

**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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A GUIDE

TO THE

EXAMINATIONS AT THE ROYAL COLLEGE

OF SURGEONS OF ENGLAND

FOR THE

DIPLOMAS OF MEMBER AND FELLOW.



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A GUIDE

TO THE

EXAMINATIONS AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

FOR THE

DIPLOMAS OF MEMBERS AND FELLOWS



BY

FREDERICK JAMES GANT, F.R.C.S.

SURGEON TO THE ROYAL FREE HOSPITAL.

REVISED AND MUCH ENLARGED

FROM APPENDIX TO THE AUTHOR'S "SCIENCE AND PRACTICE OF SURGERY."

HENRY RENSHAW,
356, STRAND, LONDON.

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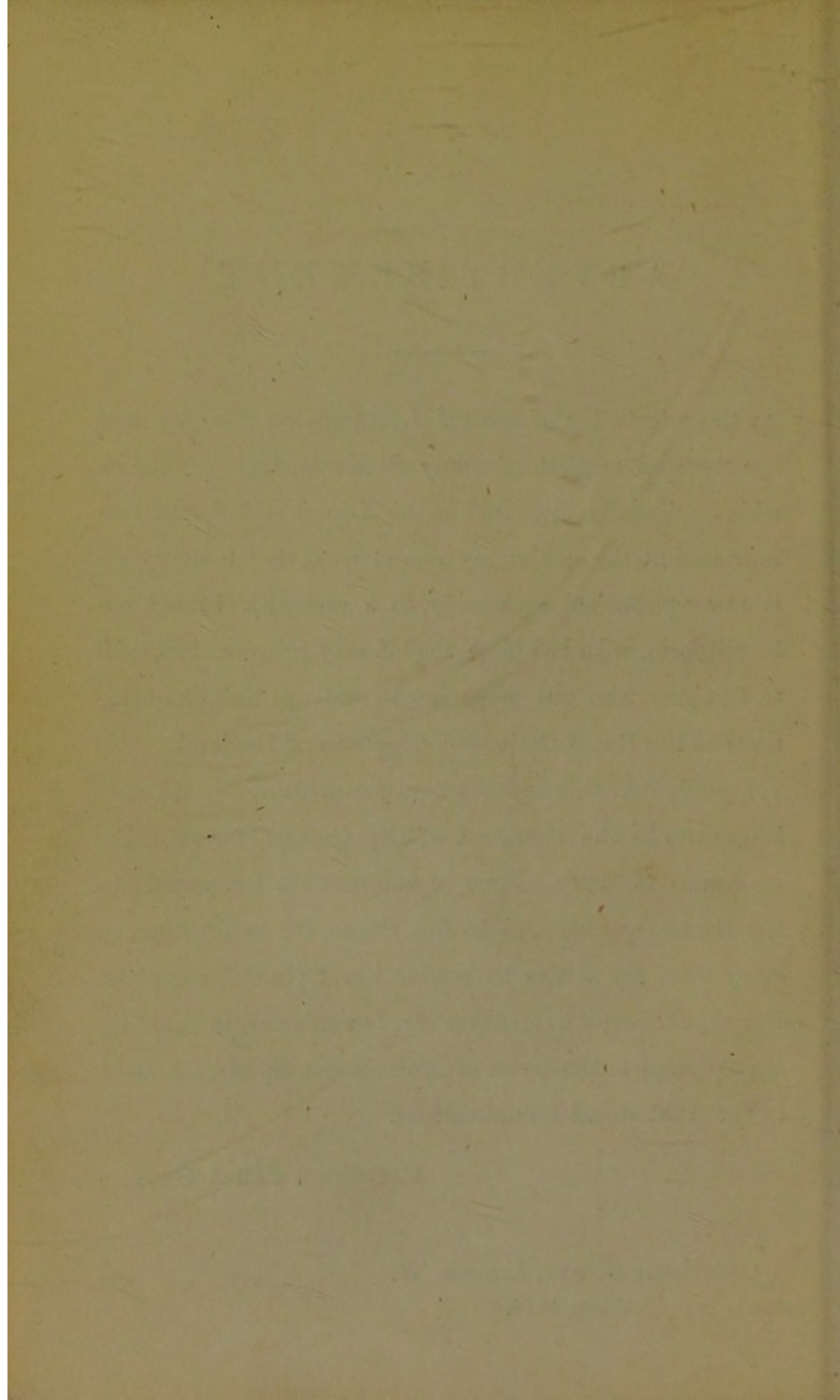
At the suggestion of several Lecturers on Surgery, and the repeated request of many Students, this "Guide"—which originally appeared in the *Lancet* (1870), and was reprinted at the end of my recent work on "Surgery"—is now republished separately, in a revised and much enlarged form, with the hope that it may prove more useful to all those who are preparing to undergo the Examinations at the Royal College of Surgeons of England.

I gladly take this opportunity of expressing my acknowledgments to the President of the College, for affording me access to every source of information I required; to the Secretary also, and to Mr. Stone, for facilitating, in every way, my desire to render the "Guide" complete. Nor should I omit to mention Mr. Doran's aid, in enabling me to complete the series of Microscopic Specimens used in the Anatomical Examinations.

FREDERICK JAMES GANT.

CONNAUGHT SQUARE, LONDON, W.

May, 1874.



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A G U I D E
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 organized beings in health and disease, and the laws relating thereto. The possession of an absolutely unrivalled Museum of Anatomy—human, comparative, physiological, and pathological, though less complete—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, in the midst of reform and reorganization, relative to our medical corporate bodies, it seems 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, by similar permission, followed through the two Examinations.—First, and Second, for the Diploma of Fellow. Since the period referred to, I have repeatedly continued 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 a period of the last five years.

EXAMINATIONS FOR THE DIPLOMA OF MEMBER.

PRIMARY EXAMINATION.

AT THE END OF SECOND WINTER SESSION,

ANATOMICAL AND PHYSIOLOGICAL EXAMINATIONS, from 1 to 4 o'clock, P.M.—Candidates *must* answer at least four out of the six questions. Answers to *less* than six questions will not be received before half-past 3 o'clock.

1. Describe the situation, attachments, and structure of the urinary bladder. Mention the portions of the bladder which are not covered by peritoneum, and the structures with which those portions are contiguous. 2. Describe the iris; its position, attachments, and structure. Mention its blood-vessels and nerves, and state the function it exercises in vision. 3. The thumb. Describe the position of the thumb, its bones, its articulations, its capability of motion, and the muscles by which its movements are effected. 4. Mention the muscles which enlarge the capacity of the chest during ordinary inspiration. Explain the mode by which ordinary expiration is effected. 5. Describe the changes which take place in the circulation of the blood after the birth of the child. 6. Describe the position and attachments (origin and insertion) of the biceps flexor cubiti, the brachialis anticus, the supinator radii, longus and brevis, the pronator radii teres, and the pronator quadratus. Mention the precise action of each muscle, and the nerve by which each is supplied.

The practical examinations on Anatomy and Surgery, which are most conclusive as the test of professional qualification, were instituted at the College in November, 1858, and have 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 their general design. It is to test the student's practical knowledge of Anatomy and Surgery as the result of personal instruction.

PRACTICAL EXAMINATION ON ANATOMY.—In the room, or theatre converted into a room, where the examination is held, several tables are arranged, on 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. The latter 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 table two examiners are engaged with a student or candidate for diploma. The general features of this 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. 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.

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 ureter 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, &c.

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

Histology.—As already stated, a series of specimens are used, in order to test the student's objective knowledge of histology. For example, under one of the microscopes I observed a section of a tooth showing the dentine. 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 might be advantageously extended.

SECOND OR PASS EXAMINATION.

AT THE END OF FOURTH YEAR.

EXAMINATION ON SURGICAL ANATOMY, AND THE PRINCIPLES AND PRACTICE OF SURGERY; from 1 to 4 o'clock, P.M.—Candidates *must* answer at least four out of the six questions. Answers to *less* than six questions will not be received before half-past three o'clock.

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. 2. Mention the circumstances attending a compound dislocation at the ankle-joint which would induce you to amputate. 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. 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. 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. 6. Myeloid disease. Describe the local appearance and the symptoms of myeloid disease. Mention its microscopic character. State the treatment, and the probable result.

PRACTICAL EXAMINATION IN SURGERY, AND USE OF SURGICAL INSTRUMENTS AND APPARATUS.—There are four tables, on each of which lies a man stripped for the purpose of surgical examination. 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 recumbent *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, as one of the examiners aptly designated it. Another man, of ample muscular form, is more suitable for amputation and the application of splints. A well-knit negro, whose picked-out muscles seem to invite the ligature of arteries, supplies the subject requisite for this purpose. 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, with certain remarks, on another paper, of "good," "moderate," or "bad." This last record is made, we believe, but rarely and very reluctantly, for a second or a third repetition of such failure will be fatal to the hopes of the candidate. 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, where the examiner is enabled to see what questions have been asked, in order to avoid any repetition. After another ten minutes the student passes on to a third; and, lastly, to a fourth table. 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 insertion 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 situations 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 metatarsophalangeal 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 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.

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

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

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 ankylosis 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.

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 until recently, has been the period. Examples: What is this? an angular curvature of the spine. Point out the caries. What are its consequences? In hip-joint disease, recognise the alterations which the head of the femur and acetabulum have undergone. Specimens of tumours or morbid growths, &c. Pathology being so directly supplemental to Practical Surgery, this part of the College examination might be most advantageously extended. But the College Museum, having no regular source of supply for the enlargement of its pathological department, should be aided by contributions from the hospitals, where duplicate specimens of value for the purpose of testing the student's knowledge are constantly accumulating.

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 Pharmacopœial 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 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.

Having watched the course of *practical* examination in Anatomy and Surgery, it 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. 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, from 1 to 5 o'clock, P.M.—
Answers to *less* than four questions are not received.*

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 each epiphysis is united to the shaft.
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.
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.

PRACTICAL EXAMINATION ON ANATOMY.—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

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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 time of examination for each candidate is ten minutes at four tables severally; a total period of forty minutes.

The anatomical 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 foetus, 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.

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 spleno-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 connexions with nerves; the nerves supplying the muscles of the eyeball. Select the bones of the internal ear, and describe their relative position and connexions. Describe the structure of the Eustachian 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. From 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 connexion 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 intra-pelvic organs : describe the parts seen.

Histology.—A series of highly useful mounted speci-

mens 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; kidney injected, showing arrangement of the vessels, and structure of Malpighian bodies; choroid coat of the eye. 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 function as an excreting organ.

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 to 5 o'clock, P.M.—Answers to *less* than four questions are not received.*

1. Describe the process of reparation which nature adopts to unite fractured bone, divided tendon, muscle, nerve, skin, mucous and serous membranes. 2. Describe the different forms of gangrene which may be produced—first, by disease of arteries; secondly, by lesions of arteries; thirdly, by acute inflammation. State the treatment to be employed in each case, and your reason 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. 4. Mention the different forms of disease, including malignant

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affection, to which the knee-joint is liable, and which may possibly render amputation or excision necessary. Describe the pathological conditions and the symptoms, local and constitutional, which would induce you to save a diseased knee with the view of obtaining ankylosis. 5. State the symptoms of congenital syphilis, and mention the internal lesions which frequently exist. Describe the treatment to be adopted. Prescriptions to be written in full. 6. Describe the local symptoms which precede and accompany the formation of phlegmonous suppuration; and state the chemical, physical, and microscopic characters of pus.

CLINICAL EXAMINATION OF PATIENTS.—For the purpose of conducting this portion of the *practical* examinations, various hospitals are visited, by permission of the authorities, and suitable cases selected by the examiners, agreeably to the surgical staff. Four of the recognised hospitals supplied the requisite amount of clinical cases on one such occasion—namely, Guy's, St. Bartholomew's, the London, and Charing-cross hospitals. Two examiners attend each hospital. It will be obvious that this clinical examination 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 it may be conducted. The examination is partly written and partly oral. Each candidate is required to examine a patient, and take notes in the form of a short clinical report of symptoms, or signs, and diagnosis. Of course, the bed cards, indicating the nature and treatment of the case, are removed. The time allowed is twenty minutes. The examiners then return and receive the report, folded up, and bearing the candidate's number. He is taken to a second case, one whereon another candidate has been engaged for his written report; he is first requested to examine that case, and then the oral questioning commences, ten minutes being the period. Thus, each candidate is submitted to clinical examination for half an hour. The relative merits of the written and oral modes of examination at the bedside, as a test of clinical knowledge, is a disputed question. But one eminent examiner, who has had experience of both modes, at the University of London, and at the College of Surgeons, gave his decided opinion in favour of the oral method for eliciting the candidate's qualifications at the bedside.

The following cases and series of questions will illustrate the general nature of this examination. Of four cases selected at one hospital, two were well marked by their positive signs, the other two being valuable for examination 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 ankylosis 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 moveable, 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 woman, 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 her age? 4. Secondary syphilis. Copper-coloured, scaly eruption, in a young woman. 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. He is requested to perform a certain operation, aided by an assistant when necessary. The candidate is required to

select the appropriate instruments, and to give instructions to his assistant—*e.g.*, as to the position of a limb for amputation, or the compression of a main artery. During the operation, or afterwards, questions are asked as to the parts seen or concerned; and lastly, as to the dressing of the wound. A second operation may then be undertaken. 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 comprised amputations, excisions, and the ligature of arteries. Thus I witnessed amputation of the fingers; at the wrist-joint; in the forearm; at the shoulder-joint; of the great toe, at the tarso-metatarsal articulation; Chopart's operation through the tarsus; and amputation below the knee. Excision of the knee-joint, and of the elbow-joint. Ligature of the subclavian artery, in the third portion; of the common carotid; and of the anterior tibial artery.

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 *viva 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 one of the candidates:—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.

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 viva-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 junior, 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.

In conclusion, I would venture to 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 exami-

nation. 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 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 sacroiliac 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 semilunar 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.

* From Catalogue by L. Jones Moseley, Esq., Anatomical Assistant to the College.

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 acromial fossæ of humerus. Orbicular ligament of radius and insertion of tendon of biceps muscle. Ligaments of elbow and fore-arm. 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. 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.

BLOOD-VESSELS.—Arteries and veins. Superficial palmar arch: distribution of nerves and anatomy of palm of hand. Elbow: front, superficial veins and nerves. Relations of superficial and deep vessels and nerves in front of elbow. Leg: transverse section, showing vessels.

NERVOUS SYSTEM.—(1) Spinal cord, shown by removal of arches of lower cervical and upper dorsal vertebræ, and membranes removed. Connexions 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 sphenopalatine 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 sphenopalatine 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 cord 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.

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 connexion 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 *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 connexion 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. 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 foetal circulation, injected, dried, and painted. Foetal heart, seven months, showing ductus arteriosus. Foetal thoracic viscera, injected.

ORGANS OF VOICE AND RESPIRATION.—Cartilages of larynx and hyoid bone (female, aged). Section of trachea, with its bifurcation. Thyroid and thymus glands, spleen and 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. Transverse 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 bristle 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 attachments of costal cartilages; section of right side to show interior of articulations. 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. Foetus 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. Popliteal space. Axilla. Front of thigh. Knee-joint, showing subcruræus. Constrictor muscles of pharynx, seen from behind. The same, side view. Muscles of larynx. Œsophagus, showing muscular layers, longitudinal and transverse. Digestive tract of child, eighteen months.

MICROSCOPIC SPECIMENS IN ANATOMICAL EXAMINATIONS.

—Striated muscular tissue. Hyaline cartilage (3 specimens). Yellow elastic tissue. White fibrous tissue. Section of liver, stained in carmine. Section of tooth, longitudinal. Section of tooth, horizontal. Involuntary muscular tissue. Section of human kidney, transparent, arteries injected carmine, veins in Prussian blue. Ditto, opaque; arteries injected yellow. Section of bone, transverse (3 specimens). Section of bone, longitudinal. (1 specimen). Section of spinal cord (3 specimens, by Leuhoessek). Section of lung stained blue.

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, Esq.

(96.) Organized 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.) Organized 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 Vertebrae.—The lumbar vertebrae 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 ver-

tebræ, 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 B.) Senile Gangrene of the foot.—Presented by E. Cock, Esq.

(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 laid 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 D.) Sebaceous cyst from 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.

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

(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, Esq.

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

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

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

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

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

(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, Esq.

(366 c.) Enlarged Bursa Patellæ.—Presented by E. Cock, Esq.

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

(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, Esq.

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

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

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

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

(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 Brookes, Esq.

(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, Esq.

(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, Esq.

(568.) Inflammation of Bone with superficial formation of New Bone: section of 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 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, Esq.

(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, Esq.

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

(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.

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

(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 of an 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.

(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, Esq.

(919 c.) Excised portion of diseased Knee-joint.—Presented by Sir W. Fergusson.

(926 A.) Bones of diseased Elbow-joint, excised.—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, Esq.

(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, Esq.

(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, Esq.

(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 hæmor-

rhoids.—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*.

(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*.

(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 connexion with the hernial sac.—From the Museum of John Howship, Esq.

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

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

(1982.) Sacculated Urinary Bladder, from Stricture of Urethra.—A bladder and prostate gland. In consequence of stricture of the urethra, 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*.

(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; 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.

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

(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.

(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*.

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

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

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

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

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

(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.

(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 ap-

proaches 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 fasciculated. 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, Esq.

(2810 B.) Epithelioma of Penis.—Presented by Sir W. Fergusson.

(2610 D.) A similar Specimen.—Presented by E. Cock, Esq.

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

(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.

(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, Esq.

(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 re-union 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, Esq.

(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, Esq.

(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*.

(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*.

(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 disk-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*.

(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.

(2973 A.) Left Femur, which has been fractured, near middle of the shaft, and re-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*.

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

(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*.

(3275.) Dislocation of Humerus, unreduced, and new articulation.—A scapula and humerus. 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, Esq.

(3327.) Bony Anchylosis of Hip-joint, with mal-position of Limb.—An os innominatum and a femur, closely and smoothly united by bone at the hip-joint. 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.

(3332.) Chronic Rheumatic Arthritis of Hip-joint.—The bones of a right 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 make 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, Esq.

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

(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.

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

(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 vertebrae 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 vertebrae 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, Esq.

PATHOLOGICAL PREPARATIONS AND SPECIMENS
IN
EXAMINATION ON MEDICINE.

(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, Esq.

(1166.) Cancer of Stomach.—A stomach of which the blood-vessels 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, Esq.

(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 ilio-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 cicatrized. 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*.

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

(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 adherence 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 foetal vitelline duct; but the second pouch on the ileum, and that on the colon, must have had a different orifice.—Presented by R. R. Robinson, Esq.

(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, Esq.

(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 liver.—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, Esq.

(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*.

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

(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 of 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.

(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 commences 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*.

(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, Esq.

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

(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 take 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 blood-vessels between the trunks of the urine-tubes, are seen radiating in every direction towards the circumference of the calyx.—Presented by J. G. Crosse, Esq.

(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, Esq.

(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 blood-vessels 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, Esq.

(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, Esq.

COLOURED LITHOGRAPHS OF SKIN DISEASES:—

(83.) Impetigo Conferta.—Coloured lithograph of impetigo of the face. The patient was a delicate youth, aged seventeen; he was brought up in the country, and being 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.

(120.) Herpes Zoster—showing the typical form of herpes, the particular example being herpes zoster, or herpes intercostalis.—The eruption is seen in its characteristic progressive stages—namely, 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 finally, as incipient scabs.

(146.) Dermato-syphilis Erythematososa—in an Infant Eleven Months Old.—The disease was first manifested at the age of six weeks by excoriation of the mucous membrane of the mouth and at the angles of the mouth, nose, and eyelids, by aphthæ, hoarseness, and mucous accumulation in the bronchial tubes, trachea, and nares. Three months after this attack the eruption made its appearance in the form of small circular spots, which increased quickly in size and became blended into blotches of considerable dimensions, 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; an example of which is seen on the left buttock. The mother of the child was free from any syphilitic symptoms, but had suffered two miscarriages and occasionally from vaginal discharge and sore throat, the latter being attributed to catarrh. She was a healthy-looking young woman, æt. twenty-six, and her husband was, to all appearance, equally healthy.

(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 prominent 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 connexion, but no local disease; and six or eight weeks after the last of these connexions 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.

(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.—*Bagg.*

(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.—*Bagg.*

(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.—*Bagg.*

(493.) Mollusum Adenosum—Mollusum Sebaceum—Mollusum 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.—*Bagg.*

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—Hainsby's Spring-Compressor of cheeks, after Operation for Hare-Lip—Tongue Spatula—Tonsil Guillotine—Œsophagus Sponge Probang—Ditto Expanding Brush—Probang—Ditto Hook—Probang—Trocár and Canula for Paracentesis Abdominis—Hydrocele Trocar and Canula—Smaller Instrument for exploratory puncture of Abscess—Hypodermic-injection Syringe—Candle and Mirror, for examining hydrocele by transmitted light—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—Catheters, silver and gum elastic—Prostatic Catheter—Catheter for Washing out Bladder—Urethral Bougies, gum elastic—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—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; Forceps 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):—

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

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

<i>Made Bandages.</i>		<i>Thigh.</i>	<i>Leg and Foot.</i>	<i>Arm.</i>	<i>Straight Splints.</i>			
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.	

*Bandages, &c., 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 Bandages. 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
DURING A PERIOD OF FIVE YEARS, FROM
JANUARY, 1869, TO JANUARY, 1874.*

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 foetal 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.

4. Healthy Urine:—Name its constituents. State its specific gravity, and the normal quantity passed in twenty-four hours by an adult.

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.

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.

* 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.

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.

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.

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.

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.

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.

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.

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.

5. State the functions of the Skin. Describe its Glandular Structure and the Excretory Ducts.

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.

May 8th.

1. The Sterno-mastoid Muscle. — *a.* Name (without describing) the Blood-Vessels 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.

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.

5. State the changes which the Atmospheric Air and the Blood respectively undergo during respiration.

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.

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.

5. The Ovary.—Describe its position, connexions, and structure.

6. State the functions assigned to the different parts respectively of the Organ of Hearing.

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.

2. Describe the sounds of the Heart, and state the causes to which they are attributed.

3. Describe the Diaphragm.

4. State the means by which Animal Heat is produced and maintained in the human body.

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.

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.

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

6. Describe the functions of the Soft Palate and Uvula.

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.

3. State the position of the Coeliac 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.

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 Foetus.

3. Describe the shape and structure of the Trachea, Bronchial Tubes, and Air-Cells.

4. How is the Heat of the Foetus maintained *in utero*? and how is it produced and maintained after birth?

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.

April 23rd.—(See page 3.)

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.

3. Describe the structure of the Uterus, and mention the changes which take place in the organ during gestation.

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.

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.

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.

3. Describe the Knee-Joint.

4. What are the functions of the Spinal Cord?

5. Describe the Prostate Gland; its structure, investments, and attachments.

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.

November 5th.

1. Describe in their relative position the muscles, nerves, and blood-vessels 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.

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.

4. Describe the functions of the Skin; and state what physiological effects result from their suppression.

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 14th.

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.

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.

5. Give the course, relations, and distribution (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.

April 1st.

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.

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.

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 kinds of Cartilage, give examples of each kind, and a description of its minute structure and properties.

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.

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.

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?

April 22nd.

1. Give an exact description of the Inter-articular Fibro-cartilages in the human body—including their minute structure, connexions, and functions.

2. The Tympanum—its boundaries, the parts contained within it, and their functions.

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.

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.

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.

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.

5. The Deep Cervical Fascia—Describe its extent, connexions, and arrangement; specifying particularly its relations to the muscles and blood-vessels of the neck.

6. Describe the Superior Cervical Ganglion of the Sympathetic—its form, situation, and connexions. What effects result from its section?

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.

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.

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.

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.

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.

3. Describe the Prostate Gland:—its anatomical relations and minute structure; and its functions.

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?

6. Describe the Tongue, including its mucous surface, muscles, and their action, and the distribution of its vessels and nerves.

March 30th.

1. Describe the structure, connexions, 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.

3. Describe in detail the action of the Heart. How do you account for its sounds and impulse?

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.

6. Give the physical characters and chemical composition of Urea; state how its presence may be detected in the urine and other fluids.

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? 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.

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.

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.

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.

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.

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.

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?
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.
3. Describe the Metatarso-phalangeal articulation of the Great Toe, and the tendons in connexion 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.
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 Vertebrae in one of the higher Animals.

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.
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.

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.

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

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

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

6. Describe the microscopic appearance, properties, and uses of Areolar tissue, and of elastic and non-elastic Fibrous tissue. Give examples of each.

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?

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 were divided in the centre of the Axilla, name the muscles which would be paralysed; and describe the positions which the forearm and hand would assume.

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.

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.

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.

May 10th.

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. State how the Capillary Arteries and Veins are distributed in this organ. Give an Analysis of the Urine.

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.

July 12th.

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 blood-vessels, its nerves, and the structure of its mucous membrane.

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, connexions, and structure, and the dissection necessary to expose it.

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 Graafian Vesicle, the mode in which the Ovum enters the Fallopian tube, and how it finally becomes attached to the Uterus.

November 8th.

1. Give the Anatomy of the Prostate Gland; describing its size, form, situation, connexions, and structure.

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.

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.

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.

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.

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.

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.
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.

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.

2. State the signs which distinguish a Femoral Hernia from an Inguinal Hernia.

3. State the symptoms of Ulceration of Cartilage in the Knee-joint, and the treatment of that disease.

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.

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. 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. For the medicines that may be required, write the prescriptions in full.

April 17th.

1. Describe the diagnosis and the treatment of Fracture of the Acromion of the Scapula.

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 Blood-vessels which are close to it, mentioning their position with respect to the ring.

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. 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.

5. Describe the Symptoms and the Treatment of Peritonitis following an operation for Strangulated Hernia. 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. 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.

2. Describe the causes, the most frequent situations, symptoms, and treatment of Abscess in Bone.

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.

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.

5. Describe the circumstances which serve to distin-

guish a Cancerous tumour from other tumours of the Breast; and the means of identifying the cancerous character after its removal.

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.

May 15th.

1. The Omo-hyoid Muscle:—Describe its connexion with bones (origin and insertion) and with the cervical fascia; also the relation the muscle bears to operations performed on large blood-vessels.

2. Describe the process of healing by Primary Adhesion; and that by Granulation. 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. Describe in detail the Fistula in one of those situations; stating how it originates, its distinguishing characters, and the plan of treatment.

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?

5. Carbuncle:—Describe the symptoms; the successive morbid changes; and the treatment, local and general, in different stages of the disease.—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.—Prescriptions to be written in full.

July 17th.

1. Name the structures which must necessarily be divided or separated in the operation for the removal of the Superior Maxillary Bone.

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.

3 Describe the boundaries of the Axilla, and the rela-

tive position of the great blood-vessels 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.

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.

November 12th.

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.

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.

3. Mention the structures which must be divided in the respective operations for Hydrothorax, Ascites, Hydrocele, and Fistula in Ano.

4. Describe the appearances of an ordinary Syphilitic Sore, and mention the different forms of Secondary Syphilitic Eruption.

5. Describe the Surgical Anatomy of the Sartorius Muscle in reference to deligation of the Femoral Artery.

6. Describe the local symptoms of Acute Periostitis (say of the Tibia); state the possible results, and mention the treatment.

1870.

January 21st.

1. Describe the appearances and symptoms which indicate Congenital Syphilis in an infant. Mention the treatment to be adopted in such a case.

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.

3. To what morbid changes are Bursæ liable? Give examples, and mention such modes of treatment as you think most eligible.

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.

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.

6. Explain anatomically the course which the blood takes to the lower extremity after the External Iliac Artery has been tied.

April 16th.

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.

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.

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.

5. Abscesses in the Female Breast:—Describe their causes, situation, progress, and treatment.

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.

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.

2. Mention the circumstances attending a compound dislocation at the Ankle-joint which would induce you to amputate.

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.

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.

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.

6. Myeloid disease:—Describe the local appearance and the symptoms in Myeloid disease. Mention its microscopic character. State the treatment, and the probable result.

May 13th.

1. What is Spina Bifida? What are the effects usually produced by it? Give the treatment.

2. Describe the parts seen in exposing the Sternomastoid 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. State also the diagnostic signs of Femoral Hernia; and describe the operation for its relief when strangulated.

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.

6. Describe the position of the Thyroid Body in relation to surrounding structures. Describe also its blood-vessels, 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.

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.

3. What is understood under the term "fungus" of the Testis? Describe its nature, the mode in which it arises, and the appropriate treatment.

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.

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 ; and notice the principal methods of treatment which have been followed in cases of Ununited Fracture.

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.

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.

3. State the boundaries of the Popliteal Space, and the relative situation of the parts contained within it.

4. What are the diagnostic signs of Chronic Rheumatic Arthritis of the Hip-joint? Describe the pathological changes observed in such cases after death.

5. Describe the course of the Brachial Artery, pointing out its relative position with respect to the contiguous muscles, nerves, and veins.

6. What are the local signs, most probable cause, and proper treatment of Post-pharyngeal Abscess?

1871.

January.

1. Describe the common forms of Ulcers (non-specific). State the causes by which they are produced, and their appropriate treatment.

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.

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.

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.

April 14th.

1. Pyæmia; its causes, symptoms, effects, and treatment.

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.

3. Describe the various forms of inflammation which affect the Conjunctiva; their symptoms, causes, and appropriate treatment.

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.

6. How may the production of "lymph" as the result of

Inflammation be accounted for? Describe its minute structure in its different forms, and the changes they may undergo.

May 12th.

1. Describe the Inguinal Canal: its boundaries and relations to other structures, including hernial protrusions.

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?

3. Give the pathology of non-traumatic Aneurism from its commencement to its termination.

4. Describe the operation known as Chopart's, and the relative position of the various parts cut through in this amputation.

5. How are Scirrhus and Medullary Cancer distinguished in the living subject? What organs does each form specially affect, and at what ages usually do they respectively occur?

6. By what form of accident is dislocation of the Head of the Femur backwards usually caused? Describe the two dislocations in this direction, the deformity existing in each, and the proper method of reducing them.

July 21st.

1. Mention the Articular surfaces of the Superior Maxillary Bone; describe the operation for its removal, and the parts cut through in the operation.

2. Describe the operation of extirpation of the globe of the Eye, and state the injuries or diseases which render the operation advisable.

3. Name the parts cut through in the following operations—viz., Hare-lip; Umbilical Hernia; amputation of the Thumb at the Carpo-Metacarpal joint; and in ligature of the Ulnar Artery in the middle of the fore-arm.

4. Enumerate the various kinds of Ulcer which occur on the Tongue; state the cause and characteristic appearance of each, 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.

November 10th.

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.

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 fore-arm, indicating the precise relations of the vessel at the point at which it is tied.

3. Describe the symptoms, consequences, and treatment of chronic enlargement of the Prostate Gland.

4. Mention the different tissues and localities in which the formation of Pus causes the greatest local pain and constitutional disturbance. 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.

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.

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.

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.

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 Apnoea from Drowning.

5. What are the symptoms, course, results, and treatment of Gonorrhoeal Ophthalmia?

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? What are the microscopic appearances by which each is characterized?

2. Describe the operation of Excision of the Elbow-joint; and state under what circumstances it may be required.

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.

4. What are the causes which may impede the union of a fracture of a long Bone? Describe the modes of treatment which might be resorted to in order to promote the cure of an Ununited Fracture.

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.

6. Mention the different forms of Nævus; and the appropriate modes of treatment.

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.

2. Define 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.

3. Describe the various forms of fracture of the Neck

and intertrochanteric portion of the Femur. Give their diagnostic marks, and the treatment.

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.

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.

May 10th.

1. Enumerate the various Dislocations of the Head of the Thigh-bone; and describe the position of the limb in each kind.

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.

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.

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.

5. Name in order the structures that must be divided in the lateral operation of Lithotomy; and the parts liable to be wounded.

6. Describe the various kinds of Opacity of the Cornea, their causes, the prognosis, and treatment.

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.

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.

3. State the different morbid conditions which render Lumbar Colotomy necessary. Describe this operation and the parts successively divided in performing it.

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.

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.

6. What is Cataract? Give its different forms, and the operation appropriate for each variety.

November 8th.

1. In injuries of the Head, under what circumstances would you feel warranted in using the Elevator or applying the Trephine?

2. Describe the operation for applying a ligature on the External Iliac Artery, and the parts cut through in its performance.

3. Give an account of the descent of the Testicle; and mention the affections resulting from imperfections in the process.

4. Mention the boundaries of the Femoral ring. Describe the mode of formation of the Saphenic opening of the Fascia Lata. Enumerate the Coverings of a Femoral Hernia, and state from what structures they are derived.

5. Describe Syme's operation at the Ankle-joint, the parts cut through; and state in what Pirogoff's method differs therefrom.

6. Describe the varieties of fracture of the upper end of the Humerus, their diagnosis, prognosis, and treatment.

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.

3. The side view of the Pelvis:—Give the relations of

the several parts shown in this Section, including the connexions of the Pelvic Fascia and Peritoneum.

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

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

6. Describe the microscopic appearances, properties, and uses of Arcolar tissue, and of elastic and non-elastic Fibrous tissue. Give examples of each.

January 17th.

1. Describe the course to a favourable termination, the symptoms and treatment of a severe case of Carbuncle upon the Nape of the Neck.

2. Give the relative Anatomy of the Arteria Innominata. 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.

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.

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.

April 18th.

1. Name the varieties of Ulcers. Describe the characteristic appearances of each, and the treatment required for its cure.

2. Enumerate the parts divided in the Operations for Fistula in Ano, Tracheotomy, Single Hare-lip, and Strangulated Hernia within the Inguinal Canal.

3. Describe Glaucoma, and its treatment.

4. Give the various modes of arresting Hæmorrhage, either from an artery, a vein, 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.

6. State the complications which may attend a fracture of a Rib, and their appropriate treatment.

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.

2. Describe in detail the operation of placing a ligature upon the Common Carotid Artery; and state how the Brain would then be supplied with blood.

3. Describe Epithelioma, its general and minute characters, the parts most liable to be attacked by it, and the treatment.

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.

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.

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.

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.

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?

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.

6. What fluctuating or fluid Swellings may present themselves in the Popliteal space? 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.

2. Describe the operation for placing a ligature on the Radial Artery in the upper third of its course.

3. Give the pathological anatomy, symptoms, and treatment of Strumous Ophthalmia (Keratitis).

4. State the symptoms, diagnosis, and treatment of the various fractures of the upper end of the Humerus.

5. What is Necrosis? Describe its causes, the pathological changes which ensue, the bones most liable to be affected, and the surgical treatment.

6. What is Talipes Valgus? With what condition of foot is it commonly associated? Describe the treatment.

1874.

January 16th.

1. Describe the method of Reparation in Simple Fracture of Bone, in Laceration of Muscle, in Division of Tendon, and in Sloughing of Skin.

2. Mention all the symptoms of Concussion of the Brain; and give an explanation of them.

3. Describe the Diseases of the Skin usually grouped under the term Vesicular; and give their appropriate treatment.

4. Describe the varieties of Primary Venereal Sores commonly met with, their probable consequences, and proper treatment.

5. Describe the affections known as Phimosis and Paraphimosis; explain their causes and possible consequences, and state their treatment.

6. What is Staphyloma? Mention its causes, pathology, and treatment.

EXAMINATION ON
THE
PRINCIPLES AND PRACTICE OF MEDICINE.

1869.

January 16th.

1. Describe the course of an attack of Pneumonia, the physical signs by which the several stages are characterized, 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 Brit. Ph. 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 17th.

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 Ph. Br., with their ordinary uses and doses:—Mist. Amygdalæ; Mist. Cretæ; Mist. Ferri Composita; Mist. Gentianæ; Mist. Sennæ Composita; Mist. Spiritus Vini Gallici.

May 1st.

1. When a patient is suddenly seized with bleeding by

the mouth, what 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 B. P., 1867:—*Mistura Creasoti*; *Liquor Morphiæ Acetatis*; *Spiritus Chloroformi*; *Tinctura Chloroformi Composita*; *Tinctura Camphoræ Composita*; *Tinctura Opii Ammoniata*.

May 15th.

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. Assa-fœtidæ Co.*; *Pil. Colocynthis Co.*; *Pil. Conii Co.*; *Pil. Hydrargyri Subchloridi Co.*; *Pil. Plumbi cum Opio*; *Pil. Rhei Co.*; *Pil. Saponis Co.*; *Pil. Scillæ Co.*

July 17th.

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 13th.

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 14th.

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 23rd.

1. Describe the course of an attack of Rheumatic Fever, and the symptoms and signs which characterize 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 12th.

1. Describe the symptoms characterizing 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 15th.

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 13th.

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 22nd.

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 11th.

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, Diarrhoea, 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 Morphiae 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 11th.

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 20th.

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 9th.

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 Brit. Ph. 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 18th.

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 19th.

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 17th.

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, Ring-worm, 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.

DIPLOMA OF FELLOW.
FIRST EXAMINATION.

ANATOMY AND PHYSIOLOGY.

1869.

May 22nd.

1. State the position in 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.

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.

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.

5. Mention the structure common to Secreting Glands generally; and describe the modifications the structure undergoes in different classes of glands.

6. Describe the physiological phenomena attending death from Asphyxia, the order in which they occur, and the condition of the internal organs after death.

November 20th.

1. The Tongue:—Describe its attachments, surfaces, muscles, vessels, and nerves; state the special functions of each nerve.

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.

5. Describe the Anatomical structure of Skin, Mucous Membrane, and Serous Membrane; and state the particular functions which each is adapted to fulfil.

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.

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 each Epiphysis is united to the shaft.

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.

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.

(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?

(c.) Whence are the various additional components found in the expired air derived?

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.

5. Describe the Diaphragm: its attachments, relations on both surfaces, structure, and openings. Also state whence its blood-vessels 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 blood-vessels respectively? Also state the general physical laws under which absorption takes place.

1871.

May 19th.

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.

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.

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.

N.B. *All four questions must be answered.*

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.

3. Describe the development of the Mammalian Heart; and give an account of its construction in the different classes of Vertebrata.

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.

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?

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.

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.

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.

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.

4. Describe the Œsophagus; its course and relations, the dissection necessary to expose it, and its structure.

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.

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.

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. 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; and describe the process by which the Ulcer is healed.

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; 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.

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.

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 faecal matter. Mention the plan of treatment to be adopted in different cases. Describe any necessary operation.

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.

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.

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?

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?

5. Mention the different morbid affections to which the Prostate Gland is liable; and describe the pathological condition of the organ in each affection.

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 Iodide of Potassium should be preferred.

1870.

May 26th.

1. Describe the process of reparation which nature adopts to unite Fractured Bone, divided Tendon, Muscle, Nerve, Skin, Mucous and Serous Membrane.

2. Describe the different forms of Gangrene which may be produced; 1st, by Disease of Arteries; 2ndly, by Lesions of Arteries; 3rdly, by Acute Inflammation. State the treatment to be employed in each case, and your reason 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.

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. Describe the pathological conditions and the symptoms, local and constitutional, which would induce you to save a diseased knee with the view of obtaining ankylosis.

5. State the symptoms of Congenital Syphilis, and mention the internal Lesions which frequently exist. Describe the treatment to be adopted. Prescriptions to be written in full.

6. Describe the local symptoms which precede and accompany the formation of Phlegmonous Suppuration; and state the chemical, physical, and microscopic characters of Pus.

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.

2. Enumerate the various kinds of Cystic Tumours met with in the neck. Describe their nature, diagnosis, and treatment.

3. Describe the various forms of Mortification, and the causes upon which they severally depend.

4. Describe the minute changes which Articular Cartilage undergoes in the process termed "ulceration."

5. State the various causes of Intestinal Obstruction. Give the diagnosis and treatment in each case.

6. What is understood by the term "adenoid?" Describe the general characters and minute structure of Tumours of this kind, their usual site, and the proper treatment.

1871.

May 25th.

1. Describe the Diseases which cause undue prominence or protuberance of the Globe of the Eye; their diagnosis, treatment, and prognosis.

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.

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.

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.

N.B. *All four questions must be answered.*

November 22nd.

1. Describe precisely the different modes of performing Amputation of the Thigh, and include amputation at the Knee-Joint. State the advantages of each mode of operation, and the reasons for selecting it.

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.

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.

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.

1872.

May 23rd.

1. Describe the operation of Excision of the Upper Jaw, and state for what diseases this operation may be required.

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.

3. Give the symptoms, causes, and treatment of Acute and Chronic Glaucoma ; including the appearances usually presented under the Ophthalmoscope.

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.

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.

2. Name the varieties of Nævus as developed in the Integument. Describe minutely their Special Anatomy and appropriate treatment.

3. The pathology and treatment of Pyæmia.

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.

1873.

May 29th.

1. Describe the Anatomical Characters, Causes, and Results of Inflammation of Veins.

2. Describe the Morbid Changes you would expect to find in a person who had died from protracted Syphilis.

3. Describe the Anatomical Characters of the various Diseases of the Larynx, their diagnosis, and treatment.

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.

November 27th.

1. Give the different forms of Stricture of the Cæso-

phagus, and their usual seat; and describe the symptoms, diagnosis, and treatment of each form.

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.

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.

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?

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.

THE END