes to which they are severally more especially adapted.

Write prescriptions for an anodyne draught, and for a diuretic mixture.

July 18th.

1. You are summoned to an adult patient in a state of Coma, and of whom you have no history. How would you proceed to examine the case so as to determine its nature? What are the chief causes of Coma?

2. What are the diseases with which Enteric Fever (Typhoid) is liable to be confounded in its earliest stages?

By what symptoms would you be guided to a diagnosis in doubtful cases?

What symptoms would make your diagnosis certain?

What are the chief sources and indications of danger in this disease?

3. Give the medical properties of the following preparations, and the doses in which you would use them:

Tr. Digitalis; Zinci Sulphas; Ext. Belladonnæ; Ext. Ergotæ Liquidum; Ol. Terebinthinæ; Liq. Arsenicalis; Succus Conii.

November 14th.

1. A patient is taken more or less suddenly ill, and is seen after four or five days have elapsed, and is then found much prostrated, with a furred tongue, quick pulse, hot skin, and other symptoms of fever. What are the diseases on which the symptoms may depend? and how would you severally distinguish them?

2. What are the different causes which may give rise to vomiting and spitting of blood? how would you distinguish them? and what treatment would you adopt in each?

3. What are the chief preparations in the British Pharmacopœia into which Opium and Morphia enter? State the proportions of the several ingredients in each, the doses in which the different preparations should be given, and the purposes for which they are severally more particularly adapted.

Write a prescription for an anodyne draught, and for a mixture to check sickness and vomiting.

1875.

January 23rd.

1. 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.

2. Define and illustrate the following terms: Puerile respiration; Bronchophony; Pectoriloquy; Ægophony; Fine Crepitation; Sibilant râles; Cracked pot sound; Metallic tinkling; Dulness on percussion.

3. Mention some of the principal causes of vomiting, and the remedies you would use to arrest it. Write two of the Prescriptions in full.

April 17th.

1. Mention the chief causes which may give rise to sickness and vomiting; state how you would distinguish them, and the treatment you would adopt in each.

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. Mention the forms in which Digitalis, Belladonna, and Hyoscyamus are used. State the purposes for which they are more especially suited, and the doses in which they should be given. State the effects produced by overdoses of Digitalis and Belladonna.

Write a prescription for a diuretic mixture.

May 15th.

1. You are called to a child acutely ill with sore throat; how would you distinguish between Cynanche tonsillaris, Scarlatina, and Diphtheria? Give a short description of these three diseases.

2. Describe briefly a case of locomotor ataxy, of progressive muscular atrophy, of lead paralysis, and of general paralysis of the Insane. Mention also briefly the different forms of electricity and galvanism used in medicine, and their mode of application.

3. Mention the medicines contained in the Pharmacopœia which are used as diuretics; and state the doses which you would give. Write two prescriptions in full for diuretic mixtures.

July 17th.

1. A patient is labouring under general dropsy. What are the different conditions on which it may depend? and what will be the probable state of the organs chiefly affected on examination after death? How would you distinguish and treat such cases?

2. What are the diseases characterised by the presence of pustular or vesicular eruptions in the skin? On what do such eruptions generally depend?

3. Mention the chief formulæ in the British Pharmacopœia into which opium enters; state the proportions of the drug, the doses in which the formulæ are to be used, and the purposes for which they are specially adapted.

Write a prescription for a draught to procure sleep.

November 13th.

1. Describe a typical case of Typhoid Fever, with its treatment. For what other diseases might Typhoid Fever be mistaken? and how would you distinguish between them?

2. Mention the chief morbid changes to which the valves of the Heart are liable. State the effects produced on the walls and cavities of the Heart by these affections; and give the leading signs by which they may be recognised during life.

3. Indicate the medicinal qualities of the following preparations, and the class of cases in which they are used, together with the doses:—Ext. Ergotæ liquidum; Tr. Digitalis; Elaterium; Zinci Sulphas; Acidum Gallicum; Extractum Belladonnæ; Plumbi Acetas; Hydrargyri Perchloridum; Liquor Arsenicalis.

1876.

January 22nd.

1. Describe a case of Rheumatic Fever, mentioning the complications which are most apt to arise; and state how you would distinguish them and treat them.

2. What is meant by tactile vibrations or vocal thrill? and what are the modifications which the sign undergoes in disease? What is understood by crepitation, bronchial respiration, pectoriloquy, ægophony, and metallic tinkling? and what are the conditions upon which those several signs depend?

3. Mention the preparations of Iron, Zinc, and Arsenic contained in the Pharmacopœia ; and state for what purposes and in what doses they are severally used. Write a prescription for a mixture to assist expectoration and relieve cough. The body of the prescription to be written in Latin in full, the directions in English.

April 15th.

1. Describe a case of Typhoid Fever, giving the appearances detected in the body on examination after death in the different stages of the disease ; and state how you would distinguish such a case from one of Typhus and of Relapsing Fever.

2. You are called to see a patient who has been found insensible in the street : what are the different causes on which his condition may depend ? and how would you severally distinguish them ?

3. What are the proportions of the chief ingredients in the following preparations of the British Pharmacopœia ? —Tinctura Opii ; Tinctura Camphoræ Composita ; Pulvis Ipecacuanhæ Compositus ; Pulvis Cretæ Aromaticus cum Opio ; Pilula Ipecacuanhæ cum Scillâ ; Pilula Aloës et Ferri; Liquor Arsenicalis; Liquor Morphiæ Hydrochloratis; Vinum Antimoniale ; Vinum Opii : and state what are the purposes for which they are employed, and the doses in which they are to be prescribed.

May 13th.

1. Describe a case of Rheumatic Fever, giving its symptoms and sequelæ, with the post-mortem appearances in a fatal case.

2. What are the various conditions of the Kidneys in diseases characterised by albuminuria ?

3. What is the constitution and average dose of the following Pharmacopœial preparations ? — Glycerinum Acidi Tannici ; Linimentum Camphoræ ; Tinctura Chloroformi Composita ; Infusum Gentianæ Compositum ; Mistura Ferri Composita ; Mistura Cretæ ; Pilula Plumbi cum Opio ; and Pilula Rhei Composita : and give a Latin prescription in full for an adult suffering from Chronic Bronchitis.

July 22nd.

1. Describe a case of acute Pneumonia in the adult ; giving the causes, symptoms, and physical signs of the different stages, and the sequelæ of the disease.

2. What are the various parasites found in the human body? Describe them, give their habitat, and the usual treatment.

3. Give the indications and counter-indications for the employment of opium and its preparations. State the constitution and average dose of the following Pharmacopœial preparations: Acidum Nitrohydrochloricum Dilutum; Confectio Opii; Decoctum Aloës Compositum; Pilula Conii Composita; Pilula Hydrargyri Subchloridi Composita; Pulvis Kino Compositus.

November 11*th.*

1. What are the consequences, local and general, and what the diagnostic signs of the following varieties of heart-disease?—

a. Obstruction at Aortic orifice;
b. Incompetence of Aortic valve;
c. Obstruction at Mitral orifice;
d. Incompetence of Mitral valve.

2. How would you treat, medicinally, a case of phthisis—

a. With the object of improving the general health;
b. With the object of relieving cough;
c. With the object of arresting hæmoptysis;
d. With the object of checking diarrhœa?

Give the doses, for an adult, of the various drugs you would employ in each case.

3. What are the various causes of obstruction of the Œsophagus? How would you distinguish them clinically from one another?

1877.

January 20*th.*

1. Describe the symptoms accompanying Aneurism at the base of the Brain, Aneurism of the ascending Aorta, and of the abdominal Aorta; and the plan of the treatment to be adopted in each case.

2. Give the various causes of Hæmoptysis, including the pathology, and the sequelæ, of the morbid conditions giving rise to it; and state the indications for treatment, with the usual remedial agents.

3. Write a prescription in full for a child of seven

years at the outset of Scarlet Fever; and then for an adult in the first step of acute Pneumonia; and give the uses, composition, and doses of the following preparations:—Ferri Carbonas Saccharata; Unguentum Gallæ cum Opio; Pilula Hydrargyri Subchloridi Composita; Linimentum Iodi; Infusum Gentianæ Compositum, and Mistura Guaiaci.

April 21*st.*

1. Describe the contracted granular Kidney. What are the organic changes which attend it, or to which it gives rise, in the heart and bloodvessels? Discuss the more important symptoms of the disease, including the chemical and microscopical characters of the urine.

2. Describe the symptoms of Acute Rheumatism. How would you distinguish pathologically and clinically between Rheumatism and Gout?

3. What Medicinal Plants belong to the order Cinchonaceæ? and what are their several therapeutical properties? Enumerate their more important officinal preparations, and name their ordinary doses.

May 19*th.*

1. Give the Causes, Symptoms, and Treatment of Simple Ulcer of the Stomach, and append two Prescriptions suitable for an Adult suffering from the complaint, written out in full.

2. Enumerate and describe the Morbid Conditions resulting from Chronic Lead Poisoning, and give the various modes by which Lead may be introduced into the System, with the appropriate Treatment in each case.

3. What are the Physiological and Therapeutic effects produced by Antimonial Preparations, Conium Ipecacuanha, Elaterium, and Digitalis? Enumerate the Pharmacopœia preparations and average doses of the above remedies.

July 21*st.*

1. Discuss the causes, morbid anatomy, symptoms, and diagnosis, together with the complications and sequelæ, of *Cirrhosis of the Liver.*

2. What are the causes, symptoms and diagnosis, and results of *Pneumothorax?* How would you treat it?

3. What Medicinal Plants belong to the order Solanaceæ? What are their several physiological and thera-

peutical properties? and what the doses of their Pharmacopœial preparations?

November 10th.

1. Describe the symptoms of, and the pathological conditions giving rise to, Hemiplegia, with the general principles of treatment in the different stages.
2. Describe a case of acute Bronchitis in the adult, giving the causes, course, physical signs, and treatment, with two different prescriptions written out in full.
3. What are the different effects of opium, belladonna, hyoscyamus, cannabis indica, chloral, and stramonium? What are the chief indications and counter-indications for their employment?

1878.

January 19th.

1. What are the various causes of Ascites? what are the symptoms which it produces? how would you recognise its presence, and distinguish it from cystic diseases within the abdomen? and how would you treat it?
2. Discuss the morbid anatomy, symptoms, and treatment of Tubercular Meningitis.
3. What are the several officinal preparations of the following drugs, and what their properties and doses:—Magnesia; Arsenic; Senna; Rhubarb; Colchicum; Conium. Write out a full prescription for an adult requiring a diuretic medicine.

April 13th.

1. Describe the symptoms, course, and sequelæ of Diphtheria, and state the treatment you would adopt in the various stages.
2. What are the pathological conditions leading to Hemiplegia? State the prominent differences in the symptoms according to the locality of the lesion.
3. Give a list, and the average doses for the adult of the vegetable and saline purgatives contained in the Pharmacopœia, specifying their various modes of action. Write out a prescription in full for a single draught.

May 18th.

1. Discuss the pathology, symptoms, treatment, and condition of the Urine in Hæmaturia, omitting the subject of hæmorrhage from surgical injuries.

2. Describe the morbid anatomy, symptoms, and results of Enteric Fever.

3. What medicinal plants belong to the order Euphorbiaceæ? Give their medicinal properties and uses; and the names and doses of their several Pharmacopœial preparations. Write an unabbreviated prescription in Latin, with directions for use, for a case of acute Bronchitis.

July 20th.

1. What are the morbid conditions that induce hypertrophy of the Heart? How is the affection recognised, and what are the indications for treatment?

2. Describe an attack of Gout; state the pathology of the disease, and give the morbid conditions of internal organs and tissues, occurring in gouty subjects.

3. Write a prescription, in full, for an adult affected with Pneumonia in the stage of consolidation; and state the medicinal plants of the order Leguminosæ, with the Pharmacopœial preparations in which they are employed.

November 9th.

1. What are the causes, symptoms, consequences, and treatment of Hæmorrhage from the stomach and bowels? Surgical injuries and piles to be excluded.

2. Define the terms tubular or bronchial breathing, bronchophony, pectoriloquy, ægophony, metallic tinkling, splashing, and bruit de pot-fêlé. Point out the circumstances under which these several phenomena occur, explain their modes of production; and specify their diagnostic indications.

3. Enumerate the officinal alkaloids, and their several preparations. State whence they are derived, what are their physiological and medicinal properties, and what the doses of the Pharmacopœial preparations.

Write in full a prescription for a mixture, with suitable directions, for a patient suffering from Scarlatinal Dropsy.

1879.

January 18th.

1. How are lesions of the various Cardiac orifices detected and diagnosed? Where, in the different cases, are abnormal sounds heard? and what are the pathological conditions that induce them?

2. Enumerate the various modes by which Lead may

be introduced into the system, and what symptoms it gives rise to. What is the prophylactic and medicinal treatment?

4. Enumerate the various metallic and vegetable substances contained in the Pharmacopœia that are employed as evacuants of the alimentary canal. Describe their modus operandi, the particular indications for their employment; and write a prescription in full of a diuretic mixture for an adult.

April 19th.

1. Discuss the morbid anatomy, symptoms, and treatment of Diphtheria.

2. Give a chemical and pathological account of Gall-stones. Enumerate the accidents to which they may give rise. And discuss the symptoms and treatment of these accidents.

3. Name the vegetable astringents of the Pharmacopœia; state their several special uses: and give the doses of their more important preparations. Write in Latin an unabbreviated prescription (with directions) for an astringent mixture for a patient suffering from Chronic Dysentery.

May 17th.

1. Describe the course and features of Measles and Scarlet Fever, their sequelæ, and the prominent measures of treatment and prophylaxis suitable in each case.

2. Under what circumstances does embolism of a Cerebral Artery occur? What would be the consequent symptoms? and what would you advise to be done for the relief of the patient?

3. What are the effects of overdoses of the following medicinal substances?—Belladonna; Digitalis; Iodide of Potassium; Chloral; Arsenic, and Cantharides. Give their chief Pharmacopœial preparations, and their average doses. Write out in full a prescription, for a mixture, for an adult suffering from chronic Bronchitis.

July 19th.

1. What are the causes, symptoms, and pathological consequences of Abscess of the Kidney? By what routes may such Abscesses discharge themselves?

2. What are the causes of regurgitant Mitral Valve

disease? how would you detect its presence? and what are its pathological and clinical consequences?

3. Describe the physiological and therapeutical effects of Opium; and enumerate the Pharmacopœial preparations in which opium or morphia is present, stating their strength in opium or morphia, and their usual doses. Write a prescription for a child suffering from Summer Diarrhœa.

November 15*th*.

1. Describe emphysema of the lungs. How is it produced? on what diseases does it supervene? and what are the symptomatic and other consequences to which it gives rise?

2. Give the chemical and physical characters of gall-stones. Discuss the symptoms which may arise in the progress of a gall-stone from the gall-bladder to the duodenum. And especially consider the effects of obstruction of the common duct directly on the liver and indirectly on the general system.

3. What are the special uses and doses of the following drugs?—

Sulphuric Acid; Nitric Acid; Bicarbonate of Potash; Acid Tartrate of Potash; Iodide of Potassium; Sulphate of Zinc; Nitrate of Silver; Tincture of Senega; Tincture of Indian Hemp; Tincture of Nux Vomica; Ethereal Tincture of Lobelia; Croton Oil; Elaterium; Tincture of Belladonna, and Wine of Aloes.

1880.

January 17*th*.

1. What conditions give rise to fluid in the pleural cavity? of what kinds may it be, and what are the signs which indicate the presence of each kind? What treatment should be pursued in different circumstances?

2. What are the chief modes by which mechanical obstruction of the bowel is produced, the symptoms proper to, and the treatment to be adopted in each?

3. What are the uses and doses of the following drugs?—Salicylate of Soda; Acetate of Ammonia; Liquor Arsenicalis; Sulphate of Potash; Vinum Antimoniale; Infusion and Tincture of Digitalis; Sulphate of Zinc; Liquor Potassæ; Subnitrate of Bismuth Extract; and Tincture of Stramonium; Calomel, and Hydrargyrum c̄ cretâ.

April 17th.

1. What are the chief causes of Ascites? What are its symptoms, and how would you recognise its presence?

Point out the distinctions between it and ovarian and hydatid cysts and distended bladder. How would you treat it?

2. Give the morbid anatomy, symptoms, and treatment of acute Pneumonia.

3. What are the properties, uses, and doses of the following drugs?—

Tr. Opii; Pulv. Opii; Liq. Morphiæ Hydrochloratis; Morphiæ Hydrochloras; Tr. Cannabis Indicæ; Ext. Cannabis Indicæ; Tr. Colchici Seminum; Ext. Colchici; Liq. Hydrargyri Perchloridi; Tr. Ferri Perchloridi; Tr. Ergotæ; Tr. Scillæ; Oxymel Scillæ; Potassæ Chloras; Santoninum; and Elaterium.

May 15th.

1. Describe the symptoms and pathological conditions of Rheumatism, Gout, and Rheumatoid Arthritis respectively, with the treatment proper to each.

2. Give the causes, symptoms, and treatment of Peritonitis.

3. State the uses and doses of the following drugs:—Ipecacuanha; Elaterium; Digitalis; Extract of Stramonium; Liquor Strychniæ; Liquor Morphiæ Acetatis; Sulphate of Zinc; Nitrate of Silver; Dilute Sulphuric Acid; and Dilute Hydrocyanic Acid.

State the composition of the following drugs:—Compound Ipecacuanha powder; Compound Kino powder; Compound Jalap powder; Compound Mixture of Senna; Compound Tincture of Camphor.

July 17th.

1. Discuss the morbid anatomy and symptoms of Enteric Fever; and state the chief clinical distinctions between it and Tubercular Meningitis.

2. What are the distinctive signs of the several diseases of the Aortic and Mitral Valves? What are the consequences of Mitral disease as regards (1st) the heart itself; (2nd) the pulmonary circulation and lungs; and (3rd) the general circulation together with the liver and kidneys?

3. Enumerate the officinal alkaloids and their several preparations. State whence they are derived, what are their physiological and medical properties, and what their doses.

November 13th.

1. Give the symptoms, course, complications, and treatment of Acute Rheumatism.

2. Describe the symptoms and course of Tubercular Meningitis. Note the distinctions which separate it from the diseases which clinically resemble it ; and mention the appearances commonly met with after death from this cause.

3. State the effects, preparations, and doses of :

Digitalis ;
Elaterium ;
Colchicum ;
Acid Tartrate of Potash, and
Perchloride of Mercury.

DIPLOMA OF FELLOW.

FIRST EXAMINATION.

Anatomy and Physiology.*

1869.

May 22nd.

1. State the position which the Heart and the Arch of the Aorta bear in reference to the walls of the thorax and to the lungs.

2. Describe the Ossification of a long bone (the Femur) from the earliest or primitive condition to its completion. (C. 51; H. and P. 32.)

3. The process of the Digestion of food consisting of Bread and Meat (lean and fat): State the changes which take place; and explain how they are effected. (F. 219—238.)

4. State the views generally entertained respecting the mode or channels by which, and the direction in which the sensory and motor impulses are respectively conveyed through the spinal cord to and from the Brain. (F. 110—118, 547—555.)

5. Mention the structure common to Secreting Glands generally; and describe the modifications the structure undergoes in different classes of glands. (F. 4.)

6. Describe the physiological phenomena attending death from Asphyxia, the order in which they occur, and the condition of the internal organs after death. (F. 349.)

November 20th.

1. The Tongue: Describe its attachments, surfaces, muscles, vessels, and nerves; state the special functions of each nerve.

* Recently (1880) *two* separate Papers are set: one in Anatomy, and one in Physiology. References:

C. = Carpenter, edit. 1881.

F. = Foster, edit. 1880.

H. and P. = Harris and Power.

In Anatomy, for references to Questions, see Index to any of the ordinary Text-books.

2. Describe the position and structure of the Rectum; its relations to the peritoneum, and to the other structures with which it is in contact. Mention the muscles which are connected with the Rectum and influence its functions. State the source from which the bowel receives its supply of blood, and the mode in which the blood is returned.

3. Mention the different systems of vessels by which Fluids and Solids are supposed to be removed from the Tissues of the Body and carried into the Circulation; and state in what way the removal is supposed to be effected.

4. Explain how the sense of hearing is supposed to be induced in man. Point out the purposes of the various structures and fluids which contribute to form the Organ of Hearing; and illustrate the subject by reference to the Auditory Apparatus of some of the Lower Animals. (F. 514—521.)

5. Describe the Anatomical structure of Skin, Mucous Membrane, and Serous Membrane; and state the particular functions which each is adapted to fulfil. (H. and P. 57, 49, 23).

6. Describe the structure of Arteries (large and small), of Capillaries, and of Veins; mention the nerves which supply these vessels, and the mode of their distribution. (H. and P. 43, 44.)

1870.

May 20th.

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

2. Describe the intrinsic muscles of the Larynx; the position, relations, and functions of each, and their nerve-supply. Describe particularly the distribution of the motor and sensitive filaments of the Superior Laryngeal Nerve, and the probable origin of each set of filaments.

3. State the chemical composition of Bone, and the relative proportion of organic and inorganic matter. Describe the arrangement of the osseous tissue in a long bone (say the Tibia). State the sources whence the Tibia is supplied with blood, and describe how the arteries permeate its structure.

4. What is the condition of the Humerus at birth? Describe its mode of growth in length and thickness, the

order in which the Epiphyses ossify, and the age at which Epiphyses is united to the shaft. (H. and P. 32.)

5. Describe the secretory structure of the Liver, and give the arrangement and mode of distribution of the different kinds of vessels where they reach, or leave the lobules. (H. and P. 53, 54; C. 434—7.)

6. 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.

November 19th.

1. Give the Anatomy of the Perineum in the Male; and describe the dissection required to display all the parts contained in it.

2. Describe the process of Respiration under the following heads:

(*a.*) The Mechanism by which the Acts of Inspiration and Expiration under ordinary circumstances are effected. (F. 301—306; C. 349.)

(*b.*) By what means, and in accordance with what physical laws, is the air within the lungs changed? and what are the changes observed in the expired air? (F. 296—298, 306—309; C. 365.)

(*c.*) Whence are the various additional components found in the expired air derived? (F. 327—332.)

3. Describe the course and relations of the Internal Maxillary Artery; and give the dissection necessary to expose it. Trace, also, to their distribution, its several branches in the order in which they arise.

4. Give an account of the forces by which the systemic circulation is carried on; and of the mechanism of the Heart's action. State also the sources whence that organ derives its nerves, their mode of distribution in its substance, and the way in which they are supposed to influence its action. (F. 133—139, 148—154, 169—179.)

5. Describe the Diaphragm: its attachments, relations on both surfaces, structure, and openings. Also state whence its bloodvessels and nerves are derived, and the mode in which they are distributed.

6. Describe the minute structure and general arrangement of the Lacteals, and of the Lymphatic Vessels and Glands. What is the principal difference between Absorption by the lymphatics and by the bloodvessels respectively? Also state the general physical laws under

which absorption takes place. (H. and P. 51, 69, 70; F. 283—288; C. 177—180.)

1871.

May 19th.

All four Questions *must* be answered. (See *New* Regulation, 1880.)

1. What parts are in immediate relation with (1) the Obturator internus, and (2) the Obturator externus muscles.

2. Describe the development of the Human Brain from its first appearance in the embryo up to the full period of intra-uterine gestation, and compare its several stages with the adult Brain in the classes of Vertebrata.

3. Give the dissection required, and mention in the order in which they appear the parts that must be removed to expose the Otic Ganglion; describe its relations and the nerves connected with it.

4. Describe the structure of a "Malpighian body" of the Spleen, and state the evidence from which it is concluded that the Spleen is concerned in the elaboration of the blood. (F. 346.)

November 18th.

1. Describe, in the order in which they occur, the anastomoses of the arteries in the walls of the Alimentary Canal from the cardiac orifice of the Stomach to the Anus.

2. Describe the white corpuscles of the Blood; and state the evidence which exists concerning their origin and destination. (H. and P. 19, 107; F. 32.)

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

4. Describe the Cochlea:—(1) Its osseous structure; (2) Its membranous portion and the structures connected with it, including the mode of distribution of the cochlear division of the Auditory Nerve. (H. and P. 75, 76.)

1872.

May 17th.

1. Describe the course and relations of the Nerves which supply the following Muscles, tracing them from

their origin to the part of the Muscle at which they enter: Subclavius, Serratus magnus, Obturator internus, Pectineus, Popliteus, and Anconeus.

2. Describe the exact relations and structure of each Bronchus, of its subdivisions, and of the Air-Cells. State what nerves accompany the Bronchi in their distribution, and their several functions. (H. and P. 56.)

3. Describe the development of the Mammalian Heart; and give an account of its construction in the different classes of Vertebrata. (C. 923.)

4. Describe the form and dimensions, in its different parts, of the Vertebral Canal; enumerate its contents: and give a description of the structure and uses of the Membranes of the Spinal Cord. (H. and P. 39; F. 536—555.)

November 16th.

1. Describe the arrangement of the Muscular Fibres of the Auricles and Ventricles of the Heart, and the structure of the Auriculo-ventricular and Arterial openings. State the exact mode of action of the Mitral and Tricuspid Valves.

2. What do you understand by Reflex Action? Describe its different forms, and give examples of each. Through what portions of the Nervous System are the several kinds of Reflex Action produced? In what relation do they respectively stand to consciousness and will? (F. 115—117, 536—545.)

3. How is Heat generated and regulated in the Human Body? State the various chemical changes associated with its evolution and their proportional influence in its production. (F. 420—438.)

4. From what sources does the entire Scalp receive its supply of Nerves? Give the dissection requisite to expose the branches distributed to the Occipital Region, from their origin to their termination.

1873.

May 23rd.

1. Describe the Mucous Membrane of the Nasal passages and Cavities; and state precisely how each region is supplied with Nerves. (H. and P. 79.)

2. State what you know of the Vaso-motor Nervous System, and of its functions. Cite facts and experiments

by which such conclusions have been reached. (F. 181—202 ; C. 847.)

3. Describe the Vestibule and Semicircular Canals in the Dry Bone, also the soft structures they contain in the recent state, including the distribution of the Auditory Nerve to these parts. (H. and P. 76.)

4. Describe the Œsophagus : its course and relations, the dissection necessary to expose it, and its structure. (H. and P. 47.)

November 22nd.

1. Give the dissection required to expose the trunk of the Sympathetic Nerve in the Neck ; and describe the relations of the Nerve. Trace the Cardiac branches from their origin to the cardiac plexuses.

2. Describe the Serratus Magnus, the dissection by which you would display it, the various parts with which it is in relation, and the vessels and nerves by which it is supplied ; and enumerate the muscles which are its antagonists.

3. Describe the modes of origin, the structure, and the general arrangement of the Lymphatic and Lacteal Vessels, and the nature, sources, and destination of the Lymph. (H. and P. 51, 69, 70 ; F. 283—294.)

4. Describe the structure of the Human Ovum ; and give an account of the earlier stages of development up to the period at which the *Chorda Dorsalis* is formed. (H. and P. 67.)

1874.

May 22nd.

1. Describe, in their relation to each other and to the several parts in contact with them, the muscles which form the floor of the posterior Triangle of the Neck.

2. Name the structures, in their relative order, which would be necessarily divided in cutting out the last Rib through an incision made in the skin over it.

3. At what period of Embryonic Life does the formation of the Liver commence ? Describe the process of its development up to the period of birth, and the changes it undergoes during the first year after birth. State what functions it performs during intra-uterine life. (C. 932.)

4. What arrangements exist for neutralising the effects on the Brain of shock in jumping from an elevation on to

the feet? Describe the mechanism of these arrangements, and how they act.

November 20th.

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.

2. 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 backward, the several structures in direct relation with it.

3. Describe the functions of the Medulla Oblongata, (1) as a conductor, (2) as a nerve-centre; and state the facts and arguments upon which your description is based. (F. 594; C. 573.)

4. At what period of Embryonic Life does the formation of the human Kidney begin? Describe the process of its development, from the commencement to the completion of the organ; and state when the various changes occur. (C. 934.)

1875.

May 21st.

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

2. What arteries supply branches to the Vertebral column, the Spinal Cord, and its membranes? How are these distributed? Describe the position and arrangement of the veins in the Vertebral canal.

3. 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. (C. 111.)

4. Describe the mucous membrane of the Genito-urinary apparatus in the male, stating precisely the structural peculiarities, and the sources of vascular and nervous supply of each part. (H. and P. 61—64.)

November 19th.

1. Describe the influence which the function of Respi-

ration, including the respiratory movements, has upon the Circulation of the Blood. (F. 341—355.)

2. State the evidence in support of the current views concerning the functions of the Fifth Cranial Nerve. (F. 597; C. 584.)

3. Describe the course and relations of the Arteries which enter the Cranial cavity anterior to a transverse line drawn in front of the Foramen Magnum, limiting the description to the interior of the Skull.

4. In a transverse section of the Neck through the Fourth Cervical Vertebra, name the parts seen in their order from before backwards.

1876.

May 19th.

1. Describe the successive changes undergone by the Vascular System from its first appearance to the end of fœtal life.

2. Describe the secretion of the various Salivary Glands. State how this secretion is affected by nervous influence; and give proofs of each statement you make. (F. 216—270; C. 135.)

3. Give the dissection required to expose the Internal Jugular Vein from its commencement to the level of the Hyoid bone. Describe the course and relations of this portion of the vessel; and mention the veins which terminate in it.

4. Enumerate in their relative position the parts seen in a horizontal section of the trunk at the level of the third Costal Cartilages.

November 17th.

1. Describe the minute structure of the Spleen. State the current views respecting its office, and the grounds on which these are based. (H. and P. 70; F. 33.)

2. What are the essential parts of an Organ of Respiration? Describe the chief forms of Respiratory Apparatus met with in the Animal Kingdom. (F. 295; C. 341.)

3. 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.

4. Give the dissection required to expose from behind the Adductor Magnus Muscle; and mention in order from above downwards the parts seen on its removal.

1877.

May 25th.

1. The Head being divided in the middle line, give, in their order, the parts found in dissecting, from within outwards to the surface, the region bounded by the horizontal plate of the ethmoid and body of the sphenoid above, the palate below, the posterior border of the internal pterygoid plate behind, and the nasal duct in front.

2. Describe the first four Cervical Nerves ; giving the exact course, relations, and distribution of their branches.

3. What are the principal features which distinguish the Skeleton of Man from that of the higher Primates?

4. Describe the various changes through which the Male and Female Generative Organs pass in their transition from the rudimentary to the complete stage. (C. 938—941.)

November 16th.

1. State your views on the formation of Urea, and the experiments or arguments on which they rest. (C. 478 ; F. 348.)

2. Describe the Development of the Intestinal Canal. (C. 920.)

3. Describe in order the parts seen in dissecting, from the surface to the bones, the region bounded by the superior curved line of the occipital bone above and the seventh cervical vertebra below.

4. Describe the Ligaments of the Ankle-joint and of the Tarsus, and their relations.

1878.

May 24th.

1. State the velocity of the Blood in the several parts of its course, and describe the methods by which this has been ascertained. (C. 323—329 ; F. 103.)

2. What are the essential structures of a Secreting Organ? (C. 428.) Describe the several types of Secreting Glands. (C. 436.) Give evidence of the direct influence of the nervous system upon secretion. (C. 446, 466, 861, 491, 154.) Describe the Poison-apparatus in Ophidia.

3. Describe the course and relations of the Profunda Cervicis Artery, and the dissection required to expose it.

4. Describe the dissection required to expose the course and distribution of the Obturator Nerve.

November 15th.

1. Describe the dissection required to expose the upper surface of the first Rib; and mention, in order from before backwards, the several structures in immediate relation with that bone.

2. A transverse vertical section is made through the Cranium and its contents, passing through the Odontoid process. Mention, in order from above downwards, the several structures which would be divided.

3. 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.

4. Describe the structure of the Supra-Renal Capsule; and give the evidence which at present exists regarding its function. (C. 212.)

1879.

May 23rd.

1. What is the loss of material, in kind and amount, which a healthy adult sustains in twenty-four hours? (C. 402; F. 368.) For what necessary physiological purposes is this expenditure undergone? (F. 368 *et seq.*). How is the total amount shared by the different excretory organs, and by what means is the loss made good? (C. 411; F. 383.)

2. Describe the minute anatomy and development of the Cochlea. (C. 767.)

3. Describe the parts seen in a dissection, from skin to peritoneum, of the structures closing the outlet of the male Pelvis.

4. Enumerate the Nerves supplying the skin and mucous membrane of all parts above the level of the Clavicles. State the source from which each is derived, and indicate its area of distribution.

November 21st.

1. What do you understand by the term "Arterial Tension"? (C. 319.) How is its amount estimated? (C. 320.) By what circumstances is it modified? (C. 321.)

2. Describe the minute anatomy of the Grey Matter of the cerebral hemispheres in man. What functions have been assigned to it? and upon what evidence? (C. 666; F. 504 *et seq.*)

3. How would you expose in an entire subject the arch of the Aorta, as far as the fourth dorsal vertebra? What are the relations of each part of the arch? Give also the topographical indications on the chest surface.

4. The brain having been removed, how would you trace out the course, connexions, and distribution of the second division of the Fifth Nerve?

1880.

May 21*st*.

ANATOMY.

Three of the four questions *must* be answered.

1. Describe the peculiarities of the Skull at birth.

2. Give a dissection to expose the Glosso-pharyngeal nerve from its exit at the base of the skull to its termination. Describe the distribution and connexions of the entire nerve.

3. Give the attachments and actions of the Deltoid Muscle, and the arrangement of its muscular fasciculi and tendons. Describe the structures exposed upon removal of the muscle.

4. The left Innominate Bone being removed, describe the dissection necessary to expose the anterior primary branches of the Sacral Nerves with their distribution and connexions inside the Pelvis.

May 21*st*.

PHYSIOLOGY.

Three of the four questions *must* be answered.

1. Give an account of the development of the Eye. (C. 958.)

2. Describe the minute structure of the Pancreas. State the mode in which a proteid-digesting extract may be obtained from a perfectly fresh Pancreas. How does the action of such an extract differ from that of a proteid-digesting extract of the gastric mucous membrane?

3. Give an account of the changes that take place in the Uterus during Pregnancy, and describe the mode of formation of the Placenta and of the membranes enclosing the Fœtus. (C. 887.)

4. Describe the structure of Striated Muscular Tissue, and the phenomena attendant upon its contraction. (C. 783, 798; F. 36.)

SECOND EXAMINATION.

Pathology, Therapeutics, and Surgery.*

1869.

May 29th.

1. State the morbid conditions which render necessary partial Amputation of the Foot—tarso-metatarsal, and median-tarsal respectively—as well as the condition requiring removal of the entire foot. Describe in detail the tibio-tarsal amputation, and the subsequent local treatment (p. 117, vol. ii.). Refer, in illustration of your statements, to any case or cases that have been under your observation.

2. State the phenomena of Ulceration of the Skin (p. 202) ; and describe the process by which the Ulcer is healed (p. 393, vol. i.).

3. Describe the morbid conditions of the Retina which have been observed to produce different degrees of dimness of sight or entire blindness. State the treatment to be resorted to where any might be expected to be useful (p. 228 *et seq.*, vol. ii.) ; and mention in illustration any case or cases you have observed.

4. 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 cause 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 (p. 486 *et seq.*, vol. ii.).

5. Describe in detail the means to be used for restoring suspended animation from immersion in water. State the duration of the immersion up to which the efforts for restoration are likely to be successful, with the facts in support of the judgment you form. Mention the results of the examination in fatal cases (p. 355 *et seq.*, vol. ii.).

* The paged References are an Index to the Author's "Science and Practice of Surgery." Second Edition. Baillière, Tindall, and Cox. 1878.

6. 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. Mention the plan of treatment to be adopted in different cases. Describe any necessary operation (p. 593 *et seq.*,vol. ii.).

November 24th.

1. State under what circumstances and conditions it may be considered expedient to open the Trachea. Describe the dangers and difficulties of the operation, the method of performing it, and the after-treatment (p. 378, vol. ii.).

2. Name the different causes which may produce Obstruction of the Bowels within the abdominal cavity (*i.e.*, excluding Hernia) ; and describe the post-mortem condition of the intestinal canal above and below the seat of obstruction. State if any of these affections are remediable by surgical treatment ; and if so, describe the treatment (p. 548 *et seq.*, vol. ii.).

3. In a case where Coma supervenes a few hours after an injury to the head has been sustained, what would be your diagnosis as to the cause of the Coma ? How might the history of the accident and the symptoms guide you to form an opinion as to the site of the lesion ? Under what circumstances would operative surgical interference be justified ? (pp. 155, 171, vol. ii.).

4. Describe the conditions (immediate and at a later period) which may probably ensue from a puncture of the Femoral Artery (say with a penknife) in the middle of the thigh. What treatment should, or might, be adopted in such a case ? (p. 513, vol. i.).

5. Mention the different morbid affections to which the Prostate Gland is liable ; and describe the pathological condition of the organ in such affection (p. 735 *et seq.*, vol. ii.).

6. State in what forms of primary or of constitutional Syphilis you would give Mercury, and under what constitutional conditions you would withhold it. State also in what class of cases Iodine of Potassium should be preferred (pp. 274, 277 *et seq.*, vol. i.).

1870.

May 26th.

1. Describe, the process of reparation which nature

adopts to unite Fractured Bone (p. 582), divided Tendon, Muscle (p. 440), Nerve, Skin, Mucous and Serous Membrane (p. 360 *et seq.*, vol. i.).

2. Describe the different forms of Gangrene which may be produced ; 1st, by Disease of Arteries (p. 220) ; 2ndly, by Lesions of Arteries (p. 221, vol. i.) ; 3rdly, by Acute Inflammation (pp. 222, 95). State the treatment to be employed in each case, and your reasons for its adoption.

3. Describe the treatment which your observation and experience would lead you to adopt for the relief and cure of Permanent Stricture of the Urethra (p. 768 *et seq.*, vol. ii.).

4. Mention the different forms of disease (including malignant affection) to which the Knee-joint is liable, and which may possibly render amputation or excision necessary (p. 791 *et seq.*, p. 706 *et seq.*, vol. i.). Describe the pathological conditions and the symptoms, local and constitutional, which would induce you to save a diseased knee with the view of obtaining anchylosis.

5. State the symptoms of Congenital Syphilis, and mention the internal lesions which frequently exist. Describe the treatment to be adopted (pp. 265, 281, vol. i.). Prescriptions to be written in full.

6. Describe the local symptoms which precede and accompany the formation of Phlegmonous Suppuration (pp. 84, 123) ; and state the chemical, physical, and microscopic characters of Pus (p. 78, vol. i.).

November 23rd.

1. What form of Cancer most usually affects the Tongue ? Give the distinctive appearances presented to the naked eye, and its microscopical characters. Describe its course and treatment (p. 298, vol. ii. ; p. 178, vol. i.).

2. Enumerate the various kinds of Cystic Tumours met with in the neck. Describe their nature, diagnosis, and treatment (p. 386, vol. ii.).

3. Describe the various forms of Mortification, and the causes upon which they severally depend (p. 216 *et seq.*, vol. i.).

4. Describe the minute changes which Articular Cartilage undergoes in the process termed " ulceration" (p. 809, vol. i.).

5. State the various causes of Intestinal Obstruction. Give the diagnosis and treatment in each case (p. 548 *et seq.*, vol. ii.).

6. What is understood by the term "adenoid"? (p. 127, vol. i.). Describe the general characters and minute structure of Tumours of this kind, their usual site, and the proper treatment (p. 441, vol. ii.).

1871.

May 25th.

All four questions *must* be answered.

1. Describe the diseases which cause undue prominence or protuberance of the Globe of the Eye; their diagnosis, treatment, and prognosis (p. 238, vol. ii.).

2. Mention the symptoms of loose cartilage in the Knee-joint, and the treatment which should be pursued for their relief. Describe the operation which might be performed for the removal of a loose cartilage, and the circumstances which would warrant such an operation, or render it unadvisable (p. 813, vol. i.).

3. Describe the nature, seat, and diagnosis of the diseases which may render the operation of Colotomy expedient. Mention the steps of the operation, the after-treatment, and probable prognosis (p. 547 *et seq.*, vol. ii.).

4. Describe the different modes in which Union of Fractured Bones is accomplished. State the conditions, constitutional or local, under which union may be impeded or prevented (p. 582 *et seq.*, vol. i.).

November 22nd.

1. Describe precisely the different modes of performing Amputation of the Thigh, and include amputation at the Knee-joint (pp. 124, 123). State the advantages of each mode of operation, and the reasons for selecting it (p. 95, vol. ii.).

2. A Knee-joint becomes acutely inflamed, and the result is a complete ossific union of the bones. Explain the process by which this is accomplished; point out the symptoms pathognomonic of the structural changes. State the duties of the Surgeon in the Treatment of such a case, and the time probably required for its natural course (p. 791 *et seq.*, vol. i.).

3. Give the signs which indicate the impaction of a Foreign Body in the Œsophagus, indicating the points at which it is most likely to be arrested. Mention the various instruments that may be useful for its removal, and the circumstances under which Œsophagotomy may be necessary. Then describe that operation, and give

the surgical anatomy of the parts concerned (p. 359 *et seq.*, vol. ii.).

4. Describe wounds of the Abdomen; contused, punctured, and incised: mention the 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 (p. 457 *et seq.*, vol. ii.).

1872.

May 23rd.

1. Describe the operation of Excision of the Upper Jaw (p. 344), and state for what diseases this operation may be required (p. 343, vol. ii.).

2. Describe the formation, spontaneous evacuation, and healing of a Scrofulous Abscess; giving an explanation of the pathological phenomena attending each stage of its progress (p. 228, vol. i.).

3. Give the symptoms, causes, and treatment of Acute and Chronic Glaucoma; including the appearances usually presented under the Ophthalmoscope (p. 232, vol. ii.).

4. In a case of Compound Dislocation of the Ankle, state the local and general or constitutional conditions of the patient, and the external circumstances that would guide you in determining upon the propriety of Amputation, and as to the site at which it should be performed (pp. 786, 725,vol. i.).

November 21st.

1. What do you understand by the terms Shock and Collapse? State the symptoms of each, and explain how they are induced; give short illustrative cases, and point out the treatment you would adopt (p. 328 *et seq.*, pp. 359, 372, vol. i.).

2. Name the varieties of Nævus as developed in the Integument. Describe minutely their Special Anatomy and appropriate treatment (p. 152, vol. i.).

3. The pathology and treatment of Pyæmia (p. 297 *et seq.*, vol. i.).

4. Describe the operation and the parts cut through in applying a Ligature upon the left common Iliac Artery; and point out the Anatomical differences between that Artery on the left and right sides of the body (pp. 541, 539, vol. i.).

1873.

May 29th.

1. Describe the Anatomical Characters, Causes, and Results of Inflammation of Veins (p. 567, vol. i.).

2. Describe the Morbid Changes you would expect to find in a person who had died from protracted Syphilis (p. 265, vol. i.).

3. Describe the Anatomical Characters of the various Diseases of the Larynx, their diagnosis, and treatment (p. 370 *et seq.*, vol. ii.).

4. A man while suspended by the hand felt something snap near the armpit. This was followed in the course of two or three hours by considerable swelling, undefined below the outer half of the Clavicle, which rapidly extended towards the Axilla; then the whole Arm became swollen, and no pulse could be felt at the wrist. State your opinion of the nature of the mischief, and the grounds for it; and describe the treatment which in such a case you would adopt (p. 504, vol. i.).

November 27th.

1. Give the different forms of Stricture of the Œsophagus, and their usual seat; and describe the symptoms, diagnosis, and treatment of each form (p. 367, vol. ii.).

2. What are the causes of, and pathological changes occurring in spontaneous Gangrene, say of the foot? Describe the process of natural separation of the gangrenous part, and the subsequent repair (p. 560, vol. i.).

3. State what you understand by the term Cancer. In the examination of a Tumour recently removed, describe fully the characters by which you would be led to the conclusion that it is Cancer (p. 155 *et seq.*, vol. i.).

4. A man receives a punctured wound in the middle of the anterior part of the Thigh, followed by profuse arterial hæmorrhage. The external bleeding is arrested by pressure, but the Thigh becomes rapidly distended and tense. What condition does this indicate? What course is the case likely to take? and what treatment would you adopt for the sequences of this injury at their different stages? (p. 513, 477, vol. i.)

1874.

May 28th.

1. In which directions may the Astragalus be dislocated? and how does this accident usually occur? Describe the attendant signs, possibly complications, and consequences of this injury; and state how you would deal with it according to circumstances (p. 786, vol. i.).

2. What is meant by Degeneration? Describe the minute characters presented by its principal forms in those structures in which they most commonly occur (p. 185 *et seq.*, vol. i.).

3. Describe the varieties of Inguinal Hernia which occur in association with an open state of the vaginal process of the peritoneum in both sexes (p. 507 *et seq.*, vol. ii.).

4. A man received a severe kick in the Perineum, which was rapidly followed by considerable swelling there and retention of urine. State the probable nature of the injury and its immediate and remote effects, the mode in which you would investigate such a case, and the treatment you would adopt (p. 787 *et seq.*, vol. ii.).

1875.

May 27th.

1. Describe the circumstances under which you would remove the Eyeball, and the mode of performing the operation (p. 239, vol. ii.).

2. What are the symptoms attending the introduction of a foreign body into the Trachea? Describe the probable course and termination of such a case when the body is retained; and state how you would proceed in attempting to give relief (p. 352, vol. ii.).

3. 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 those changes, when advanced, upon the circulation (p. 355, vol. i.).

4. Give the diagnostic signs by which you would distinguish different Tumours within the Antrum; and describe their respective anatomical characters (p. 343, vol. ii.).

November 25th.

1. Describe minutely all the changes observed in the

Vessel, its Branches, and its Contents during the repair of a large Artery after ligature (p. 377, vol. i.).

2. What are the causes of Non-union after a fracture of a long bone? Describe the treatment you would adopt to obtain union (p. 604 *et seq.*; p. 585, vol. i.).

3. Mention the conditions, local and general, co-existent with Fracture of the Skull, which would guide you to a decision as to the propriety of Trephining (p. 178, vol. ii.).

4. A man is the subject of Strangulated Inguinal Hernia with well-marked symptoms. Taxis is applied and the rupture passes back into the abdomen. Four hours afterwards, when the man is seen again, there is still urgent vomiting and no relief to the other symptoms. Explain fully the view you take of the probable nature of the case, and the treatment you would adopt (p. 486, vol. ii.).

1876.

May 25th.

1. Describe the chief features peculiar to all the varieties of the Healing Process in Wounds of Cartilage, Nerve, Muscle, and Skin (p. 362, vol. i.).

2. To what causes may enlargement of the Cervical Lymphatic Glands be due? Describe, in detail, the Anatomical Characters of the Disease in each case (p. 385, vol. ii.; p. 229, vol. i.).

3. Give the Pathology, Diagnosis, and Treatment of the various forms of Pulsating Tumour of the Orbit (p. 497, vol. i.; p. 238, vol. ii.).

4. Describe the Congenital Malformations of the Bladder and Penis; and the modes of Treatment adopted in each (p. 726, vol. ii.).

November 23rd.

1. Describe from the commencement, and in its several stages, the Anatomical Characters of the Affection commonly known as Disease of the Hip-joint in Childhood; and discuss the Pathological Changes that occur (p. 816, vol. i.).

2. Mention the principal cases in which the condition known as Hæmophilia becomes of Surgical interest. Discuss the Pathology of that affection; and describe the Treatment, local and general, which you would adopt in particular instances (p. 373, vol. i.).

3. Discuss fully the question, In what cases is it justifiable to perform the operation of Castration? Describe the operation; its accidents; and complications (pp. 835, 841, vol. ii.).

4. Describe the various forms of Internal Acute Intestinal Obstruction; and the Surgical Treatment that you would adopt in each case (p. 548 *et seq.*, vol. ii.).

1877.

May 31*st.*

1. State what Pathological Changes are produced by Rickets in the minute structure of Bone, and describe the effects of this disease on the walls and contents of the great cavities of the Body (p. 697, vol. i.).

2. Describe the Anatomical Characters of Phlebitis in its several stages; state what you know of its Causes, and sketch the Clinical History of the affection (p. 567, vol. i.).

3. State the Diagnostic Signs of the various forms of Dislocation of the Bones of the Ankle-joint and Tarsus (p. 783 *et seq.*, vol. i.).

4. What do you understand by the term Secondary Hæmorrhage? State the Causes to which it may be due, and the Treatment you would adopt in each case (p. 99, vol. ii.; pp. 410, 472, vol. i.).

November 22*nd.*

1. Describe the methods adopted for excision of the whole or part of the Superior Maxillary bone (p. 344, vol. ii.); and state what Vessels and Nerves are likely to be implicated in these operations.

2. Give the Pathology of acute specific Bubo, from its commencement to its termination in spontaneous cure. In what way may treatment modify the progress of such a case? (pp. 255 and 276, vol. i.).

3. On what morbid changes may stricture of the Rectum depend? Describe the diagnostic characters of each variety, and its appropriate treatment (p. 584 *et seq.*, vol. ii.).

4. What are the accidents and risks incidental to Lithotrity? How are they to be avoided? and, if they occur, how are they to be treated? (p. 708, vol. ii.).

1878.

May 30th.

1. Give an account of the changes produced by healthy and strumous Inflammation in the Tissue of Bone and Periosteum (p. 673 *et seq.*, vol. i.).

2. How may traumatic Rupture of the Bladder occur? Describe the Diagnosis of such an injury, the chances of recovery, and the measures which might be taken to prevent a fatal result (p. 619, vol. ii.).

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 (p. 72, vol. ii.).

4. Describe the congenital malformations of the Brain which are perceptible externally, and their diagnosis from other surgical affections with which they might be confounded (p. 183, vol. ii.).

November 21st.

1. Describe the characters of the Lupous (p. 215), the Rodent (p. 216), and the Tertiary Syphilitic Ulcer (p. 265, vol. i.); pointing out those which are especially to be relied on in Diagnosis.

2. In a case of Hæmaturia describe the method of investigation you would pursue, and the facts or symptoms by which you would be guided, in the diagnosis of its sources and cause (p. 725, vol. ii.).

3. Describe the immediate and remote effects which may follow an injury of a large Nerve-trunk (pp. 449, 450, vol. i.).

4. Discuss the relative advantages and disadvantages of Median and Lateral Lithotomy (pp. 699, 688 *et seq.*, vol. ii.).

1879.

May 29th.

1. Give the clinical history and pathology of the Diseases of the Larynx which give rise to difficulty of Breathing. What surgical means are indicated in the various conditions? (p. 370 *et seq.*, vol. ii.).

2. What are the Post-mortem appearances you may expect to find in a case of Traumatic Pyæmia? Explain

their origin, and the symptoms attending their development (p. 297 *et seq.*, vol. i.).

3. Describe the condition generally known as Concussion of the Spine. Give your views as to the pathology of these cases : trace their usual progress, and state the main circumstances to which attention should be given in their Diagnosis and Prognosis (p. 395 *et seq.*, vol. ii.).

4. State the probable consequences of a penetrating Wound of the Lung, inflicted, (1) by a bullet), (2) by a sharp instrument. How would you treat such a case in its different stages ? (p. 423 *et seq.*, vol. ii.).

November 27th.

1. Give the pathology and clinical characters of the disease known as Lymphadenoma (p. 576, vol. i.).

2. Discuss the pathology and treatment of Knock-knee (p. 834, vol. i.).

3. In injuries of the lower extremity, what circumstances should guide you as to Amputation, primary or secondary, of the leg or thigh (pp. 598, 724, vol. i.).

4. Describe the changes which Blood extravasated in the tissues may undergo (p. 390, vol. i.).

1880.

May 27th.

1. Describe the changes which may be found in the Spinal Cord after death from injury to the Spine (p. 389 *et seq.*, vol. ii.).

2. Describe the structure, development, and course of the various forms of Cystic Tumours of the Mammary Gland (pp. 441, 443, vol. ii.).

3. To what causes may a Rise of Temperature, after a severe injury or operation, be due ? Describe the circumstances which would influence your view of it, in relation to Diagnosis and Prognosis (pp. 330, 359, 334, 298, 289, vol. i.).

4. What are the Diseases which may cause obstruction of the Nasal Fossæ ? How would you distinguish them from each other ? Give the Treatment you would adopt in each case (p. 271 *et seq.*, vol. ii.).

EXAMINATION

ON

THE PRINCIPLES AND PRACTICE OF MEDICINE.

1869.

November 25th.

1. A person is suddenly seized with violent pain in the abdomen, rapidly followed by sickness and vomiting. What are the various forms of affection which such an attack may indicate? how would you distinguish each form? and what treatment would you have recourse to for its relief?

2. What are the symptoms caused by poisonous doses of Opium, Belladonna, and Aconite? and how would you treat such cases of poisoning, respectively?

3. What are the preparations in the Brit. Ph. 1867, into which these drugs enter, and the proportions in which they are combined? In what doses and for what purposes would you employ such preparations?

1870.

May 27th.

1. In what diseases may albumen and blood in the urine occur together or separately? How do you treat the respective cases?

2. Describe the appearance of a lad who is the subject of well-marked inherited Syphilis; also mention some of the complaints amenable to treatment to which he is liable.

3. Mention the various agents employed to produce Anæsthesia by inhalation, and their mode of administration.

No more Examination Papers have been issued since this date, owing to the exemption (in general) of Candidates for the Fellowship by their having passed a previous Examination in Medicine, according to the published Regulations of the College.

RESULTS OF THE EXAMINATIONS.

THE following is the number of Candidates from the various Medical Schools who presented themselves for the Primary and Pass Examinations for the Diploma of Member of the Royal College of Surgeons during the Collegiate year 1879-80. This list includes the number of those who passed and of those who were rejected. The candidates who are indicated by a fraction in any column have been educated at more than one Medical School.

PRIMARY EXAMINATIONS. 1879-80.

Medical School.	Totals.	Number passed.	Number rejected.
St. Bartholomew's	163·75	99·75	64
Guy's	100·50	75·50	25
University College	95·25	59·75	35·50
St Thomas's	48·50	24·50	24
King's College	53	33	20
London	43·75	31·75	12
Charing Cross	37·50	29·50	8
St. George's	35·50	29·50	6
St. Mary's	28	21	7
Middlesex	27	21·50	5·50
Westminster	15·50	10	5·50
Manchester	36·50	30·50	6
Leeds	29	19·50	9·50
Cambridge	22·50	16·50	6
Birmingham	17·25	9·25	8
Newcastle-on-Tyne	16·50	10·50	6
Bristol	14	7	7
Sheffield	14	6	8
Liverpool	12·50	9	3·50
Dublin	6·50	4	2·50
Galway	3	1	2
Cork	2·50	2	·50
Belfast	0	—	—
Edinburgh	37	26·50	10·50
Glasgow	11·50	8	3·50
Aberdeen	6·50	6	·50
Kingston, Canada	3	3	—
Toronto	2	2	—
Montreal	2	2	—
Philadelphia	1	1	—
Ontario	1	1	—
Ohio	·50	·50	—
Bombay	3	3	—
Melbourne	2	2	—
Würzburg	1·50	·50	1
Seville	1	—	1
Malta	1·50	·50	1
Totals	896	607	289

Pass Examinations. 1879-80.

Medical School.	Totals.	Number passed.	Number rejected.
St. Bartholomew's	105·3̇	77·50	27·8̇3̇
University College	76.8̇3̇	48·3̇	28·50
Guy's	74	50·50	23·50
St. George's	39	32	7
St. Thomas's	33	22	11
King's College	31	19	12
London	27·50	16·50	11
St. Mary's	27	18	9
Middlesex	17	12·50	4·50
Westminster	13	6	7
Charing Cross	11·8̇3̇	6·3̇	5·50
Manchester	30	18·50	11·50
Birmingham	19	8	11
Leeds	17	10	7
Liverpool	11·50	6	5·50
Newcastle-on-Tyne	10	3	7
Bristol	9·50	8	1·50
Cambridge	8	7	1
Sheffield	2·50	1·50	1
Hull	2	1	1
Dublin	3·8̇3̇	1.8̇3̇	3
Belfast	3·50	2·50	1
Cork	1	—	1
Galway	1	1	—
Edinburgh	8·50	6	2·50
Aberdeen	4	1·50	2·50
Bombay	3	2	1
Bengal	1	1	—
Madras	·50	·50	—
Kingston, Canada	3·50	2·50	1
McGill	2·50	2·50	—
Toronto	2	1	1
Colombia	·8̇3̇	—	·8̇3̇
New York	·50	·50	—
Pennsylvania	·50	·50	—
Melbourne	1	1	—
Berlin	·50	·50	—
Würzburg	·50	·50	—
Paris	·8̇3̇	—	·8̇3̇
Totals	605	397	208