Report on the examinations, 1881-2, of the medical and surgical corporations of the United Kingdom by the visitors appointed by the General Medical Council.

[March 22, 1882.

REPORT

ON

THE EXAMINATIONS,

1881-2,

OF THE

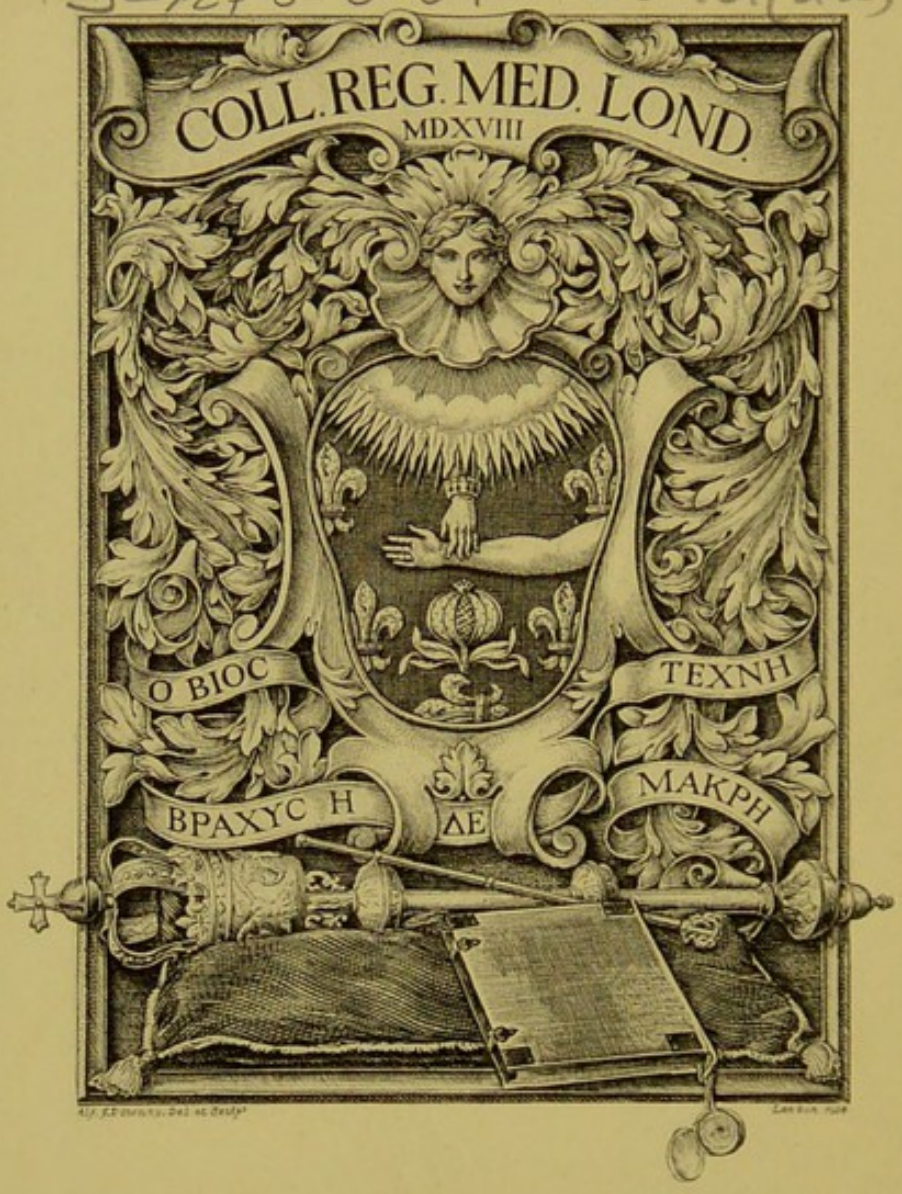
MEDICAL AND SURGICAL CORPORATIONS OF THE UNITED KINGDOM,

BY

THE VISITORS

APPOINTED BY THE

GENERAL MEDICAL COUNCIL.



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GENERAL MEDICAL COUNCIL.

VISITORS:

T. Pridgin Teale, M.A. Oxon., F.R.C.S., Crown Nominee on the General Medical Council.

Wm. Tennant Gairdner, M.D. Edin., Professor of Medicine in the University of Glasgow.

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PART III.

[EXTRACTS FROM MINUTES OF THE GENERAL COUNCIL AND EXECUTIVE COMMITTEE, VOL. XVII.]

GENERAL COUNCIL, JULY 16, 1880.

22. *Moved by* Dr. ANDREW WOOD, *seconded by* Sir JAMES PAGET, and *agreed to*—

"That the Council resume the Visitation of Examinations and carry it on systematically from year to year."

23. *Moved by* Dr. HUMPHRY, *seconded by* Dr. ROLLESTON, and *agreed to*—

"That it be a direction to the Executive Committee to instruct Visitors to inquire into the causes of the rejections that appear in the Annual Returns."

EXECUTIVE COMMITTEE, AUGUST 9, 1880.

13. *Resolved:*—(*a*) That in accordance with the foregoing resolution [Clause 22], the Executive Committee determine that during the ensuing year the following Licensing Bodies be visited:—

(i.) In England:—
The Royal College of Physicians of London.
The Royal College of Surgeons of England.

(ii.) In Scotland:—
The Royal College of Physicians of Edinburgh.
The Royal College of Surgeons of Edinburgh.

(iii.) In Ireland:—
The King and Queen's College of Physicians in Ireland.
The Royal College of Surgeons in Ireland.

EXECUTIVE COMMITTEE, OCTOBER 30, 1880.

3. *Resolved:*—That each of the Visitations be conducted on the following system:—

(*a*) That two Visitors, not Members of the Council, the one

a Physician, and the other a Surgeon, visit, if possible, each of the Professional Examinations of each College of Physicians and Surgeons in England, Scotland, and Ireland, at least once during the year 1881;

(β) That a Member of the Council be associated, in each Visitation, with the Visitors aforesaid;

(γ) That it be referred to a Committee to make the suitable arrangements for carrying out the above resolutions, in accordance with the Council's Standing Orders, and that the following be the Members of the Committee:—Sir JAMES PAGET, Dr. QUAIN, Dr. PITMAN.

EXECUTIVE COMMITTEE, JANUARY 19, 1881.

Report of the Visitation Committee:—Members: Dr. ACLAND, President; Sir JAMES PAGET, Dr. QUAIN, and Dr. PITMAN.

The Committee appointed to make suitable arrangements for visiting the examinations of each College of Physicians and Surgeons in Scotland, England, and Ireland, beg to report that Mr. TEALE, Professor GAIRDNER, and Mr. STOKES, have consented to undertake the duty of Visitors.

Resolved:—"That their Report be adopted; and that Mr. TEALE, Professor GAIRDNER, and Mr. STOKES, be appointed Visitors of Examinations for the current year."

EXECUTIVE COMMITTEE, APRIL 25, 1881.

Resolved:—"That the Visitors of Examinations of this year be requested to include the Faculty of Physicians and Surgeons of Glasgow among the Bodies that are to be visited."

EXECUTIVE COMMITTEE, NOVEMBER 11, 1881.

Resolved:—"That the PRESIDENT be requested to communicate with the VISITORS of Examinations with a view to ascertain whether before the end of this year (or early in next year) they could visit the Examinations of the two Societies of Apothecaries, and if they could, to request that they will do so."

PREFACE.

In compliance with the foregoing resolutions the Visitors present their Report to the President and Members of the General Medical Council.

The Report consists of three parts.

Part I. includes—(*a*) General impressions of the Examinations in the various bodies; (*b*) special remarks on the Examinations of each; (*c*) notice of changes and improvements which have followed on the Reports of former Visitors; (*d*) opinions as to the "causes of rejections"; (*e*) methods of marking; (*f*) appointment of Examiners; (*g*) conclusions; (*h*) suggested scheme for written Examinations. Part II. comprises descriptions in detail of the examinations as witnessed by the Visitors. Part III. contains various documents bearing upon the examinations, together with the printed questions. In the plan of the Report the Visitors have departed somewhat from that of their predecessors. They have not printed any of the written answers of candidates, not feeling that a commensurate advantage would be likely to result from the publication of such a large mass of manuscript; but they have collected the actual answers, or accurate copies of them, selected from the Examinations of each body, and these may at any time be printed if the Medical Council should consider their publication desirable. In the meantime, the answers are placed in sealed packets among the archives of the General Medical Council. In another respect also the Visitors have not followed the precedent of former Visitations. They have refrained from expressing opinions as to the judgment formed by the Examiners in passing

or rejecting candidates, feeling that such judgment ought to rest solely with those who are responsible for the Examination, and moreover, that the standard of any Examination cannot be fairly taken from the individual judgment of the Examiner, especially when given in the presence of Visitors who have to report critically upon the Examinations.

The Visitors have much pleasure in expressing their thanks to Mr. HENRY HUNT, of Dublin, who acted as their Secretary, and to whose work they are much indebted in carrying the Report through the Press, and in preparing the index.

PART I.

GENERAL IMPRESSIONS.

BEFORE entering upon any criticism of the particular Examining Bodies, the Visitors wish to record the general impressions they have received of the examinations which they have inspected. In every examination they found some features specially worthy of commendation, and a large amount of good work done by earnest and competent men. It may be doubted whether, up to a certain point, the differences between the examinations are not, in reality, an advantage; because, while some Examining Bodies insist more strongly on one thing, and some on another, it would seem that, were each of the examinations severally developed to their highest standard in every subject, the demand upon the candidate could not be met. One Body devotes itself more to developing one aspect of the examination; another to another, and thus a high standard, with regard to particular subjects, is preserved, which otherwise would be unattainable. It might be argued that, for the average student, it is more important to have a moderately high standard all round than to have excellence in particular departments, with a comparatively low standard in others. But, looking to the exceedingly wide range, and the great multiplicity of subjects for examination in a medical curriculum, and also to the time at the disposal of the student, only a very moderate standard all round can possibly be attained by the majority. Whether the area of examination ought not to be limited so as to permit of a high standard in essential subjects being required is an important question, especially as education becomes daily more and more the slave of examination. Hence it is once more a serious subject for inquiry, whether a careful limitation of some of the fundamental studies, such as physiology and

General Impressions: Special features in every Examination.

Limitation of certain studies recommended.

chemistry, ought not to be more decisively adopted, substituting a smaller portion well done for the whole somewhat imperfectly so. The Colleges of Surgeons, both in England and Ireland, seem to attach an importance, perhaps too great, to the minute details of human anatomy in comparison with the other fundamental sciences; and it is through this alone—*i.e.*, by concentrating the attention of the student upon anatomy at the expense of the other subjects—that they are able to require so high a standard. The question arises, to what extent should other subjects be made secondary to anatomy? Or, whether it would be at all possible to obtain, with an evenly distributed attention in all the subjects, anything approaching to sufficient excellence in anatomical detail. Again, is it right that anatomy, as a subject for examination, should be treated so exclusively from the point of view of human anatomy as to exclude morphology? This exclusion was observable in all the examinations witnessed by the Visitors.

The stringency as to minute detail in examination is undoubtedly having an injurious reflex effect upon philosophical anatomical teaching. The result is that teaching is becoming more and more bound by the inflexible requirements of the examining bodies which demand such minute knowledge. The extreme importance of the mutual interdependence of examination and teaching is well illustrated by Professor Humphry in his Hunterian oration (p. 32) :—" The Examinations, as I have said, are, and must be, the despots of education. They have probably, for the present at any rate, been made sufficiently severe. What is required is a gradual alteration in their quality. They might well afford to be less exacting in the amount and variety of detail and circumstance, and to throw somewhat more weight into the scale of intelligent appreciation of the knowledge possessed, so that, by their requirements, they may develop a better adjustment of the balance of work and thought. They should not be considered merely as tests of fitness for certain positions and rewards, but even more as educational agents, as the guides of teaching and of study. *Every question put must be regarded as a drop in the educational current of the future; and Examiners must recognise that they are not simply judges of the students who come before them, but that they are, in no less degree, directors of, and so, responsible for, the teaching of those who will*

Humphry on the influence of Examinations in direct-

follow." In this spirit it is the desire of the Visitors to compare and estimate the various examinations which it has been their privilege to inspect.

Clinical Examinations a lever in Medical Education.

The great importance of clinical examinations, and also their being comparatively an innovation, lead the Visitors to think that a few remarks, conveying the general impressions they have received from the whole of the examinations, may not be out of place here. They desire most emphatically to bear testimony to the great care and conscientiousness with which these examinations were conducted. The great majority of the examiners were hospital physicians or surgeons of high reputation ; and in some, but not in all instances, they were working in their own wards, where their familiarity with the materials enabled them to do the utmost justice to all parts of the examination. Not only did the Visitors observe a great desire for fairness and efficiency as regards testing the merits of the individual candidates, but also, in most instances, an appreciation of the principle that a comprehensive and really clinical test is, as it were, a new leverage introduced into medical education, tending both to elevate its character and to make it more practical in its aims. This test, moreover, secures the general competency of the registered medical practitioner for the emergencies of his daily life.

The reflex influence of the clinical test upon the quality and character of medical education appears to the Visitors so overwhelmingly important, that they desire to show how it has influenced their judgment, in points of detail, as regards the clinical examinations which they have had an opportunity of describing. It is at once evident that the medical student, having it distinctly before his mind, all along, that he is ultimately to be brought into contact with his examiners at the bedside of a patient, must be led to avail himself largely and earnestly of all the opportunities presented to him of learning the actual facts of disease for himself, and obtaining experience in the methods of investigation used in forming a diagnosis. In like manner, the teacher, having in view that his pupils will be subjected to this test, will be more anxious to place them personally in contact with facts at the bedside, and to give them all necessary opportunities of learning scientific methods. Both upon teacher and pupil, therefore, the influence of clinical examinations for good, will be directly in proportion as the examinations are conducted

in a thoroughly practical manner, by bringing the candidate as much as possible into the position of a man acting for himself in the presence of disease.

Comparative estimate of Clinical Examinations.

The Visitors would here compare the clinical examinations of the Royal College of Physicians of London, and those of the King and Queen's College of Physicians in Ireland, as described in Part II., at the same time interpolating remarks upon the corresponding examinations of the Scottish Bodies. While all these examinations are, in the opinion of the Visitors, well-conducted, substantial differences exist, amounting in some cases to completely opposite methods. Thus there is still room, perhaps, for further development and improvement in the methods of the individual examinations. In the London examination, for instance, each candidate is furnished with a case, and desired to write a detailed report on it, and to state also, in writing, his opinion as to the diagnosis, prognosis, and treatment. This having been done, the record forms the sole basis of the examiner's judgment on the performance of the candidate in this part of the clinical examination. So far as this case is concerned, no conversation at the bedside takes place between the examiner and the candidate; no questions are asked as to how certain conclusions are arrived at; and, therefore, the examiner has no opportunity of personally observing the method of working of the candidate in investigating the case, except as it appears on the face of the document. The facts and inferences may be right or wrong, defensible or otherwise. If right, the candidate has no means of showing the process by which he arrived at his conclusions; if wrong, the examiner is obliged to decide merely from the written report whether the error was accidental, or due to essentially faulty methods of procedure. The Visitors do not assume that this method is the one invariably pursued in the London examinations; only that, in the point mentioned, it appears to them to be decidedly defective. No doubt it tends in some degree to economise the time of the examiner, and perhaps also affords, to a really excellent candidate, an opportunity of showing how he can produce in a written form an elaborate and well-reasoned commentary on a case. But as a method of distinguishing between competent and incompetent candidates it is not satisfactory; nor does it make the best use of the actual materials employed in a clinical

Coll. Phys., London.

examination. One case only being allowed to each candidate, too much might depend upon the candidate having had previous opportunities of seeing the particular kind of case allotted to him; and there is, further, the accident of his not being in a state of mind to form a calm and impartial judgment upon it. Moreover, a good man, though well instructed in general, may fail, when under examination, to comprehend the bearings of a particular case, or may have his judgment upon it warped at the outset by some purely conventional and venial error; whereas an inferior man, who has a certain amount of cleverness in expressing himself on paper, may give a right diagnosis, and may accumulate, partly from observation and partly from book knowledge, a sufficient amount of details to give it a plausible support, although possessing little real skill in the work allotted to him. These considerations tend to show that a wrong diagnosis may sometimes speak better for a candidate than a right one; or, at all events, that it is not so much the accuracy of the diagnosis, as the mode in which it is arrived at, that ought to influence the examiner in estimating the position of the candidate.

K. & Q. Coll. Phys., Ireland.

The Dublin examination is here at all points superior to the London one. The candidate is asked to examine the case for himself, as in London, and he is ultimately expected to write upon it a report, a schedule being handed to him at the beginning of his examination for the purpose of confining his remarks within the limits required. But while this written report is, as in London, an essential part of the examination, it is by no means upon the document only that the examiner ultimately founds his judgment. At any period between the personal investigation of the case by the candidate, and the written report upon it, or even after the report is finished, the examiner may, and does, intervene, going to the bedside and asking the candidate what he has discovered, how he is proceeding, what are his reasons for such and such a statement; or, finally, asking him to demonstrate, by actual manipulation, conducted in presence of the examiner, the facts in detail. It is obvious that the securities here against incompetency are almost indefinitely multiplied, as compared with a judgment founded merely on a written report by the candidate. Besides, as regards its reflex influence on the methods of instruction, the Dublin clinical examination, with its *vivâ voce* conference between the examiner and

the candidate, has immense advantages over the London written case. It conveys, both to the candidate and the examiner, an evident sense of the importance, not only of results, but of methods of working. A few minutes so employed will often suffice to show infallibly whether the candidate has been rightly trained to observe for himself, or has only learned to assimilate the results of observation by others. The directions "Map out the heart, liver, &c.; demonstrate to me the murmur, the physical facts, in short, on which your diagnosis depends," convey both to the examiner and the candidate, and, by inference, to all future candidates, a strong sense of the value attached by the examiner to precise, as compared with inexact, data of observation. The Visitors would not disparage the value of a written paper upon a case as tending to elicit a candidate's power of giving logical coherence and definiteness to his ideas. But the special province of the clinical examination is far better subserved by the method of personal and direct interrogation on matters of fact.

Clinical Examinations in Edinburgh and Glasgow.

In the Scottish clinical examinations, both in Edinburgh and Glasgow, an extended written case is not required from the candidate. He is desired to investigate the facts for himself, and allowed, but not enjoined, to take notes in doing so. At all events, the written notes do not form an essential part of the examiner's materials for judgment. But the actual testing through the *vivâ voce* conference is, in many instances, exceedingly minute and thorough. Hence if it be a defect not to require a written case from the candidate, the Visitors have no hesitation in saying that it is less a defect than to require a written case and nothing else.

One matter requires to be stated as suggesting the possibility of abuse in the *vivâ voce* clinical examination. In some instances, the visitors noticed *vivâ voce* conferences in presence, not only of the patient who was the subject of examination, but of various other patients and of the other candidates. The Visitors consider that this course is distinctly objectionable in principle. All such conferences ought to be so conducted that no possible offence could arise to the feelings of the patient; and the Visitors think it is not too much to require that anything like a discussion of prognosis, or of delicate points of diagnosis, or of pathology, should take place out of the hearing of the patient, and without

the presence of any other candidate. When the candidates are numerous, and when many have to be examined in one or two wards, there may be difficulties of detail; but all the more on this account is it necessary to make these remarks, so that means may be taken to overcome such difficulties. In one point of detail, the London system seemed preferable to that witnessed in Dublin. The examination taking place, one day at St. Bartholomew's, on another, at University College Hospital, care was taken that one of the examiners, at least, should be the physician responsible mainly for the treatment of the cases employed in the examination. This is desirable, not only in the interests of the patients, but for the sake of the examination itself, the materials of it being thus thoroughly known at least to one examiner. There may be difficulties in carrying out the principle in all cases. But it is obviously undesirable that a number of candidates should be brought into a hospital ward in the presence of examiners who have seen the cases for the first time, and probably learned the particulars about them mainly from the house physician. Besides, it is possible, from the point of view of the patients, that there may be serious objections to an examination so conducted. This point is alluded to in the description in detail of the clinical examination of the King and Queen's College of Physicians, Ireland [*Vide* Part II. p. 102]. The Visitors would suggest that, if it be not feasible in all cases to select as examiners the physicians responsible for the treatment, they should at least be associated with the examiners as assessors. But while the London clinical examinations in medicine appear to the Visitors relatively weak, as regards the method of testing through the written case, the portion of the examination which consisted of chemical and microscopical investigation of urine, &c., was efficiently conducted, assuming the position of a much more regular and distinct element in the examination than it did in the Dublin examinations which they witnessed.

Importance of urinary testings.

In the Scottish clinical examinations, urinary testings formed an essential part, and although not always so elaborately performed as some of those witnessed in London, no student escaped testing in this way altogether. The urinary examinations as conducted in Edinburgh appeared to be particularly good, and in this respect might serve as a model for such ex-

aminations. Without remarking further upon the subject here, the Visitors consider it of importance to indicate their opinion that no clinical examination can be regarded as satisfactory unless chemical and microscopical testings, chiefly, but not exclusively, of urine form such part of the examination as to secure that no candidate escapes examination altogether in these departments; and perhaps the actual personal employment of the thermometer, the urinometer, and other instrumental means of research which are in daily use, might also be brought into operation as part of the field of examination to a greater extent than at present.

Primary Examination in Physiology.

With regard to the primary examinations in physiology, the Visitors approach the subject with some difficulty, as it is one which has but recently acquired a position of first-rate importance, and even at present commands a varying standard. The difficulty of forming a judgment on the attitude of the various examining boards towards physiology is, moreover, increased by the fact that it is a subject which has rapidly extended its area and methods of investigation, and opened out new fields of research. It is but natural that teachers and examiners who are themselves working in the van of physiological investigation, should press forwards the newest, and to them the most interesting portions of their science, thus running a risk of imposing a demand which could only be satisfied at the expense either of other subjects, such as anatomy, or of the fundamental portions of physiology itself.

Examination at the College of Surgeons, England.

In the College of Surgeons of England, physiology has recently been made the subject of a separate paper and questions, and has been assigned to special examiners, and in consequence the standard of requirement has been materially changed. Questions are given upon electro-physiology, on physico-chemical processes of investigation, on stained microscopic preparations, on manipulation of microscopic tissues, and on the application of the graphic method. The inquiry cannot be suppressed, is all this in the case of the average candidate compatible with an adequate knowledge of the fundamental principles and details of medical science? It is not to be forgotten that every one of these comparative novelties introduced into an examination by the Royal College of Surgeons in England tends to affect the teaching in every school throughout the empire. Thus it may become a question whether unduly insisting

upon the most advanced methods of investigation in physiology may not in some cases lead to the result that the more elementary and fundamental principles of the science, those, moreover, which will be of the greatest value to the practitioner, will be less carefully taught than the newer methods of investigation. In the words of Professor Humphry, "What is really wanted, and what teachers and examiners must combine to promote, is, to use the words of the Laughing Philosopher, Democritus, who was one of the greatest thinkers of antiquity, that 'we should strive not after fulness of knowledge, but fulness of understanding,' that is, that we should strive for good, clear, solid, intelligent, producible, and available knowledge, *of the kind that will be useful in after life*—not so much the refinements of chemistry, anatomy, and physiology, which, in their aggregate, are likely to perplex, encumber, stupify, and then pass away like chaff before the wind, but the essential, fundamental facts and principles welded together, and so woven into the student's mind that he can hold them firmly and wield them effectually, and that he is conscious of them not as the goods of other men, or as dogmas which he has because they were imposed upon him, but as his own possessions, of which he appreciates the value, because he knows how to use them. 'The knowledge which a man can use is the only real knowledge, the only knowledge which has life and growth in it, and converts itself into practical power. The rest hangs like dust about the brain, and dries like raindrops off the stones.'"—(*Hunterian Oration*, p. 33.) The effect of the high standard of physiology is shown at the College of Surgeons of England, by the fact that in 1881, of a total of 324 rejections, 98 failed in anatomy, 76 in physiology, and 150 in both anatomy and physiology. With this may be compared the effect of physiology in rejecting candidates at the Royal College of Surgeons in Ireland. In the examination inspected by the Visitors, out of 27 candidates who were rejected on their written papers, 22 were rejected absolutely in anatomy, one absolutely in physiology, and, in the case of two others, physiology would have contributed to their rejection had they been weak in a second subject also. It is clear, therefore, that the rejecting power given to physiology in these two colleges is very different. These remarks become even more pointed when it is considered that the decision in physiology in the Irish College,

Humphry on the necessity of a thorough knowledge of fundamental facts and principles.

Result of the high standard in physiology.

so far as the written paper is concerned, is based upon two answers only, selected by the candidate himself, from three optional questions. It seems remarkable that in a group of 67 candidates, so large a proportion of whom failed to pass their written examination, there should have been only three whose written examination in physiology would, under any circumstances, have contributed to their rejection. As compared with the minute and scrupulous care bestowed upon the anatomical part of the examination, and even upon the materia medica within the limits allotted to it, it appeared to the Visitors that physiology proper, in its more modern developments especially, received far too little consideration in this examination.

Physiological Examinations of other Bodies.

The physiological examinations of the other bodies were carefully conducted, and, on the whole, satisfactorily, with the exception of the Apothecaries' Society of London, on which the Visitors have commented elsewhere; the range of questions embracing generally the more important facts of physiology, and the histological specimens being such as any average student might be expected to be familiar with.

Retrospect of previous visitations and results of recommendations.

The Visitors may here briefly indicate certain alleged defects connected with the several examinations inspected, which were noticed by their predecessors in 1873–4.

In the examinations, both primary and final, of the Royal College of Surgeons of England, the absence of dissections by the candidates, and of examinations in chemistry, materia medica, and pathological histology were emphasised, and yet the same omissions were observed at the present visitation.

In the Irish College of Surgeons the recommendations of the Visitors have been carried out, both as regards the increased duration of the period devoted to the examination and the introduction of histology and chemistry. It still remains, however, to give commensurate prominence to physiology, the scope of which in medical education needs to be carefully studied, defined, and regulated by those responsible for examinations.

In the examination at the English College of Physicians the defects remarked have been removed, and improvements have been introduced by examining the candidates on morbid anatomy and histology and the nature of morbid processes, besides the requirement of a more extensive knowledge of physiology

At the King and Queen's College of Physicians in Ireland the examination in 1874 presented, as a feature for favourable comment, the testing of the candidate's knowledge of various instruments of precision, while in 1881 this method of testing was absent.

At the Royal Colleges of Physicians and Surgeons, Edinburgh, the very questionable practice still prevails of framing at the beginning of the year the questions for the written part of the several series of examinations, while in the arrangements for each examination the written answers are read and decided upon by examiners who may not have been responsible for the questions put, and the *vivâ voce* part is conducted by different examiners who may, and often do, ask the same questions as have been already given in writing. In order to secure co-operation it is obviously desirable, as the Visitors in 1873 observed, that the same examiners should conduct the whole of the examination. An extension of time recommended in the written part, particularly in anatomy and *clinique*, has not been adopted.

At the Glasgow Faculty improvements have been made in the directions suggested, the candidates having each to dissect a region of the body, and to show their skill in bandaging and in the management of fractures and dislocations; but there remain other suggestions of importance to be carried out, namely, the performance of operations on the dead subject, and the employment during the examination of pathological specimens.

At the conjoint examination in Glasgow for the double qualification—that of the Faculty and of the College of Physicians of Edinburgh—the insufficiency of the testing of the application of surgical apparatus pointed out by the Visitors in 1873 has been rectified.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Primary Examination of Royal College of Surgeons of England.

The merits of the primary examination are great and conspicuous. Over the field which it covers it is an excellent but severe test, founded upon a comprehensive appeal to actual objects, and hardly to be evaded by mere book study. The examination is conducted throughout by gentlemen thoroughly

informed, eminent in the particular departments in which they are employed, and apparently of large experience in the work of examination. Each candidate is examined on a considerable variety of objects in a remarkably short period of time, and yet, so far as the Visitors observed, without any want of exactness as regards individual questions. It may indeed be fairly open to doubt whether the strain upon the candidate, as upon the examiner, may not be too great from the attempt to include so much within a quarter of an hour; and one of the examiners spontaneously indicated that, but for the alternate action of the two at each table, the strain to himself would certainly be too great.

Remarks.

The supply of materials for this examination was remarkably complete. At each of the two anatomical tables there was at least the possibility of discussing the anatomy of every important dissection of the human body on the basis of actual preparations, moist or dry; while the fresh dissection of a body in the centre of the room, carried on by successive stages from day to day by the prosectors, gave material for the consideration of parts in their freshly dissected condition.

It might, perhaps, be objected that there was a predominance of spirit preparations over recent dissections; and it is indeed admitted that the preparations, on which the examination is conducted, are open to the previous consultation of students within the college, and are moreover reproduced at most of the anatomical schools.

It seems to be a matter of deliberate determination that, in the plan of these examinations, comparative anatomy is excluded. There was nothing that the Visitors observed to suggest a question on homology; much less was there any approximation to questions intended to elicit knowledge of the ascending and descending scale of typical formations throughout the animal kingdom. The physiological questions were perhaps not so strictly, but still, in the main, similarly limited. The object was clearly to secure that the attention of students, so far as their examination was concerned, should be concentrated on human anatomy and physiology, with the view of securing greater thoroughness of preparation. It may, however, be reasonably doubted whether a system of examination that practically excludes, or minimises the importance of, philosophical morphology exerts an altogether wholesome influence on the teaching.

It is perhaps right to keep in view the fact that the admission of physiology as a separate subject is comparatively recent. On this point the Visitors were informed that doubts existed in the minds of some of the examiners, whether the increased attention given to physiology and histology of late years had, or had not, been accompanied by decreased attention and accuracy as regards the details of human anatomy. The Visitors found that the rejections in physiology, although as already noted sufficiently numerous to show the strictness, if not severity, of the test, fell considerably short of the proportion of rejections in anatomy. When it is considered that at least four microscopic preparations formed the basis of part of the physiological examination in each instance, and that ordinary topographical anatomy has long been the special care of the college, while histological study has been only making its way during the last quarter of the century, a greater proportion of rejections in the latter might have been expected. The truth seems to be that the completeness and the compactness of the field of human topographical anatomy are such as to lead the examiners to expect a degree of preparation all round which is not demanded in the physiological examination. Still, some of them expressed a fear that the substantive importance given to physiology, by separating it as an independent subject, may have had a detrimental influence upon anatomical study.

Alleged influence of high standard in physiology on the study of anatomy.

In connection with this doubt, another arises. Admitting that the examination in anatomy is a thoroughly searching and practical test of a student's detailed knowledge of the topography of the human body, *i.e.*, of his knowledge of hundreds or thousands of separate anatomical facts, in the order and method of their exposition in the school or at the dissecting table, is it not possible that the test may be too exacting as regards this particular series of facts? and that, by taking a nindividual candidate, for a quarter of an hour only, over as large a number of separate details as can be inquired into during that space of time, injustice may be done to good men, whose "forte" does not happen to be the exercise of technical memory sufficient to give readiness and completeness to their answers; nay, that even inferior men in many of the qualities necessary for a practitioner of medicine may, by dint of good elementary drill, pass through the ordeal with the aid of a ready memory, when better men fail? On this

Questionable utility of examination in minute details in anatomy.

point it was difficult to form a positive judgment; but, although disposed to acquit the examiners individually of any such intention, and even to credit them with consideration for necessary human infirmity, it is difficult to be sure that an additional quarter of an hour, or another examination, in case of doubt, might not have reinstated some candidates who were condemned on points of detail to which it was only natural for a professed teacher of anatomy to give perhaps an undue importance.

It is obvious that the assumption of a perfect knowledge all round, even of human anatomy, is far too great a strain for the average candidate aspiring to the practice of medicine and surgery. But if a degree of necessary imperfection is conceded, then it becomes evident that a quarter of an hour is too short a time to determine the incidence of particular imperfections or errors as regards the status of a doubtful candidate. The Visitors were told that in doubtful cases the examiners were sometimes asked to reconsider a written paper to see whether it might not deserve a higher mark; and that occasionally it happens that, by an *ex post facto* determination of this kind, a weak candidate, who had been rejected, according to his numbers, in the first instance, is raised to the pass level. It would be more satisfactory, in such cases, to reconsider the candidate's position on the basis of the oral examination as well as the written; but the Visitors could not ascertain that a second oral was ever allowed.

Much as they admire the unique completeness of the arrangements for exact testing in the anatomy of the whole body, the Visitors cannot but express their strong opinion that this examination would be a sounder gauge of the best kind of work, and would also have a better influence on the teaching in medical schools, were arrangements made for the testing of every candidate by actual dissection. Admirable for exactness and precision as is the mode of testing by question and answer on the carefully prepared dissections at this College, the Visitors feel that the knowledge thus tested, and prepared for examination, is but one step removed from knowledge obtained through the medium of books and plates. Besides, no candidate can dissect fairly at an examination without having dissected abundantly during his studentship; and there can be no doubt as to the relative value of anatomy remembered from personal dissection, as compared

Importance of testing by actual dissections.

with anatomy remembered from plates, or from dissections done by other persons. Again, the collateral advantages involved in becoming a practised dissector are so obvious that it is unnecessary to emphasise them. However, the question has not been ignored at this College, but held in suspense, owing to the difficulties supposed to attend the practical examination of large bodies of candidates. But the Visitors would remark that the difficulties have not proved insuperable in the case of the Irish College of Surgeons, or of the Glasgow Faculty of Physicians and Surgeons, in the former of which large numbers of candidates are so examined.

Surgical clinical examinations.

The Visitors were struck with the arrangements for the clinical examination. Typical cases of ordinary occurrence were brought to the college for the purpose of testing the candidates. The question of the best mode of carrying out a surgical clinical examination may fittingly be discussed here. In the course of their inquiry, the Visitors have witnessed three different methods—one, in which the students were examined on patients in the wards and in bed, as in the Royal Infirmary of Edinburgh, the Adelaide Hospital, Dublin, and the Royal Infirmary, Glasgow; a second, in which the students were examined on cases at the hospital, but brought from the wards into another room for examination, as in the City of Dublin Hospital and at the Western Infirmary, Glasgow; and a third, where cases of ordinary occurrence were brought to the examination hall, as at the Royal College of Surgeons, England. The Visitors are convinced that the third plan—that of the English College of Surgeons—is the best, and that the surgical cases most suited for such an examination are those which can be brought to a centre, and which often may be obtained from amongst out-patients. In fact, in many instances, where the examination took place in the wards, the cases selected could easily have been removed to an examination hall. The reasons in favour of this method are:—First, great economy of time to the examiners; secondly, the avoiding crowding of the hospital wards at irregular times by large numbers of candidates; thirdly, that cases suffering from severe injury and acute disease, or which have recently undergone operation, are decidedly unfit for such an examination; fourthly, the fact that when candidates are taken to a ward they must

Out-patient cases suitable for testing candidates.

necessarily be distributed amongst a large number of cases, some of which are inevitably of inferior value for testing the candidates; fifthly, that there is much less risk of any collusion between the candidates and the patients, such as occasionally takes place when the clinical surgical examination is conducted at hospitals known beforehand.

This method also contributes to the more systematic carrying out of the details of the examination, enables the bandaging and application of splints to a healthy subject to be conducted at the same time, and allows the examiners to be all in the same building, taking different departments of the work. Moreover, the giving to each candidate the same series of cases to diagnose and report on enables the examiners much more easily to come to a conclusion with regard to the relative merits of the candidates.

The Visitors think that the system which is worked in so thorough and efficient a manner by the Royal College of Surgeons of England is well worthy the consideration of the other surgical examining boards. A second point observed, with great satisfaction, is the method of testing the students' knowledge of the various anatomical landmarks of the living subject. The effect upon study of these two methods of examination cannot but be good. The Visitors also thought highly of the oral examination in surgery and surgical pathology, particularly the effective use, in this department of the examination, of the various specimens, illustrating points in surgical pathology, taken from the unrivalled museum of the College.

Importance of testing by operation on the dead body and of practical application of bandages.

Having thus drawn attention to the points deserving of approbation, the Visitors feel bound, also, to notice those which, in their opinion, are capable of improvement. In the first place, it would be desirable that steps should be taken to test the candidates by actual operation on the dead body, as it is only by this method that their knowledge can be satisfactorily tested in that important branch of surgery. Another advantage is, that it is also the best method of testing their knowledge of the use of instruments. The Visitors are also of opinion that every student should be required to apply both a bandage and a splint, as was rigidly enforced by the examining bodies in Dublin, Edinburgh, and Glasgow. In this examination only one candidate was required to apply a bandage, and no candidate was required to apply a splint for a supposed fracture.

The examination in medicine was well conducted within the limits assigned to it; but it contained no element on which the Visitors feel bound to remark, and, in particular, no clinical or other specially practical department, the whole decision resting upon a written and *vivâ voce* examination of the ordinary character.

The Visitors also observed the singular want of knowledge of anatomy on the part of the majority of the candidates at the final examination, and which they believe is mainly due to the system of students ceasing to pursue anatomical studies at the end of the first eighteen months of their pupilage. The Visitors venture to suggest whether it would not be desirable, at the final examination, to examine candidates on strictly surgical regional anatomy. By so doing, the probabilities are that students would not altogether lay aside the practical study of anatomy at the end of their second year. The Visitors are aware that anatomical questions in considerable numbers are given at the final examination, but, in their opinion, the questions are not sufficiently restricted to the surgical aspect of anatomy, and many of them might fairly be considered suitable for a primary examination. The error consists in not having it sufficiently defined what the amount of anatomy required is, and in not limiting that amount strictly to the needs of surgical practice.

Points in the examinations at the English Colleges of Physicians and Surgeons compared.

The system of examination at the two English colleges differs materially. At the College of Surgeons the examiners who read over the papers and appraise them, do not, under any circumstances, examine the same candidates in any part of the *vivâ voce*. At the College of Physicians, the same examiners read the papers and examine both clinically and *vivâ voce* at the hospital. Thus a candidate's work in any department of examination, for instance in medicine, is reviewed from beginning to end by the same examiners, who can form an opinion of the whole work. But at the College of Surgeons, each subdivision of the examination is judged and appraised by a different examiner, and with complete independence and absolute ignorance of what has gone before. Should a candidate break down with any one of these examiners, there is no possibility of his work being reviewed and compared as a whole. Under a system in which merely ten minutes or a quarter of an hour is allowed for each portion of the examination, a candidate who has proved unsatis-

factory over a very small area may be rejected, although on the whole well informed.

There is another point also in which the two systems differ. In the College of Surgeons each portion of the examination ends with military precision when the bell rings at the end of ten minutes. At the College of Physicians no time is kept, the examiners using their discretion in curtailing or prolonging a candidate's examination. Hence in examining a candidate, who has answered well in his paper, and who in *vivâ voce* quickly convinces the examiners that he knows his work, they may spend a very short time; or, in the case of a candidate as to whom they come rapidly to the conclusion that he must be rejected, again a short time is spent. Thereby time is gained for a longer oral examination of those whose cases are doubtful.

In making these comparisons, the Visitors bear in mind that the two colleges are dealing with different factors, the one college having a comparatively small number of candidates, and the other a very large number to examine. When large numbers have to be examined elements are introduced which increase the difficulties of examination, and perhaps compel mechanical routine not otherwise required.

Systems of marking in the English Colleges.

Again, the proceedings at the two colleges, as to the passing and rejection of candidates may be compared. At the completion of the *vivâ voce* examination in each case the examiners assemble. At the College of Surgeons each examiner, from a list that he has, reads out the mark he has adjudged, which is recorded by the chairman against the number of each candidate. These marks are then added up by the president, and the candidate who has not received a rejecting mark, or whose total number has reached the passing number, obtains his diploma. In rare instances, where a candidate has done well in one part of his examination and indifferently in another, his case is reconsidered, and occasionally his written paper is read before the whole court. At the College of Physicians the marks are read out by the examiners at the call of the senior examiner, and should the marking leave it doubtful whether a candidate ought to pass or not, the examiners who have given the least marks reconsider their decision on the basis of the good report of the other examiners, and determine whether they ought, under all the circumstances, to insist upon the rejection of the candidate. Under

this system it is improbable that a fairly prepared candidate can be accidentally rejected. Perhaps, on the whole, the tendency of such reconsideration is in the direction of leniency.

Systems of marking.

The general impression which the Visitors have received from what they have observed at the primary examinations of the Royal College of Surgeons of England is, that there is great risk that a candidate knowing his work fairly may be rejected. The causes they would assign for this are twofold—the strict limitation of time for each department of the *vivâ voce* and the method of marking.

The Visitors indicate elsewhere that the highest and the lowest numbers are practically invalid, so much so that the habit of the examiners has been in most instances to decline giving a maximum number, even where the examination was really without flaw; while, on the other hand, a 2 in any department, oral or written, stops a candidate just as effectually as a 1 or a 0.

For strictly practical purposes the Nos. 2, 3, 4, 5, in this examination actually convey the whole opinion of the examiners —4 being the level pass, 3 in particular sections the possible pass, 5 the redeeming counterpart of the 3, and 2 the absolutely bad mark, which, in any department neutralises all good marks in the others. This system of numbers, as worked by the examiners is extremely clear and definite; but it does not appear to differ much from the older system by which "good," "moderate," and "bad" were the only gradations allowed. Judging from their experience, the Visitors consider that it is much too arbitrary, and presents too little elasticity to meet the case of the various aptitudes requiring to be discriminated in an examination. It is, of course, much more applicable to such subjects as anatomy than to the more advanced subjects, because it implies something absolute as regards the standard of attainment, which, in the other subjects, would be out of the question. Even in anatomy, and much more in physiology, the Visitors are of opinion that, placing the fate of a candidate in a balance, of which the scales may be turned by the difference in one department of one of three unit figures, recorded without fractions, is a system of assaying that tends to discourage refinements of judgment, and to throw too much weight into an individual decision perhaps on too few data. It may be that few ill-prepared candidates pass the ordeal, but it is question-

able on the other hand whether the well-prepared are as secure of passing as ought, if possible, to be the case, having regard to the inevitable variations of individual judgment. A man of average ability, who has worked honestly and well, ought to be able to present himself for examination without fear of rejection. In the final examination the system of marking is somewhat different, a greater effect being given to the higher numbers in counteracting the lower. The Visitors think that a system of percentages, in which a reasonable effect should be given to very high as well as to very low marks, and a reconsideration of doubtful cases on the basis of the oral as well as the written examination, would tend to greater certainty in the results.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

Primary Examination, Royal College of Surgeons, Ireland. Practical Dissections.

The Visitors bear testimony to the excellence of the primary examination in anatomy, which leaves, as a practical test, little to be desired. Each candidate is required to perform dissections, and answer questions on dissections, made not only by himself but by other candidates. This is of importance as furnishing an answer to the objections that have been made against such an examination on the ground of the supposed difficulty of carrying it out. The Irish College of Surgeons was the first of the Corporations to adopt this practical method of examination, and the Visitors think it would be well if the example were followed by other Corporations, even though, in order to do so, they were obliged to augment their staff of examiners, or curtail some other portion of their examination. The Visitors particularly noticed the great advantage of not too rigidly limiting the time spent in this practical examination, so that more time can be devoted to the weaker candidates. The method of actual dissection gives the examiner facilities for determining a candidate's anatomical knowledge far greater than can be obtained from any amount of *vivâ voce*, or answers to written questions. It should be remembered that the kind of information elicited by so practical a mode of examination is such as can hardly be obtained by any amount of mere reading or grinding, but must be derived solely from the

Dissections.

industry and manipulative dexterity acquired by the candidate himself in the dissecting room.

Charucteristics of Examinations.

The impulse which this method gives to practical work in the dissecting room is evident, as it must soon become known to all preparing for examination that only in the practical work of the dissecting room can the information and personal skill in manipulation be obtained, that it is the object of this examination to elicit. Seeing that one great object of an examination, nay, even the greatest, is to direct study, the Visitors cannot but feel that the method which enforces the most valuable kind of study ought to be an essential factor in the testing of every candidate. They were struck, too, with the courtesy exhibited towards the candidates throughout, the main object of the examiners being apparently to elicit the knowledge of the candidates, rather than to discover their deficiencies. They specially remarked the manner in which some of the examiners —evidently experienced in their work—dealt with a candidate who hesitated about an answer. Instead of passing on to another subject, leaving that as a point recorded against the candidate, the examiner told him the answer, and thereby, in many instances, elicited the fact that it was a mere temporary hesitation, and that on the subject on which he seemed at the moment ignorant, he was thoroughly well informed. This seems to have the additional advantage of securing the candidate against the nervousness of feeling that he has missed a point, and is a great economy of time in enabling the examiner more rapidly to go on with his testing. The Visitors did not see any instance in which it helped an inferior candidate to appear better than he deserved to appear.

There is another feature in the examinations of the Irish College of Surgeons worthy of serious consideration by other Examining Bodies, although different opinions may fairly be held as to its wisdom. To examine thoroughly in every department of an examination implies a great demand upon the labour and time of the examiners, and upon the funds of the Examining Bodies. It is a serious question how far waste of time and waste of power can be prevented. This difficulty has been solved by the Irish College of Surgeons in a remarkable manner. Although the method may be open to certain objections, and possess disadvantages, the question which it appears to the Visitors desirable to raise is whether these possible objections are not

more than counterbalanced by still more important advantages. In the College of Surgeons, England, every candidate is examined in all the subjects, even though in the early stages he is deserving of being rejected. The evil of this is, that the candidate is kept for many days in painful suspense, and, if he be from the country, is probably detained uselessly in London. Another evil is that the time of the hard-worked examiners, spent upon candidates who are already condemned, is actually wasted. The same process is repeated when the candidate comes up again; and, in some instances, over and over again, the candidate goes through the process of rejection, and the whole examination.

Mode of saving time and examining power.

The plan of the Irish College of Surgeons is as follows: First, the examiners read over and adjudicate upon the whole of the written papers, and the candidates hopelessly rejected on their written papers are stopped from going further with the examination. By the Edinburgh Colleges the same plan is partially adopted. In the next place, the Irish College of Surgeons' examinations are divided into stages—first, written; secondly, oral; thirdly, in the final, clinical; and lastly, practical. Each stage is treated, as it were, independently. A candidate who passes the written may be rejected in the oral, and so not go through the other stages; or he may pass the oral and be stopped in the clinical or practical. Further, when a rejected candidate comes up for re-examination, he commences not at the beginning of the whole of the examination, but at the portion of it where he was previously stopped. It is evident, therefore, that by this mechanism, whether right or wrong, there is great economy of the time of the examiners; which the Visitors consider to be a serious consideration for those who conduct examinations.

The Visitors remarked that the written examination in chemistry and materia medica consisted of one question out of three in each subject to be answered, and that only a quarter of an hour was devoted to the oral examination in both subjects, there being no practical testing. Within these limits, however, the examination was in other respects satisfactory, and the same remark applies to the other oral examinations that the Visitors witnessed.

Final Examination: Operative surgery.

The Visitors are satisfied with the final examination, and consider that it affords valuable experience on the method, more especially, of testing candidates in operative surgery. There are

certain points which it is well particularly to emphasise. The Visitors have already referred to the economy of time by stopping students at the written, or even at other subsequent portions of the examination, more especially to the fact that, if a student has passed any stage, he is only re-examined in the portion in which he was rejected, and in the stages that follow the rejected portion. In "clinical" and "operative surgery," the time spent on any particular candidate is not definitely limited, and this want of limitation does not seem in any way to lead to undue protraction of the examination of any candidate, or of the whole examination. Every candidate is required to apply a bandage; and to perform at least one major and one minor surgical operation, selecting his instruments for the purpose. The strictly oral part of the examination, being separated from the clinical, practically admits of limitation of time, and is limited to a quarter of an hour with each examiner. Finally, the Visitors were most favourably impressed by the excellent and efficient way in which every candidate was tested in operative surgery, and that without any undue expenditure of time or trouble. In this instance, three subjects amply sufficed for the examination of thirty-three candidates, and probably double the number might have been efficiently examined without an additional subject. The whole proceeding occupied less than an hour and a half. At least in one respect, the final examination of this College stands out as an example worthy of imitation—namely, in operative surgery. The Visitors find it difficult to say much about the method of marking, as being a mixed one; the oral examination is by numbers, and the rest of the examination by the terms "Yes" or "No"—Pass or Reject.

Operative Surgery.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

On the second division of the primary examination in anatomy and physiology the Visitors have not many remarks to make. The candidates were not numerous, for the reason that this college accepts for its licence the primary examination of the College of Surgeons of England, and of other corresponding

Primary Examination, Royal College of Physicians, London.

registered bodies. The anatomical examination was conducted in a manner similar to that of the College of Surgeons of England —first, by written questions, and, secondly, by oral examination with the aid of dried anatomical preparations, bones, and recent dissections, not specially made for the examination, but brought out of the dissecting room of a medical school. The Visitors witnessed the oral examination at the College of Physicians. This portion of the examination seemed to be carefully and efficiently conducted, but, as it dealt with only a small number, it does not afford any material experience.

The clinical examination of the English College of Physicians has already been fully considered in the more introductory portion, being there compared with the clinical examinations at the Colleges of Physicians in Ireland and Scotland. On the *vivâ voce* examination in midwifery and medicine there is not much to be said beyond the fact that in all its essentials it was satisfactory. In reference to the number of candidates examined at the College of Physicians, it may be mentioned that the rule of the College is, that no more than twelve candidates are examined in one evening *vivâ voce;* and if the total number does not make exactly twelve, they are so divided as to give an average number each evening.

Final Examination: Operative surgery.

In the final examination for licence the portion dealing with surgery also affects but a small number of candidates, the majority having already obtained a surgical diploma. The arrangements for examination in surgery—written, oral, and clinical—were excellent, and included the testing of the candidates in operative surgery, a portion of the examination which was conducted with high efficiency.

KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND.

K. & Q. Coll. Physicians, Ireland: Primary Examination.

For the Primary Examination there were only three candidates, all of them ladies, who were examined by written papers, and orally and practically both in anatomy and chemistry. The candidates were required in turn to make dissections in the

presence of the examiners, the dissections assigned to them being confined mainly to superficial structures; but hardly sufficient time was allowed to show much practical knowledge. Within the limits of the time allowed, however, the examination was, on the whole, satisfactory. The examination does not call for further special remark, except that the practical chemistry was carried out with great care and efficiency in the School of Physic, Trinity College. This is the only instance in which the Visitors have seen a practical examination in chemistry carried on in the laboratory, and it is a method which they think is well worthy the consideration of other examining bodies. As a rule, there are few candidates for this primary examination, nearly all who present themselves for the licence of the King and Queen's College of Physicians having already obtained a surgical diploma, and having therefore passed a primary examination. Reciprocity in this respect is not displayed by the English or the Irish College of Surgeons towards the respective Colleges of Physicians. As regards the clinical examination in the final, the Visitors need not here refer to it, having already entered fully on its consideration.

Practical chemistry in the Laboratory of Trinity College, Dublin.

In reference to the early part of the final examination, it appeared to the Visitors that throughout this examination, as in the clinical, too little use was made of the microscope. The only instance in which it was employed was by Dr. Smith at the *vivâ voce*. It may be a question also whether the objective method could not be more extended in some of the other subjects. The latter remark does not apply to the midwifery examination, which was characterised by a large exhibition of objects connected with that subject. This examination struck the Visitors as being essentially excellent and practical. With the reservation already made in reference to the microscope, and criticisms on the method of carrying out certain portions of the clinical examination, the Visitors would express a favourable opinion of the whole scope of this examination, which they consider to have been ably and faithfully carried out.

Final Examination: Histology.

The Visitors would here record their impressions with regard to the system of marking employed in this college. Having carefully observed the various methods in the different examining bodies, they have come to the conclusion that the marking in all the pass examinations resolves itself into four degrees expressed either by words or numbers. Where numbers are used they are virtually

System of marking.

substitutes for words; and it is a question which method expresses most accurately the judgment of the examiner. The terms employed here are "Pass," "Reject," with two intermediates, "Pass, if" and "Reject, unless." "Pass, if" is defined [*Vide* Part III.] to mean that the candidate has reached a minimum standard, but no more, and that the examiner will only agree to his passing if the other examiners are of the same opinion. This is apparently equivalent to the "moderate good" of the College of Physicians of London. "Reject, unless" is defined to mean that the candidate's answering has barely reached the minimum standard, and the examiner will reject him, unless the other examiners are strongly in his favour. This seems to be equivalent to the "moderate bad" of the College of Physicians of London, to the "30" of the Colleges of Physicians and Surgeons of Edinburgh, and to the "3" of the College of Surgeons of England.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, EDINBURGH.

Coll. Phys. & Surg., Edinb.: Primary Examination for double qualification limited to Anatomy, Physiology, and Chemistry.

The primary Examination for the Double Qualification in these colleges is limited to three subjects—anatomy, physiology, and chemistry—in each of which the candidate is tested orally and by written papers. The papers are read over by the examiners, all assembled together in the Physicians' Hall, and at the end of about an hour, the examiners read out their decisions. Candidates getting marks below 30, are stopped from going through the further part of the examination. Those getting marks between 30 and 50, are allowed to proceed to the oral, in which they must answer more than the average to save themselves from rejection. While giving full credit to the examiners for an anxious desire to conduct the examinations conscientiously and efficiently, the Visitors feel bound to notice certain respects in which the examination appeared to fall short of the requirements considered necessary by other examining boards that they have inspected. In the examination in anatomy, there were no fresh dissections on which to test the candidate orally, as at the London Colleges,

and at the Faculty of Physicians and Surgeons of Glasgow, nor were the candidates required to make any dissections themselves, as in the examinations of the Royal College of Surgeons in Ireland, and in the Faculty of Physicians and Surgeons, Glasgow. There were a few dissected specimens in spirit, which were made use of by some of the examiners, but not by all. Indeed the major part of the anatomical examination consisted of questions, which, in the opinion of the Visitors, were of too elementary a character for an examination for this qualification. When considered in reference to the time bestowed on the examination of each candidate, the range of topics was so wide as to preclude anything like a searching inquiry into the knowledge of the candidate, as regards any particular topic. This, of course, was the more marked, inasmuch as the questions were in reference to technical memory, rather than to any objects put before the candidate. The physiological examination was carefully conducted and satisfactory, the candidates being questioned on histological specimens, with which any average student should be familiar. The Visitors can speak in the same terms as to the chemical portion of the examination; but there were no arrangements for testing the practical knowledge of the candidates by actual experiment.

Final double qualification.

The final examination consists of written papers on surgery, surgical anatomy, practice of medicine, materia medica, midwifery, and medical jurisprudence; and of an oral examination in these subjects, and a clinical in medicine and surgery. The same arrangement for stopping the candidates whose papers are unsatisfactory exists as in the primary. The examiners, meeting on the evening of the day on which the written papers are answered, read these over in the Examination Hall, and in the course of about an hour and a quarter announce their decisions; a greater or less number of candidates requiring a proportionate number of examiners. The candidates answer the papers on these six subjects on one day, three hours being allowed for the four subjects of practice of medicine, materia medica, surgery, and surgical anatomy, and two hours for the remaining subjects.

Inspection of papers. Extension of time for adjudication suggested.

The Visitors would suggest that the system of inspecting the papers is one capable of improvement, seeing that the whole body of examiners must complete the estimate of the written papers, almost simultaneously. It seems probable

that sufficient time is not allowed for the varying qualities of the papers, and the varying readiness with which the examiners individually are able to get through the work. For instance, on the occasion of the primary, eight examiners looked over the answers of thirty-two candidates, in three subjects—anatomy, physiology, and chemistry. The chemistry papers were distributed among the examiners specially qualified in chemistry, and the anatomy and physiology among the remaining examiners. In this way, each examiner undertook about twelve papers, and in any instance in which a candidate did badly, and deserved to be stopped, the assistance of the examiner sitting with him was called in to aid his judgment. Thus the whole set of papers was looked over and adjudicated on in less than an hour. The Visitors cannot but think that a more deliberate estimate could be formed of the papers if each examiner could do his share of the work without this practical limitation of time. On the other hand, the arrangements for the clinical examination in medicine, as witnessed by the Visitors in the Royal Infirmary, Edinburgh, appeared exceedingly satisfactory. Every candidate was, in the first instance, tested in the examination of urine, about ten minutes being devoted by the examiner to each. The examination of the patients in the wards was also conducted on a good plan, and the method of the examiner was calculated to bring out the good training of the candidate by the comparative examination of a patient suffering from disease and of the organs of a healthy person. The examiners spent about twenty minutes upon each candidate. There seemed to be no absolute limitation of time, and certainly no appearance of hurry or anything calculated to make a candidate feel nervous. This examination, especially from the manner in which the candidate was tested on the physical examination of the healthy body, is worthy of study by those who conduct such examinations. The clinical examination in surgery seems open to considerable improvement, and to show certain weak points which are instructive. In the first place, the examination is limited to the cases in the wards of the examiners, and when there are many candidates, must be carried out upon many cases that are not the best for such an examination. That such cases are hardly suitable will appear from the fact that candidates were examined on cancer of the lip recently

Clinical Examination in Medicine.

Clinical Examination in Surgery: Improvements suggested as to suitable cases and testing knowledge of instruments.

operated on, an excised shoulder, excision of the os calcis, excision of the elbow, and, lastly, on a badly formed stump. These cases might bring out certain points on a question of treatment, but they do not bring out the essentials of a surgical clinical examination—*the question of diagnosis aided by the manipulations of the candidate.* Moreover, the Visitors observed on the second day of the clinical examination, that some of the cases that had been used the previous day were again employed. The objections to this course are obvious. In all these instances, the questioning was conducted carefully in the surgeon's room, and was carried on in collateral subjects, but the range of questions was more suitable to an oral than to a clinical examination. Questions were also asked upon various instruments displayed on a table. This, good as far as it goes, only comes out in contrast as defective when compared with the performance of actual operations on the dead body, and the far better testing of knowledge of instruments which the selection for use by the candidate implies. The Visitors observe that in this examination there is no testing of the candidates in actual operations. Another weak point was that there was no systematic provision of padded splints for the candidates to select from, as was the case at the Glasgow hospitals; but each candidate had to apply to the ward nurse for the materials he needed, and to make the best of what the nurse chose to supply. The Glasgow plan not only economises time, but appears to be a more adequate test of the efficiency of the candidate. On the oral examination, the Visitors have not much to remark further than that it was fully and carefully carried out as far as it went.

Remarks on Clinical Examinations.

FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

The aim and plan of the examinations of this body are essentially good, and are evidently improving on correct lines. The question on which the Visitors find it most difficult to express an opinion, is as to the standard of answering that is

Faculty of Phys. & Surg. Glasgow.

Primary Examination: Improvements noticed in practical anatomy; changes suggested.

allowed to pass current in the various Bodies, depending as it does on the individual judgment of examiners, and more or less on the traditions of the place. The Visitors observe, however, that the proportion of rejections in the Glasgow Faculty during the last three years has risen from 37 to 50 per cent. They take this as a distinct proof that the improvements in the examination are acting with greater stringency upon the large numbers of ill-prepared candidates, not educated in Glasgow, who are in the habit of coming up for examination to this body, under the impression —which the Visitors believe to be erroneous—that a low standard is adopted. The Visitors can speak favourably of the practical anatomy test recently introduced, in which the Faculty examination is in advance of the London and Edinburgh Colleges.

The practical anatomy examination was efficiently conducted by two examiners; at the cost, however, of great personal exertion. In the first place, one of the examiners had himself, with an assistant, made, in readiness for the examination, a dissection of the superficial regions of one half of the body, and again, after the fatigue of several hours of examination, the same examiner prepared deeper dissections for the second day's examination. In respect of recent dissections, the examination is superior to that of the College of Surgeons, Edinburgh, and equivalent to that of the English College. The other half of the *one* subject was used for testing all the candidates—eighteen on the first day, and the remainder, including candidates for the double qualification, on the second day. In this way about thirty candidates, two at a time, were examined practically on one half of a subject. In order to accomplish this, each candidate was told to expose a particular nerve, or muscle, or artery. Such testing is hardly sufficient, and sometimes perhaps, not quite fair to the candidate, who may, through nervousness, have forgotten the exact site of the particular structures —*e.g.*, the musculo-cutaneous nerve of the leg, which one candidate failed to find after twenty minutes' search. Slight changes of plan would make this an excellent examination—changes which might be based on the system adopted at the Irish College of Surgeons. Two or three subjects (instead of one) would be ample for every student to dissect a region. The candidates could be admitted, eight or ten at a time, instead of two and two, and thus eighteen candidates could be disposed of

in two hours at the outside, especially if four examiners, instead of two, were employed. The dissections by the candidates would provide ample opportunity for *vivâ voce* questions, and obviate the labour imposed upon the examiner of preparing elaborate dissections, besides setting one half of the subject free for the use of the candidates. The present system, whereby two examiners are engaged six consecutive hours in testing candidates, is too great a strain upon the examiners, and might be objected to by a candidate who was rejected at the end of such an exhausting examination. The oral examination in anatomy, physiology, and chemistry was carefully conducted. On this occasion nineteen, or nearly two-thirds, failed, of whom seven were rejected on chemistry alone, two in anatomy alone, and one in physiology alone, while the remaining nine failed in more than one subject.

Final Examination: Special features noted and suggestions.

The plan of the final examination was also in every way satisfactory. As in the primary, the examiners are selected for their special competency in the several subjects with which they are charged, the clinical surgery and clinical medicine being entrusted to the hospital physicians and surgeons, even though they are not members of the Court of Examiners. The examination in clinical medicine was conducted partly by short written notes of the case, and partly by oral questioning, the system employed by various examiners differing somewhat in detail. The testing of urine was well done, but the arrangements for the microscopical examination of urinary deposits were not on a level with the other parts of the examination. However, on the occasion of the examination for the double qualification this defect did not exist. The examination in clinical surgery was very satisfactory. Every candidate had to bandage a limb and to apply splints for a supposed fracture, padded splints and bandages being supplied to the candidates. At the Royal Infirmary, the candidates were questioned on cases in the wards, and had to be distributed among such cases as were found there. At the Western Infirmary a different method was employed. The examining surgeons selected three cases from the in or out-patients, who were brought into their private room, and every candidate in turn was examined upon them, care being taken to prevent the possibility of communication between those waiting for examination and those who had been examined.

The Visitors would sum up the good points of the examination as follows: (1) The appointment of examiners to special subjects; (2) The introduction of dissection by candidates; (3) The testing of every candidate for the final examination in bandaging and the application of splints; (4) The clinical examination in surgery on selected cases brought into the examiner's room, instead of in bed in the ward; and (5) The testing of every candidate in the examination of urine. On the other hand, the following are directions in which improvements might be made: (1) In the practical anatomy, by dissections of regions rather than the exposition of particular structures, and by conducting the *vivâ voce* examination on the dissections made by the candidate, rather than on those prepared by the examiners; (2.) The use of two or more subjects, and the employment of additional examiners, so as to diminish the strain suffered at present both by examiners and candidates; and (3.) The performance of operations on the dead subject by candidates in the final examination.

Double qualification of Edinburgh and Glasgow.

The examination for the double qualification of the Glasgow Faculty pertains also to that of the College of Physicians of Edinburgh, but of this examination the primary witnessed by the Visitors was conducted almost exclusively by the Glasgow examiners, those from Edinburgh acting merely *pro forma*, while at the final, the Edinburgh examiners took fully an equal part in the examination, and, indeed, performed exclusively the part of it relating to medicine, the examiners of the Glasgow Faculty taking the part relating to surgery.

APOTHECARIES' SOCIETY OF LONDON.

Society of Apothecaries of London: Examination on the old lines.

The examination of the Society of Apothecaries of London is, in some of its departments, a good and searching one upon the old lines. As regards the subjects specially within the domain of the Society under its legal charter—*e.g.*, the practice of medicine, materia medica, therapeutics, and forensic medicine, the above remark is particularly applicable. In these subjects the examiners, although for the most part proceeding by way of

question and answer, and without much reference to the objective or experimental method, cover a good deal of ground, and elicit the knowledge of the candidate in a satisfactory manner. The subject of prescriptions receives considerable attention. As in the case of the other Bodies already visited, so in that of the Society of Apothecaries, there are points of excellence from which instruction may be gained, and which are suggestive of improvements that might be adopted by other examining boards. It seemed to the Visitors that the plan by which the testing of microscopical specimens was undertaken by one of the examiners, who devoted the whole time of the examination to this department, allowed of its being conducted in a very thorough manner, without hurry, and with due allowance for the varying degrees of readiness of different candidates. Another instructive point was the manner in which the candidates were examined on the living subject as to the position of the various organs of the body. The principle of closely questioning a candidate on the position and size of the various organs of the body seems to the Visitors one of great importance, and capable of being made an instrument of the highest possible value in medical education. This method is, however, more suitable for the final than the primary examination, inasmuch as to be utilised to its full extent it ought to be carried out with direct reference to the practical uses to be made of it by the exact definitions required in physical diagnosis, as by mensuration, auscultation, and percussion of the chest and abdomen. On the other hand, considered as an examination in primary anatomy, and as a substitute for actual dissection, the Visitors are of opinion that it is very inadequate. As a matter of fact, the candidates were required simply to indicate in a general manner the position of the organs without any precision. As an instance of this want of precision, a candidate who very grossly misplaced the spleen and the arch of the aorta, nevertheless received a mark which did not interfere with his passing, this candidate being already a member of a surgical Licensing Body, which had submitted him to full anatomical examination, and the standard of which is generally believed to be very high. Remarks.

The *vivâ voce* examination in anatomy witnessed by the Visitors on the second day is, as an anatomical test, wholly insufficient for a Body having the right to place its licentiates on Anatomy.

the Medical Register as qualified for general practice. The same remark extends also to physiology, which, according to the regulations, ought to be and is marked separately from anatomy. Although, however, there is this separation in the markings, the Visitors did not observe any such separation in the actual examination; and the few questions put in physiology within a quarter of an hour, as part of an anatomical oral examination, and without any means of practical illustration, cannot be considered to do anything like justice to the range of modern physiology, even where its results are most important. The only effect, indeed, of this examination is virtually to encroach on the time given to anatomy, the separate marking of the two having thus no real foundation. These remarks on physiology become the more important when it is considered that the written examination in that subject consists of one question only.

Clinical Examination.

The Clinical examination of the Apothecaries' Society resembles, in its arrangements, that of the Royal College of Surgeons of England thus far, that instead of the candidates being taken to a hospital, and confronted with the sick in their beds, or at least in the wards, selected cases are brought for examination to the Hall of the Society, and are there submitted in succession to several candidates. Having already expressed an opinion of this plan as observed in the clinical examinations of the Royal College of Surgeons of England, the Visitors feel bound to indicate the points in which the method pursued differs in the two corporations. In the College of Surgeons a large number of cases is provided each day of examination, illustrating many points at once of surgical diagnosis and treatment, and admitting of being divided into groups, so that even after such division five or six cases are at the disposal of each pair of examiners, and a candidate is liable to be asked to give his opinion on any or all of these in succession. Further, the candidate is rigidly questioned, *vivâ voce*, on the diagnosis arrived at in each case, and thus all the knowledge or ignorance which he may display is instantly brought to the test of actual fact, by asking him to show how he arrives at his conclusions. The examiner, in short, not only elicits from the candidate his ultimate diagnosis, prognosis, or treatment, but also gets an insight into his methods and processes of observation and reasoning: and in general into his way, whether skilful

or the reverse, of going about his work. In the examination of the Apothecaries' Society, nothing of this kind takes place. One candidate is set to a selected case for a quarter of an hour, and then writes out such opinions and conclusions as he has been able to arrive at within that rather limited time. It may be conceded that to examine one candidate on several medical cases, or, indeed, on one such case, *vivâ voce*, within a quarter of an hour, would be in most instances unsatisfactory, and therefore the difference of method is to be regarded as due, in part, to the differences essentially or usually existing between a medical and a surgical case of disease. But in respect of this difference of procedure, the Visitors wish it to be understood that the remarks made by them as regards the surgical clinical examination are not to be read as involving approval of the same method of procuring the materials in the case of the Apothecaries' Company.

In their general observations, comparing the clinical examinations in medicine of the several Royal Colleges, the Visitors had occasion to discuss more at large than is necessary at present the relative advantages of the *vivâ voce* method and of the written paper. In the Apothecaries' clinical examination the latter method is exclusively followed. The Visitors were not, any more than the examiners, admitted to a knowledge of the steps in detail by which the candidates severally arrived at the conclusions formulated in their papers; nor is it easy, under these circumstances, to judge of the reasons which influenced the examiners in assigning marks to each paper, especially as it was only in a few instances that the Visitors observed notes of any kind by the examiners upon the papers themselves. As practical examples of the difficulties thus arising, the following may be assigned, subject to the remark that the Visitors, not having personally examined the cases, and not having witnessed in detail the performance of the candidates, are obliged to infer the true diagnosis from the papers themselves, which were placed at their disposal. One of the three cases may thus almost certainly be inferred to be one of diabetes mellitus, with all the signs of tubercular consolidation, if not excavation, in the left pulmonary apex. This case was examined in succession by four candidates, who all recorded their opinion of it more or less accurately, after testing the urine, as a case of saccharine

Details of Clinical Examination.

diabetes; but only two of the four have indicated the signs in the left apex. One of the two, whose report appears to be deficient in that point, has, nevertheless, indicated that he is acquainted, as a matter of doctrine, with the frequent liability of diabetics to "phthisis, or other disease of an exhausting nature." This report is marked S. 50 (*Satis* 50), which means a level pass. The other paper, which entirely ignores the lungs, is that of a rejected candidate.

In the second case there seems to have been, unquestionably, cardiac valvular disease, following an attack of acute rheumatism; but the four reports of it by different candidates differ so much as to anything beyond this, that nothing can be affirmed with even approximate certainty as to the precise character or seat of the valve-disease; two of the reports, however, indicating it as aortic regurgitation, a third as mitral regurgitation, and the fourth as mitral stenosis. From internal evidence, the Visitors infer that the first two concurring reports are probably correct; the third and the fourth presenting confusions in detail which appear incompatible with exactness of observation. Report 3, however, has been marked "S" (*Satis*) by the examiner; and all the reports were by candidates who ultimately passed.

In the third case, which was also reported on by three several candidates, the report which, in the opinion of the Visitors, bears most internal evidence of accuracy of detail, and which, indeed, they would characterise as *probably* very good, gives as the essential fact "a well-marked *præ-systolic* bruit heard over the apex, with a slight thrill; the first sound roughened, and the second sound somewhat accentuated at the base"; the diagnosis, in conformity with these statements, being "mitral stenosis, but slight regurgitation as well." The second report gives as the diagnosis "mitral regurgitant disease, with bronchitis," and a *systolic* murmur at apex. This report is marked B [*Bene*] by the examiner. The third report excludes the heart altogether from the diagnosis, which is regarded as one of bronchitis, with partial collapse of the right lung following pneumonia. These last particulars are at variance with all the other reports, as are also the following particulars set down with respect to the heart, and showing that its examination had not been omitted *per incuriam*; viz. "heart's area of dulness not increased; impulse rather weak, otherwise normal; no murmur

at base or apex." It is impossible, the Visitors think, to avoid the conclusion that one at least (most probably the last) of these three reports of the same case is altogether wrong in detail; but they were all regarded as sufficient, in conjunction with the examinations passed in other subjects, to entitle the authors of them to receive the diploma of the Society. Remarks on Clinical Examination.

The Visitors wish it to be understood that they do not venture to infer from these details that the decisions arrived at by the examiners were wrong, or that any candidate was on the present occasion allowed to pass who ought to have been rejected on account of insufficient clinical knowledge; but they certainly feel bound to express an opinion, that a clinical examination conducted on the plan above referred to is unsatisfactory, and, indeed, quite illusory as a test of knowledge and skill at the bedside. Further, it seems evident that to make the clinical, under these circumstances, a separate and independent element in the final examination, would be unjust to candidates, were it not that in the practical working of the system the clinical examination is, to say the least, very feebly insisted upon in the actual adjudications.

The "rules affecting the examination of students," as printed at p. 203 of the by-laws, show that a "*Malè*" in the clinical alone will "be sufficient to reject, *if the candidate be not subjected to any of the written examinations.*" This means that in the modified examinations sanctioned by the Company for candidates who already possess a licence in medicine, and who, accordingly, are to be otherwise examined *only orally* in the final subjects, a clinical "*Malè*" (= 0 to 25) out of 100 possible marks, will reject. In all other cases, the clinical ranks as one of nine separate markings in the various subjects, written and oral, and a "*Malè*" must be accompanied by a "*vix*" (= 25 to 50 out of 100); or, alternatively, there must be a majority of "*vix*" marks, in *vivâ voce* and *written together* (*i.e.*, in five out of nine separate adjudications), to reject. And the Visitors cannot but infer, from what is stated above, that the written papers in the clinical examinations are, on the whole, very leniently judged. To give to the clinical element in a final examination anything like its due value as a test of competency to practise, and, still more, to secure for it an influence of the kind which it undoubtedly ought to exercise in the practical System of marking.

Remarks.

training of candidates, which is even a more important consideration, would require an entire change in the method of procedure. A greater variety of cases should be at the disposal of the examiners, who ought to be personally acquainted with their details, and thus able to require the candidate to give evidence, especially when the written report is of doubtful accuracy or completeness, that he actually possesses the skill and knowledge necessary not only to make a conventional diagnosis, but to show in detail how he arrives at it. It is perhaps unnecessary to enlarge upon this, as the subject has been so fully treated in connection with the Visitors' report on the examinations of the colleges. In this respect, as in some others, the practice of the Apothecaries' Company appears to be a notable instance of the difficulty of putting "new wine into old bottles." In all those parts of the examinations which are conducted mainly on the old lines, viz., by written or oral question and answer, apart from objects, and according to the mere judgment of the individual examiners, the Visitors consider that the examinations of the Company are fully abreast of those of any other corporation. But in the subjects which lend themselves most completely to the *objective*, or, as it might be called, the direct and realistic method of examination, *e.g.*, Chemistry, Anatomy, Toxicology, and, above all, in Clinical Medicine, the Visitors failed to observe any thorough appreciation of the great advances that have been made elsewhere in these methods, towards the perfecting of which, it may be said with confidence, almost all the licensing boards are striving, in various degrees, to contribute. An exception is, perhaps, to be made in favour of the histological examination in the primary, and the examination in microscopical pathology in the final examinations of the Company. These appeared to the Visitors to be conducted so as to show, by contrast, what might be done in the other departments, were the materials of the chemical, physiological, and toxicological laboratories, and the anatomical resources of a well-furnished museum and dissecting-room, as well as a better supply of clinical cases, with time to do justice to them, placed at the disposal of the examiners. The Visitors feel confident that the individual members of the Court of Examiners will themselves, in many instances, appreciate the remark, that it is not easy for an anatomical examiner to do much in this direction

with only a few bones and dry and wet preparations laid out on a small table, even with the aid of a "practical" examination *on the living subject*; that chemical and physiological, or toxicological, testings, cannot be very well conducted on a considerable scale over a table covered with a green baize cloth; and, finally, that examinations in clinical medicine cannot be adequately conducted except with a minute attention to details, and with an expenditure of time as well as of resources, which has not been even attempted in the examinations of the Society. The examiners are men of proved competency and of high character, but they are fettered by the traditions of a system which, whatever merits it may have had, as the Visitors fully believe, in the past, is not in accordance with the advances that have been made both in teaching and examination during the last quarter of a century. Remarks.

THE APOTHECARIES' HALL OF IRELAND.

The examination of the Apothecaries' Hall of Ireland appears to the Visitors to present some features of a distinctive character and deserving favourable notice. The method pursued in the botanical examination is instructive as a test of practical observation rather than mere technical memory. The contrast with the examination of the Apothecaries' Society of London is marked in this respect; for in the latter there was no attempt made to give botany a substantive place in the examination, although it appears in their regulations. Another feature of this examination which the Visitors did not observe in any examination of the other corporations they visited, *except the King and Queen's College of Physicians in Ireland*, was, that the important subject of hygiene is made an independent part of the examination with a separate paper and a separate mark, while the oral examination is exceedingly practical and in all respects a model which is highly deserving of imitation elsewhere, especially considering the great and growing importance of hygiene, not only for the special health officer, but also for the general Apothecaries' Hall of Ireland. Remarks. Botany. Hygiene.

practitioner. This excellent examination leads almost necessarily to the remark that, considering how much the prevention of disease is in the hands of the ordinary or family practitioner all over the country, it seems nothing less than a dereliction of duty that the subject of hygiene should in no examining board visited in connection with the present report, besides the King and Queen's College of Physicians in Ireland and the Apothecaries' Hall of Ireland, have obtained that distinct recognition to which it is entitled. It is not enough to urge that separate diplomas in public health are issued by various universities and corporations, for it would be a very serious consequence of the specialisation of that subject were it to be withdrawn practically from the list of subjects on which the ordinary medical advisers of families might be supposed to be well-instructed. That there is a possibility of danger at this moment of its being so neglected has been prominently brought before the Visitors by the entirely exceptional importance given to it by this corporation.

Anatomy.

As regards the anatomical examination, the Visitors consider that it is designed upon correct lines. In the *vivâ voce* portion of it, the examiners did as much as possible with candidates who were below the average in anatomical attainments. The plan of examining the candidates, without entering into any minute detail, was, on the whole, practical and good; and the candidates having themselves to make dissections is another element in the examination which the Visitors commend to notice. The actual dissections made by the candidates were not as good as those witnessed at the examinations of the few other Bodies where this method of testing is carried out.

Chemistry.

In reference to the examination in chemistry, it was, as far as it went, satisfactory, but would have been more so had the candidates been required themselves to perform the manipulations, and to explain in symbols the nature of various reactions and show generally that they had a practical knowledge of the subject. In materia medica, pharmacy, and prescriptions, the examination was everything that could be desired. In medicine, on the other hand, whether in the oral or the clinical, the Visitors remarked that there was throughout a want of definiteness apparent both as regards the questions asked and the answers

Medicine.

received from the candidate. The range of the examination was extensive; but in no one subject did it seem to proceed upon

lines which would have brought out the best kind of knowledge. The questions were for the most part such as could have been answered perhaps better by a candidate who had confined his reading to the most elementary and least satisfactory manuals; and the examiners did not seem to expect, or, at all events, did not direct the questions so as to elicit, the information that is got from actual personal observation of disease. In short, the impression given throughout the oral portion of the examination was that names of things more than actual things were brought under view; while the whole vast and far-reaching developments of medicine during its later progress through such means of diagnosis as the thermometer, and even the ordinary methods of physical diagnosis, were to a great extent overlooked. It must, however, be admitted that this apparent defect may have been in part due to the deficiencies of the candidates on this particular occasion.

Clinical Examination.

In the clinical examination, the right method was followed to a very considerable extent: that is to say, the candidate was admitted to examine the case, and was then questioned on it by the examiner in such a manner as to elicit what he had discovered; but in doing so, the examiners were subject to the obvious disadvantage that they themselves began the examination on merely hearsay information as to the cases, and accordingly it was nearly impossible that they should be able to pursue the details in such a way as to test very thoroughly the accuracy of the candidates' conclusions. Owing to this cause, and perhaps also owing to the weakness of one at least of the candidates, the clinical examination in medicine did not impress the Visitors so favourably as perhaps it might under other circumstances have done. The remark made in the Visitors' account of the primary examination on the microscopic testing of urine must be recalled, inasmuch as it is possible for candidates who have passed their primary examination elsewhere, to come up for final examination here. Such candidates may not have been examined at all in the use of the microscope as applied to practical subjects; and from this point of view the amount of evidence required of acquaintance with the microscope, particularly as regards urinary sediments, in the clinical examination was certainly small. On the other hand, the questions put by one of the examiners as to the chemistry of the urine, and the quantities, and physiological relations of its various chemical constituents, were, perhaps, almost too elaborate

for a clinical examination. But with these defects, the clinical examination of the Apothecaries' Hall of Ireland compares favourably with that of the English Society.

CAUSES OF REJECTIONS.

Causes of rejections.

With regard to the instruction that the Visitors "inquire into the causes of the rejections that appear in the Annual Returns," they have not seen their way to form precise conclusions. They would, however, summarise the opinion that they have formed in the course of their visitations, in the following manner: They attribute the large number of rejections to the action of various causes:

(1) In some cases, to the unsatisfactory method of marking adopted, whereby failure to get a certain number of marks may procure a candidate's rejection, without expressing the judgment of the whole Court of Examiners, that he ought to be rejected.

(2) The minute requirements of detail in anatomy, and the uncertainty on the part of the student as to the area over which the examination in physiology will range.

(3) The very strict limitation of time in the oral examination of some Bodies, which bears unfairly on doubtful and nervous candidates.

(4) The inadequate preparation of candidates who present themselves at some of the Bodies, supposed to give an easy examination, resulting in a large proportion of rejections in these examinations.

SYSTEM OF MARKING.

System of Marking.

The Visitors feel that it is an extremely difficult duty to make any commentary upon the system of marking followed by the different corporations, inasmuch as these systems are, to a great extent, traditional, and moulded and modified in their effect by usage, and hence any innovation upon the actual system would be distasteful, and even perhaps, to a certain degree, open

legitimately to objection. Nevertheless, the immense advantages that would probably accrue from a homogeneous system sufficiently elastic to adapt itself to the varieties of examination pursued by the different Boards, are such as to make the following remarks, even should they do no more than raise the question, not out of place. It has appeared to the Visitors that the only system of marking which at once indicates with perfect exactness the various shades of difference between "very good" and "very bad," and at the same time enables a satisfactory average to be attained out of a great number of individual judgments is, that of percentages followed out on a perfectly uniform plan through all the separate parts of the examination. Suppose, for example, that an absolute maximum, that is to say, a perfect answer, or a series of answers, is to be estimated at 100, an examiner can generally affirm without difficulty whether in a particular case the answer, or series of answers, amounts to 50, that is to say, what, apart from all other considerations, he would consider a "pass." Everything above this, *e.g.* 60, 70, or 80 per cent., counts for so much above a pass, the higher figures indicating excellence more or less nearly approaching to perfection; while, on the other hand, everything below counts for something short of a pass, and thus it is possible to mark absolute and gross ignorance with a 0, and every degree of demerit in like manner with a number below 50. In the general estimate of results it may be possible, according to the opinion of the Board, to allow a certain amount of deficiency in any one department to be condoned by excellence in another. Or it may be arranged beforehand that a certain amount of deficiency in any one department shall imply rejection, or that the deficiencies in the written paper may be covered by superiority in the oral, or deficiency in medicine, written and oral, by superiority in the clinical, or otherwise as the experience of the Board may direct. The special advantage of this numerical method seems to be that it allows examiners in each subject to represent their opinion of the merits of the candidate with perfect clearness, and at the same time in a form that admits of the opinion of the whole Board being brought to bear to prevent too great stress being laid upon the judgment of a single examiner. So long as the conclusions of the examiners are expressed in terms of "good," "moderate," and "bad," or any corresponding

System of Marking suggested.

indications of a vague and general nature, it is felt that they may be subject to qualification—that is to say, that an individual examiner must be induced to reconsider and revise his own opinion, and to adopt a nomenclature different from what would have spontaneously suggested itself to his mind. When he gives a numerical estimate, on the other hand, it stands for what it is worth in the general judgment, and he has the power of graduating so as to show every possible phase of his own opinion. For example, if he thinks it not quite a "pass," but still so little below the pass that he has almost no desire to influence unfavourably the general result, he can render this opinion in figures at any number from 45 to 50; while on the other hand, if he thinks the case so bad that the candidate ought under no circumstances to pass, whatever his excellence in other departments, he can indicate this by numbers from 0 up to 20, 30, or 40. The distinctive character of this system as compared with that of the Royal College of Surgeons in England, which is also numerical in its form, is that in the primary examination of the latter no force or validity whatever is given to the numbers either above or below a certain degree removed from the level pass. So that, for practical purposes, such a numerical system is little, if at all, superior to the simple "pass" or "reject," "yes" or "no," practised in other Boards.

SCHEME OF NUMBERS.

Scheme of numbers.

The following is a scheme graduated so as to afford a scale of examination marks in accordance with the foregoing observations:

100, 90, 80	... ...	*Optimé.*	40	... ...	*Vix satis bene.*
70, 60	... ...	*Bené.*	30	... ...	*Malé.*
50	... ...	*Level pass.*	20, 10, 0	... ...	*Pessimé.*

The working of the above scheme in detail might be as follows, a certain amount of latitude being given according to the traditions of different Boards and the importance attached to the several subjects:

Supposing five separate subjects to be embraced in one examination, viz., A, B, C, D, E—candidates might range thus:

	A	B	C	D	E	
Cand. No. 1 ...	50	45	55	55	50	Pass.
—— No. 2 ...	60	60	40	50	55	Pass.
—— No. 3 ...	50	60	40	40	55	Reject.
—— No. 4 ...	60	70	40	45	55	Pass.
—— No. 5 ...	50	50	50	45	55	Might pass, but doubtfully.

The whole Board, of course, will determine all doubtful cases.

APPOINTMENT OF EXAMINERS.

Appointment of Examiners.

Considering that the question of the right method of appointing examiners is of cardinal importance in every examination, the Visitors have placed in a tabular form the information on this point which they have obtained from the various corporations.

Without entering into any comparison of those methods which in the case of individual bodies are the result either of long continued custom, or of the rigid requirements of charter, and therefore unalterable except by Act of Parliament, they feel justified in putting forth certain recommendations, which express the opinions they have formed on the subject in the course of their visitations, viz.:

Recommendations.

(*a*) That the appointment of examiners ought to be in the hands of a Body responsible to the Corporation for making the best possible selection.

(*b*) That the selection should be made in reference to special fitness to examine in the subjects for which each examiner is responsible.

(*c*) That, with rare exceptions, it is desirable that an examiner should actually be, or should recently have been, a teacher of the subject in which he examines.

(*d*) That, as a rule, an examinership should be held by a competent examiner for a term of years, with the double object of retaining his experience, and of avoiding too rapid changes in the standard or area of an examination.

(*e*) That examinerships should not be indefinitely renewable, and should not be held by the same individual for a longer period than five years without a break. Competent examiners might be re-elected after an interval, say of one or two years.

TABLE CONCERNING THE

Corporation	Number of Examiners	By whom appointed	If elected to examine in special Subjects
COLL. OF SURGEONS, ENGLAND.	9 for Primary. 10 for Final.	By the Council of the College.	Yes. Yes.
COLL. OF PHYSICIANS, ENGLAND.	Primary, Secondary, Final, 12. } 14	By the "College" at a general meeting.	Yes.
ROYAL COLL. OF SURGEONS, EDINBURGH,	Primary, Final, } 12.	By Fellows, 359 in all; but practically by the 77 who are resident in Edinburgh.	No; but to some extent specialised after election.
and			
ROYAL COLL. OF PHYSICIANS, EDINBURGH.	Primary, 6. Final, 15.	By the Council of the College.	To a certain extent — *i.e.*, after election are assigned to special groups of subjects.
Double Qual.			
FACULTY OF PHYSICIANS & SURGEONS, GLASGOW.	Primary, 6. Final, 9, with the Hospital Physicians and Surgeons who conduct Clinical Examinations.	By the Fellows, 180 in number.	Yes.
KING AND QUEEN'S COLL. OF PHYSICIANS, IRELAND.	Primary, 4. Final, 4 Censors and 1 additional Examiner; not necessarily the same for both Examinations.	By the Fellows, 51 in number.	To a certain extent. For the primary elected for special subjects. For the final special subjects assigned to the Censors by the President.
ROYAL COLL. OF SURGEONS, IRELAND.	Primary, Final, } 8.	By a Committee of 7, elected by ballot from the Council of the College.	No; but to a certain extent specialised after election.
APOTHECARIES' HALL, IRELAND.	Primary, Final, } 11.	By the Board of Directors.	After appointment are assigned to special subjects.
APOTHECARIES' SOC. LONDON.	Primary, Final, } 11, and the Chairman.	By the Court of Assistants.	No.

APPOINTMENT OF EXAMINERS.

Number of Examiners who are Teachers	Number of Examiners who neither are nor have been Teachers	Term of Examinership	For what period re-eligible
8 7	0 0	1 5	Primary 5 years. Final not limited.
23	0	1 year.	4 years.
—	—	1 year.	Not limited.
6	4 are not, and have not been; 2 have been.	1 year.	Not limited.
All.	0 4 have not been Teachers of the subjects in which they examine.	4 years.	Not limited.
8 out of 9.	1	1 year.	As a rule, re-elected for 2 years; rarely for a longer period.
Lecturers and Professors excluded from all Examinerships.	0	For 1 year.	Not limited.
0	11	For 1 year.	Not limited.
5	7, of whom 3 filled the office of Prosectors at the College of Surgeons.	For 1 year.	Generally re-elected for 5 years, after which retirement is the custom rather than the rule.

CONCLUSIONS.

Conclusions.

As the result of the visitations of the nine Corporations, the Visitors beg to append the following conclusions as to points which they think are desirable in the conduct of medical examinations.

1. That every "primary" or "first part" examination should include dissections by every candidate.

2. That, having regard to the great and increasing range of chemical and physiological science, candidates should be apprised beforehand of the limits of the examination in these subjects.

3. That at the final examination, candidates should be examined orally or practically on strictly regional anatomy, that is, on the parts of anatomy which illustrate surgery and medical diagnosis, and not on purely descriptive anatomy.

4. That in every final examination for a surgical diploma, candidates should be required to perform operations on the dead subject.

5. That for every "minimum" qualification the examination in operative surgery should be confined to emergency operations, such as any practitioner may suddenly be called upon to perform, *e.g.*, amputation, deligation of arteries, catheterism, urethrotomy, tracheotomy, &c., and should for the most part exclude complicated operations, not of sudden urgency, such as ovariotomy, excisions of joints, plastic operations, lithotomy, lithotrity.

6. That the application of bandages and splints should be required in every surgical clinical examination.

7. That the examination of normal and morbid urine should be an essential part of every clinical examination in medicine.

8. That the practical examinations in chemistry should, when feasible, be conducted in a laboratory.

9. That a practical knowledge of the histology of tissues and chief organs should be required of all candidates for medical or surgical diplomas.

10. That in oral examinations, where the time allotted is strictly limited, for instance, to ten minutes or a quarter of an hour, there is a serious risk that candidates of average ability who have been conscientiously taught and fairly prepared in their work may be rejected owing to misunderstanding or nervousness, and this is a hazard which, reacting as it does injuriously upon study and teaching, ought to be, if possible, avoided by allowing a margin of additional time for satisfying the examiners in all such cases. The actual practice of certain Boards, and especially of the Colleges of Physicians, shows that this suggestion is not impracticable, although it may be more or less difficult to carry out where the numbers are very large. The Visitors think that no mere difficulty of mechanism should be allowed to interfere with its being adopted as a measure of justice to candidates.

11. That with a view to economy of the time of the examiners, it is desirable that when a candidate has obtained rejecting marks in the written portions of an examination, he should not be required to proceed to the oral.

12. In any future revision of the curriculum, the subjects of hygiene, ophthalmology, and mental disease, will demand serious consideration, and perhaps admission, under careful limitation, as distinct elements of examination.

13. Suggestion by Dr. Gairdner and Mr. Stokes:—That considering the great importance of preventive medicine and hygiene to the general practitioner, these subjects ought to form a more independent part than they do of the examinations of all Corporations. The particular circumstances leading to this suggestion are indicated at pp. 47–8; and it may be added that in Ireland, under the Public Health Act, all dispensary medical officers are, *ex officiis*, medical officers of health. The tendency in England and Scotland, on the other hand, is to separate, artificially, preventive medicine from all other medical practice, and thus to erect it into a specialism, which in course of time might easily lead to its being altogether neglected as part of a general medical education. But the issue as to whether hygiene should not necessarily be a part of the final examination in medicine is a very important and far-reaching one; and the Visitors believe that their duty is fulfilled in thus clearly placing it before the

Medical Council, viz.: Are the general medical practitioners of England and Scotland to be taught and allowed in future, so far as education and examination are concerned, to drop gradually from their consideration the principles and practice of preventive medicine, leaving, in a great measure, the systematic study of these to a limited order of practitioners, who may take a special curriculum and diploma in Public Health, or State Medicine? or, are they to be enabled through their education and examination to maintain the prevention of disease on a par with its cure in their private practice as well as when specially employed in public health offices? To state the question is, in the opinion of the Visitors, to indicate with sufficient clearness the proper reply.

In putting forward the foregoing conclusions, the Visitors bear in mind two considerations, first, that the effect of an examination must be to guide education and study; and secondly, that in emphasising all the good points of the various examinations inspected, they have had in view the practicability of the suggestions offered as the basis of a future scheme for examinations.

A change in the existing practice in medical and surgical examinations has suggested itself to the Visitors as likely to help the solution of many difficulties which at present exist, and of others which might arise to bar the way to the introduction of any general improvement in the mechanism of examinations.

Suggested Written Examination.

They consider that the written portion of the examinations might with much advantage be carried out at the several educational centres, medical schools, &c., thus following the example set in the Oxford and Cambridge local examinations, in the matriculations of the University of London, and the Royal University of Ireland, as well as in the Science and Art examinations, South Kensington; and in the Intermediate Education examinations, Ireland. By the adoption of such a plan much would be gained and some of the defects remedied.

Advantages.

In the first place, time, trouble, and expense would be saved to those candidates who, residing at a distance, have to come up to the examination centre for the written portion, and then have to wait for their turn in the oral examination.

In the second place, the supposed necessity for commencing the oral immediately after the written examinations, and the *consequently hurried consideration of the papers*, would disappear.

In the third place, by rendering it possible to have an ample interval between the written and the oral portions of the examination, the written portion might become more thoroughly than at present a means of sifting out inadequately-prepared candidates. Again, by rejecting them at this stage, valuable time would be gained for the oral and practical portions of the examinations.

In the fourth place, the greater the aggregate number of candidates at an examination, the more conspicuous would be the saving of time, and the greater the economy of expense in conducting the examination.

In the fifth place, the rejection of a candidate on his written examination alone could be more carefully managed than at present, while the candidate, in the event of failure at this stage, would be saved much personal mortification, and in any event would be put to no expense beyond the mere fee for the examination.

PART II.

DETAILED DESCRIPTION OF THE EXAMINATIONS.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

PRIMARY EXAMINATION FOR MEMBERSHIP.

Primary Examination for membership.

The Visitors of the Medical Council arrived at the Royal College of Surgeons at two o'clock on Monday, April 11, in order to visit the *vivâ voce* examination of the College. They were received by Mr. Trimmer, and found that the Board of Examiners, nine in number, were assembled punctually at two o'clock.

The examiners were:—Mr. Durham, Mr. Pick, Mr. Rivington, Mr. Baker, Mr. Lowne, Mr Bellamy, Mr. McCarthy, Mr. Langton, and Dr. Gerald Yeo.

In the theatre of the College were four tables—A and B, anatomy; and C and D, physiology. At each of the tables were two examiners. The ninth examiner acted as chairman, and did not take part in the examination. In the middle of the room was a subject, with certain regions of the body dissected, viz., the front of the wrist, the back of the wrist, the elbow, the temporal region, one side of the abdomen showing the rectus and its fascia and the inguinal region, and the inside of the ankle-joint. The other objects displayed in anatomy consisted of wet preparations under glass, which was removable; dissected specimens preserved in spirit, on which the candidates were required to point out the various structures that were presented to their view. These specimens represented almost the whole

dissection of the body. At the physiological tables were wet preparations of the kidney, heart, brain, portions of intestines spread out, and various other parts of the body, including a series showing some portions of fœtal development. There were also specimens of urine and various chemical tests, which were applied by the student in the presence of the examiner. At each physiological table there was a black-board, which was used for making rough sketches, and in particular for examining upon the graphic method.

The plan of examination was as follows: Four students were admitted at one time, one to each table. One of the two examiners questioned a candidate for a quarter of an hour, when the bell rang. The candidate then passed to another table, where he was examined in the second of the two subjects, physiology and anatomy. At the end of the second quarter of an hour the bell again rang, and the four students left the room and were replaced by four others. Thus each student had a *vivâ voce* examination of half an hour, one quarter of an hour at the anatomical, and the other quarter at the physiological table. The whole examination occupied three hours, during which twenty-four candidates were examined.

The first candidate was examined in osteology, and required to answer on the sphenoid bone, naming the different parts, the bones with which it articulates, and its muscular attachments. He was then required to recognise the cuboid bone, to state the side to which it belonged, and the bones with which it articulates. Having been shown a dissection of the popliteal space, he was required to name its boundaries, to mention the origin and insertion of the muscles that form those boundaries, and the nervous supply of each of the muscles. The contents of the space were also examined upon. The next region the candidate was examined on was Scarpa's triangle. Lastly, he was examined on a section of the brain, and had to point out minutely the different parts that were presented to him in it. The candidate then passed to the examiners in physiology, and was required to recognise microscopical preparations of the kidney and spleen. There were also specimens of villi and different forms of epithelium. He was next required to make a preparation for the microscope of yellow elastic tissue. Lastly, he was examined on the way to take the specific gravity of

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Primary Examination. Details.

normal urine, and also of urine in various diseased conditions, such as saccharine and albuminous. One candidate had to put some milk under the microscope, and another to identify it.

When two sets of students had been examined, the series of microscopical specimens were changed, so that there might be no collusion between those who had been in and those who were coming in for examination.

Another candidate was examined on the lower jaw and the various muscles attached to it; on the cuboid bone; on a preparation of the urethra and bladder; on the ducts opening into the urethra and bladder, which were indicated by bristles; on the trigone, &c. He was next taken to the dissected subjects in the middle of the room, and examined on a dissection of the bend of the elbow, on the origins and insertions of the muscles which were seen there, and on some of the deeper structures; on a dissection of the wrist, the tendons, &c., and the distribution of the nerves about it; and then on a dissected ankle in the same manner.

There were four specimens under the microscope, the fourth being a section of an artery, showing its muscular coat. The candidate was closely questioned as to the rate of flow of the blood in capillaries; the rate of the heart's pulsation; the action of the pneumogastric upon the heart; the beating of the heart of a frog and its cause; electricity and its effects on muscles in various forms, and the changes that take place in the muscles during action, illustrated by diagrams of curves on a board.

Other candidates were examined on the following topics: A section of the head and neck; the thoracic viscera; a dissection of the under aspect of the tongue. They were questioned also on the nerves of the tongue; on the upper surface of the tibia and the semilunar cartilages of the knee-joint; on the astragalus, and on the right first rib.

Another candidate in anatomy was examined on the fibula, tibia, and femur, and the attachments of the muscles to them. He was also examined on the popliteal artery, on the occipital region, on the nerves and arteries of the space and their course. Then taken to the dissected subject, he was examined on the hernial region, on the fold of Douglas, and on the tendons behind the ankle-joint. The same candidate was also examined on a dissection of the posterior mediastinum, the splanchnic nerves,

Primary Examination.

and the azygos vein. Another candidate was examined on the microscope, and questioned upon the minute anatomy of the kidney; a section of a nerve; the function of the grey matter of the spinal cord, of a nerve centre, and also on the physiology of micturition. He was then required to put a piece of yellow elastic tissue under the microscope; was examined on a heart laid open, and on portions of intestine cut open, which he was asked to identify. Another candidate was closely examined on the anatomy of the orbit. Several candidates were asked to delineate on a black-board the curve of a muscle in contraction, and were questioned on the significance of different parts of the curve.

Punctually at five o'clock the examiners assembled in the theatre under the presidency of the chairman, the Visitors also being present. The chairman read out a number corresponding with an entry in the secretary's book of the name of each candidate, which, however, was not disclosed; and four examiners, each with a tabulated statement of marks, gave the number of marks as each number was read out. For instance, say No. 142; the examiners first gave the marks for *vivâ voce* anatomy, next for *vivâ voce* physiology, then for the written anatomy and the written physiology, and so on through the whole twenty-four candidates.

System of Marking.

The system of marking is as follows: Ten is the maximum number of marks in anatomy and physiology respectively, and also in written and *vivâ voce* respectively; so that the total maximum would be 40. Any mark below 3 in any one of the four subjects would reject; but in each subject, anatomy or physiology, a minimum total of 8 must be reached, a failure to attain which means rejection; so that a 3 in the oral examination would require to be balanced by at least a 5 in the written to pass in each subject, anything less than 8 in either physiology or anatomy meaning rejection. After all the numbers had been read to the president, he added up and read the totals, and everyone who had received below the standard was rejected. Four were rejected out of twenty-four. The Visitors were told that in rare instances, where a student is just below the passing standard, and has done well in several of his subjects, the examiners confer and pass him by allowing an addition to one of their marks, considering that he virtually has a right to pass.

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Primary Examination. System of Marking.

Although 10 is nominally the maximum number, it rarely happens that more than 8 is given, which is practically the maximum, any higher number than five (see *ante*, p. 27) being of no use in retrieving lost ground where a candidate has done badly in any one of the subjects.

In this manner the examination is conducted, twenty-four candidates being examined each day, until the whole number is exhausted.

Each candidate is known only by a number, with this exception, that the clerk observes what schools they come from, and if the student happened to come under an examiner from his own school, a mark is put opposite his name, so that he may be examined instead by the colleague of that examiner. At the close of the written examination the papers are divided among the examiners, and it is so arranged that the examiners who read over and adjudicate upon them do not examine the candidates *vivâ voce*. Thus each candidate, in his written papers, comes under one set of four examiners, and in his *vivâ voce* comes before the other four examiners. The object of this, and other arrangements indicated, seems to be to secure, as far as possible, absolute impartiality, and to prevent even the appearance of undue favour being shown to the pupils of one or another school at the examination.

On Tuesday, April 12th, the Visitors again attended the primary examination of the Royal College of Surgeons. Changes had been made in the materials for examination. Generally speaking, the specimens were changed from side to side, reversing their position of the previous day; the examiners changing along with their own specimens. Fresh specimens also were added to those used on the previous day, such as a clot of blood, bile, a freshly dissected eye; and fresh dissections made on the subject in the middle of the room, viz., the fore-arm, the inner side of the arm, the axilla, the buccal region. But the examination in its general plan and arrangement was similar to that on the previous day. The Visitors did not remain to the conclusion of the examination, but went to the Royal College of Physicians to witness the second part of the primary examination of that body, and therefore did not hear the final decisions upon the candidates they had watched.

FINAL EXAMINATION FOR MEMBERSHIP.

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Final Examination.

On April 20th the Visitors arrived at the College to inspect the clinical, the *vivâ voce*, operative surgery, and final examinations for membership of the College. There were nine examiners, one acting as chairman. The examination consisted of two parts. The first, occupying two hours, from five to seven, took place in the theatre, in which were arranged four sets of tables, with two examiners at each table Four candidates were admitted at a time, and each candidate had ten minutes at each of two tables, and at the end of twenty minutes was dismissed, when a fresh batch was admitted. Each candidate was examined at one table clinically on patients with some surgical injury or disease, brought there from various hospitals or dispensaries. The patients procured for examination were varied from day to day. This plan has been adopted in consequence of the practical difficulties which attend the taking of large numbers of students to various hospitals for clinical examination. Ten minutes were spent on the examination in operative surgery and surgical anatomy, which was conducted in the following manner: A man, stripped of his clothes, lay on a table covered with a blanket. The candidate was questioned on various surgical regions and anatomical land marks. He was asked to mark out, with coloured chalks, the incisions for various operations, and then questioned on the relative anatomy involved in such operations, and was required to answer other anatomical questions. In this part of the examination the candidate was liable to be taken to a table covered with various surgical instruments, and a series of wooden knives, used for going through the various manœuvres for amputations, &c. Arranged round the sides of the theatre was a complete series of splints, bandages, and other surgical appliances, which, however, the Visitors observed, were not much used during the examination.

Operative Surgery.

Clinical.

The Visitors paid a second visit to this examination next day, and found the same general arrangements as before, except that the patients brought for clinical examination were about double in number. On the first day there were the following cases: case of flat foot; encysted hydrocele; a second case of hydrocele, in which the lower part was obliterated and the

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Clinical Examination.

testicle adhered to the sac in consequence of repeated tappings; a well marked case of epithelioma of the lip; a second case of flat foot; a small bursal tumour situated at the inside of and a little below the knee; a case of inguinal hernia. On the second visit about half these cases were present, with the addition of a case of dislocation of the lower jaw; a case of dislocation of the head of the radius in a boy; a case of lupus of the nose; a case of epithelioma of the tongue; a case of iritis, in which iridectomy had been performed; a case of hydrocele; a case of anæsthesia of the conjunctiva and the skin of the face from paralysis of branches of the fifth nerve.

The examiners were: Mr. Birkett, Chairman; Mr. Holmes, Mr. Humphry, Mr. Hulke, Mr. Holden, Mr. Hutchinson, Mr. Cooper Forster, Mr. Wood, and Mr. Savory.

At one table a candidate was examined on the living model. He was asked questions on the third stage of the subclavian artery, on the relations of the brachial plexus; to mark the course, in chalk, of the subclavian artery; to name the relations to it of the anterior scalenus muscle, and of the phrenic nerve; to "name all you see between the eyelids," and he was questioned on the action of the pupil. Another candidate, also examined on the model, was asked whether the trochanter was in its proper place, and how he would prove it by Nélaton's test. Also: "How would you distinguish by the position of the trochanter between fracture of the neck of the thigh bone and dislocation? Where would you insert a needle in order to inject the sciatic nerve? With what muscles is this nerve in relation? Mark in chalk the course of the sciatic nerve and its branches. If the external popliteal nerve were divided alongside the biceps tendon, what would be the result?" He was told to bandage the left knee; to point out the limits of the synovial membrane of the knee-joint; lastly, to compress the femoral artery.

The clinical examination consisted mainly in requiring the candidates to give their diagnosis of two or more of the cases that were presented. They were also required to answer a few practical questions in reference to prognosis and treatment. One candidate was taken to the table containing the instruments, and questioned on two or three of them as to what they were used for, but as a rule the candidates were not required either to name the instruments, or to show that they were familiar with the

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Clinical Examination.

application of bandages or the various surgical appliances that lay on the table. In fact, only one candidate was seen by the Visitors to apply a bandage. Another candidate, examined on the model, was asked: "Mark out amputation of the shoulder-joint; describe the operation. Where are the teres major and minor attached? What is the size of the circumflex arteries? Does the posterior circumflex ever cause trouble? After dividing the axillary vessels, how do you command them? What are the relations of the upper part of the brachial artery and of the axillary vein to its artery? Mark out Hey's amputation of the foot; also the line of the metatarsal joints."

Practical Surgery. Pathology.

Precisely at seven o'clock the examiners adjourned to the library and council-room. Here they conducted a second part of the oral examination. Four tables were arranged—two examiners at each table, as before—and on these tables there was a large and well-selected assortment of preparations taken from the Hunterian Museum, illustrating various points connected with surgical pathology and injuries. Every candidate was examined for ten minutes at each of two tables, the examination at one table being directed rather to practical surgery, and at the other to surgical pathology. One candidate was questioned on a piece of spinal column eroded by an aneurism; and on a skull with a deep sabre cut, with edges rounded and thickened—"Was this immediately fatal? How would you know that inflammation of the brain had supervened? What symptoms denote compression?" Shown a specimen of hernia, he was asked for the symptoms of strangulated hernia. Another candidate was questioned on injury of the upper part of the femur—"Has it opened the hip-joint? What treatment could you adopt?" Shown a tumour in the eye, he was questioned on it. Shown a specimen of acute periostitis, he was asked, "With what disease is this often confounded? How do you diagnose it?" Another candidate was questioned on infantile purulent ophthalmia, its treatment and protection against contagion. Questioned on a specimen of hernia. How to distinguish omentum from bowel. Another candidate was questioned on hæmorrhage, primary and secondary; on a specimen of internal piles; on fractured neck of the femur impacted; and also on a case of caries of the spine. Another candidate was questioned on

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ankylosis of the hip, and the changes through which the joint had passed; on an impacted calculus in the prostatic urethra, with thickened bladder. He was also questioned on prostatic enlargement.

At the end of an hour, during which three sets of candidates had been examined in this second portion, the examiners rested for half an hour, having first assembled all in one room, and added up the marks of the first twelve candidates, and decided upon the result, viz., whether they should get their diploma or be referred. At the end of half an hour, the examiners resumed, and in another hour the remainder of the candidates had a second twenty minutes, and the same process of decision as to the results was repeated.

Medicine. Therapeutics.

An entirely separate examination in medicine only, including therapeutics, was conducted by Dr. Bristowe and Dr. Dickinson. The candidates had previously answered a written examination on medicine, and the *vivâ voce* consisted of ten minutes each, the decision as to their being rejected or not being made on the combined result of the written and oral examination. There was nothing very distinctive about the character of this examination to call for remark specially upon it, further than that it was well supported by a great variety of preparations from the Hunterian Museum, and by some drawings of skin diseases. The oral examination was not, however, chiefly, or, indeed, considerably upon these, but consisted of questions and answers, in relation to general medical practice, of a miscellaneous character. The written paper contained a distinct therapeutical element, and also some reference to the composition of remedies. The marks assigned were not by numbers, but simply an indication in general terms of the status of the candidate, numbers not being necessary, because this part of the examination stands by itself, a student being able to pass in surgery and stand over in medicine, or *vice versâ*.

ROYAL COLLEGE OF SURGEONS OF IRELAND.

EXAMINATION FOR LETTERS TESTIMONIAL. FIRST HALF.

Examination for Letters Testimonial. "First Half," or Primary.

On the 4th of July this examination (the equivalent of the Primary Examination for Membership of the English College) commenced with written papers.

The arrangement of this division of the examination was as follows:

From ten A.M. to twelve was the time allowed for answering four out of twelve questions in anatomy.

Written Examination.

The written examination in physiology, chemistry, and materia medica takes place between four and six o'clock on the same day. Three questions were given in each subject, of which the candidate was required to answer two.

On the following day, July 5th, at five o'clock P.M., the examiners met in the board-room of the College of Surgeons, to adjudicate on the written answers given by the candidates on the previous day. The candidates who satisfied the examiners were allowed to proceed to their *vivâ voce* examination, while those who had not were excluded from further examination. Fifty-five candidates presented themselves at the written examination. Six retired, and of the remainder, twenty-seven were rejected and twenty-two passed. The proportion of rejections seemed enormous; but it was explained by the examiner that as a rule a large number of ill-prepared candidates appear at the July examination. At the adjudication there were present the four examiners who had given the questions in anatomy, a fifth who had given the questions in physiology, and a sixth who had given the questions in materia medica and chemistry. The

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Primary Examination. Written.

seventh examiner acted as President, not having taken any part in setting or judging the written examination. The examiners for both "First Half" and "Senior Class" were: Mr. Richardson, Mr. Stoker, Dr. Frazer, Mr. O'Grady, Mr. Croly, Mr. Swan, Mr. Thomson, and Dr. M'Dowell.

In conducting the examination, the presiding examiner assigns to each of the four examiners in anatomy a division of the body to which his questions should relate. Each examiner gave three questions, the candidate selecting at his own discretion one question out of each set of three, that is, one in each of the four divisions of the body. At the conclusion of the written examination, each examiner reads over and appraises the answers to his own questions preparatory to the adjudication at five P.M. of the day following the written examination. There were on this occasion fifty-three candidates, and, after deducting six who retired, each examiner had to look over forty-seven answers to a single question; the exception being in the case of the examiner in materia medica and chemistry, who, having undertaken two subjects, had double the number of answers to read.

Adjudication.

At the adjudication the President read out the number of each candidate in order, and each examiner in turn declared his judgment on the paper he had read, which, as already mentioned, contained the answer to a single question only. If the judgment was favourable, he answered "Yes"; if not favourable, "No"; if so unfavourable that he thought the candidate ought to be rejected absolutely, he gave a "0." So that a single examiner is able to stop a candidate on his own judgment alone. In this way the four subjects were respectively appraised. If there were two "Noes"—that is, for two very indifferent answers—the candidate was rejected, whatever his marks might have been in the other subjects. In anatomy a "No" rejects absolutely. In the other three subjects a "No" did not reject, only a "0"; but a "No" in two subjects rejected. The result of the adjudication of the written papers was that on this occasion more than 60 per cent. of the whole number of candidates was stopped, and not allowed to proceed to the remainder of the examination. Those candidates on coming up again will have to be re-examined in all the subjects. Any candidates who passed the written examination, but were rejected in the *vivâ voce*, will be allowed to come up

Adjudication.

next time without doing paper work. In like manner, any candidates who passed the *vivâ voce*, but were rejected in the practical anatomy, will be allowed on a future occasion to come up for practical anatomy only. So that each stage stands by itself; a student who has passed the first, or first and second stages, not being re-examined in them. As soon as this adjudication was over, notice was sent by post to each candidate to say whether he was rejected or passed, and information was given to those who wished it as to the subjects on which they had failed. In several instances in which the result was doubtful, the examiners conferred as to whether the candidate ought to be passed or not, and in a few instances the reports of individual examiners were modified after hearing the opinions of the others, usually in the direction of a more lenient judgment on the whole examination.

Vivâ voce in Materia Medica, Chemistry, Anatomy, and Physiology.

On Wednesday, July 6th, at four o'clock P.M., the Visitors were present, at the commencement of the *vivâ voce*, in the College of Surgeons. The candidates were examined at the rate of twelve a day, four candidates each hour; each candidate having a quarter of an hour at each of four tables, and the time being kept by the Chairman of the examiners, who marked each quarter by ringing a bell. At each table sat an examiner and an assessor, the assessor being sometimes one of the Examining Board, sometimes a Member of the Council of the College. Each member of the Board examined for an hour, and then his place was taken by another examiner, who might have been acting as his assessor, or absent at the time. By this plan each examiner was able to rest for one hour out of the three.

At one table Dr. Frazer, with Mr. O'Grady as assessor, examined in materia medica and chemistry, and continued as examiner for the whole three hours. On this table were several small bottles containing various drugs and chemical preparations. Two tables were devoted to the anatomical examination; the fourth to physiology. On each table there was a series of bones. The examiners in anatomy tested the candidates minutely over a limited range. Candidate No. 8, examined by Mr. Croly, was asked about the foramina of the skull and the sutures, pointing them out on the bone. He was then examined on the dissection of the perineum and the various structures that would be found from the skin down to the deep structures inside the

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Primary Examination. Oral.

pelvis. This candidate answered well, and received seven marks, ten being the maximum. The same candidate next went to the physiology table and was examined by Mr. Swan upon the salivary function, and the substances acted upon by saliva; on ptyalin, pepsine, and the mechanism of deglutition; on the position of the stomach, and the microscopical appearances of the lining of the stomach near the cardiac orifice; on the physiology of the secreting cells; on anastomoses; the gastric fluid and its reaction, and the cause of its acidity; how pepsine is obtained; on the ceruminous glands. The candidate did not answer well in physiology, and only got three marks. The same candidate at another table was examined by Mr. Thomson, on the superior maxilla and its articulations and foramina; on the superior dental nerve and its groove; on the puncta lachrymalia and what they lead to; on the temporal muscle and its origin, and the attachments of the temporal fascia; on the coronoid process of the lower jaw and the attachment of the masseter muscle; on the temporo-maxillary articulation, and the relations of the parotid gland; and on the muscles attached to the mastoid process. He received seven marks. Another candidate, No. 88, was examined by Dr. Frazer in materia medica. He was shown a series of specimens in small bottles, like test tubes, easily handled and suitable for exhibiting the character of the specimens. Taken rapidly over a great number of facts on blistering and the means of producing it, he was also questioned on the doses of Epsom salts, castor oil, iodide of potassium, sulphate of iron, corrosive sublimate, strychnia; asked to identify buchu leaves, senna, phosphorus, nitrate of silver; the doses of liquor arsenicalis, of opium, the dangerous doses of opium; about cumulative medicines; and to show a specimen of ipecacuanha. This candidate received five marks.

When a candidate hesitated to name any drug or specimen, the examiner told him what it was, and then ascertained whether it was simply temporary forgetfulness, or ignorance, or want of power of identification, from the subsequent answers that he could draw out by further inquiry on the same subject. The whole scope of this examination was admirably calculated to elicit what a man knew, and to detect where his ignorance lay, with the least possible risk of mistaking nervousness for ignorance.

Primary Examination. Oral.

Next day, Thursday, July 7th, the Visitors again attended the *vivâ voce* examination, being present at six o'clock P.M. for the last hour of the three devoted to the examination. The Visitors were much struck with the excellent answering of some of the candidates in anatomy. Some of the better candidates were carried rapidly by Mr. Stoker over a large extent of the subject during the quarter of an hour. This was partly owing to the promptness with which the answers were given, and partly to Mr. Stoker's method of examination, which was somewhat peculiar in this—that he did not allow the candidate long to hesitate about an answer. If at times the candidate had forgotten the precise answer, he told him, and then soon ascertained whether the candidate was ignorant or only temporarily forgetful.

With respect to the examinations in chemistry and materia medica, conducted by Dr. Frazer, the Visitors have a remark to make which is not intended in any degree to reflect upon the examiner, inasmuch as they have not witnessed anywhere an examination managed with more ability, discretion, and consideration at once for the candidate and for the duty to be performed. In these respects Dr. Frazer seemed to possess almost instinctively the highest qualities of an examiner. But this indicates only more clearly that it is difficult, if not impossible, to bring out to the requisite degree the knowledge of a candidate in these two large and complicated subjects, within the limits assigned by the College to these examinations. To justify this remark the following considerations suffice: One question only in each of these subjects is required to be answered at the written examination, and that is selected by the candidate himself out of three. The oral examination on the two subjects was, as has been mentioned, conducted strictly within the limits of a quarter of an hour. So that seven and a half minutes, on the average, was the very utmost time that could be given to testing a candidate's knowledge over the whole range of modern chemistry, with its infinitely varied symbols and doctrines, not to speak of its endless details. Dr. Frazer had a number of chemical objects before him, and, in many instances, candidates were asked to note in symbols the composition of some of these objects. There were also questions upon the manufacture of gases, the simpler processes of inorganic analysis, &c. But it cannot fail to follow, even from this brief statement, that nothing approaching the testing

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of a thorough knowledge of chemistry, either as regards its principles or its details, could be attempted; and with all Dr. Frazer's care and scrupulous impartiality, it must be assumed that his markings of individual candidates had reference to a low standard, and formed to some extent a fallacious estimate. To materia medica these remarks do not apply in the same degree; and, on the whole, the larger proportion of the examinations was on this subject. But even for materia medica, one question out of three to be answered in writing, and seven and a half minutes for oral examination, appear inadequate; and if more time was given in fact, it only brings into greater prominence the remark upon the inadequacy of the time given to chemistry.

Practical Anatomy.

The Visitors, on July 9th, at ten o'clock A.M., attended in the dissecting room of the School of the Royal College of Surgeons, where the practical examinations in anatomy and histology were held. The examiners in practical anatomy were: Mr. Edward Stoker, Mr. Henry Gray Croly, Mr. O'Grady, Mr. Thomson, Dr. M'Dowell, and Mr. Swan. There were four subjects on separate tables in one portion of the room. In another portion there was a series of microscopes with various histological specimens for the purpose of examination. Before entering the room, each candidate received a number drawn by lot, indicating the region allotted to him for dissection. Six candidates were, as a rule, assigned to each subject. At the first table the first candidate was directed to make a dissection of the digastric space. The second and third candidates were required, the one to make a dissection of the first stage of the axillary artery, and the other of the inferior thoracic wall; the fourth candidate to make a dissection of femoral hernia; the fifth, to dissect the superficial muscles of the abdomen; the sixth, to expose all the parts that lie between the inner malleolus and the os calcis; and the seventh, to expose the structures in front of the ankle-joint. At the second table, the first candidate was required to exhibit all the parts that are seen in front of the ankle-joint; the second, to make a dissection of inguinal hernia; the third, to make a dissection of the parts round the inner malleolus; the fourth, to dissect the triangles of the neck; and the fifth and sixth, to make dissections of the axilla. At the third table, the first candidate was required to make a dissection of the muscles in front of the leg; the second, to exhibit the course of the internal iliac artery; the third, to

demonstrate the superior laryngeal nerve; the fourth, to demonstrate the parts in front of the elbow; the fifth, to dissect the muscles in the front of the thorax; and the sixth, the muscles of the shoulder-joint. At the fourth table, the first candidate was required to demonstrate the sympathetic nerve in the thorax; the second, to dissect the hollow space in front of the elbow-joint; the third, to dissect the parts in connection with femoral hernia; and the fourth, to demonstrate the parts on the dorsum of the foot. Each candidate was allowed about half an hour to make his dissection, and the examiner then very minutely examined him in all the structures he had exposed. Moreover, during the progress of the dissection, the examiners put questions at their discretion, and constantly questioned the candidates on the *surgical bearings* of the anatomy. On this point, it must be remembered that all the candidates had already attended three courses of surgery, as well as three of anatomy. The origins and insertions of the muscles were discussed. The relative anatomy of the arteries and veins was also considered in detail. The candidate, having been examined on his own dissection was questioned next on the dissection done by another, and sometimes on a third, by the same examiner, who then formed his judgment as to the result thus far. The candidate was then transferred to a second examiner, who also took him over at least two dissections. He was thus tested by two examiners on at least four different regions of the body, one of which he had himself dissected.

Primary Examination. Dissections.

Mr. Richardson and Dr. Frazer conducted the histological part of the examination, each student being examined by one or other of these examiners, but not by both, each assessing his examination separately and unaided by any assessor. The objects the candidates had to recognise were mainly the simple tissues, such as muscle, bone, and cartilage, and also various urinary sediments. They were likewise examined on the composition and practical working of the microscope.

Histology.

Each candidate, therefore, received three judgments in this examination, two from the examiners in practical anatomy, and one from one or other of the examiners in histology. The Visitors observed other candidates subsequently being carefully and closely examined on the heart, the pulmonary vessels, the mediastina, the course of the femoral artery and its branches,

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the ligaments of the knee-joint, the lungs, the intestines and other contents of the abdominal cavity, the superficial and deep palmar arch of arteries, the submaxillary, sublingual and parotid spaces, and the Hunterian canal. Occasionally a candidate, after being asked to identify some of the structures, was told at once to follow them out with the knife to some other important structure.

The two examiners on histology pursued somewhat different methods. Mr. Richardson placed a specimen under the microscope, and told the candidate generally what it was; for instance, a stained section of the tail of a kitten, displaying several different structures, ossifying cartilage, muscle, &c. The candidate was then asked to identify the different structures. Another specimen was a section of kidney. He was asked to describe what he saw. Another was a section of bone. Dr. Frazer's plan was to put some of the more simple structures under the microscope, as a rule not stained, and to ask the candidate to name them, such as yellow elastic tissue, bone, milk, and ordinary urinary deposits. The examiners in anatomy spent about ten minutes on each candidate, and the examiner in histology between five and ten minutes.

Examiners.

There were twenty-seven candidates. The examination commenced at ten o'clock; the anatomical part of it was finished at 11.30 A.M.; at 11.40 the examiners assembled in the Albert Hall to adjudicate upon the answers, and by twelve o'clock the whole of the proceedings was completed. Thus in the course of two hours twenty-seven candidates were examined and adjudicated upon. All the candidates passed their practical examination. Six examiners were engaged in the anatomical part, and two in the histological. When there is a large number of candidates there is a larger number of subjects, allowing six or eight candidates to each subject. The examiners go on with the examination until it is completed, whatever the number. The largest number they have examined recently was in April 1880, when there were sixty-seven who underwent the practical examination. On that occasion five were rejected; and the whole of the examination was completed in three hours. The examination is continued without intermission until completed. In the entire examination witnessed by the Visitors each examiner spent about fifteen hours, exclu-

sive of the time of conference on the written answers and of the time spent in looking over the papers, which on this occasion would occupy two or three hours.

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FINAL EXAMINATION FOR LETTERS TESTIMONIAL.

Final Examination for Letters Testimonial.

The arrangements of the oral examination were on much the same plan as those for the primary ("first half"), the same examiners being engaged. The main difference seemed to be that in this examination the candidate was required to answer two in each paper of three questions, instead of one only, as in the primary. During the forenoon, from ten to twelve o'clock, three surgical papers of three questions each by three different examiners were given. In the afternoon, between four and six o'clock, three papers were also given of three questions each—one on medicine, one on medical jurisprudence, and a third on prescriptions; the candidates having to answer two questions on each paper, and to write two out of three prescriptions required. One prescription had to be written with the usual symbols, and the other in Latin in full. The written examination took place on Monday, July 25th, and the adjudication on the paper work on the day following, by which seven candidates out of forty-three were stopped from proceeding further with their examination. The *vivâ voce* was commenced on Wednesday, at the rate of four an hour for three hours. On Thursday, the Visitors were present at the oral examination. There were four tables, at each of which sat an examiner and an assessor. At one table the practice of medicine was examined on by Dr. Frazer and Dr. M'Dowell. The other three tables were devoted to surgery, and the examination was conducted by Messrs. Croly, Richardson, Edward Stoker, O'Grady, and Thomson—Mr. Swan, the other examiner, being unavoidably absent. As before, each examiner examined for an hour, the assessor looking on. At the end of an hour, as a rule, the assessor took the place of examiner, and the examiner became assessor.

Details of the Examination.

The following are examples of this examination:—Candidate No. 29 was examined at the *first table* by Dr. Frazer. "In case of death from peritonitis, on opening the abdomen, what do you see? What may have caused the peritonitis?"

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Injuries; perforations of the gall bladder; ruptured bladder; perforating ulcer of the stomach. Where is such an ulcer usually situated; whether most frequent in the male or female, and at what age; characters of such an ulcer? Where may the most intense peritonitis be found? What symptoms are present in perforating ulcer of the stomach? How would you treat such a case? Reference was made also to perforating cancer; perforation of the stomach by corrosive poison; *post mortem* softening of the stomach. "In what situations do we find perforations in adults; in typhoid fever; the appearance of the glands in typhoid fever; tubercular ulceration of the intestines and its character? What are your ordinary rules of treatment of peritonitis?" He was questioned especially about peritonitis over the liver, near the kidneys and bladder; on the treatment of flatulent distension of the intestines; on the forms of peritonitis which are most dangerous in communicating blood poisoning. *Second Table.*—The same candidate was next examined by Mr. Croly on dislocations of the shoulder; the old terms and the modern—on the most common form of dislocation; the symptoms; the value of the measuring tape; on the methods of reduction of the dislocation. "What muscles do you relax in reducing the arm over the head?" The candidate was next examined on fracture of the neck of the humerus; its diagnosis. How does it differ from dislocation? How would you apply a splint for such a fracture? Give any three symptoms of strangulated hernia." Then he was questioned on those symptoms, and asked to select the instruments for operation out of a case of instruments. "In oblique inguinal hernia, how would you make the incision at the neck of the sac?" He was questioned on the details of the operation and on the appearance of the different structures; on the most common seat of stricture in oblique and direct inguinal hernia; and finally on the after-treatment of hernia. *Third Table.*—The same candidate was then examined by Mr. Richardson on hydrocele and its varieties, and on the diagnosis of hernia; on the various operations, palliative and radical; on the mode of tapping; on the character of the fluid in encysted hydrocele, and on hæmatocele resulting from tapping a hydrocele. *Fourth Table.*—Finally, the same candidate was examined by Mr. Stoker on stone in the bladder—its symptoms in the adult and in the child; on lithotomy and lithotrity, and

the suitable cases for either; on difficulties in sounding, and on Sir Henry Thomson's sound; on iritis; on synechia posterior and the mode of its formation; the use of atropine and its effects; and on the use of mercury, iodide of potassium, and turpentine in treating cases of iritis. Candidate No. 28 was subjected at three tables to a surgical examination, similar to that already described, the subjects discussed being—at the *first* table, retention of urine, cystitis; abscesses, hot and cold, chronic and acute; and on opening abscess early or not, and the special dangers in various situations; on Potts's fracture and its treatment. At the *second* table he was asked by Mr. Croly what he had been examined on at the previous table. Then a vesical sound was produced—"What instrument is this?" He was questioned on the shape of it, the object of the curve, the mode of using, &c.; on symptoms of vesical calculus, especially in children; how it might be suspected and how ascertained to be present. "What is a 'fit of the stone'? what affections in early life may simulate stone?" Lithotomy—the steps of operation. The instruments being displayed in a case, the candidate was directed to take them out in order as he would use them, and to describe each part of the operation in connection with the instrument. He was examined on dislocation of the hip, a photograph being placed before him for recognition; on indolent ulcer—how to stimulate the surface and the edges. At a *third* table the candidate was examined on piles; specific gravity of urine; Bright's disease in connection with surgery; urinometer—use of; operations for piles—instruments used, cauterising by nitric acid, &c.; dangers. This candidate had passed a medical examination for the College of Physicians, and was, therefore, according to regulations, exempt from examination in medicine; but he elected, nevertheless, to be examined in medicine. He was accordingly examined over a considerable range of subjects by Dr. Frazer, as follows: measles, rötheln, characters of eruption, complications, and capillary bronchitis and pneumonia in the child—relative danger of the two; scarlet fever, complications; pericarditis; pathology—what appearances on opening the pericardium; colour and characters of lymph; hæmorrhagic pericarditis; the candidate saying that he had personally observed a case, symptoms in this case, pain, dyspnœa, general condition, physical signs, friction; how to make

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sure that the friction was in the pericardium and not in the pleura; how to distinguish effusion in each cavity; pericarditis without friction; endocarditis.

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Another portion of the medical examination was conducted by Dr. M'Dowell, one candidate being examined almost entirely upon cardiac disease; another candidate upon cancrum oris, purpura, pompholix, and pemphigus; also upon cardiac murmurs, &c. The third candidate was examined almost exclusively on erysipelas.

The two candidates who were thus examined on one subject only, or in the main on one, were rather slow in giving their answers, and pains were taken to elicit knowledge which at first appeared to be deficient, or at least very ill-assorted, but afterwards was found by the examiner to justify a mark of four in the one case and five in the other, the maximum being ten. Both candidates ultimately passed, having good, or at least fair, surgical marks. The scope of the examination in medicine in these cases was really very limited, considering the importance of the decision. Both, however, had written two answers out of three prescribed in medicine, and the answers were considered sufficient for the pass.

Clinical Examination.

On Friday, July 29th, the candidates met at four o'clock P.M., at the College of Surgeons. Arrangements had been made so that no student should be assigned to his own hospital for his clinical examination. The ballot for hospitals over, each detachment of candidates went off with the surgeons and examiners to the hospital appointed. At each hospital one examiner at least was surgeon to the hospital, and in charge of the cases examined upon, and therefore well acquainted with the clinical facts. The other examiner might or might not be surgeon to the hospital. Three hospitals were selected—the City of Dublin, the Adelaide, and Mercer's Hospitals. Had the candidates been more numerous, a fourth hospital would have been included. At the City of Dublin Hospital, of which Mr. Croly is one of the surgeons, Mr. Stoker attending as assessor, three cases had been provided specially from the out-patients' department: 1. An unreduced dislocation of the shoulder of some standing, a new glenoid cavity having been formed, and considerable extent of movement existing. 2. A case of combined inguinal hernia and hydrocele on the same side. 3. A case of umbilical hernia.

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Mr. Croly stated that he had selected these from amongst the out-patients, because, at the time the Dublin hospitals being partially empty for sanitary purposes, and therefore somewhat stripped of their cases, it was easy for candidates, looking forward to their clinical examination, to ascertain in the various hospitals what cases were under the surgeons who would examine. The candidates were successively admitted and asked to identify these cases, and to give reasons for their diagnosis, and afterwards in some instances to write a short report of what they had observed. As soon as this portion of the examination was completed, the examiners withdrew to another room, in which a large variety of surgical instruments, bandages, splints, and other apparatus had been displayed. On an attendant the candidates had to apply bandages, while they explained the mode of application of splints, and the precise manner in which they would use particular instruments; for example, the trochar in puncturing hydrocele, the lancet in performing venesection, &c. In the course of this examination the Visitors were particularly struck with the attention given to minutiæ of detail, *e.g.*, the precise mode of applying the bandage previous to and after venesection, and the various possible dangers to be encountered even in this small operation, to which Mr. Croly attached great importance. Cupping was also the subject of detailed examination.

The Visitors also attended at the Adelaide Hospital, where the clinical examination was conducted by Mr. Richardson, surgeon to the hospital, and Mr. Thomson. There were eleven candidates. Each candidate was assigned a case. As a rule, there were two or three candidates in a ward, and thus the candidates were distributed over about five wards in the hospital. Each candidate was required to make a written report of the case on which he was subsequently questioned, either during the period of writing or after he had finished, according to the convenience of rotation. He was required to apply a bandage, and, in some instances, strapping, as for an ulcerated leg. One or two candidates were requested to test the urine. The following are illustrations of the cases to which the candidates were sent: 1. Varicose ulcer of the leg; 2. Suppurating inguinal glands, non-syphilitic; 3. Case of strumous abscess and caries of the cervical vertebræ; 4. Tertiary syphilis; 5. Cicatrix from a burn.

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At Mercer's Hospital, notes of the following cases were taken and submitted to the Visitors : 1. Bruise, probably with fractured rib ; 2. Strumous ulceration of the rectum, for which colotomy had been performed ; 3. Disease of the knee-joint ; 4. Pulsating tumour below right ear, diagnosed by the candidate as aneurism of the carotid ; 5. Necrosis of the head of the tibia ; 6. Case of compound fracture, with protracted recovery ; 7. Case of hæmorrhoids ; 8. Ditto ; 9. Sinus near left eye ; 10. Potts's fracture. The Visitors did not see this portion of the examination, but concluded that, in accordance with the rule of the college, every one of the candidates had had to apply a bandage.

Operative Surgery.

On Saturday, July 30th, the Visitors arrived at ten o'clock A.M., at the College of Surgeons, and saw the preparations made for the examination. The examiners met in the Albert Hall ; and after a short interval, the candidates were called in and, one by one, in the order of their numbers on the examination list, were directed to draw a number from a ballot box. As there had been originally over forty candidates, the numbers balloted for began with 50, in order that the number drawn by ballot might not be confused with the number attached to the candidate's name. Each candidate having drawn his number, retained the card, and the number was recorded opposite his designating number. This process having been completed, the examiners retired to the dissecting-room of the College of Surgeons, in which there were three subjects. These had been injected with preservative fluid, but not with any colouring material, so that the arteries might be as natural as possible. On a table were displayed instruments, mostly intended to be used by the candidates during the operation. Additional instruments were on the table, not for use, but to serve the purpose of questioning by the examiners. Amongst the instruments there were about six saws, two dozen of dissecting forceps, eight pairs of scissors, six or eight pairs of artery forceps, five large amputating knives, trephines, catheters, bandages, apparatus for fracture of the clavicle, lithotomy instruments, various forms of tourniquets, six or eight in number ; cupping instruments, trochars, lithotrites, hypodermic syringe, ophthalmoscope, and stomach-pump. These instruments were in good order, and the Visitors were told that they were supplied by an instrument maker who is paid a certain sum per year for furnishing the examinations, and who keeps sets of ordinary in-

Final Examination. Oral.

struments for the purpose, and has to produce them in sufficient number and in good condition. Seven examiners were present. One of the examiners (Dr. Frazer) superintended the admission of candidates and the working of the examination. The other six were engaged, two at each subject, in examining the candidates. The candidates were called in by Dr. Frazer, beginning with the first number balloted for, No. 50. The candidate who had drawn No. 50 appeared and was given another card marked "50," with the name of a major operation which he had to perform. The numbered blank cards had been previously distributed equally amongst the four examiners, in order that each might write on the back the operations he required to be performed. This was done throughout the whole series of candidates, so that every candidate on admission received a card with his balloted number, and the name of the operation assigned to him. Dr. Frazer, partly at his own discretion and partly by arrangement with the individual examiners, admitted one, two, or three candidates at a time to each subject, being guided somewhat by the convenience of the examiners in carrying out the operations or supervising them. Each candidate was then told to select at the side table the instruments required for his operation, and to proceed forthwith with its performance. If the operation were one needing an assistant, the examiner proposed himself as an assistant, and requested the candidate to tell him what he was to do in that capacity, the directions so given forming an important part of the examination. When he had completed this major operation, if he had not done it satisfactorily, he might be called upon to do another major operation dictated at the moment by the examiner. If he did well, he was told to do a minor operation, such as amputate a finger or toe; or make incisions in various parts of the body for any special object, such as incise the forefinger for thecal abscess along its whole length. If, however, he did not satisfy the examiner in his major and minor operations, the examiner then transferred him to another examiner, who gave him a third operation; and if he failed to satisfy the second examiner, he was "referred." The examiner marked on the card containing the name of the operation his opinion of the candidate's work; and if he had any doubt, he called in his assessor to aid him in his judgment. As a rule, after the completion of the operation, the candidate

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was questioned at the table of instruments on the use of several of them. He then returned his card to Dr. Frazer and left the room. Other candidates were called in to supply the place of those retiring. Each examiner examined usually on the operations he had himself set; but this was not rigidly adhered to, partly because two examiners had not set any questions, and occasionally for greater convenience of working. The whole proceeding in the dissecting-room, during which thirty-three candidates were examined in operative surgery by six examiners, occupied less than an hour and a half. As soon as all had been examined, the examiners retired into the Albert Hall for final adjudication. The numbers were read out in order, and "Yes" or "Stopped" was recorded against each number, which now in the list corresponded to the candidates' respective numbers. Three candidates were rejected—that is to say, would have to come back on a future occasion for this the fourth portion of the examination. Finally, the whole proceeding terminated at twelve o'clock, in two hours from the commencement. For this examination there is generally a larger number of candidates than on the present occasion, and a proportionately longer time is occupied in the examination. Although the thirty-three candidates were examined in so short a time, there was no appearance of hurry, or pressure, or limitation of time in the instance of any candidate.

Adjudication.

The following operations had been prepared for the remaining seven candidates, who were rejected in the earlier stage of the examination, and were therefore stopped from this portion:

By Mr. B. Wills Richardson.—Pirogoff's amputation at ankle; paracentesis thoracis; laryngo-tracheotomy; and Syme's amputation at ankle.

Operative Surgery: Details of Examination.

By Mr. Henry Gray Croly.—Amputation of the forearm by the rectangular flap method (Teale's).

By Mr. E. A. Stoker.—Excision of the mamma.

By Mr. E. Stamer O'Grady.—Castration.

The following were the operations performed:

Assigned by Mr. Richardson.—Amputation at middle of leg by double flap; circular amputation of forearm at middle third; amputation of leg at junction of middle with upper third; Chopart's medio-tarsal amputation; Teale's amputation of thigh; amputation (supra-condyloid) of thigh; extirpation of breast; stretching ulnar nerve at elbow.

Assigned by Mr. Croly.—Tracheotomy; excision of the elbow-joint; ligature of the femoral artery in Scarpa's angle; trephining the head of the tibia for deep abscess (Brodie); operation for femoral hernia; ligature of the subclavian artery in third stage; lateral lithotomy; amputation of the shoulder-joint; amputation of the thigh by the rectangular flap method.

Assigned by Mr. Stoker.—Ligature of the carotid artery above omohyoid muscle; excision of mamma; the necessary incisions for urinary infiltration; amputation in lower third of forearm; laryngotomy; ligature of the anterior tibial artery in lower half of leg; excision of the shoulder-joint; paracentesis thoracis.

Assigned by Mr. O'Grady.—Amputation of leg by the circular operation below the knee; removal of a great-toe-nail; amputation of a breast; amputation of a finger through the metacarpal bone; operation for cancer of lip; amputation of great-toe at the metatarso-phalangeal articulation; ligature of femoral artery in Scarpa's space; amputation of the ungual phalanx of a finger.

The following is a brief outline of the plan of procedure:

Candidate No. 1 was required to tie the femoral artery at the apex of Scarpa's space. After that operation was completed, the examiner (in this instance Mr. Croly) questioned more closely on the position of the limb that the candidate had adopted, and his reasons for doing so; on the structures that he was to avoid, stating the position of the nerve and of the vein; the reasons for making a small opening in the sheath and for passing the aneurism needle from within outwards. He was also asked to state to what other portions of the vessel a ligature was occasionally applied, and why the apex of Scarpa's space is the situation that surgeons as a rule select. The second operation that this candidate had to perform was an amputation of the great-toe, which was done by the oval method and with considerable dexterity. No questions were considered necessary by the examiners. Subsequently the candidate was brought to the table on which the surgical instruments were displayed, and was asked to name a Syme's staff, a lithotomy staff, a Petit's tourniquet, and a polypus forceps.

Candidate No. 2 was required to perform tracheotomy. He selected the high operation, and was questioned as to the alleged merits of this over the operation below the isthmus of the thyroid. The candidate having, in the first instance, selected his instruments, the examiner said to him: "Now, just make me

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your assistant; I will do whatever you please, if you tell me what to do. How am I to stand? and where will you stand?" This having been arranged, the operation was proceeded with, the examiner using the spatula, retractors, &c., under the directions of the candidate, and asking questions as to the reasons of everything that was done. When the operation was completed, the examiner asked, "Might there be hæmorrhage in this operation?" The answer being "Yes," he then said: "Suppose there was venous hæmorrhage before you opened the trachea, would you proceed to open the trachea, or would you stop the hæmorrhage first?" The answer given to this was wrong; and it was only after further conversation that the candidate remembered, or was led to perceive accurately, that the result of opening the trachea in the face of venous hæmorrhage would be to put a stop to it. This candidate, however, in consideration of the knowledge he had shown on the whole, was passed. The examination of the other candidates was conducted on the same principle.

In one instance a remarkable circumstance occurred, which, as indicating the bearings of the practical upon the older method of examination, may be given in detail. The candidate was asked to amputate at the shoulder-joint, and while the examiner was otherwise occupied he had completed the operation in a fairly correct manner. The examiner then, taking it up as though not completed, asked him in the most pointed manner what direction he would give to his assistants during the various stages of the operation, and, in particular, during the period of cutting the posterior flap. At this point the candidate evidently became very confused, and, to the surprise of the examiner, seemed totally unable to put into words the directions required, or even to follow up very broad hints given him by the examiner as to controlling the hæmorrhage; and having spent about five minutes in trying to elicit satisfactory answers, the examiner himself proceeded to perform the operation on the opposite side, telling the candidate to act as his assistant, and to do what was necessary, namely, to follow up the track of the knife so as to compress the vessels, which ultimately the candidate did in such a way as to satisfy the examiner, though not, it must be confessed, without leaving a sense of insecurity as to his knowledge and promptitude in applying it. This candidate, in respect of having done otherwise well, was passed.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

SECOND DIVISION OF PRIMARY EXAMINATION.

ANATOMY AND PHYSIOLOGY.

Second Division of Primary Examination.

THE Visitors witnessed the *vivâ voce* examination on Tuesday, April 12th, at the Royal College of Physicians, London. For this the second portion of the primary examination in anatomy and physiology there are, as a rule, few candidates, the College of Physicians accepting the primary examination in anatomy and physiology of all bodies recognised by the Medical Council. Those examined are a small residue who do not seek any other qualification, the licence of the College of Physicians being claimed by the College itself, and accepted by the Poor Law Board, as a complete double qualification in medicine and surgery.

Anatomy and Physiology.

On the previous evening eight candidates had written their answers in the space of three hours, the papers containing six questions, three in physiology and three in anatomy. The answers in physiology were separate from those in anatomy. The examiner superintending was Dr. CURNOW. The examination over, Dr. CURNOW, being anatomical examiner, reviewed the papers on anatomy, and Dr. ORD, the examiner in physiology, read the papers on that subject. They each read the answers to their own questions first, and then the papers of the other examiner, so that all were read by both examiners in time for the *vivâ voce* of the following day.

The Visitors arrived at the commencement of the examination. Eight candidates were waiting to be examined, one of whom had answered so badly in his papers that he was not admitted to the *vivâ voce*. As a rule, each examiner took a candidate for a quarter of an hour, but the time was not strictly observed. A candidate who had answered well was given a short examination *vivâ voce*. If he at once satisfied the examiners that he knew

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his work practically, time was gained to spend upon the less satisfactory candidates, who got more than the allotted time.

There were three tables. On one was a selection of bones. On the second, a series of recent dissections, most of them not specially prepared for examination. On the third was a microscope with a collection of microscopical specimens and reagents. There were also prepared for examination the base of the brain; a section of the brain; a dissected foot, the superficial muscles reflected; an arm; the popliteal space; the side of the neck; the back of the leg; dry preparations of the various portions of the intestinal tract; the back of the wrist; the carotid vessels.

The first candidate in anatomy was examined on a dry preparation of the ileo-cœcal valve; a vertical section of the base of the brain; the back of the wrist; the radial artery, its position, the parts it lies upon; and the posterior interosseous artery. He was asked to point out the extensor carpi radialis longior, and to state its attachments; and similarly with the brevior. Then, about the radial vein and its destination, and what becomes of the cephalic vein. Taken to the table of bones, he was asked to pick out the first rib, and to name the muscles attached. He was questioned on the superior maxilla, and asked to name the teeth—"Where is the opening of the antrum? What other openings are there in the same meatus of the nose?" Then passing to Dr. Ord for physiology, he was questioned on a section of the spinal cord observed under the microscope. He was shown a section of striped muscle and some potato starch. He was asked about the tests for starch; the action of gastric juice and its composition; the difference between the peptone and the albumen. The candidate then left the room.

The second candidate was examined on the femur, and asked to point out the principal muscular attachments and the attachments of the ligaments, especially the inferior attachment of the capsular ligament. He was required also to point out the situation of the Y ligament of Bigelow. He was questioned on the muscles which are attached to the sacrum, on the muscular attachments of the atlas, the axis, and the occipital bone. Taken to the dissected subject, he was asked to point out the masseter muscle, its nervous supply, its origin and insertion. He was questioned on a section of the penis; and was required to point out and name the muscles at the back of the wrist. In physiology, he

was questioned on the effects of the division of the anterior and posterior roots of the spinal nerves. He was asked to recognise a section of the cord under the microscope. He was then given some questions on the physiology of respiration and digestion, and was asked as to the tests for the bile acids. Lastly, he was required to recognise a specimen under the microscope of striped muscular tissue and cartilage.

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The answers on papers are thus marked: 100 marks is the full allowance for each answer, and 40 the minimum entitling the candidate to go up for *vivâ voce*. In the oral examination, the numerical system of estimating the merits of the candidates was not adopted, but the words "good," "bad," and "indifferent" were used. In the decision, the oral and paper work combined were considered by the examiners. This somewhat informal system is possible, where there is a small number of candidates.

Marking.

FINAL EXAMINATION FOR LICENCE.

The Visitors arrived on Wednesday, April 20th, at St. Bartholomew's Hospital, to inspect the clinical examination. They found in the medical ward Drs. Andrew, Handfield Jones, and Sydney Ringer, making arrangements for the distribution of patients among the candidates, who were eighteen in number. About twelve candidates were provided with cases in Dr. Andrew's ward, and four candidates in a ward under the care of a physician, not present at the examination.

Final Examination for Licence. Clinical.

A brief exposition was made, by Dr. Andrew, of the selected cases under his own immediate superintendence. Numbered according to the beds in the ward, these were: Bed 1. Diabetes mellitus—two glasses of urine being supplied at the bedside. Bed 4. Gastric ulcer; the diagnosis, perhaps, not absolutely clear, but still a strong presumption of simple ulcer of the body of the stomach. Bed 6. Leuchæmia, with enlarged liver and spleen. Bed 8. Carcinoma, probably of the stomach and adjoining parts, involving large tumour in the epigastric and hypochondriac regions. Bed 10. Disease of the heart, with enlargement and loud mitral murmur. Bed 11. Disease of the heart, with ascites. Beds 12 and 13. Aortic regurgitation. Bed 19. Aortic obstruc-

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Final Examination. Clinical.

tion. Bed 27. Convalescent from left hemiplegia, the attack having been sudden, but without loss of consciousness, thence raising questions as to diagnosis, especially as between hæmorrhage and embolism. Certain slight cardiac changes might be noted, but were not, in the opinion of the physician, of first-class importance.

The cases in the second ward were said to be miscellaneous, and not very dissimilar in character.

In this ward there were seven microscopes for purposes of demonstration. The specimens under the microscopes were: Nitrate of urea, triple phosphate, octohedral oxalates, carbonate of lime in circular concentric crystals, tyrosin, trichina spiralis encysted in muscle, and, lastly, a specimen of the acarus scabiei. The candidates were questioned in turn upon the specimens. On a table there were six specimens of urine, illustrating common pathological conditions. One of the examiners saw the candidates actually perform chemical testings, and examined them verbally upon the results. This examiner confined himself in a great measure to this duty, and was practically alone in it; while the other two, after having assigned a case to each candidate, occupied themselves chiefly in the microscopic examinations, the candidates being successively called up to name, in the presence of the examiners, all the objects under the different microscopes, the answers, right or wrong, being noted by the examiners, and characterised at the time by a private mark, but no further question being put as to any of the objects. In this respect the microscopic portion of the examination differed very much from that upon urinary testings, where the examiner put a great many questions of a more or less general character, bearing not only upon the details of the examination in hand, but upon the chemistry of the urine, and the forms of disease in which certain conditions of the urine are habitually found. This examiner spent a variable time on the different candidates, sometimes twenty minutes or half an hour, so that when two-thirds of the time was gone, only about one-fourth of the candidates had been tested on the urine, and the other examiners had to join him in examining the remainder of the candidates.

As regards the general arrangement of this clinical examination, the Visitors were informed that there were altogether twenty-eight candidates. Fifteen of these were being examined

at St. Bartholomew's Hospital, the examination extending from 1.30 to 5 o'clock. The remainder went to University College the succeeding day, at the same hour. These twenty-eight candidates were all to be examined by the same three examiners, who would also read their written papers in medicine, and examine them *vivâ voce* in medicine. The system, in this respect, of these examinations, differs very much from that of the College of Surgeons, where the work is sub-divided among a much greater number of examiners.

This is the first time in which three examiners have examined orally and clinically in medicine. A third examiner was added to meet the requirement of the General Medical Council that no student should be examined by his own teacher. This requirement is thus carried out: The three days of *vivâ voce* are divided between the three examiners in pairs, each examiner being present on two out of the three days, and the candidates are distributed so as not to be brought before their own teachers.

The clinical examination, with which the Visitors were specially concerned, consisted of these three elements:

(1) A single case recorded by each candidate exactly as would be done by a clinical clerk in a hospital journal, observations, however, being added afterwards upon diagnosis, prognosis, and treatment. The book of ruled paper received for this purpose is thus headed: "Candidates are requested to bear in mind that the examination of patients must be conducted with gentleness, and so as not to injure them." In some cases, temperature charts were placed at the disposal of the candidate, and, as already mentioned, the urine was placed before him along with the patient. With these exceptions, no special instructions were given as to the method of examination, or of noting the case, nor was any strict limitation of time imposed. It is to be presumed, therefore, that every candidate had ample time for all that was required of him, and the Visitors were informed that no subsequent oral examination at the bedside formed part of the system, the paper being simply afterwards read and adjudicated on by the two examiners.

(2) Microscopical examination as already described.

(3) The urinary testings as already described.

These three elements involved each a separate mark.

The written cases recorded were of varying merit, and some

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of them very creditable. The following remarks indicate in a general way some of the points as they appear to the Visitors. Case in Bed 1 was meagrely and imperfectly recorded in about a page and a quarter of widely-written manuscript. Nothing in the shape of commentary was appended, and although the essential fact of diabetes was brought to light, it was not done so as to show much knowledge of the subject. "I should diagnose the case to be diabetes, with effusion into the right pleural cavity." [The basis for this last remark was of the slenderest description, there being perhaps a very slight amount of relative dulness on percussion, but no other sign of pleural effusion.] Case in Bed 4 was very fairly recorded, the diagnosis given being disease, probably malignant, of the stomach. Case in Bed 8.—A fair average report, no refinements, the diagnosis fairly accurate, but not put so as to show with any exactness the grounds upon which it was arrived at. The prognosis and treatment in the main were correct. Case in Bed 10.—This manuscript was nearly illegible, so that it was difficult to form an estimate of its merits, which were probably, however, not great. It may be remarked that an extremely loud mitral murmur makes no appearance in the report, that the disease is regarded as being one of organic heart disease, but without any further definition. "It seems the patient is suffering from enlargement of liver in combination with heart disease, which was occasioned by mental excitement." No allusion is made to the presence or absence of rheumatic fever, but as, in point of fact, there was no evidence of this, the question may have been put to the patient and the negative not recorded. Syphilis, on the other hand, is distinctly alluded to as forming part of the previous history. The treatment given is digitalis and compound colocynth pill occasionally. A belladonna plaster was actually on the cardiac region at the time and was approved, but the presence of œdema of the limbs and pretty severe dyspnœa is not referred to as a reason for special treatment. Case 27.—This case was very well recorded, and showed a good deal of general knowledge of the subject. With one doubtful exception it was possibly the best of all the reports. There was, however, not much consideration given to the question as between embolism and any other pathological cause of the hemiplegia, and the only remark made as regards the heart was that no endocardial

murmur was present. Case in Bed 6.—In this case, which was an exceedingly plain one as regards the main facts, enlargement of liver and spleen were detected, and the discussion of the case generally was more systematic, and showed, perhaps, more general knowledge and method than any of the others, but the true diagnosis of leuchæmia was missed, the other causes of hepatic and splenic enlargements being, however, well considered.

Clinical Examination at University College Hospital.

The Visitors continued their investigation of the examination in clinical medicine at University College Hospital, where they met the same examiners as on the previous day. In this hospital several wards furnished cases for examination, some of these having been under the care of Dr. Sydney Ringer, and others of the other physicians. A synopsis of these cases was furnished to the Visitors.

The other arrangements did not differ materially from those already mentioned, with the following exceptions. Seven specimens were furnished under the microscope, namely, (1) uric acid; (2) triple phosphate; (3) acarus scabiei; (4) blood casts; (5) hydatid (scolex); (6) tubercle in lung; (7) mixed uric acid and octohedral oxalates, with hairs as an accidental ingredient of urinary deposit. The urine submitted for testing illustrated the following pathological states: (1) blood and albumen; (2) sugar, specific gravity 1020; (3) bile; (4) muco-pus; (5) urates.

Another alteration in the method as compared with yesterday was that the candidates were questioned orally both upon the microscope and on the testing operations; and the questions had in some cases a pretty wide range, so as practically to become almost an oral examination in some points of general medicine, as, *e.g.*, diseases and circumstances under which the particular pathological conditions exhibited occurred. In connection with this it is to be observed as possibly open to objection that a candidate might by accident be examined on precisely the same subject and in the same way as at the urinary testing table. A remark applying also to both yesterday's and to-day's examination is that the fact of there being three examiners at work while these two processes of examination were going on, at once implies that at one or other of the tables one examiner must work alone and decide the numerical value of the result, which is opposed to the general understanding under which these examinations are conducted. The remedy would be either to have four or

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more examiners at work simultaneously, or to make it imperative that every part of the examination should be witnessed by all the three.

In regard to the reports of cases, a few observations may be added to those of yesterday's examination. The reports were generally decidedly better than those of the preceding day. A rather vague case of anæmic and dyspeptic symptoms was very clearly and well stated, the candidate entertaining the question of gastric ulcer, which, although not the diagnosis formed positively by the physician, was a very legitimate question; and here the absence of hæmorrhage was noted as an important element in the determination. In another case there was an apparently very good statement of the facts of a somewhat doubtful diagnosis, the following being the view adopted by the candidate: "This is probably a case of carcinoma of the omentum, implicating the stomach, which is enlarged." On this view of the case the written commentary was very good; but the view was not that entertained by the physician treating the case, who regarded it as probably a case of tubercular peritonitis. It may be remarked, however, that the case was admittedly a rather difficult one, and the report may be considered, whether the diagnosis was right or wrong, to show good average ability, or rather more. In a case of hemiplegia with aphasia, the diagnosis was perfectly correct, and even the probable seat of the lesion indicated with considerable accuracy, so as to show good book knowledge of the subject; but the statement of facts in the case otherwise was meagre, though not incorrect. In another case the candidate seemed to have missed altogether the true diagnosis, which, as known to the physicians, was old bronchitis with asthma, there being indeed distinct remains of râles, but only at the extreme base of the right lung —the patient otherwise convalescent. In this case, the candidate seemed to have been really at a loss for a diagnosis, and gave it, on no very obvious grounds, as chronic peritonitis. The case, however, was well written, and a number of the facts, not directly bearing on the diagnosis, were given in such a way as to show a state of mind very far removed from the ignorance that would be implied in the wrong diagnosis. It would probably have been only justice to the candidate in this instance to have called upon him to point out in detail the method and ground

of the opinion at which he arrived. Several of the reports were of very remarkable excellence, and the majority of them were good.

Final Examination. Clinical Surgery at Middlesex Hospital.

The Visitors witnessed the examination in clinical surgery on April 22, at Middlesex Hospital. The examiners were—Mr. Lawson, of Middlesex Hospital, and Mr. Bryant, of Guy's Hospital.

There were only three candidates to be examined in surgery. The reason of this was that the other candidates for the licence had already obtained a surgical qualification. As a rule, those needing examinations in surgery have received colonial and foreign diplomas. This was the case with the three candidates. They were allowed five or ten minutes with each case to make their own inquiries and observations, and then were questioned by the examiner. The following cases were subjected for examination: (1) Extensive ulcer of the side of the tongue, deemed to be cancer; (2) case of multiple lipomata; (3) ditto of the back of the neck; (4) extensive syphilitic ulceration of the throat; (5) genu valgum; (6) extensive disease of the knee-joint; (7) syphilitic psoriasis; (8) a case in which dead bone had been removed from the foot. Of these eight cases, six were able to walk about the ward. About an hour and a quarter was spent on the clinical examination of the three candidates. There was no writing, and each examiner questioned the candidate on the diagnosis, prognosis, and treatment of the cases allotted to him.

Operative Surgery.

In the afternoon, at 4.30, the Visitors again met the same examiners and the same candidates in the theatre of the College of Physicians. On a table there was a subject, with a series of instruments at hand. The first candidate was asked the following questions: "At what point would you compress the aorta in a case where you were about to amputate at the hip joint? Where would you tap the bladder? Adjust a Petit's tourniquet to the thigh. Where would you perform paracentesis thoracis? Name the parts in their order going round the inner malleolus. Point out the course of the femoral artery. Where would you compress the brachial artery in a case of amputation of the fore-arm? Show me the point where the carotid artery commences and where it terminates. Point out the crico-thyroid membrane." The answering of this candidate not being satisfactory, he was

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not required to perform any surgical operation. The second candidate was asked: "Where would you tap the abdomen? How would you void the contents of the bladder? In what position would you tap it? Where would you perform tracheotomy? Select the instruments for tracheotomy, and perform the operation." This he did slowly and deliberately, but on the whole correctly. He was then told to perform Chopart's amputation of the foot, which he did in a similar manner; then to pass a catheter and search the bladder for stone; finally, to mark out, by incisions, an amputation of the leg. The third candidate was told to tie the femoral artery, and asked to point out where he would perform paracentesis of the thorax. This examination was carried out with great care and thoroughness.

Vivâ voce.

At seven o'clock in the evening of the same day, in the large library of the College of Physicians, three tables were arranged, with two examiners at each. At one table Dr. Andrew and Dr. H. Jones examined in medicine. At a second table Dr. Gervis and Dr. Meadows examined in midwifery. At a third table Mr. Lawson and Mr. Bryant examined in surgery. On the first table were several preparations from the museum of the College, one of pericarditis, one of dilated heart, one of dilated and rough aorta, and one of a small aneurism. These preparations did not present much variety, and were only occasionally referred to in the examination. The examination was conducted upon the principle that each examiner discussed a different subject for a time only limited by his own sense of what was right, and it may fairly be presumed that the choice of the subjects was in some degree determined by the previous knowledge of the ground gone over in the clinical examination and in the written papers, the whole results of which, and the papers themselves, were before the examiners. In this way, although there is, perhaps, nothing to remark upon in the method of this special examination, it must be taken as one of a series, and therefore complementary to the others, and from this point of view it was exceedingly important and very efficiently managed, although there was, perhaps, no formal reference in most instances to points on which the candidate may have been weak in his previous trial. Almost every candidate was obliged to write a prescription.

Final Examination. *Vivâ voce.*

Dr. Gervis and Dr. Meadows in turn questioned the candidates, Dr. Meadows examining upon midwifery and Dr. Gervis on diseases of women. The chief examination was upon defects in the answers given in the written papers, each answer being taken as a text on which an extensive oral examination was conducted. The first candidate was questioned on parametritis and its treatment, and on pelvic abscess. His examination occupied about half an hour. The second candidate was examined first on protracted labour, on the dimensions of the fœtal head and of the pelvis, on hæmorrhage before labour, on the treatment of placenta prævia, on conditions that would call for turning in labour, and in what degree of deformed pelvis this proceeding would be admissible. Then by the other examiner the same candidate was questioned on his defective answer on a case of uterine hæmorrhage late in life, with cancer of the uterus and perimetritis. This candidate's examination lasted about half an hour. The examination of the third candidate was much of the same kind, and on the same subjects. The Visitors did not witness the examination of the other candidates at this table, but as they had done well in their previous work, their examination was short and rapidly gone through. Two out of the three candidates above referred to were rejected.

During the examination by Mr. Lawson and Mr. Bryant in surgery, on the table were specimens of injuries and diseases of bone, a bladder with a large prostate, and a large sacculated aneurism. Each examiner gave a series of questions, and as the three candidates appeared to be insufficiently prepared, about half an hour was spent upon each. The following subjects were discussed : Fractured clavicle and the displacement of the fragments, mode of treatment; Potts's fracture and the methods of its treatment; case of stricture; the course urine usually takes in extravasation; cataract and its nature; purulent ophthalmia and its treatment; the symptoms and causes of acute obstruction of the bowel; the symptoms of intussusception, of inguinal hernia, congenital hernia, diseased bladder with enlarged prostate, and aneurism of the aorta.

KING AND QUEEN'S COLLEGE OF PHYSICIANS OF IRELAND.

FINAL EXAMINATION FOR LICENCE.

Final Examination for Licence.

THE examinations at the College of Physicians were continued on Tuesday, July 5th, the paper work having been completed the day before. Two examinations were proceeding; one, the primary, for which there were three candidates; the other, the final, for which there were thirty-three, an exceptionally large number. The reason why so few appeared at the first half, or primary, is that, as a rule, those who come up for the final examination have already passed a primary examination before some other recognised body.

Examiners.

Before describing the examination, the general scope of it and mode of appointment of examiners may be stated. There is no Council, but the body of Fellows elect annually a President and four censors, one of whom is appointed by the President as Vice-President. These four censors conduct the final examination. At the same time, there are appointed by the Fellows four examiners for the primary examination, some of whom may or may not be censors, and therefore examiners in the final also. Two examiners for the midwifery licence are appointed in the same manner. The President assigns to each examiner the subject in which he shall examine; and thus, to some extent, it is provided that each subject of examination shall be undertaken by somebody specially competent. The names of the candidates for the office of examiner are printed a month before election, and circulated amongst the Fellows, and the result is decided by ballot. As a rule, examiners are reappointed for the second year, rarely for the third. Generally two go out each time, so that a certain amount of continuity is kept up. Lecturers are not excluded from the examinership, the exception being that the "King's Professors" are ineligible for the censorship. The examiners are paid by fees for each candidate examined, not

by the number "passed." The examination for the second half takes place every month in the year except August and September. The primary examination, for which there are few candidates, takes place quarterly. Most of the candidates for the second half or final examination have already received a qualification. The plan of the final examination is as follows:—

Final Examination.

On the first day there is a written examination of six hours. Four papers are given, to each of which an hour and a half is assigned. In each paper there are six questions, answers to *all* of which are *expected*, but not rigidly required; that is to say, two-thirds of the number well answered will pass a candidate. On the second day the clinical examination takes place before two examiners. When the numbers are large, say beyond fifteen, the clinical examination is extended over a second day. The hospital for the clinical examination is selected by ballot, and the name is not divulged to the candidates until half an hour before the examination. Every candidate is set to one case, at least, by each examiner, and more than one, if the examiner sees fit. He writes a short account of the case on a paper divided into three columns: the first column being headed, "*Diagnosis*"; the second "*Reasons for your Diagnosis*"; and the third, "*Treatment.*" The candidate is thus compelled to put into a short compass the results of his examination in a form in which the examiner can easily criticise it, and the candidate's physical observations are verified at the bedside. This examination takes place from ten o'clock A.M., to one or two P.M., there being no special limit of time.

Clinical.

On July 6th the clinical examination of the remaining candidates was held at the Whitworth Hospital, the examiners being Dr. Benson and Dr. Walter Smith, who had also conducted the clinical examination on the previous day. The wards in which this examination was held were chiefly those of Dr. M'Dowell and Dr. Gordon, neither of whom was present on the occasion, and accordingly the examiners approached the cases with only slight previous knowledge of them derived from a rapid survey of the wards with the house physician. The candidates were introduced into the wards in groups of six or seven or more, and a case was assigned to each candidate, the schedule previously referred to being at the same time put into his hand as a guide in writing his opinion and his statements of fact bearing upon the case.

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Final Examination. Clinical.

As a rule, a quarter of an hour or more is given for preliminary survey; and, after this interval, the examiner goes to one of the beds and examines the candidate upon what he has ascertained in detail, requiring him to display the methods by which he arrived at the facts. The examination is of great value in eliciting the skill and knowledge with which the candidate has investigated the case given him. After this examination, and, in some instances, before it has taken place, he is required to write in the schedule his opinion in detail and the facts on which it is based. The examiner then takes the written report in connection with what he has personally observed at the bedside as the basis of his judgment, so far as this individual case is concerned. In some instances, the examination of the urine for albumen, sugar, specific gravity, &c., comes under review as part of the details; but it did not appear, from anything the Visitors observed, that the physical and chemical examination of the urine formed an independent or essential part of the clinical examination. The candidate, having been dismissed from the wards of the one examiner, passed to those of the other, where he underwent an examination somewhat similar upon another case. Provision however is made in one or other set of wards for the examination of certain specialties, *e.g.*, eruptions on the skin, two cases of psoriasis being in the present instance employed for the purpose. The examination, which is exceedingly searching, is so conducted as to carry the candidate over a wide range of facts connected with the particular objects under his observation. The two examiners note, each for himself and quite independently, the results of the examination, and these are combined in the final judgment with the results of the "written" and "oral" examinations. There seems, however, to be no inter-communication between the examiners as to the particular cases to be employed, or the field of examination for each of the several candidates, so that it is quite possible that a candidate might be taken twice over almost identical ground. On the other hand, thorough independence of judgment is thus secured, while the probability of the examinations being identical or nearly so, is of course rather remote.

The following are some examples of this examination:

(1) Several candidates were examined on a case of combined aortic and mitral disease in a boy, seven to eight years old,

Final Examination. Details of Clinical.

somewhat pigeon-breasted, and having, in a perfectly unequivocal form, the characteristic systolic apex murmur and systolic and diastolic base murmur. This was an admirable test case for examination, but it is noticeable that the previous history of the case and, in particular, the question of rheumatic origin or not, was equally unknown to the examiner and the candidates. The questioning, therefore, was in a large degree hypothetical as to these matters of detail. Subject to this remark, the whole examination was exceedingly satisfactory, and admirably calculated to test the skill in diagnosis of the candidate.

(2) A case of albumenuria and ascites. This was examined in detail on the actual appearances at the bedside. The urine was tested by the candidates in presence of the examiner, and the examination was thorough.

(3) A case of cavity in the left apex. This was subjected in the same way to examination at the bedside and with the actual facts demonstrated by the candidate, and made the subject of examination by the examiner.

(4) Large abdominal tumour in an old woman. This was diagnosed as ovarian disease. There was no uterine examination made, but an examination on the external appearances, extending to the white marks on the skin, the result possibly of former pregnancy, and taking in all the more ordinary signs characteristic of different kinds of abdominal intumescence.

(5) Case of phthisis with condensation and cavity of the left upper lobe in a young woman. There is nothing special to remark on this case, except that among the questions to the candidate was one to prescribe for the patient. A prescription was written on a card at the head of the bed ; and in this, as in all other cases, the papers containing the prescriptions by the physicians were left in full view of the candidates, possibly *per incuriam*.

Instruments.

Judging from the whole of the facts observed at the particular examination, it appeared to the Visitors that apart from the use of the stethoscope the very important assistance to diagnosis derived from instruments was inadequately recognised by the examiners. No instance occurred of any object being submitted to microscopic identification during the clinical examinations. The clinical use of the thermometer, although casually referred to, was by no means systematically insisted on, and, in one instance at least, very gross ignorance appeared on the part of the candidate.

Remarks on Clinical.

One or two remarks may be made here in the way of queries or suggestions. The method adopted of questions put at the bedside, and answered *vivâ voce* upon the actual facts, is a most excellent one, and unquestionably of the highest value as a security against incompetence on the part of the candidate. But it is an incidental consequence of this method that the written paper being sometimes completed before, and sometimes after the questioning, the candidate may have been guided or not by hints derived from the latter, and therefore the value of the written paper *per se*, as an index of the candidate's position, is diminished in proportion as the value of the *vivâ voce* examination is increased. At the same time, the Visitors fully presume that the judgment is actually given on the joint value of the two. It is, perhaps, questionable whether the whole of the examination ought to take place in presence of the patient. In one or two instances, it appeared as if questions were put and answered which ought not to have been put in presence of the patient, and where a certain amount of restraint accordingly may have been imposed upon the examiner or candidate by that fact. It is also a question whether patients, under the present system, are not too much liable to the risk of being unduly handled and unduly exposed as regards their own physical condition. In at least one or two cases, it appeared that this was so, and that complaints might have arisen on this ground, the absence of the physician responsible for the treatment being, so far, an unfortunate circumstance. Again, it is a question of detail whether the introduction of seven candidates simultaneously into a small-sized ward and their examining simultaneously seven patients in adjoining beds, windows and doors being all wide open, and each candidate within hearing of the examination of the others, is conducive to the quiet and seclusion which are desirable, both in the interests of the patients and of the examination.

On Tuesday, July 5th, at four o'clock, P.M., the Visitors attended in the hall of the King and Queen's College of Physicians, to witness the *vivâ voce* for the final examination. There were four examiners, *i.e.*, the four censors, and the registrar (Dr. Finney) present. Dr. Walter Smith examined on pathology and the practice of medicine; Dr. Benson on therapeutics and the practice of medicine, at separate tables; Dr. Harvey on forensic medicine and hygiene; and Dr. Macan on midwifery and diseases of women. These tables were at a considerable

distance from each other. There were no assessors; but members, fellows, and licentiates of the college were allowed to be present. The time devoted to each examination is not limited, the examiner proceeding with his questions as long as he thinks fit, and when he has finished with one candidate, calling up another. One half of the candidates are admitted at the beginning, and care is taken that they are so sitting apart that one candidate cannot hear the examination of another. The result of this is that some candidates are examined for about ten minutes, or a quarter of an hour, others for a considerably longer period. Next day, the whole examination occupied four hours for fifteen candidates. The system which previously prevailed, of ringing a bell every quarter of an hour, has been abandoned by this college as being inferior to the present system.

Pathology, Practice of Medicine, Forensic Medicine, Hygiene, Midwifery.

It will appear from the schedule of examination, that the *vivâ voce*, like the written examination, is subdivided into sections, each of which is supposed to be distinguished by a numerical mark, indicating relative success or failure in that part, the judgment on the whole being composed of an average or general estimate by the examiner of the value of these separate markings. The system here indicated, however, is not necessarily rigidly adhered to, the numerical markings being simply private indications for the examiner. It is pursued with varying degrees of exactitude by the different examiners. Where it is most completely followed, the examination of each candidate proceeds on pre-determined lines; and the same series of questions is repeated through the whole number of candidates. These lines involve questions under five different headings, to each of which a value is attached, the maximum value—but mainly unattainable—being ten. The Visitors did not understand that there was any very precise number corresponding to "pass" or "reject" under each heading; nor yet is the whole estimate of the examination indicated numerically, the examiner simply placing at the end of the line "pass," or not. The numerical system in this case is, therefore, in a great measure subordinated to what may be called a general mental estimate, and individual examiners do not even affect to consider the numbers as having in themselves any importance. Dr. Benson, in particular, told us that he freely diverges from the ideal plan, makes his examination discursive, according to circumstances, varies it considerably in each case, and practi-

Marking.

K. & Q. Coll. Phys. Irel.

Final Examination.

cally disregards the numbers altogether in his general estimate, although placing them on the schedule for the sake of technical uniformity. Some of the other examiners, however, appear to fix the examination much more completely on lines which permit of rigid values being attached to each part of it, thereby acting upon the rule of the college that the *vivâ voce* examination of every candidate at any one table shall be the same throughout; that is, that the same questioning shall be repeated throughout the whole number of candidates.

Forensic Medicine. Hygiene.

One of the candidates, examined by Dr. Harvey in forensic medicine and hygiene, was questioned on the poisonous doses of opium, and on the circumstances which render a dose of opium fatal to children in certain diseases; curare, what used for, what the nature of the poison; the tests for fresh blood, microscopic and by spectrum analysis; character of the fœtal heart—when first heard; the classification of insanity; to distinguish dementia and mania; what are the legal signs of insanity? how do you prove a child to have been born alive? the hydrostatic test and the causes of error in applying it. A second candidate was put through identically the same line of examination. In the examination on pathology, by Dr. Smith, a number of

Histology.

microscopical objects were submitted to the candidates—*e.g.*, urinary mixed calculus, uric and phosphatic; biliary ditto; favus crusts, hairs passing through them, dried in a glass cell; lesion of the mitral valve of the heart, involving rupture of the chordæ tendineæ and a pouching amounting to incipient aneurism of the curtain of the valve. The candidate was in each case asked to say what the object was, and was then questioned about it and its pathological significance. Besides this he was asked to draw out rudely a sphygmographic tracing, on a pretty large scale, of the pulse, and questioned about dicrotism, &c. There were also questions upon the significance of the signs of excavation in the lung; and other subjects more or less of the ordinary routine. As previously stated, the same order was mainly adhered to in the examination of the several candidates. In Dr. Benson's examination the method pursued was different in various respects as well as in the examination being more discursive and varied throughout. There were no objects submitted to the candidate; but questions were put over a wide range of subjects, and the examiner appeared, in many instances, to be led by what he had learned of the candidate in

the first part of the examination, to adopt on the moment a plan for the rest of it. Dr. Benson decidedly indicated, on inquiry, his preference for this method. The examination appeared extremely searching, and to be a good test over the ground which it occupied. Another candidate, examined by Dr. Macan, in midwifery, was asked to show on the lay figure the course of the fœtus through the pelvis in natural labour. Another candidate was asked to explain the mechanism of breech presentation and the management thereof by the accoucheur, more especially the precautions taken in reference to the cord in order to preserve the life of the child. He was also asked questions on the induction of premature labour; on the use of Barnes's dilator; and on the disorders of pregnancy. The candidate was then questioned on some instruments—the ecraseur, various forms of pessary, &c.; he was also examined on the vascular growths of the urethra.

Final Examination.

Midwifery.

It appeared to the Visitors that throughout this examination, as in the clinical, too little use was made of the microscope. The only instance in which it was employed was by Dr. Smith at the *vivâ voce*. It may be questioned also whether the objective method could not have been more extended in the other subjects.

PRIMARY EXAMINATION FOR LICENCE.

Thursday, July 7th, twelve o'clock noon, at the Dissecting Room, School of Physic, Trinity College, the oral examination in practical anatomy was conducted by Dr. Walter Smith and Dr. T. Little. There were three lady candidates and no others. The examination commenced by questions on human osteology; and the first twenty minutes were spent in asking the three in turn to name various bones and the attachments of muscles and ligaments to them. The first candidate was examined, not very minutely, on the os innominatum, the base of the skull and its foramina and the structures which pass through them. The second candidate was examined on a radius, whether right or left; on the temporal bone and its development; on the wrist and structures that could be found beneath the skin. The third candidate was examined on a scapula and on the femur. The examiners and candidates then adjourned to another theatre, where there was a subject with the skin of the anterior portion of the left side of the neck

Primary Examination for Licence.

Osteology.

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Primary Examination. Dissections.

reflected, exposing the superficial veins and nerves. The candidates were asked to name the parts in view. Two candidates were taken to the subject first. One was set to the neck dissection and the other to the dissection of the groin, whence also the skin had been already reflected. The first was asked to expose the crico-thyroid muscle; and the second to show the external cutaneous nerve at the groin. Candidate No. 1 was then asked to show the digastric muscle and subsequently to expose the sub-maxillary gland. The second candidate was asked to cut down on the anterior crural nerve. Subsequently the examiner, placing his forefinger on the tubercle of the scaphoid bone, asked the candidate to name the tubercle. The candidate was then asked to expose the posterior tibial nerve. Candidate No. 1 was asked to show the sterno-hyoid muscle; subsequently to show the long saphenous nerve; and, lastly, the examiner inserted the scalpel into the calcaneo-cuboid joint, and asked the candidate what articulation it was in. Candidate No. 1 was also asked to point out the situation of the termination of the abdominal aorta, to show the tendo oculi, and, lastly, to expose the inferior oblique muscle of the orbit. She then retired; and candidate No. 3 was asked first to expose the musculo spiral nerve, then to point out the veins at the bend of the elbow, the abductor pollicis muscle, and also the flexor brevis. The candidates then retired.

Wednesday, July 6th, at eleven o'clock A.M., in the School of Physic, Trinity College, the primary examination in practical chemistry was conducted.

Chemistry.

For this examination, which was carried on by Dr. Duffy, and occupied an hour and a half, there were only the three lady candidates already mentioned. The reason for the small number has been given before. This was an ordinary examination in practical chemistry, each candidate having two solutions of an acid and a base, the same solutions being given to each. They were allowed ample time for making their tests, undergoing questions by the examiner, and writing down the result of their testing, and the reasons for each step in the process. The salts given were corrosive sublimate and sulphate of zinc. The examination was conducted with great care; and, in employing the various reagents, the candidates were required to give, in chemical symbols, the nature of the various reactions that took place.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH.

DOUBLE QUALIFICATION.—PRIMARY EXAMINATION.

Double Qualification. Primary Examination.

The written part of this examination had taken place previously, and the six candidates now examined were the last of the series undergoing oral examination.

On April 7th the Visitors attended at the Surgeons' Hall at one P.M. to witness the oral examination in anatomy, physiology, and chemistry. There were six examiners. In the room for anatomy there were four examiners, two of whom examined in anatomy and two in physiology; and in the adjoining room there were two examiners in chemistry. On two tables in the anatomical room there was a collection of bones, and on a third microscopes were arranged with a number of sections already made of bone muscle, cartilage, nerve-tissue, &c. There was a fourth table with dissected sections of the hand, neck, and thorax preserved in spirit, on which the candidates were subsequently examined. Each candidate on the completion of his anatomical examination was required to pass into the adjoining room, where he was examined on chemistry for a period of twenty minutes.

Candidate No. 1 was examined for twenty minutes on anatomy, and subsequently for the same time on physiology.

The examiner not catechising the candidate, took notes of the questions asked on a schedule [*Vide* Part III.], on which the various stages of the examination of the candidate were recorded.

The candidate was first examined on the femur, on which he was required to point out the attachments of the muscles and ligaments, and to name the various parts about its head and neck. He was also questioned on the arteries supplying the thigh and on the branches of the femoral artery. He was next taken to the table with the dissected specimens, and was required to recognise several superficial muscles and vessels of the neck.

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Double Qualification. Primary Examination. Anatomy.

The examination in anatomy was completed by a few elementary questions on the dorsal vertebræ. The second examiner then took the candidate to the table on which the microscopes were placed, and required him to recognise a section of bone, of spinal cord, and of striped muscular fibre. The next topic dealt with was the physiology of circulation; passing on to the composition of the blood, the effect of change of position on the rate of the heart's action, the blood pressure on the walls of the vessels, the effects of the elasticity of the coats on the current of the blood; various factors affecting circulation; "Does the heart exert suction power?" the red and white corpuscles of the blood; the characters of the white, where they are formed; the relation of the spleen; the malpighian bodies; the use of the lymphatic glands, the thoracic duct, and the lacteals; the lymphatic fluid and its composition. He was then questioned on the minute structure of bone, the process of ossification, the development of bone; lastly, on sections of the spinal cord and striped muscular fibre which had been seen under the microscope. The same candidate was then questioned by the examiners in chemistry on the properties of alkalis, the principal alkalis and alkaloids, the sources whence they are derived, and the chemical tests by which they are distinguished. He was then given a blue solution, which he successfully tested for sulphate of copper. Iodine was then examined on, its sources and tests. The varieties of sugar were discussed, and questions were asked as to the modes of distinguishing between them, and, lastly, the subject of phosphorus, including its sources and mode of preparation.

A second candidate was examined in chemistry by the second examiner on the elementary chemical substances, their division and enumeration. The other subjects considered in this examination were chlorine and its compounds, the salts of potash, barium, ammonia, prussic acid, and morphia.

The Visitors then returned to the room where the examination in anatomy was being conducted. The examiners in anatomy commenced by asking a few questions on the muscular attachments of the inferior maxilla, the origin and insertions of the temporal, pterygoid, and digastric muscles, the muscles of the tongue, the parts composing the larynx, the blood supply of the larynx, the course of the superior and inferior thyroid arteries,

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Double Qualification. Primary Examination.

the subclavian artery and its branches, and the course of the internal mammary artery. The diaphragm was next examined on, and lastly, the branches given off by the abdominal aorta, the branches of the cœliac axis, and the distribution of the superior and inferior mesenteric arteries.

Anatomy.

By the second examiner the candidate was questioned on the muscles of inspiration, on the course and functions of the pneumogastric nerve, on the functions of the anterior and posterior roots of the spinal nerves, and on the effects of section of the same. He was then questioned on temperature, on capillary circulation, blood corpuscles, and the changes that take place in venous blood whilst circulating in the lungs; also on the effect of food taken cold or hot.

Adjudication.

The examination over, the six examiners met together and transferred their marks to the schedule, and then the result was read off as to who had passed and who had not. The president called in first the successful candidates one by one, and announced that they had passed. Afterwards the unsuccessful candidates were summoned and informed of the result.

The Visitors having asked to see the written papers of these candidates, it was found that they had been destroyed. It is the custom to destroy papers soon after the examination, and the Visitors had not sent notice of their intention to be present until after the decision on the written examination.

In this examination no fresh dissections were prepared, nor were the candidates themselves required to dissect, while the range of subjects over which the examination was conducted was so extensive as to preclude the examiners, having regard to the limited time at their disposal, from asking more than the elementary questions.

FINAL EXAMINATION.

Final Examination.

On Friday, April 8, at five o'clock P.M., the Visitors were present in the Hall of the Royal College of Physicians, in which the candidates for the double qualification were undergoing the written examination. For this examination they were allowed from eleven to three and from four to six o'clock. Two candidates sat at each table, Dr. John Duncan superintending. The Visitors were

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Double Qualification.

then told that the examiners would meet at half-past six o'clock to read over and adjudicate on the papers, and that, if present about a quarter to eight, or eight, they would see the finishing portion of the reading, and be present at the adjudication. The Visitors arrived at a quarter before eight, that is, an hour and a quarter after the time that the examiners would meet, and they found that the examiners had dispersed, having read over and adjudicated upon the papers of twenty-four candidates, of whom eleven passed in six separate subjects, three or four waiting to show the Visitors any papers they asked for.

Clinical Medicine.

On Friday, April 8th, the Visitors went to the Royal Infirmary to witness the clinical examination for the final part of the examination for the double qualification. The clinical examination was conducted by four examiners—two physicians of the hospital, each with an assessor. The physician in his own ward examined clinically a candidate, while the assessor in the physician's room examined another candidate simultaneously on urine. Six or eight specimens of urine were shown; and the candidate was asked to judge by the appearance what the nature of the urine was likely to be; he tested one or two specimens, and was questioned on the various methods of testing the remainder. This examination lasted about twenty minutes. The candidate was required, without questioning the patient, to make a physical examination of the anterior chest wall, for which he had been allowed ten minutes, and was examined by the physician of the ward as to what information was to be derived from inspection, palpation, the expansion of the chest, the pulsation of the heart; on percussion as to whether there were slight dulness or not on the right side about the third rib; on the situation of the cardiac dulness; next on auscultation, and the candidate stated that respiration was rough over both sides, and bronchial in sound on the right side, less so on the left. The heart was also auscultated. The same candidate was then taken to a case of hemiplegia which he had been allowed to examine by questioning; also to a case of paralysis agitans of the right side, and questioned as to the distinction between that and sclerosis, which he answered correctly. He was then shown a case of favus and questioned on it. This examination lasted fully half an hour.

Clinical Surgery.

The Visitors attended the surgical examination, which began

at eleven o'clock, the same candidates being similarly examined by two sets of examiners with assessors. Each candidate was given two cases in the ward to examine by himself, and was then called into the surgeon's room and questioned on those cases.

The first candidate was questioned on a case in which an extensive epithelioma of the lower lip had already been excised, and in which the wound made was closed by a plastic operation. He was asked how he thought such an operation might be accomplished. No questions were given upon the history of the case or the pathology of the disease. The second case was one of hip disease, and a few leading questions were asked as to the signs of the ailment and the appropriate treatment. The candidate was then required to select the instruments for deligation of the femoral artery, to adjust a Petit's tourniquet, and, lastly, he was sent into the ward to apply a bandage, the result of which was, at the end of the examination, criticised by the surgical examiner.

The next candidate was required to recognise a case of lingual epithelioma, and a few questions were asked in reference to the methods of operating in such cases. A second case was one in which the head of the humerus had been previously excised, and one or two questions were asked in reference to the operation. The candidate was then required to recognise the smaller constricting bands of an Esmarch's bandage; to recognise and name an aneurism needle and a Syme's staff. The third candidate also had a case which had been previously operated upon, excision of the os calcis having been performed sub-periosteally, but the disease had returned in the new bone. His second case was one of callous ulcer. As in the former cases, a few simple, practical questions were put in reference to it. The candidate was then required to recognise a tonsillotome, an aneurism needle, a nævus needle, a lion forceps, and finally he was required to apply a divergent spica bandage to a knee-joint.

The fourth candidate got a remarkable case of rupial excrescence on the lower lip of a young girl. The case was apparently syphilitic, and was recognised by the candidate as such. There was considerable glandular enlargement in the submaxillary region, and a roseolar eruption over the front of the chest which the candidate had not observed, probably because he supposed he was not to ask questions. The candidate was interrogated

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Double Qualification. Final Examination.

briefly on this case as well as on a case of cicatrising ulcer. The instruments he was required to recognise were a small metallic probe-pointed catheter, an aneurism and nævus needle, a Volkman's scoop, a lever for necrosis, and probangs. Lastly, he was required to apply a bandage to the hand and fore-arm.

Another candidate was questioned on a case of necrosis, also on a bad stump, and how he would deal with it. He said he would dissect the skin back and cut off an inch of bone. He was then questioned upon instruments, Esmarch's bandage, œsophagus forceps, Volkman's scoop, aneurism needle, hæmorrhoidal needle, &c.

Another candidate was questioned on a case of fractured rib with hæmoptysis; on pneumo-thorax and its symptoms; on a case of chronic disease of the elbow (strumous) in a patient who had had a foot amputated; and on the operation of excision of the elbow. The instruments he was required to identify were Corrigan's cautery, Volkman's spoon, actual cautery, and probang.

Clinical Medicine.

On Saturday, April 9, at ten A.M., in the Royal Infirmary, the clinical examination in the other series of wards was conducted by Dr. Muirhead, the physician of the ward, and an assessor. The examination of urine in the assessor's room was conducted in the same way as on the previous day.

Candidate No. 1, examined by the physician on the chest wall, was questioned about the various regions of the front of the chest, the position of the innominate artery, on palpation and percussion; as to slight dulness on the right side, and his opinion as to what he heard on auscultation of the patient.

A second candidate, taken by the same physician to a case of difficult breathing, was asked what he observed by inspection; afterwards by percussion; on hyper-resonance of the chest, indicating emphysema; and also on other signs of emphysema. He was asked the limits of cardiac dulness, both superficial and deep, and the position of the commencement of the aorta; to place the stethoscope for hearing the aortic valves; also for the mitral. On auscultation, the candidate said he heard coarse râles. He was questioned about what he heard. He said he thought there was a mitral bruit, the apex was far to the left—$2\frac{1}{2}$ inches outwards and downwards—indicating hypertrophy and dilatation from incompetent mitral valve, which he afterwards corrected,—and, on a hint from the examiner, suggested that the aortic

valves were diseased. With renewed observation, he discovered an aortic regurgitant bruit; he spoke correctly of the water hammer pulse; observed that the arteries in the arm were atheromatous; and answered correctly about the mitral pulse.

At eleven o'clock the Visitors attended the clinical surgical examination, by Dr. John Duncan, in his room, with Dr. Inglis as assessor. The first candidate was questioned on a case of interstitial hernia with the testes in the inguinal canal. He was also examined on hydrocele and its treatment, and required to point out the differences between congenital and infantile hernia. The second case he was examined on was one of burn, and he was asked some questions on the classification and treatment of these injuries. He then adjourned to a neighbouring ward, where he applied a long Liston's splint for a supposed fracture of the shaft of the femur. He was given a bare splint, and had to get the materials necessary from the nurse in the ward.

The next candidate was examined on a case of strumous disease of the elbow, which had previously been excised. The present condition of the parts was questioned on, and the cases indicating excision of the elbow-joint were also discussed. The candidate was asked his opinion as to the best treatment to adopt for the case in its present condition. He was examined on necrosis of the tibia and the operation of probing. He was also asked the symptoms of abscess in the head of the tibia, and the treatment recommended for that condition. He was then required to recognise an Esmarch's bandage, an aneurism needle, a nævus needle, a lithotomy forceps, a lion forceps, and a necrosis forceps. He was questioned as to the mode of application of splints in fractures involving the elbow joint; also on Liston's long splint and Dupuytren's splint.

At the surgical examination in the other ward, the Visitors found a candidate being examined on the two cases—one of disease of the os calcis, and the other of rupial sore on the lip of a girl—which had been the subjects of the clinical examination on the previous day.

At one o'clock, April 8, at the Surgeons' Hall, the Visitors were present at the oral portion of the double qualification examination. There were three tables, and two examiners to each. At one table a candidate was examined in surgery and surgical anatomy;

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Double Qualification Final Examination. Oral.

at the second in midwifery and medical jurisprudence; and at the third in materia medica and the practice of medicine. To each subject twenty minutes were given.

The first candidate examined in surgery was questioned on rectal affections, fistula in ano, its treatment and causes. He was asked the boundaries of the ischio-rectal fossa, and the different situations of the openings in fistulæ. He was also questioned on the subject of hæmorrhoids, required to give a definition of them, and to describe the symptoms of the various forms of them; on epithelioma of the rectum and its symptoms; also on fractures of the neck of the femur, and on the pathology and treatment of surgical aneurism generally.

Another candidate was questioned by the second examiner, first on a radius with union of fracture, and on the mode of union of fracture, the mode of putting up a fractured radius, on the minute anatomy of bone, on a preparation of popliteal aneurism, on aneurism generally, on the treatment of popliteal aneurism, and on traumatic aneurism. He was then shown a specimen of warts, a specimen illustrating an osteo-sclerosis of the femur; he was also examined on the varieties of syphilis, the appearances in the second stage, the appearances in the tertiary stage, and the treatment of a case of syphilis in the second stage. Finally, he was shown a scapula, and asked as to the attachments of muscles.

Another candidate at the second table was questioned on the positions in which the fœtal head presents, the candidate having a pelvis and a fœtal skull to show the various positions. Next he had to show by a dummy fœtus the course of the child through the pelvis in natural labour; he was also required to diagnose the second position, and to describe the mechanism of labour in the first position. He was then examined on instruments for performing craniotomy and other aids to difficult labour, as to when they should be used; when craniotomy is justifiable; what are the causes of obstructed labour? The candidate was also questioned upon the perforator, crochet, cephalotribe, and long forceps. In medical jurisprudence, questions were asked as to kinds of poisons—arsenic—symptoms of arsenical poisoning—"How would you set about any suspicious case?" "I would test the urine." "How would you test the urine? How would you decide that a wound had been inflicted during life." At the third table the

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Double Qualification. Final Examination. Oral.

candidate was examined in materia medica. Preparations were before him, and he was asked to identify them, and was questioned upon them, viz.: jalap, cinchona, squills, columba, gentian, quassia chips, iodide of mercury, and sulphate of iron. The same examiner then questioned him in medicine, on continued fever, typhoid, and typhus—"How would you distinguish them? How do you distinguish the spots of typhoid from spots of incipient small-pox?" Facial paralysis; its various causes. The diagnosis between central and peripheral causes of facial paralysis. Next on aortic and mitral regurgitation. "How many forms are there of Bright's disease?" On the large white kidney, the granular and the waxy.

FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.

PRIMARY EXAMINATION FOR LICENCE (SINGLE).

Primary Examination for Licence (Single).

THE candidates attended the written examination in the Faculty Hall, on Tuesday, July 19th. This consisted in papers on anatomy, physiology, and chemistry, set by two examiners in each subject. These papers were answered both by the candidates for the "single" qualification, and by those for the "double"—that is to say, the combined examination of the Glasgow Faculty of Physicians and Surgeons with the College of Physicians of Edinburgh. The examiners looked over the answers to their own questions in preparation for the *vivâ voce* examination of the following day. Each examiner looked over one-half of the papers, and any doubtful papers were seen by both.

Practical Anatomy.

The Visitors attended at ten o'clock on Wednesday, July 20th, at the Dissecting Room of the School of the Royal Infirmary to witness the examination in practical anatomy. They were informed that this portion of the anatomical examination has been in force during the last twelve months. This examination applies to the candidates not only for the "single" but also for the "double" qualification as above defined. It was conducted by the two examiners, Dr. CLARK and Dr. KNOX, who had previously adjudicated on the anatomical papers. One "subject" served for the whole examination—*i.e.*, for the examination of twenty-two candidates for the "single" qualification, and of eleven for the "double." Previous to the examination the right side of the subject had been carefully dissected by one of the examiners, so as to show muscles, chief arteries and nerves, viscera of the abdomen, and the viscera of the right side, and middle of the thorax. The other side was reserved for dissection by the candidates, so that one-half of the subject had to serve for the whole

thirty-three candidates. In various parts of the room were displayed materials for oral examination. On one table was a series of bones, including specimens showing epiphyses; on a second table, large models of the internal ear; on a third, dry dissections of arteries; and on a fourth, dissections in spirit.

Two candidates were admitted at a time, being selected on no particular rule from those waiting outside, and were under examination for forty minutes; half the time being devoted to dissection, and the other half to *vivâ voce* examination, partly on the dissection, and partly on the materials on the various tables, each examiner being occupied ten minutes. In this way, the examiners continued without intermission until four o'clock—that is, for six hours, during which time they examined eighteen candidates.

The remaining candidates underwent the same system of examination on the following day, for which some deeper dissections were prepared on the right half of the subject.

Candidate No. 1 was taken to the dissected side of the subject, and required to point out the arteries of the forearm, to state the course and the relative anatomy and branches of the radial artery, also of the ulnar and anterior interosseous artery; to indicate the various superficial muscles of the anterior aspect of the forearm; and to make a dissection of the musculo-cutaneous nerve of the leg. The candidate spent about twenty minutes in dissecting off the skin and seeking for the nerve, which he failed to find. He was "referred."

Candidate No. 5 having dissected the radial artery in the forearm, was examined on the base of the skull and its foramina and the structures that pass through; on the sinuses; and on the teeth. He was then examined by Dr. Clark on a dried preparation of the internal mammary artery, on the intercostal arteries and muscles, the sterno-clavicular articulation and its interarticular cartilage; on the recently dissected subject, the cæliac axis and superior mesenteric artery, the transverse colon and its characters, the intercostal arteries, the diaphragm seen through an opening in the thoracic wall, the anterior mediastinum, the internal mammary artery, and the relations of the phrenic nerve and its course in the thorax.

Candidate No. 3 having dissected the Sartorius muscle, was asked the action of the muscle, its nervous supply, and the

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Primary Examination (Single).

artery to which it is a guide. He was then examined on the adductor longus muscle, and asked the boundaries, shape, and contents of Hunter's canal. Subsequently he was examined on the inferior mesenteric artery, on the relative anatomy of the common iliac artery; and asked to state at what point it commences and at what point it terminates; and the boundaries of the inguinal canal and internal abdominal ring were fully discussed. Dr. Clark examined him on the astragalus, and asked to which side it belonged, with what bone it articulated, and the various ligamentous attachments to it. He was also required to recognise several of the small bones of the carpus.

The examination of several other candidates was conducted in the same method and with the same degree of care.

Primary Examination (Double).

The examiner from Edinburgh took the place of one of the other examiners for a time, in order to conduct the examination of the candidates for the "double" qualification. The Visitors returned to the examination in the afternoon, and found that the Edinburgh examiner had been obliged to leave at the end of an hour, and that the examination for the double qualification was being continued by the other two examiners, who were thus at work without intermission from ten o'clock in the morning until four P.M. The examination of the candidates for the "double" qualification was essentially the same as that of the candidates for the "single."

Oral.

On Thursday, July 20th, two P.M., the Visitors were present at the commencement of the oral examination, which was being carried on by the examiners in physiology—Dr. McVail and Dr. Fleming. The examination in histology had been conducted in the following way:—During the written examination in physiology, four microscopes were placed in the room, with one microscopical specimen under each. The microscopes were numbered, and each candidate was asked to write down on a sheet of paper the name of the specimen according to the number. This paper was retained by the examiner and counted as the answer to one written question, and marked accordingly.

The examiners were sitting at a table, on which were placed a series of Klein's microscopical drawings of the elementary tissues, and there were also various instruments connected with practical physiology. The candidates were admitted one at a time, and had an examination of about twenty minutes each, the

time not being rigidly adhered to, but varying according to the course of the examination, and what appeared to be necessary to satisfy the examiners.

Primary Examination (Double). Histology.

Candidate No. 1, examined by Dr. Fleming, was handed a drawing of a microscopical section of the skin, and asked to point out and name the various elements that were illustrated. He was then examined on the various functions of the skin, on bodily temperature, and how it is regulated by the skin; how the body loses heat; on the mode of estimating blood pressure; the cause of the pulse-beat, and the effect of the division of the sympathetic nerve of the neck.

Candidate No. 2, examined by Dr. McVail, was asked, when a person took a piece of bread and butter in his mouth what changes it underwent. This text opened to the examiner a wide field of examination. The candidate was also asked what sort of information the gustatory nerves give under such circumstances. He was then examined on the fifth pair of nerves at some length, and minutely on the physiology of salivation, deglutition, and the functions of the various nerves connected with these processes:—"How is the glottis guarded? how are the nares defended? where is the nerve-centre which regulates these processes? what is the chief afferent nerve?" He was then examined on the constituents of bile:—"What are the bile salts? what other functions has the liver besides secreting bile?" Subsequently he was questioned on the muscular tissue of the pharynx and heart, and asked how voluntary and involuntary muscular fibre differ histologically, and to point out these different structures on a diagram.

At 6.30 P.M. the Visitors attended the physiological examination for the "double" qualification. An examiner from Edinburgh, Dr. Andrew Smart, having taken the place of Dr. McVail, conducted, along with Dr. Fleming, the examination of candidates for the double qualification. This examination was similar to that already described.

Chemistry.

The examination in chemistry commenced at the same time as that in physiology, in another room in the Faculty Hall, and was conducted by Dr. Perry and Dr. Lindsay. On a table were bottles containing various ordinary chemical salts. On another table there were test tubes and various reagents. Each candidate was examined separately for about twenty minutes.

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Primary Examination (Double). Chemistry.

Candidate No. 1 was questioned on milk and its composition, reference being made occasionally to his written paper. He was given hydrochloric acid, and asked to find out by test what it was.

Candidate No. 2 was questioned closely on the laws of chemical combination, and was given nitric acid to test. This candidate answered promptly, and got a good mark in *vivâ voce*, having obtained but an indifferent one for his paper.

Candidate No. 3 was questioned on iodine, its manufacture and tests; also on the various compounds of iodine, such as iodide of potassium, &c. The physical properties of iodide of potassium were discussed. He was also questioned on the composition of normal urine and on the mode of taking its specific gravity.

Candidate No. 4 was examined on carbon and its compounds. He was asked to explain what is meant by binary, ternary, and quaternary compounds, and to give examples; to state what is the general elementary constitution of fats, what elements are in the composition of milk, and what salts it contains. He was also asked how to obtain nitrogen, what its properties are, and to give illustrations of its importance in relation to food.

Candidate No. 5, after a series of questions, was given some red oxide of mercury and a test tube, and asked to heat it at a spirit lamp, and then explain the changes which took place.

Candidate No. 6 was examined mainly on sulphurous acid and its mode of preparation.

Occasionally the candidates were asked to name the subjects in chemistry that they would wish to be examined on, and from this point the examiner started.

At six P.M. the examiner from Edinburgh, Dr. Stevenson Macadam, arrived, and took the place of one of the other examiners; and then the candidates for the double qualification were examined in the same manner, one at a time.

Examples will indicate, to some extent, the range of the examination of candidates who *failed* in chemistry on the second day of the oral. One candidate, whose examination turned mainly on the composition of fat, received only 30, while in the written examination he had received 55, but the low mark in the oral involved his rejection. Another candidate was unable to state the composition or the mode of combining the ingredients in tartar

emetic, and was also imperfectly informed as to iodine, its chemical relations and how it is obtained. Indeed, his examination on this subject showed almost complete ignorance, besides which, his paper was quite below the mark. His marks were—paper 35, oral 25. Another candidate, told to combine sugar with sulphuric acid in a test tube, and heat so as to cause charring, could not explain what had taken place. He was also asked to test with chloride of barium a solution containing sulphates, and when questioned as to whether it was a test for sulphuric acid in combination or only free, he answered "only free," further questioning on this subject not improving his position. He was ignorant of the composition and uses of sulphates generally, and equally so of the composition of the atmosphere. On his paper and oral he got 30. Another candidate, whose paper was marked 40, was asked to test for chlorides, which he did with nitrate of silver. When ammonia was added, he was quite at a loss to know what took place. When asked about carbonate of lime, and what would happen to it when burnt, he said calcium would be got. "What! the pure metal, calcium?" "Yes." In this respect, however, as in some others in the after part of the examination, a doubt existed as to whether nervousness had not somewhat unhinged the candidate; and as he had answered some questions well, 60 was given him with a query, on the principle that his oral and written together might come near 100, but still be below par unless redeemed by other subjects. This candidate was ultimately rejected in physiology. Another candidate, whose paper was marked 40, was asked about oxygen, its functions and importance; its presence in water; how much in 9lbs. of water (as to which no approximate answer was given); its presence in the crust of the globe; the nature of oxidation as a chemical process; whether rapid or slow; how it takes place in the case of sodium and potassium; oxidation of carbon; phenomena of combustion; the compounds of phosphorus with oxygen, and of hydrogen with ditto. On all these subjects the answers of the candidate were considered to entitle him only to 30. Another candidate was examined on testing an acid fluid, on the properties of sulphur and its compounds with oxygen, and finally, on water and its boiling point, which he did not know, having apparently no idea of the graduation of the

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Fahrenheit or Centigrade thermometer. This candidate was also rejected.

Primary Examination (Double).

A considerable number of these candidates came from other parts of the kingdom, and it may with great probability be inferred that they had failed elsewhere in examinations for their surgical diplomas, in which, perhaps, chemistry may not have formed an essential element, or an element at all.

Adjudication.

On Thursday, at 6.30 P.M., the Visitors were present at the Faculty Hall, to hear the adjudication on the candidates who had gone through their primary examination. The following examiners were present: Dr. Perry (in the chair), Dr. Lindsay, Dr. McVail, Dr. Clark, and Dr. Knox. As each name was called out, each examiner read out the marks he had given. This applied both to the single and the double qualification. If any candidate had got less than 100 marks (*i.e.*, an average of 50 each for paper and oral combined), in any one of the three subjects—anatomy, physiology, or chemistry—he was rejected. There were, however, two exceptions. One candidate had got more than the average marks in anatomy, more than the average marks in physiology, and was 5 only short in chemistry, his written examination in chemistry having been satisfactory. On consultation, the examiner in chemistry consented to raise his marks by 5, to enable him to pass. Another candidate had done well in chemistry and physiology, but was below the mark in anatomy both in the written and *vivâ voce*. The examiners in anatomy thought that he was very nervous, and probably did not do himself justice. They therefore proposed to the Court that he should be again examined in anatomy with the assistance of one of the examiners in physiology, and that if he satisfied them on re-examination he should be considered as passed. The candidate ultimately passed. Of thirty-three candidates, one had withdrawn, another had still to be re-examined, leaving thirty-one, of whom nineteen were rejected and twelve passed. Of the nineteen rejected candidates, two were rejected in anatomy alone; one in physiology alone; seven in chemistry alone; four in all three subjects; one in anatomy and physiology; one in anatomy and chemistry; three in physiology and chemistry; so that of the whole number of candidates fifteen failed in chemistry, and would have been rejected in that subject, apart from having failed in others. The Visitors were informed that at this period of the

year they generally get an inferior set of candidates, and that many of those examined had been rejected before, some of them several times.

FINAL EXAMINATION FOR LICENCE (SINGLE).—CLINICAL MEDICINE.

Final Examination for Licence (Single). Clinical Medicine.

On Friday, July 22nd, the Visitors attended at the Royal Infirmary, Glasgow, where a clinical examination in medicine was being conducted by Drs. M'Laren and Charteris, both of them Physicians to that institution. The examination was held exclusively in one large ward. There were only six candidates. This limited number was attributed to the fact that many candidates for the surgical diploma had already obtained a medical qualification elsewhere, in which case no examination in medicine or clinical medicine is required by the Faculty. In this examination each candidate was placed with a sheet of paper at the bedside of a patient, and told to examine and report briefly on the case, the time given not being sufficient for a full report, but only for notes, to be supplemented by a *vivâ voce* examination, which was invariably carried out afterwards. In some instances, more than one case was employed in the subsequent part of the examination, but the candidate was generally required to read off his own notes, and questions were asked upon these. Specimens of urine, illustrating morbid varieties, were upon a table. The candidates were questioned upon these, one specimen containing a muco-purulent sediment, and another containing bile pigment, being employed for several of the candidates. The candidates were asked to determine the specific gravity of urine, to test it for albumen, and in various ways to show their knowledge of the ordinary clinical operations on it. Two microscopes were used, one of which had a specimen of uric acid displayed, and another triple phosphate crystals, somewhat broken and confused, in the midst of a number of other possibly foreign sediments. More than one candidate failed to recognise these crystals of phosphates, but perhaps, under the circumstances, the specimen was not quite so definite as might have been desired. The knowledge of physical signs was tested chiefly by auscultation practised in the presence of the examiner, and the candidate was

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invited to percuss, to listen to the heart sounds, &c., and state his general impressions, but in most instances without having to specify the phenomena in detail.

Individual cases will illustrate the character of the examination :—Candidate No. 1 had an average case of phthisis to report upon, in which the left apex was chiefly involved. He made out the main points correctly. He was also examined upon several specimens of urine, the result of the inquiry being satisfactory. Of the two microscopic specimens he recognised the uric acid, but failed to identify the phosphates. Candidate No. 2 was examined upon a case of rather remarkable pigmentation of the skin, which Dr. Charteris, who had seen a good deal of the patient, considered to be one of Addison's disease. However, it differed from the ordinary type of pigmentation in Addison's disease, as being, to a marked extent, patchy, and also peculiar in its distribution. The diagnosis here, of course, must be considered an open question, but on the whole the symptoms, as well as the skin affection, seemed to indicate the true diagnosis to be as stated. The candidate took this view of the case, and gave a fair account of it from his own personal investigation. He also correctly observed and defined a case of ordinary phthisis. This candidate was decidedly the best of those examined. The Visitors thought that the examination might have been made more searching, though probably not more conclusive, by asking questions of detail as regards the candidate's knowledge of the usual characters of the discoloration, and the peculiarities of the variations in this case ascompared with other cutaneous affections resembling it. The candidate was ultimately rejected on surgery alone, though his marks on all the other subjects were considerably above the average. Candidate No. 3 was examined in the first instance upon a case of purpura, which he designated correctly, but, so far as the Visitors observed, without showing much knowledge of detail. It was evident that he had seen the disease before, and was able to differentiate it. The same candidate was shown a case of chorea, and questioned generally upon it, particularly the treatment, his answers being in the main correct. Asked to auscultate a patient, he at once declared that he could not hear anything "with his ears," his explanation being that although he could hear conversation correctly, he could not hear with

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the stethoscope in consequence of an injury to his ears from a blow received in childhood. Notwithstanding this alleged infirmity he was requested to listen to the sounds of the heart, and said correctly that they were normal. He was next examined on two specimens of urine, and in the course of his examination he could not take the specific gravity, having apparently no knowledge of the urinometer, nor of what was to be inferred from the degrees upon it. He volunteered the information that this instrument was not used in the city or the hospital where he studied. To a question, put by one of the Visitors, he answered that one of the physicians of the hospital was rather a specialist in skin diseases, and that he had seen a case of purpura previously under this physician, who gave him a lecture upon it. This candidate was examined on the urine containing the bile pigment, which he at once recognised and detected by means of the nitric acid test. He also succeeded in naming one of the two microscopic objects.

Remarks.

The examination, as a whole, was carefully conducted, and as ample materials existed and were employed, it might be said to be both fair to the candidates and satisfactory as testing at least average knowledge of clinical medicine. However, more might have been made of the cases employed, had the questioning upon the candidates' observations been somewhat more varied and extended. The presence of six candidates at the same time in a ward is apt to lead to confusion as regards the result, and would do so still more if the number were larger. As a general rule, the actual questioning of each candidate should be so conducted as to be out of sight and hearing of the other candidates. In the adjudication of this examination, the examiners expressed their own views of the candidates by marking the majority of them at 50, which was just a bare pass, if satisfactory in other subjects. To the question why none of them were marked below 50, the answer was, because in clinical medicine any mark below 50 was interpreted as an absolute stop, whatever the marks in other subjects, and the wish of the examiners was to leave a possible chance of passing, if otherwise good.

Clinical Surgery.

On Thursday, July 21, 4.30 P.M., the Visitors attended at the Royal Infirmary to witness the examination in clinical surgery, which was conducted by Dr. Morton and Dr. M'Ewen. These gentlemen are not members of the Examining Board, but

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Final Examination (Single). Clinical Surgery.

the Faculty performs its clinical examinations by the surgeons and physicians to the hospitals, who examine the candidates clinically, and report to the examiners their judgment on that part of the examination. Six candidates out of eleven for this examination were present. The other five were to be examined in clinical surgery at the Western Infirmary on the following day. Every candidate was required to apply a bandage and a splint to a sound limb for a supposed fracture, the necessary apparatus being supplied to him. One candidate was told to adjust a fractured clavicle ; another to apply a splint for Potts's fracture. The candidates were next questioned on some cases in the wards —one a case of un-united fracture of the femur. This case supplied a text to the surgeon, from which he questioned the candidate on the whole subject of pseudarthrosis and its treatment. The candidate was next taken to a boy whose leg had been struck by a cricket ball about a week before, and was asked to discover the injury, and he rightly came to the conclusion that no substantial injury had been received—at any rate, that no bone was broken. Another candidate was examined on a case of spina bifida in a child about a year and a half old, and also on the case of un-united fracture already mentioned.

On Friday, July 22, the Visitors arrived at the Western Infirmary at 11.15 A.M., towards the close of the clinical examination in surgery of the remaining candidates, five in number. This was being conducted by Dr. George Buchanan and Dr. Hector Cameron. The method in this instance was rather different from that at the Royal Infirmary. The candidates had already put up a supposed fracture, and had been questioned on it. The splints and other materials for putting up fractures were arranged in a row close by, and the candidates were told to select from the apparatus what they needed for the particular fracture, and if anything they required was not present, to ask the examining surgeon for it. The candidates were then placed in a room by themselves, and called out, one by one, into the surgeon's room, and there had to examine and diagnose three cases—one of epithelioma, a second of hydrocele, and a third of perineal fistula with stricture. They received a searching examination on the diagnosis, pathology, and treatment of these cases. As a rule, each candidate got two of such cases to recognise and answer on; but occasionally, in the case of a doubtful candidate, a third case was

allotted to him. All the candidates were questioned on these three cases. When the examination had concluded, they were dismissed from the hospital, care being taken that no communication should take place between those who had been examined and those who were waiting for examination.

On Friday, July 22, three P.M., at the Faculty Hall, the examiners in surgery were Dr. Hector Cameron—who had taken part in the clinical examination in the morning—and Dr. Dunlop. The candidates are examined, as a rule, at the rate of eight a day, about twenty minutes being allowed to each, more or less, according to circumstances, and sometimes half an hour in the case of a doubtful candidate. There were bones and dried anatomical preparations on one table, and on a second a series of surgical instruments.

Candidate No. 1 was examined on the subject of vesical calculus. He was required to state the symptoms of the disease fully, and the affections for which it may be mistaken. Then from the table on which the instruments were, he had to select those that are necessary for the operation of lithotomy. He was asked to describe the position the patient is placed in immediately previous to the operation, and to answer a few questions on the operation itself. The next subject that the candidate was examined on was fracture of the clavicle. He was asked on what portion of the bone it most frequently occurs, the general etiology of the injury, the varieties of the fracture that are met with, and, finally, the most appropriate treatment for the accident.

Candidate No. 2 was examined on the subject of popliteal aneurism. He had to define what is meant by an aneurism, and the symptoms that characterise the disease, and the various kinds of treatment adopted, such as pressure, flexion, ligature, and cutting into the aneurism, and tying both ends of the artery, &c. The spontaneous cure was also discussed. The next topic was fracture of the base of the skull, and questions were asked on the way in which the injury is produced, the signs of it, and the appropriate treatment.

The other subjects questioned on were tumours of bone, fractures of the tibia, fractures of the patella, fractures in the vicinity of the ankle joint, disease of the rectum, hernia, and hydrocele.

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Final Examination (Single). Medicine: Materia Medica.

Dr. Scott Orr and Dr. Wood Smith examined alternately in the subjects of medicine and materia medica. Candidate No. 1 was questioned on coma, on the causes of loss of consciousness, from the heart, from a blow on the head, apoplexy, and kidney disease; the treatment for poisoning by opium; the symptoms of acute rheumatism; and on typhoid fever. By the other examiner in materia medica he was asked to identify sulphate of copper, and specify its uses in medicine, and how to prescribe it for diarrhœa; questioned about aloes—on the dose, which he said was 2 to 8 grains; about the dose of liquor strychniæ —how much strychnia there is in an ounce of the liquor; about squills; the dose of powdered elaterium; the dose of infusion of digitalis and of powdered digitalis; and to write a prescription for a diaphoretic mixture.

Midwifery.

The midwifery oral examination was conducted by Dr. Tannahill and Dr. Stirton, who examined the candidate over an extensive range—the management of breech presentation; on flooding; placenta previa; and unavoidable hæmorrhage and accidental hæmorrhage. On the table were the usual obstetric instruments, a female pelvis, and a fœtal skull.

In another room Professor Simpson was the examiner on medical jurisprudence, and Dr. Lindsay acted as assessor. One candidate was examined first on wounds, on the varieties of them, lacerated, punctured, &c.; the special dangers that attend wounds of the head and of the face; the various causes of death from wounds; and the mode of distinguishing between suicidal and homicidal wounds. The candidate was also examined on the preparations of cantharides.

Another candidate, examined by Dr. M'Ewen, was required to recognise spermatozoa under the microscope. He was then examined on rape and the mode of recognising a spermatic stain. The candidate was also examined as to the nature of vaginal epithelium; and on blood—the chemical tests for it, and the microscopical appearances of it. Lastly, the candidate was examined on the differences that exist between wounds inflicted during life and after death. This examination was satisfactory.

APOTHECARIES' SOCIETY OF LONDON.

PRIMARY AND FINAL EXAMINATION FOR LICENCE.

Primary and Final Examination for Licence.

On Wednesday, December 14, 1881, the Visitors were present at the weekly examination for the licence of the Society of Apothecaries of London. Both the primary and final examinations are conducted simultaneously. The Visitors arrived shortly before five o'clock, and found that twenty-one candidates were undergoing examination—a larger number than usual, as a rule only twenty being taken in one day. Of these candidates, ten were present for their "final" examination, and eleven for their "primary." Of those who attended for their final examination, one was a licentiate of the Royal College of Physicians of London; a second had passed the first M.B., Durham; a third was a licentiate of the College of Physicians and Surgeons, Edinburgh; and a fourth was a member of the Royal College of Surgeons of England. Besides the twenty-one candidates, there were four others who were marked on the roll as "assistants." Those already qualified are admitted to a modified examination, the particulars of which will be seen in the regulations printed in Part III.

Clinical.

The candidates were engaged at their written examination under the supervision of one examiner, a second examiner being in another room superintending the clinical examination of the candidates for the final qualification. In this room there were three patients sitting at a distance from one another, one being a case of diabetes mellitus with phthisis; a second a case of mitral disease of the heart; and the third a case of disease of the heart in a child. Three candidates were admitted at a time, one for each case, and were allowed a quarter of an hour to take short notes and make inquiries as material from which they afterwards gave a written account of their examination and diagnosis. At the end of a quarter of an hour the three candidates returned to their written examination, and three more were called in to go

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through the same proceeding. The candidates to whose lot the case of diabetes fell had to test the urine; those to whom the other cases were assigned were not required to test urine.

Written.

The written examination of the seniors consisted of five questions on medicine, three on midwifery, and three on toxicology. The candidates were expected, but not required, to answer all the questions. In addition to these three papers, they had to write an account of the clinical case which they had previously examined, the time allowed for the whole being three-and-a-half hours. At the end of the examination the examiner took home the papers to read over for adjudication.

Clinical.

The Visitors found that the custom adopted by the Apothecaries' Society has been to have from one to three selected cases of internal disease sent to the hall on the first of the two examination days in each week, the leading facts of the cases so sent up being briefly but precisely recorded in a book from week to week. Various hospitals and dispensaries are laid under contribution for this purpose; those chiefly appearing in the book recently being the Victoria Park Hospital and the Western General Dispensary, also occasionally University College and King's College Hospitals. The name and age of each patient, with a brief indication of the disease, are recorded in every instance; and thus the Visitors are enabled to give a rough indication of the class of cases presented since the month of September, viz.:

Chronic Bright's disease.

Diabetes insipidus, following a fall on the head.

Dyspepsia with hepatic enlargement. (First stage of cirrhosis.)

Chronic bronchitis, with congested left base of lung.

Phthisis, right, 2nd stage.

Emphysema and bronchitis.

Phthisis, right apex, 1st stage.

Rheumatic fever eight years since, with systolic bruit at apex; hypertrophy of heart, throbbing carotids, emphysema, lumbago.

Gastric disturbance from alcoholism; urine, very low specific gravity; no albumen.

Mitral regurgitation after rheumatic fever, irregular action of heart, bronchitis. (The same case on another occasion was designated mitral murmur and bronchitis.)

Paralysis agitans. (This case was from University College Hospital, and was the only one produced on September 1st.) — Apoth. Soc. Lond. — Clinical.

Psoriasis vulgaris. (This case was the only one produced on August 17th.)

Fibroid phthisis. (This case was the only one produced on August 10th.)

In several instances, the Visitors noticed that the same case was produced again and again at intervals of some weeks, and sometimes on two successive weeks. For example, the above case of fibroid phthisis may be traced in the books on October 12, August 10, July 20, May 18, April 20, March 2, and so on as far back as October, 1879. Another case of chronic Bright's disease appears in the books in the same intermittent manner back to the beginning of 1879. The case of diabetes insipidus also appears pretty frequently, and sometimes on successive weeks. It is quite evident that with this method of proceeding there is a risk—the Visitors do not venture to say how considerable or how small—of the object of the examination being more or less defeated by the candidates being able to learn in irregular ways the kind of cases they are to be examined upon, and even the character of the individual case. It seems, moreover, probable that patients so very frequently submitted to examination for this purpose, may have learned the medical features and names of their own diseases, so as to be able to inform the candidates; and it therefore becomes important to observe how far the examiners rely merely on such circumstances as could be readily got up in this way, aided by book-knowledge, or how far, on the other hand, a tolerably exhaustive examination of the distinctive points of the case is expected, such as to show more than a conventional knowledge of it. The Visitors did not themselves propose to investigate any of the three cases submitted, inasmuch as each of these patients having been gone over in succession by three candidates, it was not expedient to prolong their examination. One of the examiners present assured the Visitors that the utmost pains are taken to secure proper cases for the purpose in view, and to give in the book above referred to a true indication, upon good authority, of the character of these cases. It did not appear, however, that the examiners themselves were in any degree — Remarks.

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responsible for the diagnosis indicated in the book, except in so far as in any particular instance the examiner may have accidentally had cognisance of the case before-hand, either personally or through his assistants. The book above referred to also bears notes of the pathological specimens used on successive days in the oral examinations, the following among others: On November 30, fibroid of uterus, pneumonic lung; November 23, typhoid ulceration of intestine; November 16, specimen of diseased heart and lungs; November 9, specimens of cirrhosis of liver and Bright's kidney, also specimens of urine with albumen and uric acid. The production of such specimens, therefore, seems to be an habitual, though by no means an invariable, feature of the examination.

Anatomy (Primary).

The ten candidates for the "primary" examination were engaged in writing the answers to three questions in anatomy, one in physiology, four on chemistry, two on materia medica, and one on botany, being seated in the same room with those who were writing for the "final." As soon as the ten candidates for the final examination had completed their clinical examination of patients in the other room—a proceeding which occupied about an hour—the anatomical candidates were taken in the same manner, that is, called out from their work of writing answers, into the library, one by one, for the purpose of being tested on regional anatomy. In this room there was a couch, on which a man stripped down to the middle was reclining. The examiner who had been superintending the clinical examination of patients in the large room now took the place of the examiner who was superintending the written work. The second examiner then conducted the examination in regional anatomy as follows:

Candidate No. 1 was handed a piece of chalk, and the following questions were put in succession:

Map out the liver.

Whereabouts are the internal and external abdominal rings?

Whereabouts is the spleen?

Map it out (with chalk).

Map out the position of the heart.

Where is the brachial artery?

Where is the transverse colon?

Where is the cœcum ?
What do you see on looking at a man's eye ?
What is the iris ?
What is it composed of ?
What constitutes the substance of the tongue ?

Candidate No. 2 was then brought in and given the following questions :

Where is the stomach ?
Where is the liver ?
Where would you find the kidney ?
Where is the lingual artery ?
What is the essential part of the ear ?

Candidate No. 3 was next brought in. An attendant was requested to put out his tongue, and the candidate was then asked the following questions :

What do you see ?
What are the muscles of the tongue ?
How is the tongue supplied with nerves ?
What are the parts of the eye that are necessary for vision ?
Map out the descending colon.
Where are the radial and ulnar arteries ?
Where is the heart ?

Candidate No. 4 was asked—the examiner placing his finger on the sterno-cleido mastoid muscle—What is this ?

What are meant by the triangles of the neck ?

Candidate No. 5 was asked :

Where are the radial and ulnar arteries ?
Where is the brachial artery ?
Whereabouts is the spleen ?
Where is the liver ?
Where is the pyloric orifice of the stomach ?
Where is the gall-bladder ?
Where is the cœcum ?
And the ileo-cœcal valve ?
The vermiform appendix ?
The ascending colon ?
What do you see when you look into a man's mouth ?
What papillæ are there on the tongue ?
What ducts open into the mouth ?
Where does the optic nerve come from ?

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Primary Anatomy.

The eighth candidate already possessed a surgical qualification. He was very confused as regards his knowledge of the position of the viscera. Asked as to the sigmoid flexure, he said it was on the right side. Asked to map out the spleen, after long hesitation, he placed it nearly in a direct line below the apex of the heart, half within and half without the line of the left hypochondrium, marking it with chalk at the request of the examiner He placed the arch of the aorta to the left side of the middle line and extending quite up to the sterno-clavicular articulation; and even when asked by the examiner if it was not too far to the left, he rectified his tracing, still keeping it to the left of the middle line. He showed an entire want of precision in indicating the situation of other organs of the body; and this was the more appreciable, because in no single instance was any question put which would have brought out more than the most elementary knowledge, *e.g.*, no question was put to him, or to any other candidate, as to the exact position of the cardiac apex, or the limits of its variation in health or disease, the position of any individual valve, the exact position of the upper or the lower edge of any particular organ in reference to the walls of the chest or abdomen, &c. The Visitors have commented somewhat minutely on these questions, not with the view of throwing any special blame on the particular examination passed by this candidate, as they are aware that with the greatest care an inefficient man will occasionally escape the vigilance of examiners, but because they are convinced that the method of examination which is now described brings out in forcible relief what they believe to be a deficiency both in medical education and medical examinations. With all the minute care that is, as a rule, paid to a large amount of accurate anatomy, much of which is, after all, of little permanent use beyond the mere mental training, the most important results of anatomical knowledge in reference to practice are not unfrequently missed. If anatomy learnt by a student is to be worth anything, it ought to enable him after he has obtained his qualification, at any rate when recently qualified, to form a judgment as to the position of the various organs of the body in health, and to be able to recognise when they are altered by disease. It would seem as if the minute knowledge of anatomy which the Visitors presume he exhibited at his primary examination had been lost, and had not been replaced by even

Remarks.

a fair knowledge of the larger views of topographical anatomy which ought to be displayed at every final examination.

Apoth. Soc. Lond.

There is this peculiarity about the examinations of the Apothecaries' Society of London. This Body is bound by its charter to hold an examination every week, and therefore to have 50 or 51 examinations every year. Both the primary and final examination are conducted simultaneously by the same examiners. The Court of Examiners is twelve in number, and is appointed by the governing body, the Court of Assistants, annually. The members of this Court are not necessarily members of the Society of Apothecaries, three at least of the examiners being at the present time outsiders. The examiners are re-eligible for an indefinite period, changes in the *personnel* taking place gradually by the introduction of one or two or three new members. The examiners are not appointed to examine in special subjects, but undertake the examination in them for periods of five weeks each. This rotation of five weeks comes about in the following manner. Of the twelve examiners, the President superintends the work of the examination; a second examiner undertakes, for a period of five weeks, the testing of the students in microscopical preparations. Of the remaining ten, two set the papers of the week, and superintend the written examinations on the first day. One of these is present with the senior candidates whilst they are taking notes of the clinical cases, the other superintending the writing; and when all the clinical cases have been noted, the first examiner takes his turn in superintending the writing, and his colleague repairs to another room and conducts the "practical examination on a living subject," which has already been described. The two examiners afterwards read over and form their judgment on the written papers for the meeting of the Court on the following day previous to the oral examination. These examiners do not take part in the oral examination unless the number of candidates is larger than usual. The remaining eight examiners conduct the oral examination on the second day at four tables, on which are placed the materials for the objective testing of both senior and junior candidates. One table, for instance, is provided with materials for the midwifery examination, obstetrical instruments, &c.; also with a few materials for the anatomical examination, consisting of a skull, humerus, and pelvis, with the following preparations in wax: a section of the

Examiners.

Preparations.

Apoth. Soc. Lond.

head, with the vessels and nerves, heart and vessels, eye and appendages, ear, &c., sections of brain preserved in spirit.

Preparations.

A second table was provided with materials for the examination in pathology, such as a heart with diseased valves, a kidney with a large calculus in the pelvis, a renal cyst, a portion of diseased lung. On another table was a series of spirit preparations for use when required. The second table was also furnished with objects for examining the junior students in materia medica. There was a specimen of urine containing amorphous lithates and albumen, which was occasionally used in the examination, means for testing it being supplied. A third table was provided with a series of chemical reagents and apparatus for the examination of senior candidates in toxicology, and junior in chemistry. At a fourth table these candidates were examined, the former in medicine, and the latter in prescriptions, the chief method of testing the latter being that they were required to explain and translate manuscript prescriptions. Each candidate was detained a quarter of an hour at each table, and thus an hour was occupied with each set of four, the quarters being marked by the ringing of a bell. The following is a sample of the examination of a candidate in pathology by Dr. Alfred Carpenter and Dr. Thorowgood. Candidate No. 1 was examined upon the general features of hæmorrhage in various organs and parts of the body, with special reference ultimately to hæmorrhage in the brain including the symptoms indicating the particular parts of the cerebral structure in which the lesion was situated. Candidate No. 2 was examined on the specimen of urine; he tested it for lithates and for albumen, and was asked about the relation of lithic acid to gout, about the lesions of the kidney in gouty people, and congestive and other disorders of the liver, nutmeg liver, &c. Candidate No. 3 was questioned on some renal and other preparations, one of which contained a cyst; and also on preparations preserved in spirit, from which the examination diverged into cognate topics. The examiners at each table took the candidates alternately.

Forensic Medicine.

At another table Dr. Withers Moore and Dr. Fowler conducted the examination in forensic medicine. The candidate was examined on animal and vegetable poisons. Among the former, cantharides, snake bites, animal poisons from the ingestion of food, as, for example, in sausages, and trichinosis, were

the subjects of examination. The symptoms and treatment to be adopted in such cases were fully gone into. Subsequently the subject of belladonna poisoning was discussed, and the symptoms of the poisoning and the antidotes were questioned on. Poisoning by opium was then considered, and questions were asked as to the smallest amount of that drug which has proved fatal. The differential diagnosis of the condition of opium poisoning was also inquired into. Another candidate was examined on death by starvation, with its differential symptoms and diagnosis. In the case of another candidate, the examination was chiefly on wounds, whether inflicted during life or not. Another candidate was examined on the symptoms of phosphorus poisoning. He was asked, "What would you do to determine the existence of phosphorus?" On the treatment of poisoning by phosphorus questions were asked, and also as to what disease or diseases phosphorus poisoning simulates. The *post mortem* appearances or phenomena in cases of phosphorus poisoning were discussed, such, for example, as the appearance of phosphorescence of the tissues, congestions of the fauces, garlic odour, ecchymosis of the stomach, and fatty degeneration of the liver, kidney, and heart. The examination concluded by a consideration of the tests for phosphorus.

Midwifery.

At the midwifery table (Dr. Savage and Mr. Bullock examining) the candidates were questioned on midwifery instruments, *e.g.*, the blunt hook, the cephalotrobe, long and short forceps, and also on the positions of the fœtal head during labour. One candidate was examined on uterine hæmorrhage before and after delivery, the management of placenta prævia, and on accidental hæmorrhage.

Medicine.

At a fourth table, Drs. Lee and Burgess examined on medicine, for which no objects or specimens were used. One candidate was examined on chorea, the etiology of that complaint and the symptoms, and he was required to write a prescription for a child affected with it. With the same candidate the symptoms of tapeworm, its causes and the treatment, were inquired into, and for this also the candidate was required to write a prescription. The next topic questioned on was the subject of empyema, its symptoms and physical signs. The differential diagnosis between empyema and consolidation of the lung was next inquired into, as well as the treatment of both conditions.

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Anatomy.

As soon as the senior candidates had been examined, their places were taken at the various tables by the candidates for the primary examination. The examination in anatomy was conducted by Mr. Bullock and Dr. Savage. The candidate was first examined on a heart distended with wax. He was closely questioned on the different parts of the heart, and told to name them, also upon the superior and inferior cava, on the coronary sinuses, and asked to point them out, to give a general description of the circulation of the blood and of the fœtal circulation and its peculiarities. Finally, a few questions were asked on the formation of the blood and its composition.

At another table the candidate was asked a few questions on the parts observed at the base of the brain, and to point out the origin of the third pair of nerves; on the muscles of the orbit, on the parts supplied by the fifth, the seventh, and the eighth pair of nerves. The candidate was also examined on the bones entering into the formation of the orbit. The examination on the temporal bone consisted in asking what were the different parts into which it was divided. The candidate answered "the squamous portion and the mastoid portion," but he seemed to be ignorant of everything else connected with the bone. The sinuses of the brain were then inquired into; the only ones, however, mentioned by the candidate, being the superior and the inferior longitudinal sinuses. A few questions were likewise asked as regards the arterial distribution at the base of the brain, but the candidate's knowledge on this subject was of so meagre a character that little information could be elicited. The examination concluded by a few questions on the intestines, their division, the arrangement of the muscular fibres in them, the situation and supposed function of Peyer's patches, and the uses of the pancreatic juice. Beyond a few incidental questions the Visitors did not observe in any case a separate examination in physiology.

Materia Medica.

At another table, a junior student was examined in materia medica, and was questioned on the following substances, which he was required to recognise: nux vomica, tartar emetic, colocynth, aloes, opium, myrrh, calumba. Questions as to doses and effects and uses were asked in the course of the examination. On a supplementary table were various drugs. The candidate was asked to recognise several of them, *e.g.*, jalap, cream of

tartar, opium, senna, colocynth, camphor, &c.; how to make camphor into a pill; how to distinguish between distilled and ordinary water; what preparations of chloroform are in the British Pharmacopœia. The lozenges of the Pharmacopœia were questioned on, how much bismuth, how much morphia, how much chlorate of potash, is in each of the Pharmacopœial lozenges; the preparations into which camphor enters as a constituent were questioned upon; the preparations of iodine and its mode of manufacture. Iodide of potassium and its doses were examined on; also the Pharmacopœial preparations that are derived from the coniferæ, such as savin and pix; and the preparations of broom and its natural order. Lastly, questions were asked on the various preparations of squills, also of galls and doses of gallic acid that may be given to an adult in cases of hæmorrhage. The Visitors did not observe any further questions than those just mentioned in botany, and no botanical specimens, strictly so called, were used. They were told, however, that specimens are employed in the summer examinations.

Chemistry

At another table a junior candidate was examined in chemistry; and asked for the tests for sulphuric, nitric, and hydrochloric acid; also the mode of manufacture of each of these three acids, and their physical characteristics. Chloride of mercury was then examined on, the candidates being asked as to its mode of preparation and tests. Among others the following questions were given: What is the constitution of the atmosphere? What are the effects of respiration on the blood? What does the skin do as regards life? What is the composition of alcohol? What is the difference between alcohol and ether? What are the various forms of carbon, particularly its oxides, and the respective weights and volumes of carbonic oxide and carbonic acid? What is ammonia? How do you decompose water? What precautions must you take in order to keep phosphorus? What are the various forms of electricity? What do you mean by spectrum analysis?

Histology.

A fifth table was devoted to practical histology, Dr. Crocker being the examiner. Two microscopes were used alternately, a preparation being put under the one, while the candidate was examining a specimen, previously put under the other. A very large supply of histological objects, all of them, however, previously prepared and permanently fixed, had been provided,

Histology.

so large and miscellaneous, in fact, that an enumeration is out of the question. The following may be taken as examples of a few of those actually used: bone, liver, lung, skin, adipose tissue, muscle, voluntary and involuntary, yellow and white fibrous tissue, cartilage, trichina spiralis in muscle, oxalate of lime crystals, cholesterin, phosphates, section of emphysematous lung; the normal histological specimens being used chiefly for the junior and the pathological for the senior candidates. Every candidate passed through this portion of the examination, and had to state the nature of five specimens. For each, if right he got one mark; if wrong a 0. If he answered more than half he was marked as S (*satis*); if less than half, V (*vix*), which is the lowest mark allowed for the histological portion; the object being that it may not have too great an influence in condemning a candidate. For this portion of the examination there was ample time, as the examiner might occupy an average of a quarter of an hour with each man if he chose. As a rule, for a good candidate, five minutes were found to be sufficient.

Marking.

The following is a specimen of the marking of seven candidates in succession who passed through this histological test, indicating the proportion of instances in which they were considered to be right or wrong:

0	1	0	1	0
1	1	0	0	0
0	0	1	1	1
0	1	1	1	0
1	0	0	1	1
1	0	0	0	1
1	0	0	1	0

The examiner in most instances, especially where there was indecision on the part of the candidate, put questions, which appeared to the Visitors to be judiciously framed, so as to ascertain whether the ignorance was absolute, or more or less excusable, and in some instances a candidate who might have been marked 0 as regards a particular specimen, was thus assisted up to 1, whereas in other instances the opposite was the result. The markings, however, as regards individual specimens, admitted of no intermediate position between negative and positive.

APOTHECARIES' HALL OF IRELAND.

EXAMINATION FOR LICENCE—PRIMARY, OR "FIRST PART."

Examination for Licence—Primary, or "First Part."

The Visitors were present on Monday, January 2, 1882, at the commencement of the quarterly examinations of this Body. These examinations take place in the first two weeks of each quarter, the first half occupying the first three or four days of the first week, and the second half occupying three or four days of the second week. Such candidates at the first half as have fulfilled their curriculum, and, having passed the first half, desire to proceed to the second half, are allowed to do so; and hence it is possible for a candidate of sufficient standing to complete both primary and final in the course of ten days.

The Governing Body.

The Apothecaries' Hall consists of thirty-one shareholders. These thirty-one shareholders elect annually from their own body a Governor, a Deputy Governor, and thirteen Directors, who form the Court of Directors. This Court appoints eleven of its own number to be examiners. One examiner is appointed to each subject of examination, and with him another of the body is associated as assessor. These appointments are made for one year. For the written examinations, the questions are set on the following plan: The Court of Directors meet every week for the transaction of business, and at one of the meetings shortly preceding an examination, each examiner produces his proposed questions for the consideration of the Court. Suggestions are made by the various members; and at the next meeting the examiners submit the amended questions for approval.

The primary examination begins on the first Monday of the quarter, when the candidates assemble in the hall at eleven o'clock A.M. Three hours are allowed for writing the answers to two papers of five questions each, one paper being on botany and the other on chemistry. At two o'clock the examiner in

Apoth. Hall, Irel.

Primary Examination.

botany, with the assessor; the examiner in chemistry, with the assessor; and the President of the Court of Directors meet for the *vivâ voce* examination. The candidates are admitted two at a time, one being assigned to the examiner in botany and the other to the examiner in chemistry. At the end of a quarter of an hour, the President rings a bell, and the examiners exchange candidates. At the end of another quarter of an hour, the President again rings the bell and the candidates depart, accompanied by one of the assessors, who prevents communication with the candidates awaiting examination. This limit of a quarter of an hour is generally, but not rigidly kept, the examiner feeling at liberty in the case of a doubtful candidate to extend the time. On inquiry as to whether special examinations were ever given, the answer was that they were occasionally granted for special reasons, but rarely to men who had no diploma, an extra charge of five guineas being made for the privilege.

On this occasion, six candidates presented themselves for the primary examination, one of whom already possessed a diploma. Candidates possessing a diploma, instead of being given the paper on elementary chemistry submitted to the others, are tested with a paper of a more practical kind, a copy of which is printed along with the others in Part III.

Botany.

The examiner in botany was Dr. Harvey, and his assessor Dr. Leet. On the table the Visitors observed a large book with dry botanical specimens, books of large botanical plates, and a series of fresh botanical specimens, such as genista in flower; primula, wallflower, cineraria, and veronica, all in bloom; roots and leaves of digitalis, primrose and ferns, root of aconite, fresh and dried; bulbs, and various forms of roots, including dried medicinal roots. The general character of the questions given to the various candidates was as follows: A root and leaves of digitalis having been handed to a candidate, he was asked to read a botanical description of digitalis from a book before him, and to identify in the plant the characteristics described in the book. He was then asked to describe the shape of the leaf of the genista. Next, he was questioned on cryptogamic plants and their mode of propagation. He was asked what ferns are used in medicine; to identify a fresh and a dried root of aconite; to name the order to which the wallflower belongs; to name the medicinal plants in the order

cruciferæ; in the case of other families, to state the botanical character of the leaves, whether petals or bracts; to what family genista belongs and what medicinal plants are found in this order. A second candidate was questioned about cryptogamous and phanerogamous plants; on exogens and endogens, and he was requested to select a specimen of each from the table. Then a series of questions arose on a picture of the colchicum plant; on a fresh specimen of veronica, flowers of a large lily and a stalk of wheat or oats. The rest of the examination was of the same character. As a means of testing in botany, in connection with the medicinal uses of plants, the examination appeared to the Visitors to be very well and also very practically carried out.

Apoth. Hall, Irel.

Primary Examination.

In chemistry Dr. Collins examined, and his assessor was Dr. Montgomery. On the table there was a series of bottles containing chemical fluids and salts. As a rule, the salts were in small bottles, so as to be easily handled. Each bottle had the name of the substance it contained written upon it, so that a candidate started with a knowledge of the subject upon which he was being questioned. The first candidate was given a bottle of black oxide of manganese, and asked, "What is the use of this substance—how would you obtain chlorine according to the rules of the Pharmacopœia?" A threepenny piece was then put before the candidate; he was told that it contained silver and copper: "How would you prove its composition?" "How would you separate the two, and prove their character?" The next subject of examination was that of urinary deposits. A specimen of recent urine, with the sediments of lithates, was put before the candidate. Questions were then asked on the nature of the deposit, on testing for albumen and for phosphates, on the specific gravity of urine, and on saccharine urine. The Visitors consider that it may be open to question whether this portion of the examination, though practical in its character, would not more suitably form a part of the clinical rather than the primary examination for the licence. Another candidate was examined on tests for various salts, such as persulph. antimony, nitrate of bismuth, perchloride of iron, chloride of platinum, &c., and the nature of the reactions had to be explained by the candidate in chemical symbols. The Visitors did not observe that actual manipulation by the candidates themselves formed part of the examination.

Chemistry.

Apoth. Hall, Irel.

Primary Examination. Pharmacy.

The Visitors were present at the *vivâ voce* examination on Tuesday, January 3. The candidates to-day, five in number, had already had in the forenoon written answers to printed questions in pharmacy and materia medica; and were again examined in the same subjects *vivâ voce*, commencing at two o'clock. They were admitted for examination two at a time, one to the table for pharmacy, and the other to the table for materia medica. The examiners were Dr. Montgomery and Dr. Harvey. In pharmacy the candidate was examined on hyoscyamus, and on the mode of preparing the tincture of hyoscyamus, and subsequently on the mode of preparing the tincture of quinine. Among others, the following questions were asked: What is green extract? What are the roses of the Pharmacopœia? What is made from the rosa centifolia? What is made from the rosa canina? How is the mist. ferri comp. made? How does the mist. ferri arom. differ from this? The candidate was also required to read in full certain Latin prescriptions, and to answer various questions suggested by the ingredients in those prescriptions. He was examined on the liq. strychniæ, and its mode of preparation. Emplastrum ferri and emplastrum vesicans were examined on, and lastly the linimentum iodi, lin. belladonnæ, lin. chloroformi, and lin. opii. Several candidates were asked such questions as: What is maceration, percolation, filtration, &c. On the table was a series of preparations in bottles, and dry specimens.

Materia Medica.

The Visitors observed on the table for materia medica a series of dry drugs in glasses, *e.g.*, rose leaves, hops, senna leaves, kino, catechu, camphor, opium, various barks, aloes, colocynth, guaiacum, myrrh, uva ursi, quassia, cascarilla, gum benzoin, sulphate of potash, chiretta, ammoniacum. These preparations were used in the examination of three or four candidates, who were asked to identify the specimens, to mention the preparations in the Pharmacopœia into the composition of which they entered, and the mode of preparation. The examination was carefully conducted, and drew forth a good deal of practical knowledge of the subjects.

Anatomy and Physiology.

On Wednesday, January 4, the Visitors were present at the examination in anatomy and physiology. The *vivâ voce* portion commenced at two o'clock, Dr. O'Neill being the examiner in anatomy, with Sir G. B. Owens and Dr. Bolland as assessors;

and Dr. CHARLES MOORE the examiner in physiology, with Dr. LEET as his assessor. The written portion had taken place in the forenoon. For the examination in anatomy there were provided a skeleton, a full series of bones, a lower extremity with innominate bone and dried muscles, ligaments, and injected arteries, and a series of anatomical plates. All the candidates were examined on the lower extremity, *e.g.*, on the femoral ring and canal, on Hunter's canal and the relations of the structures in it; on the parts passing under Poupart's ligament; the branches of the external iliac artery, their course, distribution, and relations; also the branches of the femoral artery. In addition, the candidates were examined on the occipital bone, on the structures which pass through the foramen magnum; the occipito-atloid and axoid ligaments; also on the temporal bone. Large anatomical plates were used, especially one of the stomach. The arterial distribution and supply of the stomach, liver, and bowels formed portion of the examination.

APOTH. HALL, IREL.

Primary Examination, Anatomy and Physiology.

At a second table, Dr. CHARLES MOORE examined on histology and physiology, commencing with two specimens under the microscope, one being an injected specimen of lung and the other a section of bone. The candidate was requested to identify them, to describe what he saw, and to illustrate the details by drawing on a piece of paper. From these specimens the examination diverged into questions on the physiology of bone and lung, the development of bone from cartilage, and the various forms of cartilage found in the human body. Subsequently the subject of mastication of food and insalivation afforded an opportunity for a series of questions in this department of physiology. The examination of another candidate consisted in the substitution of a section of skin for the lung, the section of bone remaining. The course of the examination, commencing with what was seen in the section of skin, diverged into the subject of mucous membrane, the different kinds of epithelium, mastication, and the teeth.

Histology.

It seemed to the Visitors that the examination in both subjects was carefully conducted, but that, the candidates being considerably below the average in knowledge, it was difficult for the examiners in the time allotted to carry the questioning either deeply or over an extensive range.

Remarks.

This portion of the examination over, there was an adjourn-

Dissections.

Apoth. Hall, Irel.

ment to the dissecting-room of the Carmichael College of Medicine, for the examination in practical anatomy. Here a subject had been partially dissected, displaying the dissection of the axilla and the triangles of the neck, the submaxillary, sublingual, and parotid spaces. Each of the five candidates was first examined *vivâ voce* on the structures in those spaces; one of the candidates, for example, being questioned on the boundaries of the axilla, and asked to point out the different muscles that constitute those boundaries; the stages of the axillary artery, its relations and branches. He was also required to indicate the different nerves constituting the brachial plexus. Subsequently this candidate was required to make a dissection, showing the course of the femoral artery. Another candidate was similarly examined in reference to the triangles of the neck; he was asked to indicate and name the boundaries of those spaces; the course of the carotid artery, and the situation where the common carotid divides into the internal and external carotid, and to name the branches of the external carotid artery; to indicate the external jugular vein, and to state how it was formed and where it went to. He was also asked the origin and insertion of the omo-hyoid muscle and of the digastric; the principal nerves that are found in the triangles of the neck, and the important structures contained in the parotid gland. He was then required to make a dissection of the brachial artery. Another candidate had to make a dissection of the posterior tibial artery and the adjacent structures as it winds round the inner malleolus.

Primary Examination. Dissections.

Adjudication.

On Friday, January 6th, Mr. Stokes was present in the Apothecaries' Hall, when the Court of Examiners and Directors met and adjudicated on the answering of the different candidates. There was a full attendance of the examiners and other Directors: Thomas Collins, L.R.C.S.E., Governor; Robert Montgomery, M.R.C.S.E., Deputy-Governor; Charles H. Leet, M.D., Secretary; Charles Holmes, M.D.; Jerome O'Flaherty, L.R.C.S.I.; Arthur Harvey, Sir George B. Owens, M.D., E. J. O'Neill, M.D., James Shaw, George Wyse, Charles Moore, M.D., F.R.C.S.I.; John Ryan, John Evans, Henry Palmer Nolan, M.D., and Edward H. Bolland, M.D. The examiners reported to the combined Court the marks each candidate had obtained. The votes were then taken. As the result of adjudication, two candidates were passed; two were

remitted for three months, one of them having failed in anatomy, physiology, and pharmacy, and the other in anatomy and physiology; a fifth candidate was rejected, and the sixth had withdrawn. The rejected candidate cannot again present himself for examination sooner than six months. When the candidates remitted for three months present themselves at the end of that period, they will not be re-examined in the subjects in which at this examination their answering was found sufficient.

Apoth. Hall, Irel.

Primary Examination. Adjudication.

FINAL EXAMINATION.

The Visitors attended at the Hall on the 9th January, to witness the final examination for the licence of this Body. There were two candidates only. The subjects for examination were medical jurisprudence and hygiene, the examiners being Dr. Montgomery and Dr. Wyse.

Final Examination.

Candidate No. 1 was examined on medical jurisprudence. He was asked to state the symptoms that characterise poisoning by oxalic acid, the tests that are applied to determine its existence, and the antidotes for it. He was then examined on rigor mortis, on the time that it usually sets in, and how long it lasts, with the influences that protract or shorten its duration. Next, he was asked a series of questions, such as the following: Suppose a girl swallowed some marking ink, what antidote he would give? Suppose a person swallowed some rat's poison, what symptoms would be likely to set in? The subject of phosphorus poisoning was fully discussed and also the different symptoms and *post mortem* appearances, as well as the treatment to adopt in such cases. The candidate was asked the test for sulphuretted hydrogen; what plans are adopted for getting rid of the gas in sewers and other places where it accumulates? How to get free iodine from iodide of potassium? What is a safe dose of tincture of aconite; what of tincture of colchicum? What antidote would be given in a case of poisoning by corrosive sublimate? How would you know that a child had lived for six days? This examination, covering as it did so large a field, was one which, considering also its essentially practical character, appeared to the Visitors to be satisfactory.

Medical Jurisprudence.

The candidate having then passed to the second table, was examined on hygiene by Dr. Wyse. The following were the topics that came under consideration:—Suppose the examination-

Hygiene.

Apoth. Hall, Irel.

Final Examination. Hygiene.

room were to be converted into a school-room, how many pupils might be accommodated in it without any danger to their health? Supposing the room is 25 feet long, 20 feet broad, and 12 feet high, how is the cubic space estimated? What is the least quantity that should be allowed for each child? What are the dangers to the health of children from overcrowding? What are the effects of breathing rebreathed air? What disease or diseases are induced by the faulty posture of children at times in sitting at their desks? Where should the children's clothes be hung—in the room where they sleep, or not? How many hours at a time should children be allowed to work in school? What directions should be given in reference to this point? What are the various changes that the blood may undergo from over-study, as observed chiefly among young females? The method of examining for life assurance was then discussed: How would you proceed to examine a person for life assurance; what are the special conditions to look to in the examination of the head, chest, abdomen, and lower extremities? Supposing you were appointed surgeon to a passenger vessel, what principles would guide you in making your arrangements for the health of passengers? In reference to this question, the subjects of ventilation, cleanliness, and food were chiefly discussed. What points should be attended to in estimating the quality of beef; also, how to distinguish sound and unsound bacon; and the symptoms of trichina spiralis and the course of that disease?

Medicine.

On January 11th, at two o'clock P.M., the Visitors were present for the final examination in medicine and surgery. There were only two candidates, and one of these possessing a diploma in surgery, was not examined in that branch. The examination in medicine was conducted by Dr. Leet and Dr. Ryan. On the table was a number of specimens:—(1) A preparation of tubercular disease of the lung; (2) hepatisation of lung; (3) disease of aortic valves, with hypertrophy and dilatation of left ventricle; (4) mitral stenosis; (5) typhoid ulceration of ileum; and (6) intestinal worms. There were also available a number of plates from Cruveilhier's "Anatomie Pathologique," separated from the text, and a number of drawings of skin diseases, such as eruptions of measles and scarlet fever, erythema nodosum, and other typical forms, as given in the ordinary illustrated books. The first candidate was asked about lead colic, its pathology, symp-

Final Examination. Medicine.

toms, and treatment. He was questioned upon the indications of treatment and upon the reasons why he would give certain medicines which he himself suggested, *e.g.*—colocynth and hyoscyamus, pill hydrarg., calomel and opium, castor oil and croton oil. At this point, the candidate said he had never seen a case; and the examiner passed to the subject of purpura, asking what were its symptoms, what its dangers, what particular organs were affected, and, finally, how to treat it. The next subject was diphtheria—what is it, what is its pathology, what line of treatment is to be pursued in it, internal or external; how to distinguish between diphtheria and croup; what is the special danger of croup? Then the candidate was examined on smallpox—how to distinguish it, its different forms, and what class of disease does it belong to. He was asked: "If called to a person with a short cough and a pain in the side, how would you proceed to discover what was wrong?" Questions were also asked on the comparative diagnosis of pleurisy and pleurodynia; how disease of the liver produces ascites. Write a prescription for elaterium in a case of ascites. The candidate was asked to read his own prescription after having written it, and in doing so seemed puzzled to give the Latin equivalents for the numbers; the prescription, however, was correct enough. He was then asked to identify some plates of skin diseases, and in particular, a plate of measles eruption, which he did not seem to be very clear about. The same candidate was then examined in pathology by the other examiner on the basis of the preparations on the table. In connection with the case of tubercle of the lung, he was asked what is tubercle, whether there was any other form of it; whether there was any other form of phthisis than tubercular; one that runs a longer course? A fibroid form was ultimately suggested, and questions were put on the treatment. In connection with the case of pneumonia, various stages of the disease were asked about, the candidate not appearing clear as to which stage was indicated in the preparation. A few questions were put upon the preparation of valvular disease of the heart. Candidate No. 2 was asked about the classification of diseases of the skin, which he gave in the usual form. Then a number of the plates above alluded to were shown to him; and on his pronouncing the measles eruption to be scarlatina, a plate of the scarlet fever eruption was next shown. On his naming

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this correctly, the examiner went back on the measles eruption, which, however, still puzzled the candidate. Then a case of scalp disease in a child was questioned on. The candidate was next asked the usual causes of diarrhœa, and in various supposed cases of diarrhœa what he would prescribe; what would be the dose of opium in such cases; how does chalk act as an astringent; how does disease of the liver cause ascites? In reference to this question, the vena portæ and its tributaries came under consideration, and the candidate was asked to explain the consequences of obstruction; what treatment would he adopt in such a case; suppose he had made up his mind to give elaterium, write a prescription. This candidate, like the other, had to read his own prescription. He was then asked about the dose. He said one-twelfth of a grain. Asked how often he would give it; he said once a day. He was then questioned on intestinal worms—the treatment of the round worm and the tape worm respectively. Asked—"How would you treat a case of lead colic; and [the candidate not appearing very familiar with the subject] what is the indication of treatment? What is the patient suffering from? What two symptoms in particular—pain?" "Yes." And what the other? The candidate answered "diarrhœa," first; then, "cramps," and, at last, was told constipation. How would you proceed to relieve those symptoms? The same candidate was asked in pathology to identify the preparations of aortic valve disease and of typhoid ulceration. In connection with the latter, he was asked if any other kind of ulceration than this is to be found in the same parts. He was then questioned on the preparations of tubercle of the lung and on that of mitral stenosis.

Remarks.

By the admission of the examiners to the Visitors, the two candidates who appeared on this occasion were decidedly below the average in their attainments; and hence it is not easy to judge how far the examination to which they were subjected may have been modified in its details in accordance with this fact. But it appeared to proceed upon pretty definite lines, the pathological part of it being guided by the preparations on the table, and the rest by a short paper of notes prepared previously by the examiner; which accounts for the same subjects appearing in the examination of both candidates. Having these facts in view, the Visitors would remark that the range of subjects over which

Final Examination. Medicine. Remarks.

the candidates were taken was certainly ample, and such as might, under favourable circumstances, have elicited a very large amount of knowledge. On the present occasion, it undoubtedly failed in doing this, probably owing to the cause already stated. There did not appear to be any strict limitation as to the time occupied in the examination. Possibly with a greater number of candidates, some limit similar to what exists in other bodies might have been adopted. But in that case it would have been difficult to go over so wide a range of subjects with anything like satisfactory results, as even with the unlimited time it appeared in several instances that the subjects were rather superficially dealt with, and not so as to elicit any comprehensive or precise knowledge. For example, in relation to lead colic, though both candidates were asked the ordinary conventional treatment of this form of lead poisoning, no question was put to either as to the blue line on the gums, nor as to the general effects of lead in the system, nor, indeed, as to anything except the colic and constipation, nor as to the use of iodide of potassium with a view of removing the lead from the system. In relation to purpura, no question was asked as to the distinction between that disease and scurvy, or as to the pathology of any other form of hæmorrhage. In relation to diphtheria, no exact questions were asked as to the distribution of the false membrane, nor as to its pathological nature and histological characters, nor as to the albumen in the urine, nor as to diphtheritic paralysis. In reference to smallpox, the various stages of the disease were not brought out, nor the relation of the fever to the eruption, nor the distribution of the latter on the mucous membrane, and the dangers thence arising; nor were the varieties of smallpox, such as confluent, discrete, hæmorrhagic, &c., clearly defined or alluded to. In like manner, there was a somewhat singular absence of questions as to the physical signs of most of the chest diseases spoken about, and, in particular, no question at all as to the physical signs of cavity in the lung when speaking about phthisis, nor indeed any precise demarcation of the stages of that disease; nor was there a single question of a precise nature as to the diagnosis of the various valvular diseases of the heart, nor as to the murmurs belonging to each, even in the presence of preparations illustrating those morbid conditions; nor did the preparation of typhoid ulcer bring out any question of detail

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as to the relation of this to the dangers of typhoid fever, or as to the stage of the fever at which these dangers commonly occur.

Final Examination. Surgery.

The surgical examination was conducted by Dr. Charles Moore and Dr. O'Neill. Only one candidate was required to pass it, the other candidate having already a surgical qualification. The examination was commenced with histology, and two microscopes were used. The candidate was required to recognise various bodies placed under them—*e.g.*, (1) trichina spiralis, (2) a section of epithelial cancer, (3) a section of a scirrhous breast. The candidate did not appear to be at all familiar with the subject. He was then examined on the operation of cupping; and having been handed a scarificator, was required to set the blades so that the incision should be of a proper depth. Various questions were asked in reference to the operation generally. The candidate was then handed a syringe for hypodermic injections, and questioned as regards the amount of morphia that may with safety be subcutaneously injected in the case of an adult. He was also questioned on the other agents that are used hypodermically besides morphia. Several varieties of catheters having been handed to the candidate, he was questioned on the mode of employing them. He was then given a few questions on fracture of the lower end of the radius, and on the characteristic signs of its fracture. Dr. O'Neill next examined the candidate on erysipelas, questioning him on the different forms of the disease and the classifications that have been made. The etiology of the disease was also discussed, as well as the symptoms and external characters, such as swelling, vesication, desquamation, the special dangers that attend erysipelas of the head, and the wounds that are most likely to be followed by this disease. Questions were also asked on the class of persons that are most likely to be subject to it. The examination concluded with questions on the treatment of the disease in the simple forms of it. On bark in effervescence being suggested, the candidate was handed a piece of paper, and required to write a prescription for it.

Clinical Medicine.

The Visitors attended, January 12, at 11 o'clock A.M., in the Meath Hospital, to witness the clinical examination of the two candidates who had been examined in medicine and surgery orally on the previous day. The examiners were Dr. Charles Moore and Dr. Bolland. By some misapprehension, the Visitors on enter-

Final Examination. Clinical Medicine.

ing the hospital were informed that Dr. Moore had not arrived; whereas it appeared afterwards that the examination was already going on in the out-door department. Upon this part of the examination, therefore, the Visitors are unable to record more than that it seemed to have occupied about half an hour, and was described as consisting in bringing three cases successively under the notice of the candidates. In one of the wards of the hospital in which the examination was exclusively conducted there were—(1) a case of mitral stenosis, with a very characteristic systolic murmur and the accentuation of the second sound; (2) a case of pneumonia in convalescence; (3) a case of broncho pneumonia; (4) a case of acute or subacute chest disease, the precise characters of which the Visitors did not ascertain. In another ward a case of secondary syphilis, with the usual skin and throat symptoms, was under observation; but owing to a similar oversight to the one above mentioned this part of the examination, which was conducted by Dr. Bolland, took place unknown to the Visitors. Three or four specimens of urine were provided—one being of saccharine, one or more of albuminous urine, and one the urine of one of the cases of pneumonia already mentioned. These were ample materials in themselves, apart from the examination above stated upon the extern cases, for an extremely searching clinical examination. But here, as in the case of the examination on the preceding day, there was perhaps a difficulty, with candidates confessedly weak, in judging how far the method of examination was calculated to develope fully what the materials were capable of affording. One of the candidates was set to examine a case of mitral stenosis for a few minutes in presence of the examiner, who watched him, and occasionally gave him hints as to what he was expected to do. Ultimately he had to write his opinion, which showed that it was a case of pericarditis. Founded on this mistaken idea, the treatment as of pericarditis was given very much as might be expected. But there was no attempt at precision in the statement of individual facts—*e.g.*, as to the murmur, still less as to the character of the second sound, or the relation of the murmur to the first sound—and therefore the Visitors, as they did not consider themselves at liberty to put any questions to the candidate, were left in doubt as to whether his mistaken diagnosis in reality indicated great ignorance or only an accidental oversight. The

Final Examination. Clinical Medicine. Remarks.

same vagueness attached to the account given of the case of chest disease. There was a great want of definiteness in the written statement of this case by the candidates, and the treatment accordingly was purely conventional. It is, perhaps, right to observe that the examiners, not being physicians to the hospital, had no previous knowledge of the cases, except what was derived from one of the physicians who attended at the commencement of the visit, but went away immediately afterwards, and did not take part in the examination. To this feature of the examination the same remark applies as in the case of the King and Queen's College of Physicians in Ireland. [*Vide* pp. 15, 99, 101.] The time allowed for the examination of each case was, moreover, very short, and, even with an able candidate, would not have permitted of his going into great detail. Allowance being made for these facts, the examination was most carefully conducted, and the questions put to the candidates were of a strictly practical kind. They were asked to write prescriptions for one or more of the cases examined, and questioned on the details of these prescriptions, as well as on the pathology, diagnosis, and prognosis. One of the candidates was questioned on the urine in a case of pneumonia, the urine being high coloured and of high specific gravity, allowing of a number of questions as to the quantity of urea, the relation of this to the specific gravity and to the functional efficiency of the kidney, &c. On all these points, however, the candidate showed himself so ignorant, that the examiner did not enter into any further detail, remarking to the Visitors that it was obviously useless. The other candidate was examined on saccharine and on albuminous urine, and seemed on the whole to show a fair amount of acquaintance with the tests. But beyond this there was very little use made of the specimens of urine or of the urinometer. A microscopic demonstration of a single tube cast had been prepared, but it was little referred to, and no other kinds of microscopic objects were provided. Owing to the case of secondary syphilis being in another ward, and the Visitors not being informed of this portion of the examination at the time, they can only say they were given to understand that the candidate did very well in regard to that case, and gave good prescriptions, as, indeed, both candidates did in the other cases, although showing themselves, as one of the examiners specially remarked, excessively ignorant as regards

Final Examination. Preliminary Education.

the Latin. This examiner (Dr. Bolland) stated to one of the Visitors that he had been on the Examining Board of the Apothecaries' Hall, in one capacity or other, over thirty years, and that his experience is distinctly to the effect that the preliminary education of the candidates who present themselves at the Apothecaries' Hall, instead of getting better, is growing worse. This statement, although beyond the confines of what the Visitors have set forth to themselves as the scope of their report, appeared so important, that they requested Dr. Bolland to reduce it to writing, in order to forward it to the President of the Medical Council. There was no surgical clinical examination.

PART III.

DOCUMENTS RELATING TO EXAMINATIONS.

THE following are documents relating to the various examinations inspected:

ROYAL COLLEGE OF SURGEONS, ENGLAND.

The following are the directions to candidates, the mode of marking, and the printed questions given at the primary and final examinations for the diploma of membership of this college in April, 1881:

[*Heading of Answer Book for Final Examination.*]

*Number*_____.

"The Candidate is required to write *legibly*, on one side only of the paper; to write his *number* on the line above; to prefix to each answer the number of the question to which it relates; to fold his book when completed vertically in three; to place on its outside the number assigned to him; to hand it to the presiding Examiner; and not to write his name on any part of the book. A Candidate detected in referring to any book or paper, or in copying from another Candidate, will be referred for six months, and the Candidate from whom he copies will be referred for a like period."

[*Mode of Marking.*]

PRIMARY EXAMINATION—MEMBERSHIP.

Anatomy.

Written Examination—	Maximum	. . .	10	. .	Minimum	. . .	3
Vivâ voce do.	do.	. . .	10	. .	Do.	. . .	3
	Total Maximum	.	20	. .	Total Minimum	.	6

Physiology.

Written Examination—	Maximum	. . .	10	. .	Minimum	. . .	3
Vivâ voce do.	do.	. . .	10	. .	Do.	. . .	3
	Total Maximum	.	20	. .	Total Minimum	.	6

Aggregate Minimum to pass whether in Anatomy or Physiology	8
	8
Total Aggregate Minimum . . .	16

N.B.—Rejection in either one or other of the subjects involves rejection in both.

PASS EXAMINATION—MEMBERSHIP.

Written Examination—		Maximum	. . .	10	. .	Minimum	. . .	3
Viva voce	do.	do.	. . .	5	. .	Do.	. . .	1
Do.	do.	do.	. . .	5	. .	Do.	. . .	1
Do.	do.	do.	. . .	5	. .	Do.	. . .	1
Do.	do.	do.	. . .	5	. .	Do.	. . .	1
			Total Maximum .	30	. .	Total Minimum	.	7

Aggregate Minimum required to pass a Candidate 15

DIPLOMA OF MEMBER.

ANATOMICAL AND PHYSIOLOGICAL EXAMINATION.

Anatomy.

April 1, 1881.

From 1 *to* 3 *o'clock p.m.*

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

1. Describe the Second Cervical Vertebra.

2. Describe the Greater and Lesser Sacro-Sciatic Ligaments. What Foramina do they respectively assist in forming? What structures pass through these Foramina?

3. Describe the Rectus Abdominis Muscle, and the Sheath within which it is contained. How is it supplied by bloodvessels and nerves?

4. Describe the Parotid Gland and its Duct. Enumerate the structures with which they are in relation.

5. Describe the Lateral Ventricles of the Brain.

6. Give the Dissection necessary to expose the course and distribution of the Posterior Interosseous Nerve.

ANATOMICAL AND PHYSIOLOGICAL EXAMINATION.

Physiology.

April 1, 1881.

From 4 *to* 6 *o'clock p.m.*

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

1. Describe the minute structure and the action of the Auriculo-Ventricular and Semilunar Valves of the Heart.

2. What is the Normal Temperature of the Human Body? Within what limits does it vary physiologically? How is it kept within these limits?

3. What are the functions of the Roots of the Spinal Nerves? By what experiments have these functions been determined?

4. Describe the minute Anatomy and the mode of action of the Œsophagus.

5. What is the evidence of the existence of a Respiratory Centre in the Medulla Oblongata? How is this centre excited to action?

6. Describe the varieties, the microscopic appearances, and the uses of Yellow Elastic Tissue, and state where these varieties are chiefly found.

Examination on the Principles and Practice of Medicine.

April 16, 1881.

From 1.30 *to* 3 *o'clock p.m.*

1. Describe the signs and symptoms of Pneumonia, the modes by which it can be distinguished from the disorders which resemble it, its ordinary course, results, and treatment.

2. What are the chief causes of Jaundice? Indicate the symptoms of the more important conditions which give rise to it, with the treatment proper to each.

3. State the therapeutical effects, preparations, and their doses, of Digitalis and Colchicum. Mention the chief components, effects, and doses of the following preparations:—Pilula Colocynthidis Composita, Pilula Hydrargyri Subchloridi Composita, Pulvis Kino Compositus, Pulvis Jalapæ Compositus, Pulvis Ipecacuanhæ Compositus, Mistura Sennæ Composita, and Mistura Ferri Composita.

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

April 14, 1881.

From 1.30 *to* 4.30 *o'clock p.m.*

Candidates *must* answer at least four (including one of the first two) of the six questions.

1. Give the Anatomy of Hunter's Canal and its Contents, and describe the operation for tying the artery therein.

2. Describe the relations of the Colon in its whole length. Name the operations in which that bowel is implicated.

3. Describe the fractures which occur at the lower end of the Humerus, and state how they may be distinguished from Dislocation.

4. Supposing Tracheotomy to have been performed on a Child for Acute Inflammation of the Larynx, describe, in detail, the subsequent management of the case.

5. Describe the mode of formation of Fistula in Ano.

6. To what causes may Enlargement of the Abdomen in a woman be due? How would you investigate such a case with a view to Diagnosis?

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The following are the regulations relating to education, examination, and qualification, and directions to candidates, the forms connected with marking, including the voting papers of the examiners, the notification to candidates as to whether the Court of Examiners was satisfied or not, and the printed questions given at the examinations in July, 1881:

ABSTRACT OF REGULATIONS AS TO EDUCATION AND EXAMINATION.

REGISTRATION.

Registered Pupils of the College.

A Student of any school of medicine recognised by the Council desiring to be registered as a pupil on the College books shall, if the Council think fit, be so registered if he shall have paid a registration fee of five guineas, for which credit will be given subsequently in his Examination fee. *No student can be admitted as a Candidate to any Examination for the Letters Testimonial, until he has been enrolled as a Registered Pupil of the College, and has also passed a Preliminary Examination.*

Privileges of Registered Pupils.

Registered Pupils of the College are admitted to the Preliminary Examination without further fee, and are permitted to study each week-day in the Museum, from ten o'clock A.M. to three o'clock P.M., and to read in the Library from ten o'clock A.M. to six o'clock P.M. They are also permitted to attend the Lectures on Comparative Anatomy, and to obtain a Certificate for such attendance, without payment of any fee.

Registration as a Medical Student.

The GENERAL MEDICAL COUNCIL requires that Students shall be registered *at the commencement of their Medical studies.* This registration is not undertaken by the College, and the Student must apply to the Medical Registrar, 35 Dawson Street, Dublin, in order that he may be so registered.

PRELIMINARY EXAMINATIONS.

All Students are required to pass their Preliminary Examination *before* entering upon their professional studies; and Certificates of attendance on Lectures, or at Hospital, will not be received by the College, if the commencement of those courses of study dates more than fifteen days antecedent to the passing of the Preliminary Examination.

The Preliminary Examinations are held Quarterly, viz.:—on the *third Wednesday* in *January*, *April*, *July*, and *October* in each year, and are free to Registered Pupils.

Subjects of Examination.

The following are the Subjects upon which each Candidate for the Preliminary Examination will be examined, viz.:

THE ENGLISH LANGUAGE, including Grammar and Composition.
ARITHMETIC, including Vulgar and Decimal Fractions.

ALGEBRA, including Simple Equations.
GEOMETRY, first two Books of Euclid.
GREEK AND LATIN, including Translation and Grammar.
IN GREEK—The Gospel of St. John, or the First Book of Xenophon's Anabasis, or the Dialogue of Lucian, entitled "Menippus or the Necromancy."
IN LATIN—The First and Second Books of the Æneid of Virgil, or the Jugurthine War of Sallust, or the Third Book of Livy.

Students who have passed any of the Preliminary Examination Boards recognised by the GENERAL MEDICAL COUNCIL (into which Greek enters as a compulsory subject) are exempt from the Preliminary Examination of this College.

Non-Registered Pupils, £1. 1*s*. Rejected Candidates, a further fee of £1. 1*s*. for each re-Examination.

Candidates are required to enter their names, and to pay their fees to the Registrar, at least six days before the day of Examination.

LETTERS TESTIMONIAL.

Qualifications of Candidates.

Candidates for the Letters Testimonial of the College may present themselves either at a Stated or a Special Examination, as hereinafter set forth.

Stated Examinations.

Stated Examinations are held in the months of April, July, and November, commencing on dates of which due notice shall be given beforehand by the Council of the College. Candidates *cannot be admitted to these Examinations unless they be Registered Pupils.* They will be divided into two classes—Junior and Senior.

JUNIOR CLASS.

Curriculum.

The Junior Class shall produce certificates of—

(*a*) Having passed a Preliminary Examination recognised by the GENERAL MEDICAL COUNCIL (into the curriculum of which the Greek Language enters as a compulsory subject), and of having attended the following Lectures:
(*b*) Three courses of Lectures on Anatomy and Physiology;
(*c*) Three courses of Lectures on Practical Anatomy, with dissections;
(*d*) Two courses of Lectures on Chemistry;
(*e*) One course of Lectures on Materia Medica;
(*f*) One course of Lectures on Botany; and
(*g*) One course of Lectures on Forensic Medicine.

Subjects of Examination.

This class shall be examined in Anatomy, Histology, Physiology, Materia Medica, and Chemistry.

Fees.

The fee for this Examination shall be five guineas (in addition to the Registration fee of five guineas). Neither of these fees are returned in case of rejection, but the Candidate on paying an additional fee of £2. 2*s*. will be admitted to re-Examination.

SENIOR CLASS.

Curriculum.

The Senior Class shall produce certificates of having attended the following Lectures:

(*a*) Three courses of Lectures on the Theory and Practice of Surgery;
(*b*) One course of Lectures on the Practice of Medicine;
(*c*) One course of Lectures on Midwifery;

Also certificates of attendance on—

(*d*) A recognised Hospital, for three Winter and three Summer Sessions*;

(*e*) Of instruction in Clinical Ophthalmology, three months; and Of attendance for one month at the Cow-Pock Institution, or some other institution approved of by the Council; or under the instruction of a Public Vaccinator specially recognised by this College for that Purpose.

Subjects of Examination.

This Class shall be examined in Surgery, Operative Surgery on the Subject, and Surgical Appliances, Practice of Medicine, Medical Jurisprudence, and Prescriptions. Each of these Examinations shall be partly written, partly *vivâ voce*, and partly practical.

Fees.

The fee for the Senior Class Examination shall be fifteen guineas, returnable to the Candidate in case of rejection, or to be allowed to him in case he presents himself a second time for the same Examination. A further fee of one guinea is to be paid to the Registrar.

Rejection Fees.

Every Candidate rejected at any of the Stated Examinations, on applying for re-examination, shall be required to pay to the College, in addition to the regular fees, the sum of two guineas to reimburse the College the necessary expense of his examination.

SPECIAL EXAMINATIONS.

Candidates seeking a Special Examination must make application to the Council, and, if admitted thereto, must pay five guineas, in addition to the fees for Stated Examinations.

The subjects for Examination, and the mode of carrying out a Special Examination, will be the same as those laid down for the Stated Examinations. The fees are the same as those for the Stated Examinations, as set forth above; and a rejected Candidate will only be entitled to receive back fifteen guineas of the fees lodged by him.

CONDUCT OF EXAMINATIONS.

Examinations of candidates for Letters Testimonial are held in April, July, and November, upon such days as the Council direct.

Candidates for Examination must return their Names to the Registrar of the College, and lodge their Fees and Certificates, one clear week before the day specified for Examination; and no Candidate who has not so returned his name, can be, under any consideration, admitted to these Examinations. Each Candidate shall have a number assigned to him, by which alone he will be recognised during the Examination.

Licentiates of a College of Physicians or Graduates in Medicine of a University recognised by the College, shall be examined in General and Descriptive Anatomy, Histology, Physiology, the Theory and Practice of Surgery, Operative Surgery, and Surgical Appliances; and if, after examination on these subjects, they be recommended for admission as Licentiates, they shall be so admitted.

Rejected Candidates will not be allowed to present themselves a second

* Candidates who have attended recognised Hospitals during three Winter Sessions of *six months* each, shall be considered to have performed sufficient hospital attendance; if they shall be able to produce certificates of regular daily attendance, during a like number of months at a County Infirmary or Provincial Surgical Hospital, containing at least fifty beds; provided the surgeons of such infirmaries or hospitals shall make returns to this College, in the months of May and November in each year of the number of students so attending.

time until after the expiration of three months from their first Examination, if the rejection takes place at any one of the Stated Examinations, or six months if it occurs at a Special Examination.

JUNIOR CLASS EXAMINATION.

The Candidates shall be examined in numerical order, and the Examination shall occupy three days, thus to be allotted :

1st Day—Printed Questions on Anatomy, Physiology, Materia Medica, and Chemistry ;

2nd Day—*Vivâ voce* Examination on the same subjects ;

3rd Day—Dissections and Histology.

No Candidate will be allowed to proceed to the second day's Examination who has not passed the first ; or to the third, who has not passed the second.

First Day—(Printed Questions.)

Four hours shall be devoted to the Examination, which are to be thus allotted :

10 to 12 A.M.—Anatomy ;

4 to 6 P.M.—Physiology, Materia Medica, and Chemistry.

Morning.—Twelve printed questions in Anatomy are given to each Candidate. These questions are to be such as all Candidates may be fairly expected to answer—answers to four of them only being required. If any Candidate has completed his papers before the end of the two hours, he may leave the hall upon handing them to the Examiner.

Afternoon.—During the second two hours (four to six o'clock), four questions in Physiology, three in Materia Medica, and three in Chemistry, are given, which questions also shall be such as all Candidates may be fairly expected to answer. The Candidate shall at least answer two questions in Physiology, one in Materia Medica, and one in Chemistry.

Books of ruled paper are supplied to each Candidate, in which his answers are to be legibly written. The Candidate's English and Orthography to be taken into account in adjudicating his marks.

At the conclusion of this day's Examination the Examiners read the answers, and at the expiration of twenty-four hours the whole Court meets to decide upon the marks. Each Candidate is then informed by letter as to whether he has or has not satisfied the Examiners.

Second Day—(Vivâ Voce).

The Oral Examinations commence at four o'clock, and each of four Examiners examines the Candidate for one quarter of an hour, at a separate table ; three of the Examiners on Anatomy and Physiology, and one on Materia Medica and Chemistry. The other Examiners act as assessors.

At the conclusion of each examination the Examiner shall express his opinion by a number, and hand same, on paper, to the presiding Councillor. When the Examinations are over, the whole Court of Examiners assembles to count the marks awarded to each Candidate. The Candidate is then informed by letter as to whether he has or has not satisfied the Examiners

Third Day—(Dissections and Histology).

Subjects are provided for this Examination, two Examiners and six Candidates being allotted to each subject, the Examination commencing at 10 A.M. Each Candidate is first to make a dissection of a region allotted to him ; half an hour, at least, being allowed him for this purpose. He is then examined on the Anatomy of that part, as well as upon the regions dissected by other Candidates. Two Examiners, conjointly, conduct this part of the Examination. The Candidate is next examined on preparations under the College microscopes by two of the Examiners.

Slides of different objects are placed under the microscopes, and five minutes are to be allowed each Candidate to examine them, before being questioned upon them.

The Examination being concluded, the Court of Examiners assembles and declares their votes. A list of both the passed and the rejected candidates is at once posted in the College Hall.

Senior Class Examination.

The Candidates are examined in numerical order, and the Examination of each Candidate occupies four days.

1st day.—Printed questions on Surgery, Practice of Medicine, Medical Jurisprudence, and Prescriptions.
2nd day.—Vivâ Voce examination on Surgery and Practice of Medicine.
3rd day.—Clinical Examination.
4th day.—Operative Surgery.

First Day—(Printed Questions).

Four hours are devoted to the Examinations. Surgery 10 to 12 o'clock A.M. Nine printed surgical questions are given, all of them being such as a Candidate may be fairly expected to answer—answers to six of them only being required. Practice of Medicine, Medical Jurisprudence, and Prescriptions, 4 to 6 o'clock P.M. Three written questions are given in Practice of Medicine, three in Medical Jurisprudence, and three in Prescriptions, all of them being such as a Candidate may be fairly expected to answer—answers to six of them only being required.

At the conclusion of this day's Examination the Examiners read the answers; and at the expiration of twenty-four hours the whole Court meets to decide upon the marks. Each candidate is then informed by letter as to whether he has or has not satisfied the Examiners.

Second Day—(Vivâ Voce).

The *Vivâ Voce* Examination, on Surgery and Practice of Medicine, is conducted—as in the Junior Class Examination—by four of the Examiners, each of whom examines, at a separate table, each of the candidates for one quarter of an hour; the four other Examiners act as assessors.

Third Day—(Clinical).

At the Clinical Examination, two Examiners are allotted to each set of Candidates (not to exceed ten). Every Candidate draws from a balloting-box, provided for the purpose, the name of the hospital in which he is to be examined, but no Candidate shall be examined in the hospital where he has been educated. Every Candidate is required to take notes of a case, and is questioned either upon it or some other case. He may be also called upon to bandage, or to adjust some surgical appliance.

Fourth Day—(Operative Surgery).

This Examination is conducted by the four Surgical Examiners. The questions are written upon cards, and deposited in the balloting-box, from which each Candidate draws a card and proceeds to perform the operation thereon indicated. He is questioned upon this, and he then performs a minor operation. He is also tested on his knowledge of surgical instruments and appliances. The Examination being concluded, the Court of Examiners assembles and declares their votes. A list of both the passed and the rejected Candidates is at once posted in the College Hall.

Rejected Candidates.

No Candidate shall present himself for examination on the second day

who has not satisfied his Examiners upon the first; but all Candidates who have passed any of these days' examinations shall get credit for same. When presenting themselves upon a subsequent occasion, rejected Candidates will be only required to recommence with the subjects of the day on which they have been remitted.

One Councillor is summoned to preside at each examination.

Declaration to be taken by Licentiates.

The Candidates entitled to receive their Letters Testimonial are required to attend a meeting of the Council, specially convened for the purpose, upon such day as shall be notified to them, and to take the following Declaration prescribed by the provisions of the Supplemental Charter:

"*I, A. B., do solemnly and sincerely declare and promise that I will observe and be obedient to the Statutes, Bye-Laws, and Ordinances of the Royal College of Surgeons in Ireland, and that I will, to the utmost of my power, endeavour to promote the reputation, honour, and dignity of the said College.*"

They then sign the College roll, and receive their diploma.

Fellowship.

Qualifications of Candidates.

Every Registered Pupil or Licentiate shall be admitted to examination for the Fellowship if he shall have laid before the Council—

Fees.

(*a*) A receipt showing that he has lodged in the Bank of Ireland, for the use of the College, if he be a Licentiate, the sum of twenty guineas, or thirty-five in case he be only a Registered Pupil: provided, in either case, he intends to reside beyond ten miles from Dublin. Should the Candidate intend to reside in Dublin, or within ten miles thereof, he shall lodge, if he be a Licentiate, thirty guineas; or if he be only a Registered Pupil, forty-five guineas. Fellows entering on the country list, who may subsequently settle as practitioners in Dublin, or within ten miles thereof, shall pay ten guineas to the College; also

Certificates.

(*b*) That he is twenty-five years of age;

(*c*) That he is a Bachelor of Arts of some University, or that he has been examined in such manner as the Council may from time to time direct, with a view to ascertain that he has obtained a liberal preliminary education.

(*d*) A certificate of general good conduct during his professional education; to be signed by two or more Fellows of the College;

(*e*) Certificates of attendance on the several courses of lectures, hereinbefore set forth as being required for letters testimonial, together with—

(*a*) One course of Lectures on Comparative Anatomy; and

(*b*) One course of Lectures on Natural Philosophy; also

(*f*) A Thesis on some Medical subject, or Clinical Reports, with observations, of six or more medical or surgical cases, taken by himself.

(*g*) Candidates of the required age, who shall have taken the degree of Bachelor of Arts in a British or an Irish University, and have complied with the foregoing regulations in other respects, will be admitted to examination at the end of five years of professional study, of which three years must have been passed in one or more of the recognised schools or hospitals.

(*h*) Certificates that he has been engaged in the acquisition of professional knowledge for a period of not less than six years, during three of which he must have studied in one or more of the schools and hospitals recognised by the Council. He may have studied for the other three years in any school or schools of the United Kingdom which shall be approved by the Council, or in any foreign school of repute; it is also required that the Candidate shall have had opportunities of practical instruction as house-surgeon or dresser in a recognised hospital.

Exemptions for Licentiates of Ten Years' Standing.

Licentiates of the College, who may not be able to show that they have followed the course of study specified in the preceding regulations, may, at the expiration of ten years from the date of their diploma, be admitted to the examination required for the Fellowship, provided they produce such evidence as shall be satisfactory to the Council that they have conducted themselves honourably in the practice of their profession. In their case the examinations shall be mainly clinical and practical, but in all other respects shall be conducted in the same manner, and occupy the same time, as those of other candidates.

FELLOWSHIP EXAMINATIONS.

Examinations for the Fellowship shall be held from time to time as the Council may direct.

Each Candidate is examined on two days, and five Examiners, at least, together with the President or the Vice-President of the College, and two members of the Council, must be present at each Examination.

The subjects of the first day's Examination shall be:

(*a*) Anatomy;
(*b*) Histology;
(*c*) Physiology (human and comparative); and
(*d*) Dissections.

Those of the Second:

(*a*) Clinical Surgery;
(*b*) Pathology;
(*c*) Therapeutics;
(*d*) The Theory and Practice of Medicine;
(*e*) The Theory and Practice of Surgery, incuding operations on the Subject.

No Candidate will be examined in "Dissections" and Histology whose answering in Anatomy and Physiology (human and comparative) has not satisfied the Examiners. Nor will a Candidate be allowed to commence the second day's examination unless he has passed in the subjects of the first; and if he fails to pass in Clinical Surgery he will not be examined in the other subjects appointed for this day's examination. But, if successful, he will be examined in these subjects, which he must also pass before he will be examined in Operative Surgery—in this also he must satisfy the Examiners, or he cannot be admitted a Fellow of the College.

In addition to the Oral Examinations, Candidates shall be required to give written answers to either written or printed questions.

Rejected Fellowship Candidates.

Candidates whose answering shall be found insufficient, shall not be allowed to present themselves a second time for examination until after the expiration of one year.

Diploma in Midwifery.

Qualifications of Candidates.

Every Candidate must be a Fellow or Licentiate of the College. He shall be admitted to an examination for the Diploma in Midwifery upon laying before the Council the following certificates:

(*a*) That he has attended one course of Lectures on Midwifery and Diseases of Women and Children, in some school recognised by the Council;

(*b*) Six months' practice of a Lying-in Hospital recognised by the Council, or of a Dispensary for Lying-in Women and Children, recognised by the Council, and devoted to this branch of Surgery alone; and

(*c*) That he has conducted thirty labour cases at least.

Fees.

The Candidate shall pay One pound six shillings for the Midwifery Diploma, provided he takes it out within one month from the receipt of his Letters Testimonial; if that period be exceeded, he shall pay a fee of Two pounds two shillings.

Midwifery Examination.

The Examination of Candidates for the Diploma in Midwifery is conducted by the Examiners in Midwifery, and such Examinations are held from time to time as the Council may direct.

Candidates for the Midwifery Diploma are examined on:

(*a*) The Organisation of the Female;
(*b*) The Growth and Peculiarities of the Fœtus;
(*c*) The Practice of Midwifery; and
(*d*) The Diseases of Women and Children.

A rejected Candidate is not again admitted to examination until a period of three months shall have elapsed, and is then obliged to produce satisfactory evidence of his having been engaged during that period in the study of Midwifery.

PAPERS CONCERNING THE CONDUCT OF THE EXAMINATIONS.

Notice.

Candidate's number only to be given. Each Examiner to be answered in a separate book.

Answers of Candidate No._____

to Mr._____'s Questions in_____

Directions to the Candidate.

This book is to be returned to the Examiner without mutilation.

The blank side of each leaf is meant for your rough work; the copy which you intend the Examiner to read is to be written on the ruled pages.

If you wish to make any erasure, draw your pen through the part which is to be struck out. But on no account is any leaf to be cut or torn.

The Examiners will give a second book to any candidate who requires it.

In each exercise attention should be paid to handwriting and to correctness of expression.

_____ 18 .

CANDIDATES FOR THE JUNIOR CLASS DISSECTIONS EXAMINATION.

	Number of Candidate	Passed	Stopped	Number of Candidate	Passed	Stopped	Number of Candidate	Passed	Stopped

_____ 18 .

JUNIOR CLASS EXAMINATION.

10 o'clock	Candidates' Numbers	4 o'clock—Member of Council.

_____ 18 .

CANDIDATES FOR THE SENIOR CLASS CLINICAL SURGERY EXAMINATION.

	Number of Candidate	Passed	Stopped	Number of Candidate	Passed	Stopped	Number of Candidate	Passed	Stopped

_____ 18 .

CANDIDATES FOR THE SENIOR CLASS OPERATIVE SURGERY EXAMINATION.

	Number of Candidate	Passed	Stopped	Number of Candidate	Passed	Stopped	Number of Candidate	Passed	Stopped

Candidate's No._____

EXAMINATION VOTING PAPERS.

Anatomy.

Candidate's No. _____

EXAMINATION VOTING PAPERS

Chemistry and Materia Medica.

Dublin,_____188 .

ALBERT HALL.

The Court of Examiners is (or is not) satisfied with the answering of Candidate No._____.

_____

Senior Member of the Court.

To Candidate No._____

[*This paper is sent to each candidate by post after each section of his Examination.*]

QUESTIONS SET IN THE WRITTEN EXAMINATION OF THE "FIRST HALF."

The Candidate is to write an answer to only ONE of the Questions on this paper; but the Examiner will not read the answer of any Candidate whose number does not appear on the front page of the book in which it is written.

SESSIONAL EXAMINATIONS.

July, 1881.

Anatomy.

10 o'clock A.M. to 12.

Examiner—Mr. E. A. STOKER.

1. Describe the profunda femoral artery, its relations, collateral branches, and anomalies.

2. Give the course, relations, branches, and ultimate distribution of external popliteal nerve.

3. Give the attachments and uses of flexor pollicis longus, its relations as seen in the leg, behind the internal ankle, and in sole of foot.

The Candidate is to write an answer to only ONE of the Questions on this paper; but the Examiner will not read the answer of any Candidate whose number does not appear on the front page of the book in which it is written.

Anatomy.

10 o'clock A.M. to 12.

Examiner—Mr. HENRY GRAY CROLY.

1. Describe the medulla oblongata.

2. Enumerate the structures entering into the formation of the scalp; and describe the attachments and connections of the occipito-frontalis muscle.

3. Describe the trachea; give its length and relations, especially the vascular.

The Candidate is to write an answer to only ONE of the Questions on this paper; but the Examiner will not read the answer of any Candidate whose number does not appear on the front page of the book in which it is written.

Anatomy.

10 o'clock A.M. to 12.

Examiner—Mr. WILLIAM THOMSON.

1. Compare the seventh cervical, second dorsal, and second lumbar vertebræ.

2. Give the origins, insertions, and relations of the two portions of the splenius muscle.

3. Describe the anterior and posterior spinal arteries, and mention the various vessels which anastomose with them in their course.

The Candidate is to write an answer to only ONE of the Questions on this paper; but the Examiner will not read the answer of any Candidate whose number does not appear on the front page of the book in which it is written.

Anatomy.

10 o'clock A.M. to 12.

Examiner—Dr. BENJAMIN MCDOWELL.

1. Describe, in their relative positions, all the parts seen on the under surface of the liver.

2. Describe the course and relations of the external iliac artery.

3. The mode of formation, attachments, and relations of the "conjoined tendons."

The Candidate is to write answers to only TWO of the Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which they are written.

Physiology.

4 o'clock P.M. to 6.

Examiner—Mr. ROBERT L. SWAN.

1. What are the constituents found in saliva? What are the uses of the secretion?

2. What are the histological appearances of voluntary muscular fibre?

3. Give a concise account of the rhythm of the heart, and the causes of the heart's sounds.

The Candidate is to answer ONE of the Chemistry and ONE of the Materia Medica Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which it is written.

Chemistry and Materia Medica.

4 o'clock P.M. to 6.

Examiner—WILLIAM FRAZER.

Chemistry.

1. Prepare carbonic acid. Give its tests, and determine the exact amount present in atmospheric air, using symbols.

2. What is quicklime? State fully its preparation and tests, using symbols.

3. Give all the combinations of oxygen with iron; distinguish those which can form salts, and give their tests, employing symbols.

Materia Medica.

1. Stramonium; describe it fully, with its uses and preparations, and their average doses.

2. Morphia, quinia, and strychnia; how are they recognised? Briefly describe the effects of each, and their average medical doses. State also what quantity would be liable to cause dangerous results.

3. What "inhalations" are directed in the Pharmacopœia? How are they made, and what are their uses in medicine?

QUESTIONS SET IN THE WRITTEN EXAMINATION FOR THE "SECOND HALF."

The Candidate is to write answers to only TWO of the Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which they are written.

Prescriptions.

4 o'clock P.M. to 6.

Examiner—Dr. WILLIAM FRAZER.

1. Prescribe quinine as a tonic.

2. Prescribe bromide of potassium for epilepsy.

3. Prescribe foxglove for heart disease with dropsy.

Write one of these prescriptions with the usual symbols, and the other in Latin in full.

The Candidate is to write answers to only TWO of the Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which they are written.

Jurisprudence.

4 o'clock P.M. to 6.

Examiner—Dr. WILLIAM FRAZER.

1. What ill effects may carbolic acid cause, and state the treatment you would advise?

2. Tartrate of antimony. What dose would you consider dangerous, the symptoms likely to occur, their treatment, and the mode of detecting this poison after death?

3. What is meant by a child being viable, and state fully the most conclusive evidences of mature birth?

The Candidate is to write answers to only TWO of the Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which they are written.

Surgery.

10 o'clock A.M. to 12.

Examiner—Mr. HENRY GRAY CROLY.

1. What are the symptoms of fractured ribs? Mention the complications which may arise, and the treatment you would adopt in complicated and in uncomplicated cases.

2. What is the most frequent situation of permanent stricture of the male urethra? Give its pathology, and mention the complications which may arise; and describe at least two methods of treating permanent stricture.

3. What is epulis, and give its most frequent position? Contrast the benign with the malignant form, and describe a case in which you would decline operative interference.

The Candidate is to write answers to only TWO of the Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which they are written.

Surgery.

10 o'clock A.M. to 12.

Examiner—Mr. E. STAMER O'GRADY.

1. Give the leading clinical and histological features of epithelioma.

2. What is meant by the term "chronic rheumatic arthritis"? Give the symptoms of the affection, and the pathological appearances, living and post-mortem.

3. What is meant by the term "chilblain"? Give its causes and treatment.

The Candidate is to write answers to only TWO of the Questions on this paper; but the Examiner will not read the answers of any Candidate whose number does not appear on the front page of the book in which they are written.

Surgery.

10 o'clock A.M. to 12.

Examiner—Mr. B. WILLS RICHARDSON.

1. Describe the sebaceous tumour; mention its varieties, mode of formation, most common situation, and its treatment.

2. Give the ordinary causes, symptoms, the varieties, and treatment of traumatic tetanus.

3. Give the symptoms and treatment of aneurism by anastomosis.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

The following are the instructions to examiners, notice to examiners in reference to candidates defective in their general education, tabular form of examiner's report, directions to candidates, and the printed questions given to candidates at the examination in April, 1881, together with the bye-laws relating to licentiates of this college :

Instructions to Examiners.

I. The written answers of all Candidates under examination to be read by two Examiners.

II. The Oral Examination of each Candidate to be conducted in the presence of two Examiners at the same table.

III. The Practical and Clinical Examinations to be conducted in such manner as the Examiners may consider best calculated to test the knowledge of the Candidate.

The Examination on the Practice of Surgery to include Operations on the dead body, for which a subject will be provided.

IV. No Candidate to be rejected unless the two Examiners on the subject in which he fails shall agree in their decision, and in the case of a difference of opinion, the other Examiners shall be appealed to.

V. An Examiner is not, in any case, to take part in the examination of a Candidate from his own Hospital or School.

HENRY A. PITMAN,
Registrar.

Notice to Examiners.

The Examiners in Professional Subjects are requested to report to the College any cases in which decided ignorance in General Education has been displayed by the Candidates, with the name of the Board or Boards before which the preliminary Examinations have been passed.

REPORT ON EXAMINATIONS.

*Examiner*_____ *Date*_____ 18

Name of Candidate	Written	Oral	Clinical	General Conclusion

Directions to Candidates.

Candidates are prohibited, *under pain of instant dismissal*, from introducing any book or manuscript into the Examination Room, from communicating with or copying from each other, and from communicating with any person outside the Examination Room.

Every candidate is desired to write his name *very distinctly* at the top of the first page of each of his answer-books, and to give them, before he leaves the room, to the Examiner present.

Name _____

Heading to Clinical Answer Books.

Candidates are requested to bear in mind that the examination of patients must be conducted with gentleness, and so as not to injure them.

QUESTIONS SET IN THE EXAMINATION FOR THE LICENCE (SECOND PART).

APRIL, 1881.

Anatomy and Physiology.

1. Describe, in their relative position, the contents of the subclavian portion of the posterior triangle of the neck. (The boundaries of this space are the omo-hyoid and sterno-cleido-mastoid muscles, and the middle third of the clavicle).

2. Trace the great sciatic nerve from its origin to the ultimate distribution of its branches.

3. Describe the right auricle of the heart in the adult and in the fœtus.

4. Describe ciliated epithelium. In what parts of the human body is it found?

5. Describe the skin, giving the minute structure of its several parts and appendages.

6. In what structural and functional respects do the anterior roots of spinal nerves differ from the posterior roots? Describe their several attachments to the spinal cord, and indicate the path of impulses between them and the cerebrum.

EXAMINATION FOR THE LICENCE (THIRD PART, OR FINAL).

APRIL, 1881.

Principles and Practice of Surgery.

1. Describe the operation of ligature of the external iliac artery. Under what circumstances would you perform it? Through what vessels is the collateral circulation in the limb carried on after the vessel has been tied?

2. Describe the operation of left lumbar colotomy. Under what circumstances would you consider the operation advisable?

3. What are the causes which may produce hæmorrhage from the bladder? How would you diagnose it from hæmorrhage from the kidney? State your treatment in each case.

4. Describe briefly the various forms of ulceration of the tongue. To what causes are they due? What would be your treatment in each case?

5. A man is brought into the hospital with a penetrating wound of the belly. State what symptoms would lead you to believe the bowel has been wounded. How would you treat your patient if you detected wounded intestine?

6. Give the symptoms, progress, and treatment of a case of interstitial corneitis.

Three hours.

Midwifery and the Diseases of Women.

1. Mention the various causes of delay in the third stage of labour. Give the treatment applicable to each.

2. What are the cases which require the performance of the Cæsarian section? Describe the operation minutely, and give the after management.

3. What are the varieties of puerperal convulsions? Give their diagnosis and treatment.

4. Describe the varieties of breech presentation, the mechanism of labour with breech presentation, and its management.

5. What are the causes of uterine hæmorrhage in women who have passed the climacteric? How would you diagnose them from each other?

6. A woman æt. 33 has had five children and two miscarriages, the last three and a half years ago. Shortly afterwards she began to complain of pain, referred to the left lower abdomen, and from this she has never since been free. Her catamenia generally anticipated, and the pain before and during the period was always severe, obliging her to keep her bed for some days. She was admitted into hospital with symptoms of parametritis occupying the left half of the pelvis. Under the usual treatment these symptoms began to subside, when suddenly she was seized with intense pain in the abdomen, and after some hours became collapsed and died. What was the chronic disease in this case? How would you have treated the attack of parametritis? And what was the cause of death?

Principles and Practice of Medicine.

1. Describe an attack of variola confluens; mention what other varieties of the disease are met with, and their chief features. State what conditions most influence the prognosis, and what treatment should be adopted to meet the several exigencies.

2. Describe the diseases designated tinea circinnata and herpes circinnatus, and their appropriate treatment.

3. Describe an attack of delirium tremens, its possible complications and risks, and the treatment you would employ.

4. What are the morbid appearances, the physical signs, and the general symptoms of the several stages of croupous pneumonia? Describe in detail the treatment which you would employ in this disease.

5. Give the causation, symptoms, and treatment of chronic mercurial poisoning.

6. Describe the common forms of constipation, and the treatment which in each case you would adopt.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

The Licence of this College is a Qualification to practise Medicine, Surgery, and Midwifery, and is recognised by the Poor Law Board as a qualification in Surgery as well as in Medicine.

The College will, under its Charter, grant Licences to practise Physic, including therein the practice of Medicine, Surgery, and Midwifery (which Licences are not to extend to make the Licentiates Members of the Corporation) to persons who shall conform to the following By-laws.

By-Laws relating to Licentiates.

Section 1.

Every Candidate for the College Licence (except when otherwise provided by the By-laws) who commenced Professional Study after the *25th day of March*, 1880, will be required, at the times prescribed in Section II. for the respective Examinations, to produce satisfactory evidence :

1. Of having passed, before the commencement of Professional Study, one of the Preliminary Examinations on subjects of General Education recognised by the General Medical Council. (*See* Regulations of the General Medical Council, to be obtained of the Registrar, 315 Oxford Street, London, W.)
2. Of having been Registered as a Medical Student, in the manner prescribed by the General Medical Council, at least forty-five months previously to admission to the Third or Final Examination, unless specially exempted.

Note A.—Professional studies commenced before registration, except in the cases of Chemistry, Materia Medica, Botany, and Pharmacy, will not be recognised.

3. Of having been engaged in Professional Studies at least forty-five months, during which not less than three Winter Sessions and two Summer Sessions shall have been passed at one or more of the Medical Schools recognised by the College. One Winter Session and two Summer Sessions may be passed in one or more of the following ways :
   - (*a*) Attending the Practice of a Hospital, Infirmary, or other Institution duly recognised as affording satisfactory opportunities for Professional Study ;
   - (*b*) Receiving Instruction as a Pupil of a legally qualified Practitioner having opportunities of imparting a practical knowledge of Medicine, Surgery, or Midwifery ;
   - (*c*) Attending Lectures on one or more of the required subjects of Professional Study at a duly recognised place of instruction.
4. Of having received instruction in Chemistry, including Chemical Physics, meaning thereby Heat, Light, and Electricity.
5. Of having received instruction in Practical Chemistry.
6. Of having received instruction in Materia Medica.
7. Of having received instruction in Botany.
8. Of having received instruction in Practical Pharmacy.

Note B.—By this is meant instruction in Practical Pharmacy by a registered Medical Practitioner, or by a Member of the Pharmaceutical Society of Great Britain, or in a public hospital, infirmary, or dispensary.

9. Of having attended a course of Lectures on Anatomy.

10. Of having performed Dissections during not less than twelve months.

11. Of having attended a course of Lectures on General Anatomy and Physiology.

12. Of having attended a separate Practical course of General Anatomy and Physiology.

13. Of having attended a course of Lectures on the Principles and Practice of Medicine.

14. Of having attended a course of Lectures on the Principles and Practice of Surgery.

15. Of having attended a course of Lectures on Midwifery and Diseases peculiar to Women.

A Certificate must also be produced of attendance on not less than Twenty Labours, which Certificate must be signed by one or more legally qualified practitioners.

16. Of having undergone Systematic Practical Instruction in the Departments of Medicine, Surgery, and Obstetric Medicine.

Note C.—Under this clause the candidate will be required to show that he has been personally exercised in practical details, such as—

1. The application of anatomical facts to the investigation of disease.
2. The methods of examining various organs in order to detect the evidence of disease or the effects of accidents.
3. The employment of instruments used in diagnosis and treatment.
4. The examination of normal and diseased structures, whether recent or in a museum.
5. The chemical examination of morbid products.
6. Operations on the dead body.
7. Post-mortem examinations.

17. Of Instruction and Proficiency in the practice of Vaccination.

Note D.—The certificate must be such as will qualify its holder to contract as a public vaccinator under the regulations, at the time in force, of the Local Government Board.

18. Of having attended a course of Lectures on Pathological Anatomy.

19. Of having attended Demonstrations in the *post-mortem* room during the whole period of attendance on Clinical Lectures. (See Clause 22.)

20. Of having attended a course of Lectures on Forensic Medicine.

21. Of having attended, at a recognised Hospital or Hospitals, the practice of Medicine and Surgery during Three Winter and Two Summer Sessions.

Note E.—No metropolitan hospital is recognised which contains less than 150, and no provincial or colonial hospital which contains less than 100 patients.

A three months' course of clinical instruction in the wards of a recognised lunatic hospital or asylum, may be substituted for the same period of attendance in the medical wards of a general hospital.

22. Of having attended during nine months Clinical Lectures on Medicine, and also during nine months Clinical Lectures on Surgery, and of having been engaged during a period of Three months in the Clinical Study of Diseases peculiar to Women.

23. Of having discharged the duties of a Medical Clinical Clerk during six months, and of a Surgical Dresser during other six months.

Note F.—These duties may be discharged at a general hospital, infirmary, or dispensary, or parochial or union infirmary, duly recognised for this purpose, or in such other manner as shall afford sufficient opportunity for the acquirement of practical knowledge.

The Certificates of Attendance on the several courses of Lectures must include evidence that the Student has attended Examinations in each Course.

Section II.

Professional Examinations.

There are three Professional Examinations, called herein the First Examination, the Second Examination, and the Third or Final Examination, each being partly written, partly oral, and partly practical.

These Examinations will commence on the First, Second, and Third Mondays of the months of February, April, July, October, and December, unless otherwise appointed.

Every Candidate intending to present himself for Examination is required to give fourteen days' notice in writing to the Registrar of the College, at the same time transmitting the necessary Certificates.

Office hours from Twelve to Six; Saturdays from Twelve to Two.

The First Examination.

The subjects of the First Examination are :—

Chemistry and Chemical Physics, meaning thereby Heat, Light, and Electricity.
Materia Medica, Medical Botany, and Pharmacy.
Osteology.

Synopses indicating the range of Subjects in the Examinations, in Chemistry, and in Materia Medica, Medical Botany, and Pharmacy may be obtained together with the Regulations.

A Candidate will be admitted to the First Examination on producing evidence of having been registered as a Medical Student by the GENERAL MEDICAL COUNCIL, and of having complied with the regulations prescribed in Section I. Clauses 4, 5, 6, 7, and 8, page 2.

The Fee for admission to the First Examination is Five Guineas, being part of the entire Fee for the License; and if a Candidate be rejected, he will be required to pay an additional Fee of Three Guineas before re-admission to the Examination.

A Candidate rejected in the First Examination will not be re-admitted to Examination until after the lapse of three months from the date of rejection.

The Second Examination.

The subjects of the Second Examination are :—

Anatomy.
Physiology.

A Synopsis indicating the range of subjects in the Examination in Physiology may be obtained with the Regulations.

A Candidate will be admitted to the Second Examination on producing evidence of having passed the First Examination, of having completed, subsequently to registration as a Medical Student, eighteen months of Professional Study at a recognised Medical School or Schools, and of having complied with the Regulations prescribed in Section I., Clauses 9, 10, 11, and 12, page 2.

The Fee for admission to the Second Examination is Five Guineas, being part of the entire Fee for the License; and if a Candidate be rejected, he will be required to pay an additional Fee of Three Guineas before re-admission to the Examination.

A Candidate rejected in the Second Examination will not be re-admitted to Examination until after the lapse of not less than three months from the date of rejection.

The Third or Final Examination.

The College does not admit to the Third or Final Examination any Candidate (not exempted from Registration) whose name has not been entered in the Medical Students' Register at least forty-five months, nor till the expiration of two years after the passing of the Second Examination.

The subjects of the Final Examination are:—

Medical Anatomy and Pathology, including Morbid Anatomy; and the Principles and Practice of Medicine.
Surgical Anatomy and Pathology, including Morbid Anatomy; and the Principles and Practice of Surgery.
Midwifery and diseases peculiar to Women.

Forensic Medicine, Public Health, and Therapeutics are subjects included in the Final Examination.

A Candidate will be admitted to the Third or Final Examination on producing evidence:—

1. Of being Twenty-one Years of age.
2. Of Moral Character.
3. Of having passed the Second Examination.
4. Of having studied Medicine, Surgery, and Midwifery in accordance with the regulations prescribed in Section 1., Clauses 3 and 13 to 23, pages 2, 3, and 4.

The Fee for admission to the Third or Final Examination is Five Guineas, being part of the entire Fee for the License, and if a Candidate be rejected, he will be required to pay an additional Fee of Three Guineas before re-admission to the Examination.

A Candidate rejected in the Third or Final Examination will not be re-admitted to Examination until after the lapse of six months from the date of rejection.

The Fee for the License is Fifteen Guineas.

All Fees must be paid three days prior to the day on which the Examination commences.

Any Candidate who shall produce satisfactory evidence of having passed an Examination on any of the subjects of the First Examination, conducted at a University in the United Kingdom, in India, or in a British Colony, will be exempt from re-examination on those subjects in which he has passed.

Any Candidate who shall produce satisfactory evidence of having passed an Examination on Anatomy and Physiology, conducted by the Royal College of Surgeons of England, or the Royal College of Surgeons of Edinburgh, or the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, after a course of Study and an Examination satisfactory to the College, will be exempt from re-examination on those subjects.

Any Candidate who shall produce satisfactory evidence of having passed an Examination on Anatomy and Physiology required for a Degree in Medicine or Surgery at a University in the United Kingdom, in India, or in a British Colony, after a Course of Study and an Examination satisfactory to the College, will be exempt from re-examination on those subjects.

Any Candidate who shall have obtained a Degree in Surgery at a University in the United Kingdom, after a Course of Study and an Examination satisfactory to the College, will be exempt from re-examination on Surgical Anatomy and Pathology, including Morbid Anatomy, and on the Principles and Practice of Surgery.

Any Candidate who shall have passed the Examination on Surgery con-

ducted by the Royal College of Surgeons of England, or the Royal College of Surgeons of Edinburgh, or the Royal College of Surgeons in Ireland, or the Faculty of Physicians and Surgeons of Glasgow, after a Course of Study and an Examination satisfactory to the College, will be exempt from re-examination on Surgical Anatomy and Pathology, including Morbid Anatomy, and on the Principles and Practice of Surgery.

Any Candidate who shall have obtained a Foreign Qualification which entitles him to practise Medicine or Surgery in the country where such Qualification has been conferred, after a Course of Study and an Examination equivalent to those required by the regulations of the College, shall, on production of satisfactory evidence as to age, moral character, and proficiency in vaccination, be admissible to the Pass Examination, and shall be exempt from re-examination on such subjects as shall in each case be considered by the Censors' Board to be unnecessary

Every Candidate before receiving the College License shall be required to pledge himself by subscribing his name to the following words :—*I faithfully promise to observe and obey the Statutes, Bye-laws, and Regulations of the College relating to Licentiates, and to submit to such penalties as may be lawfully imposed for any neglect or infringement of them.*"

Each Licentiate shall have the following Form of Qualification to practise Medicine, Surgery, and Midwifery given to him, under the Seal of the Corporation, signed by the President and by the Examiners :—*I, A.B., President of the Royal College of Physicians of London, with the consent of the Fellows of the same College, have, under the authority given to us by Royal Charter and Act of Parliament, granted to C.D., who has satisfied the College of his proficiency, our License under the said Charter, to practise Physic, including therein the practice of Medicine, Surgery, and Midwifery, so long as he shall continue to obey the Statutes, Bye-laws, and Regulations of the College relating to Licentiates : in witness whereof, we have this day set our Seal and Signatures.*

Dated at the College, the _____ *day of* _____ *in the year of our Lord* _____."

Signed _____ *President.*

_____

_____

_____ } *Examiners.*

_____

_____

_____

N.B.—This document shall be signed by the Licentiate with his usual signature, and by the Registrar with the following words :—" *I certify that C.D., to whom this License has been granted by the College, and whose Signature is subjoined, has been duly admitted to practise Physic, as a Licentiate of the College, and that such License is a legal authority to him to practise Medicine, Surgery, and Midwifery, and to dispense Medicines, but only to those who are his own patients.*"

Licentiate _____

Registrar _____

KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND.

The following are the directions to candidates, the forms for the clinical examination, and the forms of marking papers both for the individual examiners and for the combined Court of Examiners, together with the printed questions at the primary and final examination, July, 1881 :—

MONTHLY EXAMINATIONS.

Answers of Mr._____
to Doctor_____'s Questions in_____

Directions to the Candidate.

This book to be returned to the Examiner without mutilation.

The blank side of each leaf is meant for your rough work ; the copy which you intend the Examiner to read, is to be written on the ruled pages.

If you wish to make any erasure, draw your pen through the part which is to be struck out. But on no accouut is any leaf to be cut or torn, or unnecessary spaces left between the answers.

The Examiner will give a second Book to any Candidate who requires it.

In each Exercise attention should be paid to Spelling, Handwriting, and to correctness of Expression.

KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND.

CLINICAL EXAMINATION

of Mr._____

Held at_____Hospital,

_____day of_____, 18

_____ *Clinical Examiner.*

Note.—The Candidate is required to fill in each blank in this paper.

KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND.	*Diagnosis.* — State, briefly and distinctly, the principal malady from which the patient is suffering, or, if you consider him to be free from disease, state your opinion to that effect.	State any leading symptom, or physical sign, on which your diagnosis is based.	*Treatment.*—Direct such medical treatment as the case now requires. Write a prescription in full.
Case of_____ Examined by_____ Clinical Examiner, Dr._____ Signature of Candidate, _____			

Dr._____ Examiner in_____

Date,_____ 18

The Examiner is requested to insert in the Table the Judgments he allots to the Candidates for their Answers to the Questions put by him, in the Clinical, Written, and *Vivâ Voce* Examinations. A separate number is to be recorded for the reply to each Question attempted by the Candidate.

When the Court of Examiners assembles to make their combined Award, the Examiner is requested to take into consideration the Candidate's Answering on all the Subjects.

The Judgment of each Examiner shall be as follows:—"Pass"—"Pass if"—"Reject unless"—"Reject."

Remarks	Candidates' Names	Clinical	Papers							Vivâ voce						Final Judgment on oral and written examination
		Judgment	1	2	3	4	5	6	Judgment	1	2	3	4	5	Judgment	

Combined Report of Censors on the Final Examination for the License to Practise Medicine.

The Judgment of each Examiner shall be given as follows:—"Pass"—"Pass if"—"Reject unless"—"Reject."

"Pass"—shall mean that there is no doubt in the Examiner's mind as to the answering of the Candidate being such as to justify his passing.

"Pass if"—shall mean that the Candidate has reached a *minimum* standard, but no more, and that the Examiner will only agree to his passing *if* the other Examiners are of the same opinion.

"Reject unless"—shall mean that the Candidate's answering has barely reached the minimum standard, and the Examiner will reject him *unless* the other Examiners are strongly in his favour.

"Reject"—shall mean that the Candidate's answering is so far below the minimum standard, that there is no doubt in the Examiner's mind as to his unfitness to pass.

When the Court of Examiners assembles to consider their combined Award, each Examiner is requested, before giving his final vote, to take into account the Candidate's Answering on all the subjects of Examination.

Names	Clinical Medicine		Medicine and Pathology	Medicine and Therapeutics	Midwifery	Hygiene and Medical Jurisprudence	Final Judgment of the Court of Examiners	Remarks
	I.	II.						

Date,_____ 18

Signature of the Vice-President,_____

Chairman.

QUESTIONS SET IN THE FIRST PROFESSIONAL EXAMINATION, JULY, 188 .

Anatomy.

DR. WALTER G. SMITH, V.P.

1. Define the position of the claustrum, the nucleus lenticularis, and the fenestra rotunda.

2. Describe the glandular structures found in the mucous membrane of the small and large intestine.

3. Origin, nervous supply, and relations of the external pterygoid muscle.

4. Describe the small bones of the tympanum as to form, relative position, and attachments.

5. Describe the ligaments and joints of the larynx.

Chemistry.

DR. DUFFEY.

1. How is the atomic weight of an elementary gas ascertained?

2. State the laws of chemical combination, and give an example of each.

3. For what purpose is the B. P. test solution of $H_2C_4H_4O_6$ used?

4. Give and explain the B. P. process for the detection of lead in acetic acid.

5. Describe the preparation of H_2S, and express by an equation its action on a solution of ferric chloride.

6. Write the formula of chlorate of potassium. Explain how it is made, and how oxygen is obtained from it.

Materia Medica.

DR. J. W. MOORE.

1. State the composition of the following officinal preparations:—*Pulvis Antimonialis, Vinum Antimoniale, Pilula Phosphori, Liquor Arsenici Hydrochloricus, Pulvis Kino Compositus.*

2. How may *Scammony* (*Scammonium*) be distinguished from *Resin of Scammony* (*Scammoniæ Resina*)? Enumerate the preparations of both.

3. What *Solutions* in the Pharmacopœia are of the uniform strength of *four grains* of the active ingredient to *the ounce.*

4. How is *Aromatic Spirit of Ammonia* prepared, and into the composition of what tinctures does it enter?

5. Write a prescription in Latin or in English, but without abbreviations, for the administration of *Cinchona Bark* in effervescence.

Physiology.

DR. PURSER.

1. Describe the decussation of the pyramids in the medulla oblongata, and give the course of the motor conductors in the cord after their crossing.

2. Give a brief sketch of the nervous mechanism by which the movements of the heart are maintained and regulated.

3. What are the changes which the blood undergoes in its passage through the lungs? Give, as far as you can, the way in which each of these changes is brought about.

4. Describe the changes which a proteid undergoes when submitted to gastric digestion.

5. What do you mean by apnœa? What is the theory of this condition usually held?

6. Describe the act of deglutition.

Questions for Final Examination for Licence.

Practice of Medicine.

Dr. Walter G. Smith, V.P.

1. What diseases are the cæcum and its appendix liable to? Treatment of acute inflammation in or about the cæcum?

2. Mention the different varieties of diarrhœa, and indicate the principles of treatment.

3. In the absence of tumour, how would you endeavour to distinguish between carcinoma of the stomach, gastric ulcer, and chronic dyspepsia?

Pathology.

Dr. Walter G. Smith, V.P.

1. Pathology of "late rigidity" following a hemiplegic seizure? What paths do the motor conductors pursue before and after decussation?

2. What do you understand by Cheyne-Stokes respiration, and how do you account for the phenomenon?

3. Causes of thrombosis of the cerebral sinuses? Mention the chief peculiarities of the intra-cranial circulation.

Medical Jurisprudence and Hygiene.

Dr. Harvey.

1. Define the terms "irritant" and "corrosive" as applied to poisons. Enumerate some of the most common members in each class.

2. What is meant by the term "fatty embolism"? What injuries is it supposed to follow? What are the symptoms of the condition during life, and the evidences after death?

3. Give the *post-mortem* evidences of death from starvation.

4. To what is the hardness of water due? Give the mode of determining the degree of hardness.

5. What is the law as to the vaccination of infants? Give the method of performing the operation, the evidences that it has been successful, and the circumstances which would induce you to postpone its performance.

6. How much cubic space is considered necessary for each patient in a Fever Hospital? How would you heat and ventilate a ward?

Midwifery.

DR. MACAN.

1. How would you determine theoretically the probable termination of pregnancy? Describe the results of the physical examination of a woman six months pregnant.

2. Give the various indications for the use of the long and short forceps? Describe the operation with the long forceps.

3. What affection has been described under the name Weed? How would you treat it? What is the more modern theory of its causation?

4. Dividing *post-partum* hæmorrhage into three degrees, give the symptoms and treatment of each.

5. What are the symptoms of over-lactation? How would you treat it?

6. Describe the different varieties of stem pessaries. In what cases has it been proposed to use them? What dangers are connected with their use?

Practice of Medicine.

DR. HAWTREY BENSON.

1. Describe the symptoms and treatment of acute dysentery.

2. Give the various causes, and the diagnosis of—(*a*) hypertrophy of the left ventricle of heart; (*b*) dilatation of the right ventricle.

3. What are the symptoms of paralysis of the *portio dura*? How may you distinguish cases in which the lesion is situated—(*a*) within the skull; (*b*) in the portion which passes through the temporal bone; (*c*) outside the stylo-mastoid foramen?

Therapeutics.

DR. HAWTREY BENSON.

1. Enumerate the various purposes for which enemata are administered; prescribe examples.

2. What means have we of diminishing temperature in fever, and how are they employed?

3. Write a note on the use of inhalations in lung disease.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH.

The following are the instructions for the guidance of examiners for the "double qualification," notice to candidates, form of declaration to be signed by candidates, and printed questions given at the examinations in April and October, 1881 :—

Instructions for the Guidance of Examiners for the Double Qualification.

1. The value attached to the answers at the Written and Oral Examinations shall be expressed in figures: 100 shall indicate a complete answer. Lower numbers shall be assigned according to the value of the answers.

2. In the case of the First Professional Written Examination, no Candidate shall be admitted to the Oral Examination unless he has obtained at least 50 per cent. in two of the subjects, and not less than 30 per cent. in the third.

3. In the case of the Second Professional Written Examination, no Candidate shall be admitted to the Oral Examination who has obtained less than 50 per cent. in any two of the six subjects of examination; and should he have obtained less than 30 per cent. in one of the subjects of Medicine, Surgery, or Midwifery, he shall not be admitted to an Oral Examination.

4. No Candidate shall be allowed to pass who has not obtained at least 50 per cent. in every subject of the First and Second Oral Examinations, irrespective of his numbers in the Written Examinations.

5. In the Final Oral Examination, the marks gained in Systematic and Clinical Medicine, and in Systematic and Clinical Surgery respectively, may be added together, but no Candidate shall be allowed to pass whose combined numbers in each of these two conjoined subjects do not amount to 100. And if any Candidate obtains in either Clinical or Systematic Medicine, or in either Clinical or Systematic Surgery, less than 30 per cent., he shall not be allowed to pass.

6. At both the First and Second Oral Examinations, each Candidate shall appear before two Examiners in every subject. While one of the Examiners is conducting the Examination, his colleague shall note down in a schedule provided for the purpose, the topics of Examination.

Notice.

The first part of the Written Examination will go on from 11 A.M. till 3 P.M. From 3 to 4 P.M. there will be an interval of one hour. The second part of the Written Examination will begin at 4 P.M., and go on till 6 P.M.

Candidates will learn results, and obtain Billets for the Oral Examination, on applying at the College at 9 P.M.

Each Candidate is requested to pay particular attention to the following directions as to the folding and signing of his papers.

He should begin his work by signing his name at the top of every sheet of paper that he is about to use. When he has finished his answers to the

questions on any one of the subjects, he should put the sheets on that subject together, *and fold them twice in half; first with the lower margin over the upper one, and then with the line of folding over the margins.* On the back of the folded paper, across its top, he should then, in a legible hand, write the *name of the subject*, and below this *sign his name.* When the various papers have thus been folded and signed, the Candidate must enclose them together with the India-rubber strap, and hand them to the superintending Examiners before he leaves the room. He must also hand to the Examiners *the copies of the printed questions* that he has been using.

N.B.—It need scarcely be said that any Candidate would render himself liable to be immediately expelled, if he should, whilst in the Examination-room make use of books, notes, or manuscripts; or should talk to another Candidate; or should in any other way attempt either to give or obtain assistance in answering the questions of the Examination.

I hereby declare that I have not within the last three months been rejected by any Licensing Board in any of the subjects of the Examination for which I now wish to appear before the Royal College of Physicians of Edinburgh.

Name_____

Address_____

Date_____

This declaration has been in force about one year.

Questions set in the Second Professional Examination for the Double Qualification.

The printed Questions to be returned by the Candidate along with his written Answers.

XII.

Practice of Medicine.

Four Questions, of which *Three* are to be answered, and not more.

1. What is the meaning of the terms Peripheral, Spinal, and Cerebral, as employed in relation to Paralysis? How would you differentiate these varieties of Paralysis from each other, and how would electricity assist you?

2. What is Hæmoptysis? Explain its relation to disorders of the lungs and heart.

3. Name the various vegetable parasitic diseases of the skin, and their chief seat.

4. Describe the rationale of the dietetic treatment of Diabetes Mellitus, stating the kinds of food and drink which may be allowed, and those which must be forbidden.

Materia Medica.

Three Questions, of which *Two* are to be answered, and not more.

1. Describe the method of preparation of Bromide of Potassium; the form the crystals assume; its solubility, its uses, and how it is supposed to produce its hypnotic effect.

2. Enumerate the tinctures of Opium, and give their composition and doses.

3. Give the sources of Colchicum. Name the officinal preparations, their doses and actions.

Prescription.

Write a prescription in unabbreviated Latin for a pill containing Belladonna and Oxide of Zinc, for the relief of sweating in Phthisis.

Surgery.

Four Questions, of which *Three* are to be answered, and not more.

1. What is the Pathology of the affection known as Enlarged Prostate. Mention its symptoms, complications, and treatment.

2. Describe the operation of amputation at the Knee, known as "Carden's," and contrast it with any of its modifications; also the methods known as "Teale's," and by "double-flap," as respects suitability to cases demanding operation.

3. Describe the Symptoms, Pathology, and Treatment of Pulsating Tumours of the Orbit.

4. What are the typical forms of Sarcoma? With what normal tissues is Sarcoma allied? What degenerative changes may occur in these tumours? In what respect are they Malignant?

Surgical Anatomy.

Two Questions, of which *One* only is to be answered.

1. Name the cavities which communicate with the Nares. Indicate the situation of their openings of communication.

2. Describe the anatomical relations of the Lymphatic Glands in the axillary cavity, as bearing on the operation for their extirpation in carcinoma.

QUESTIONS SET IN THE FIRST PROFESSIONAL EXAMINATION.

The printed questions to be returned by the candidate along with his written answers.

VI.

Anatomy.

Four Questions, of which *Three* are to be answered, and not more.

1. Mention the structures in immediate relation to the temporo-maxillary articulation, and describe their relative position.

2. Mention the attachments, relations, and actions of the diaphragm.

3. Give the origin, relative anatomy, and distribution of the posterior tibial artery.

4. Name the branches of the lumbar plexus. Enumerate the parts supplied by the obturator nerve.

Physiology.

Three Questions, of which *Two* are to be answered, and not more.

1. What are the effects of dividing cervical sympathetic, and then stimulating the upper end (*a*) on the iris, the blood-vessels, and the temperature?

2. State the manner in which (*a*) lacteal vessels (*b*) lymphatic vessels commence. State their several functions, and by what means their contents reach the heart. Describe their structure and that of a lymphatic gland. What changes are the blood corpuscles believed to undergo in a lymphatic gland?

3. Describe the minute structure of the retina, and explain colour blindness in accordance with physiological facts.

VII.

Chemistry.

Two Questions must be answered, and not more.

1. State how chlorine is prepared. What are its principal properties?

2. Define a salt, and state the relations that subsist between acids, bases, and salts.

3. Name the varieties of true sugars; state their sources, and give their properties and tests.

Questions set in the Second Professional Examination for Double Qualification.

The printed questions to be returned by the candidate along with his written answers.

XII.

Midwifery.

Three Questions, of which *Two* are to be answered, and not more.

1. How would you diagnose and treat a case of twins?

2. What is the condition known as "hour glass contraction" of the uterus, and how would you treat it?

3. What non-septic inflammatory conditions are liable to arise within the pelvis after parturition? How would you diagnose and treat them?

Medical Jurisprudence.

Two Questions only to be answered, of which the *Third Question* must be one.

1. Should a dead body be discovered with marks of burning on it, what appearances would justify you in certifying that the burning had occurred during life? How far can these appearances be imitated after death?

2. State the proceedings adopted in the detection of blood stains, specifying the chemical tests, and especially the hæmin test. What is the distinction between human globules and those of birds, reptiles, and fishes.

3. What are the antidotes for arsenic and corrosive sublimate? Explain their action, and, in the case of arsenic, by means of symbols.

THE FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The following are the forms supplied to the examiners, consisting of notice as to when the examination papers will be called for, marking papers and tabular form for the combined reports on the subjects for the second professional examination, a form for the clinical examination, an examination notice to candidates, the system of marking, and the printed questions at the examinations for the primary and final of this body, and also for the double qualification of this corporation in conjunction with the Royal College of Physicians of Edinburgh :—

[There are no printed directions to candidates beyond a caution against the use of books and other clandestine aids during the examination.]

Notice.

The examiner will please fill up the accompanying slip, and return it to the secretary along with the examination papers.

The officer will call for the papers on_____

EXAMINATION IN_____

DATE_____

No.	Name	Marks	
		Written	Oral

_____ *Examiner.*

_____ *Examiner.*

1. The maximum mark is 100.
2. The average pass mark is 50.

First Professional Examination.

Date _____ 18

No.	Name	Anatomy		Physiology		Chemistry		Result
		Written	Oral	Written	Oral	Written	Oral	
1	Mr.							
2	Mr.							

Second Professional Examination.

Date _____ 18

No.	Name	Surgery		Clinical Surgery	Medicine		Clinical Medicine	Materia Medica		Mid-wifery		Medical Juris-prudence		Result
		Written	Oral		Written	Oral		Written	Oral	Written	Oral	Written	Oral	
1	Mr													
2	Mr.													

Examination in Clinical _____

Hospital in which examination is conducted _____

Date of examination _____ 18

No.	Names of Candidates	Marks	Subjects in which Examined
1			
2			

Signature of Examiners,

_____

_____

Examination Notice.

Examination in clinical_____

Day of examination_____

Hour of do._____ o'clock.

No. of candidates_____

Hospital in which examination will take place_____
Infirmary.

In the wards of Dr._____

Clinical Examiners, { Dr._____ / Dr._____

ALEXANDER DUNCAN,
Secretary.

Primary Examination.

Intimation as to Time and Place of Examination.

1. Oral, in anatomy, in_____ on_____
beginning at_____ o'clock.
2. „ in physiology, in Faculty Hall, on_____
beginning at_____ o'clock.
3. „ in chemistry, in Faculty Hall, on_____
beginning at_____ o'clock.

Final Examination.

Intimation as to Time and Place of Examination.

1. Clinical Surgery, in_____ Infirmary, on_____
beginning at_____ o'clock.
2. Clinical Medicine, in_____ Infirmary, on_____
beginning at_____ o'clock.
3. Oral examination on all the subjects will begin in the Faculty Hall at_____ o'clock.

System of Marking.

1. In any part (written, clinical, or oral) of the examination on a subject, the maximum mark is 100.

2. In all parts (written, clinical, and oral) of the examination on a subject, the average pass mark is not less than 50. In each subject the arithmetical sum of the marks of a Candidate inthe different parts of the examination is taken.

3. In each of the subjects, *Anatomy*, *Physiology*, *Chemistry*, *Materia Medica*, *Midwifery*, and *Medical Jurisprudence*, the Candidate will pass if the sum of the marks for the two parts (written and oral) of the examination amount to 100; if under 100, he is rejected.

4. In each of the subjects, *Medicine* and *Surgery*, the Candidate will pass if the sum of the marks in the three parts (written, clinical, and oral) of the examination amount to 150; if less, he is rejected.

5. It is left to the Examiners individually to determine the mode in which they shall form their judgment as to what mark shall be given; whether by assigning a value to each question with reference to the maximum 100, and thus making the mark express the arithmetical sum of the value assigned to each answer; or, by way of making the mark indicate the general impression made on the mind of the Examiners by the answers of the Candidate [In the written examination the Examiners generally adopt the former method, and in the clinical and oral, the latter.]

6 If the two Examiners on any subject are unable to agree as to the mark to be given, the mark entered in the summation schedule will be half the sum of the marks assigned by the Examiners individually.

QUESTIONS SET IN THE PRIMARY EXAMINATION.

Anatomy.

1. Describe the sternum, mentioning its articulations, and the muscles attached to it.

2. Describe fully the scalenus anticus muscle.

3. Give the origin, course, relations, and distribution of the ulnar nerve.

4. Trace the facial artery from its origin to its termination, and name the branches it gives off in its course.

5. The scalp having been dissected, describe the measures necessary to be taken to remove the brain from the cranial cavity, naming in their proper order the structures cut through in the course of its removal.

6. Describe the position, relations, and structure of the prostate gland.

Physiology.

1. Describe the minute structure of the lung, and the changes which the air and the blood undergo during respiration.

2. Describe the coagulation of the blood; mention the principal conditions that accelerate or retard it, and give a short account of the most modern theory of coagulation.

3. What are the physical and chemical actions of the various digestive fluids on the food?

4. What effects follow:—
   (*a*) Division of both vagi at the middle of the neck;
   (*b*) Stimulation of the upper end;
   (*c*) Stimulation of the lower end.

5. Identify specimens 1, 2, 3, 4 under the microscope.

Chemistry.

1. Describe the methods of preparing mercurous and mercuric chlorides, and give the tests for each.

2. How would you test for nitric acid in a dilute solution?

3. Find the temperature of the following mixture: Two pounds of steam at 114° centigrade; four pounds of water at 39° centigrade; ton pounds of ice at 21° centigrade.

4. Uric acid: (1) How would you separate it from urine? (2) Give the most characteristic test for it.

5. Explain the general constitution of fats, and describe how they may be saponified.

Questions Set in the Final Examination.

Medicine.

1. Give an account of the various morbid breath sounds; explain their causes and pathological significance.

2. What are the symptoms of Bell's palsy? What are the causes of the disease? Describe the treatment.

3. What symptoms would lead you to suspect cirrhosis of the liver? In what respects might the history and physical signs confirm your suspicions?

4. What are the different organic lesions which produce general dropsy? How do they severally act, and what is the best palliative treatment?

Materia Medica.

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

2. State the ordinary hypnotic dose of chloral hydrate, and the extent to which it may be safely pushed.

3. Mention the botanical source, characters, preparations, and therapeutical uses of camphor.

4. From what is quinia derived? How is it best administered? In what doses is it given as an antipyretic, as an antiperiodic, and as a tonic?

Surgery.

1. What are the various causes of stricture of the œsophagus; and what should be the treatment under the respective conditions? Mention any sources of immediate danger as the disease advances, or in the treatment that may be adopted.

2. What is spina bifida? Mention the symptoms which may present themselves during the progress of the disease, and what treatment might be pursued.

3. Describe the general characters of varicocele, the usual conditions observed in the scrotum and testis in connection with it, and the treatment to be recommended for its relief.

4. When does onychia maligna usually present itself? With what conditions of constitution may it be associated, and what treatment would you prescribe?

5. Describe the pathological changes usually observed in the course of scrofulous disease of the knee joint—(*a*) when it begins in the synovial membrane; (*b*) when it commences in the bone.

What treatment would be suitable for the various stages, and to what extent would the prognosis be influenced by other conditions?

6. Describe the general and minute characters of a carcinoma. In what tissues is it more commonly found, and after removal under what conditions does it recur.

Midwifery.

1. Give the causes, diagnosis, and treatment of a funis presentation.

2. Describe the various forms of contracted pelvis.

3. State what is meant by "vicarious menstruation," and what treatment you would adopt in such cases.

4. Mention the various causes of the protraction of the second stage of labour.

5. Give the causes and treatment of hæmorrhage in the third stage of labour.

Medical Jurisprudence.

1. What natural diseases simulate poisoning by opium, and how may a diagnosis be made in a doubtful case? How might you detect the presence of opium in organic mixtures?

2. What are the comparative rates of putrefaction as it occurs in air, water, earth?

3. How can you distinguish between coma arising from alcohol and that from opium?

4. Describe minutely the appearances to be expected upon the neck of a person which has died from hanging.

FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Surgery.

1. What are the various causes of stricture of the œsophagus? Give the suitable treatment in each case.

2. Describe the amputation of the hip joint, detailing the means by which you would control hæmorrhage.

3. In what cases of head-injury would you trephine? Describe the operation, and state the precautions necessary in performing it.

4. Describe the surgical treatment of a case of empyema, and detail any difficulties likely to be encountered in the course of the treatment.

5. Enumerate in order the anatomical structures which form the hairy scalp, and describe the proper mode of treating a scalp wound.

6. What is the most common cause of convergent strabismus in a child? How is the deformity to be remedied?

Medical Jurisprudence.

1. In cases of cerebral hæmorrhage, what characters might enable you to distinguish between that arising from violence and that from disease?

2. What are the symptoms and *post-mortem* appearances likely to result from an overdose of phosphorus?

2. What would be the *prima facie* assumption as to the nature of death—whether suicidal or homicidal—in the following cases, viz.:

Drowning,
Hanging,
Strangulation?

Give your reasons for the views you may suggest in each case.

4. What are the characters of a male child which has reached the period of seven months intra-uterine life?

Midwifery.

1. Enumerate the causes likely to induce premature expulsion of the ovum.

2. Give the diagnosis of the four breech positions.

3. Causes and diagnosis of inversion of the uterus.

4. Describe the method of using the perforator on cranium, and indicate the preferable spot for perforating.

5. Describe in their order the obstetric operations for reducing the size of the head of child.

Medicine.

1. What are the leading symptoms of delirium tremens, and which distinguish this disease from meningitis and typhus fever? What would be your general treatment of such an illness?

2. Describe the symptoms in a case of inflammatory croup occurring in a child. How would you combat these, and what symptoms would indicate the necessity of tracheotomy?

3. What are the signs and symptoms of emphysema, and the results of this disease on the body generally? What are the outlines of treatment?

4. What are the symptoms of acute peritonitis, its causes, and most appropriate treatment?

Materia Medica.

1. What are the preparations of bismuth? State their effects, proper doses, and in what diseases you would prescribe them.

2. Give in a tabular form the preparations containing opium, or its chief constituents which are mostly used, adding the proper doses for an adult.

3. Mention the different anthelmintics or vermifuges, indicating against what worms each is most applicable, and in what dose and mode of administration.

4. Write a prescription in unabbrievated Latin for an expectorant mixture.

Anatomy.

1. Describe the articular surfaces and the ligaments at the radio-carpal joint.

2. Enumerate in a definite order the structures which are transmitted into the sole of the foot between the inner ankle and the os calcis.

3. Describe the dissection required to expose the subclavian artery in the third part of its course, and give the relations of the vessel.

4. Describe the lower jaw, indicating the points where muscles are attached to it.

5. Classify the following nerves into motor, sensory, and compound, and state from what trunk each is derived: frontal, phrenic, recurrent laryngeal, chorda tympani, external saphenous, gustatory, hypoglossal, and musculo-spiral.

6. Give the position, connections, relations, and structure of the spleen.

Physiology.

1. Give a short account of the functions exercised by the Medulla Oblongata.

2. Describe the mechanism by which the rays of light are brought to a focus in the retina and accommodation made for near and distant objects.

3. Describe the changes effected by the digestive fluids on (1) common salt, (2) cane sugar, (3) grape sugar, (4) albumen, (5) fat, (6) starch.

4. Mention the various kinds of muscular stimuli, physical and chemical, and describe the changes that occur in voluntary muscle during its contraction.

5. Identify under the microscope specimens I., II., III., IV.

Chemistry.

1. Give two distinct reactions by means of which hydrogen may be obtained from water. Give equations for each reaction.

2. How would you test for Iodine (1) in the free state, (2) in combination.

3. What chemical changes occur when a candle burns in oxygen? How may each of the products be identified?

4. In what way does charcoal act as a disinfectant?

5. Give in detail the process by which urea may be obtained from urine.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

Practice of Medicine.

Four Questions, of which *Three* are to be answered, and not more.

1. What are the most common causes and seats of Cerebral Hæmorrhage? Describe the symptoms of an Apoplectic seizure.

2. Define Chlorosis. Describe the vascular and cardiac murmurs which accompany it. State how it is best treated.

3. Describe the character of the pulse in the different valvular lesions of the heart.

4. Describe the phenomena following Vaccination. What precautions are to be observed in performing it? Describe the characters of a good cicatrix.

Materia Medica.

Three Questions, of which *Two* are to be answered, and not more.

1. State the composition, actions, and doses of the following preparations:—Tartar Emetic, Antimonial Powder, Plummer's Pill and Antimonial Wine.

2. Name the officinal plants belonging to the order Solanaceæ, and state their common properties, various preparations, and doses.

3. Name the different kinds of Senna. How may its griping action be prevented? Name the various preparations of Senna, and their doses.

Prescription.

Write a prescription in unabbreviated Latin for a Hypnotic draught containing Chloral.

Surgery.

1. Describe a double harelip, and the operation which you would perform for its remedy.

2. What is meant by pedunculated exostosis? Describe its clinical characters, usual situation, and treatment.

3. What are the causes and most suitable treatment of ozaena?

4. Describe the anatomy of the principal veins and artery at the flexure of the elbow, and their relation to one another. Detail the various steps of the operation of blood-letting in this situation.

5. What is meant by spermatocele? In what cavity is the fluid contained? Discuss its probable mode of origin.

6. Detail the symptoms, special dangers, and suitable treatment of a case of enlarged prostate in an elderly patient.

Midwifery.

1. *Enumerate* the signs of pregnacy and *describe* those that are considered certain.

2. Describe the conditions that warrant the induction of premature labour.

3. *Mention* the various means employed to induce labour, and describe those now commonly in use.

4. Give a short description of the causes which may produce protraction of the first stage of labour.

5. Describe the local impeding on the part of the mother which may produce protraction of the second stage of labour.

Medical Jurisprudence.

1. What appearances would indicate murder by hanging, and subsequent immersion with a view to the concealment of the crime?

2. What chemical means might enable you to detect, during life, the administration of the following poisonous substances, viz.:

(*a*) Phosphorus.
(*b*) Arsenious Acid.
(*c*) Cantharides.

3. Mention the various ways in which it has been proposed to restore suspended animation in persons apparently drowned.

4. Differentiate a *post-mortem* from a vital wound.

APOTHECARIES' SOCIETY OF LONDON.

The following are the regulations of the Court of Examiners relating to examinations, rules affecting students, marking papers, regulations to be observed by students intending to practise as apothecaries in England and Wales, and written questions at the examinations visited:

APOTHECARIES' HALL, LONDON.

Regulations of the Court of Examiners relating to all Candidates for Examination, 1881.

The Court of Examiners meet in the Hall every Wednesday and Thursday, where candidates are required to attend at half-past four o'clock.

Every candidate intending to offer himself for examination must give seven days' notice previous to the day of examination, and must at the same time deposit all the required certificates, with the fee, at the Office of the Beadle, where attendance is given daily, from ten to four o'clock; Saturdays, ten to two.

The certificates being found correct, a card to admit the candidate will be sent, stating the day and hour of examination.

The examination of candidates is divided into two parts, and is conducted partly in writing and partly *vivâ voce*. The written examination will take place on Wednesday, and the *vivâ voce* examination on Thursday.

First Examination,

Which may be passed after the Second Winter Session, embraces the following subjects:

Physicians' Prescriptions and Pharmacy.
Anatomy and Physiology (including an examination on the living subject).
General and Practical Chemistry.
Materia Medica and Botany.
Histology.

Second Examination,

At the termination of the Medical Studies:

Principles and Practice of Medicine (including an examination of one or more patients).
Pathology and Therapeutics.
Midwifery, including the Diseases of Women and Children.
Forensic Medicine and Toxicology.
Microscopical Pathology.

CERTIFICATES REQUIRED OF CANDIDATES FOR

The First Examination.

1. Of having passed an examination in Arts, recognised by the MEDICAL COUNCIL.

This Examination must be passed before the commencement of *Medical Studies*. Medical studies commenced before the Candidates shall have passed an Examination on the subject of General Education will not be recognised.

2. Of having completed the Curriculum of Study to the close of the Second Winter Session; of having attended three months' Practical Pharmacy; and of good moral conduct.

The course of Medical Study required for a License shall occupy at least four years, of which not less than three Winter and two Summer Seasons shall be passed at any recognised School Hospital. The following will be recognised and considered equivalent to eighteen months' study, in addition to the two years and a half above mentioned.

1. Attendance on the practice of a Hospital or other Public Institution recognised by this Hall for that purpose.

2. Instruction as the Pupil or Assistant of a registered Practitioner, Physician, or Surgeon to a Hospital, General Dispensary, or Union Workhouse, or where such opportunities of Practical Instruction are afforded as shall be deemed satisfactory.

Second or Pass Examination.

1. Of having completed four years' medical study, including the period spent at the hospital; of being twenty-one years of age; and of good moral conduct.

2. Of having passed the first examination.

3. Of having completed the prescribed Curriculum of Study, including a personal attendance of twenty cases of midwifery (a certificate will be received from any registered practitioner); and of having received instructions in Practical Vaccination, and vaccinated not less than twenty cases (this certificate must be obtained from a Public Vaccinator recognised by the Local Government Board).

MODIFIED EXAMINATIONS.

1. All Graduates in Medicine of British Universities will be admitted to a Clinical and General Examination in the Practice of Medicine, Pathology, and Midwifery.

2. Licentiates of the Royal College of Physicians, London; of the Royal College of Physicians, Edinburgh; of the Royal Colleges of Physicians and Surgeons, Edinburgh; of the King and Queen's College of Physicians, Ireland; of the Faculty of Physicians and Surgeons, Glasgow; and of the Apothecaries' Hall, Dublin, will be admitted to a Clinical and *vivâ voce* examination in the Practice of Medicine, Pathology, Midwifery, Forensic Medicine, and Toxicology.

3. Any candidate who has passed his first examination for the License of the King and Queen's College of Physicians, Ireland; the joint License of the Royal College of Physicians and Surgeons, Edinburgh; or for the single License of the College of Physicians, Edinburgh; the License of the Faculty of Physicians and Surgeons, Glasgow; the first Professional Examination for the Degree of M.B., or Master in Surgery in the Universities of Oxford, Cambridge, London, or Durham; or the first Examination for the License of the Apothecaries' Company, Dublin; the first and second Examination of the Royal College of Physicians, London; or the second part of the Professional Examination for the Degree of M.B. or Master in Surgery, in the Universities of Glasgow, Aberdeen, St. Andrews, and Edinburgh; or the first and second examination for Medical and Surgical Degrees in the Irish Universities, will be admitted to examination, partly in writing and partly *vivâ voce*, in Practice of Medicine (including Clinical Medicine), Pathology, Therapeutics, Midwifery, Forensic Medicine, and Toxicology. And those candidates who have not undergone an examination in Anatomy, Materia Medica, or Botany, will, in addition, be examined *vivâ voce* on those subjects.

4. Members of the Royal College of Surgeons, England; Licentiates of the Royal College of Surgeons, Edinburgh; and Licentiates of the Royal College of Surgeons, Ireland; and all Candidates who have passed the first Anatomical Examination of the Royal College of Surgeons,

England; the Royal College of Surgeons, Edinburgh; and the Royal College of Surgeons, Ireland, will have to undergo the two examinations, but are exempt from writing on Anatomy and Physiology in their first examination.

5. The cases of Graduates of Colonial and Foreign Colleges or Universities will be considered on their respective merits.

Each qualified candidate, unless registered, will be required to produce his diploma.

Any candidate who presents himself for the first examination and is rejected, may be admitted to re-examination at the expiration of three calendar months.

A candidate who presents himself for the second or pass examination and is rejected, cannot be admitted to re-examination until the expiration of six calendar months.

FEES.—For the first examination, three guineas, which sum is retained in case of rejection, and accounted for subsequently.

For the second examination, three guineas.

For an entire examination, six guineas, half of which is retained in case of rejection, and accounted for subsequently.

Post Office Orders to be made payable at Ludgate Circus Office, E.C., to

THOMAS R. WHEELER,
Secretary to the Court of Examiners.

January 1, 1881.

APOTHECARIES' SOCIETY OF LONDON.

EXAMINATION IN ARTS.

Regulations.

This Examination will be held at the Hall of the Society on Thursday and Friday, January 26 and 27, April 20 and 21, September 21 and 22.

The Examination will be conducted by means of printed papers.

Candidates will be examined in the following branches; and no Candidate will be approved unless he show a competent knowledge of each Branch of the Examination:

I. The English Language.
II. English History.
III. Modern Geography.
IV. The Latin Language.
V. Mathematics.
VI. Elementary Mechanics.
VII. One of the following subjects, at the option of the Candidate:
  (*a*) Greek.
  (*b*) French.
  (*c*) German.
  (*d*) Elementary Chemistry.

The Examinations will take place in the following order:

Thursday Morning, 10 to 11.30.	The English Language.
Thursday Morning, 11.30 to 1.	English History and Modern Geography.
Thursday Afternoon, 2 to 4.	The Optional Subject.
Friday Morning, 10 to 11.30.	The Latin Language.
Friday Morning, 11.30 to 1.	Mathematics
Friday Afternoon, 2 to 4.	Mechanics.

After the conclusion of the Examination, the Examiners will publish Lists of such Candidates as have passed, arranged in two classes; the names in the first class will be placed in order of merit; those in the second class in alphabetical order. In the course of the following week Certificates will be forwarded by post to each of the successful Candidates.

* Syllabus of Subjects for Examination, 1882.

I. *The English Language.*
Including Grammar and Composition. Writing Sentences in correct English upon a given theme. Writing correctly from Dictation. Explaining the Construction of Sentences. Pointing out the Grammatical Errors in Sentences ungrammatically expressed. Giving the Derivation and Definition of Words in common use.

II. *English History.*
The Leading Events and Persons of each Reign.

III. *Modern Geography.*
Special attention is directed to Europe.

IV. *The Latin Language.*
Including Translations from the Original, and Grammar.
January Examination. Horace: Odes, Book III., 1 to 20.
April Examination. Virgil: Æneid, Book IV.
September Examination. Livy: Book II., Caps. i. to xl.

V. *Mathematics.*
Arithmetic, including Vulgar and Decimal Fractions.
Algebra, including Simple Equations.
The first two Books of Euclid, or the subjects thereof.

VI. *Elementary Mechanics.*
Of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics.
The Candidate is allowed to pass this subject either as preliminary or before or at the first professional Examination.

VII. (*a*) *Greek.*
Homer: Odysseus, Books I. and II.
(*b*) *French.*
D'Aubigne: Histoire de Bayart. Translation from English into French; Grammatical Questions.
(*c*) *German.*
Schiller: Don Carlos.
(*d*) *Elementary Chemistry.*
Inorganic.

The fee for each Examination is One Guinea,† which in case of rejection will not be returned.

A Notice in the subjoined form, and written in accordance with the following directions, must be sent, with the fee, to Mr. James C. Sargeant, at the Apothecaries' Hall, at least *one week* before the day of Examination. All that part of the form printed in italic letters, with the blanks duly filled up, must be written out on note paper in the Candidate's usual handwriting; and this must be done in the presence of

* [Note.—The Examiners recommend the study of one of the following:
English—Angus's, Adams's, or Mason's Grammar, and, in addition, Trench's English Past and Present, and Earle's Philology.
English History—Smith's Smaller History of England, or the Student's Hume.
Modern Geography—Cornwell's or Lawson's Modern Geography.
Mechanics—Wormell's or Newth's Natural Philosophy, or Girdlestone's Mechanics.
Chemistry—Roscoe's Elementary Chemistry.]

† Post Office Orders are to be made payable at the Ludgate Circus Office, E.C.

a Magistrate, Clergyman, or registered Medical Practitioner, who will certify as in the final clause.

I, _____(Write Name in full)_____
residing at _____(Address by post)_____
intend to present myself for the Preliminary Examination in Arts, at the Apothecaries' Hall, London, on the _____,
and I intend to take _____ *as my optional subject.*

*Signature*_____

The above has been WRITTEN and signed in my presence, by the above-named Candidate, with whom I am personally acquainted.

Signature_____
Address_____

Date_____

Certificates in Arts granted by any of the Bodies whose Certificate is recognised by the Medical Council, will be accepted from Candidates who present themselves at the Professional Examination at the Hall, as equivalent to their having passed the above Examination.

Candidates are recommended to take particular care of the Certificates, as no second Certificate can in any case be issued.

THOMAS R. WHEELER,
Secretary to the Board of Examiners.

APOTHECARIES' HALL, LONDON, E.C.

Chemistry.

Candidates will be expected to show a competent knowledge of the general principles of Chemistry, including the laws of Chemical Combination. The Atomic Theory. Specific Gravity. The general properties and laws of diffusion of Gases. The constitution of the atmosphere, the construction and principles of Barometers, Thermometers, Air Pumps, and Galvanic Batteries. Latent and Specific Heat;—and the sources or modes of preparation, principal properties, compounds, and tests for all the elements, and such metals as are used in the Pharmacopœia.

Organic Chemistry.

The general principles of Organic Chemistry. The principles of ultimate Analysis. The laws of Substitution. Compound Radicals. The composition, preparation, and chemical properties of Alcohol, Ether, and Chloroform. The principal Vegetable Acids. Cane and Grape Sugar and Fermentation. Starch. Gum. Cellulose. Glucosides Oils. Fats. Glycerine and Saponification. Turpentines and Camphor. Albumen. Fibrine. Gelatine. Cynagon and its compounds. Blood. Milk. Bile and Urine.

THOMAS. R. WHEELER,
Secretary to the Court of Examiners.

APOTHECARIES' HALL,
London, 1881.

Botany.

Candidates will be expected to display a competent knowledge of Structural and Physiological Botany, such as may be obtained from Lectures and from any Elementary work.

They will be expected to describe and identify typical specimens, and to give the distinguishing characters of the following natural orders, viz.:

Natural Orders.

1. Compositæ.
2. Convolvulaceæ.
3. Cruciferæ.
4. Cucurbitaceæ.
5. Filices.
6. Gentinaceæ.
7. Graminaceæ.
8. Labiatæ.
9. Leguminosæ.
10. Liliaceæ.
11. Melanthaceæ.
12. Papervaceæ.
13. Ranunculaceæ.
14. Rosaceæ.
15. Rulaceæ.
16. Scrophulariaceæ.
17. Solanaceæ.
18. Umbelliferæ.

THOMAS R. WHEELER,
Secretary to the Court of Examiners.

APOTHECARIES' HALL,
London, 1880.

Rules affecting the Examination of Students.

1. "Bene," 75 to 100; "Satis," 50 to 75; "Vix," 25 to 50; "Malè," 0 to 25. There are to be nine subjects marked, four in the written, and five in the oral examination.

2. A "malè" in the written examination in any one subject will not prevent the candidate from being admitted to a *vivâ voce* examination, unless it be accompanied with a "vix," except in the case of the clinical examination, in which the "malè" mark will exclude.

3. The subjects in medicine, pathology, and therapeutics to be in one line, and one mark or sign to be adjudicated to the whole. The same rule to be applied to the double subjects of materia medica and botany, and midwifery with diseases of women and children.

4. The anatomy and physiology to be marked separately in the written as well as in the practical, and the practical examination to be estimated in the marking.

5. A "malè" with a "vix" shall, under any circumstances, reject:—whether they occur in the *written*, or *oral*, or the two examinations combined.

6. A majority of "vix" marks in *vivâ voce* and *written*, together, will reject.

7. The lowest sign in the microscope to be "vix." The lowest in the clinical to be "malè," which mark shall be sufficient to reject, if the candidate be not subjected to any of the written examinations.

FIRST EXAMINATION.

Written.

Name_____

	Marks.
Anatomy, practical or written	
Physiology, practical or written	
Materia Medica and Botany	
Chemistry	

Signature of Examiner_____

If rejected, initials of Examiners_____

Oral.

Name_____

	Marks.
Prescriptions and Pharmacy	
Anatomy and Physiology	
Materia Medica and Botany	
Chemistry	
Practical Histology	
Total	

SECOND EXAMINATION.

Written.

Name_____

	Marks.
Medicine, Pathology, and Therapeutics	
Midwifery and Diseases of Women	
Forensic Medicine	

Signature of Examiner_____

If rejected, initials of Examiners_____

_____

Clinical Examination_____

Oral.

Name_____

	Marks.
Medicine	
Midwifery	
Forensic Medicine and Practical Toxicology	
Morbid Anatomy, *i.e.*, Specimens and Testing	
Microscope	
Total	

REGULATIONS TO BE OBSERVED BY STUDENTS INTENDING TO QUALIFY THEMSELVES TO PRACTISE AS APOTHECARIES IN ENGLAND AND WALES, 1880.

Every Candidate for a certificate of qualification to practise as an apothecary will be required to produce testimonials,

1. Of having passed a preliminary examination in Arts as a test of general education.

This Examination must be passed before the commencement of *Medical Studies*. Medical Studies commenced before the Candidates shall have passed an Examination on the subject of General Education will not be recognised.

2. Of having attained the full age of twenty-one years.

3. Of good moral conduct.

4. A certificate of three months' practical pharmacy from some recognised hospital or dispensary, or from a qualified medical practitioner.

5. And of having pursued a course of medical study in conformity with the regulations of the Court.

The course of medical study required for a license shall occupy at least four years, of which not less than three winter and two summer seasons shall be passed at any recognised school or hospital. The following will be recognised and considered equivalent to eighteen months' study, in addition to the two years and a half above mentioned:

1. Attendance on the practice of a hospital or other public institution recognised by this Hall for that purpose.

2. Instruction as the pupil or assistant of a registered practitioner, physician, or surgeon to a hospital, general dispensary, or union workhouse, or where such opportunities of practical instruction are afforded as shall be deemed satisfactory.

Course of Study.

Every candidate must attend the following lectures and medical practice; each winter session to consist of not less than six months, to commence on the 1st and not later than the 15th of October; each summer session to commence on the 1st and not later than the 15th of May.

First Year.

Winter Session—
- Chemistry.
- Anatomy and Physiology, including Dissections and Demonstrations.

Summer Session—
- Botany.
- Materia Medica and Therapeutics.
- Practical Chemistry.*

Second Year.

Winter Session—
- Anatomy and Physiology, including Dissections and Demonstrations.
- Principles and Practice of Medicine.
- Clinical Medical Practice.

Summer Session—
- Midwifery and Diseases of Women and Children.
- Forensic Medicine and Toxicology.
- Clinical Medical Practice.

Third Year.

Winter Session—
- Principles and Practice of Medicine.
- Clinical Medical Lectures.
- Morbid Anatomy.
- Pathology and Clinical Medical Practice.

Summer Session—
- Practical Midwifery† and Vaccination.‡
- Morbid Anatomy.
- Clinical Medical Practice.

No Certificates of Lectures, or of Anatomical Instructions delivered in private to particular students apart from the ordinary classes of recognised public medical schools, can be received by the Court of Examiners.

Professional Examinations.

The Court of Examiners meet in the Hall *every Wednesday and Thursday*, where candidates are required to attend at half-past four o'clock.

Every candidate intending to offer himself for examination must give

* By Practical Chemistry is intended a *specific* course of instruction in the laboratory, with an opportunity of personal manipulation in the ordinary processes of chemistry, and of acquiring a knowledge of the various re-agents for poisons.

† A Certificate of Attendance, on not less than 20 cases, will be received from a legally qualified practitioner.

‡ Certificates of Proficiency in Vaccination must be signed by gentlemen holding appointments, in conformity with the Regulations of the Local Government Board, Whitehall.

seven days' notice previous to the day of examination, and must at the same time deposit all the required certificates with the fee, at the office of the beadle, where attendance is given daily, from *Ten* till *Four* o'clock; Saturdays *Ten* till *Two*.

The certificates being found correct, a card to admit the candidate will be sent, stating the day and hour of examination.

The examination of candidates is divided into two parts, and is conducted partly in writing and partly *vivâ voce*.

The First Examination,

Which may be passed after the second winter session, embraces the following subjects:

Physicians' Prescriptions and Pharmacy.
Anatomy and Physiology (*including an Examination on the living subject*).
General and Practical Chemistry.
Materia Medica and Botany.
Histology.

Testimonials required of Candidates for the First Examination.

Of having passed an examination in Arts, recognised by the Medical Council. (*See page* 198.)

Of having completed the curriculum of study to the close of the second winter session; of having attended three months' practical pharmacy; and of good moral conduct.

Any candidate who presents himself for the first examination and is rejected, may be admitted to re-examination at the expiration of *three calendar months*.

The Second Examination.

At the termination of the medical studies:

Principles and Practice of Medicine (*including an Examination of one or more patients*).
Pathology and Therapeutics.
Midwifery, including the diseases of women and children.
Forensic Medicine and Toxicology.
Microscopical Pathology.

Certificates required of Candidates for the Second or Pass Examination.

Of having completed four years' medical study, including the period spent at the hospital: of being twenty-one years of age; and of good moral conduct.

Of having passed the first examination.

Of having completed the prescribed curriculum of study, including a personal attendance of twenty cases of midwifery,* and of having received instruction in practical vaccination, and vaccinated not less than twenty cases.†

Of having served the office of clinical clerk at a recognised hospital during the period of six weeks at least.

Of having been examined at the class examinations instituted by the various lecturers and professors of their respective medical schools and colleges.

By the 22nd section of the Act of Parliament of 1815, no rejected candidate for the license can be re-examined *until the expiration of six calendar months* from his former examination.

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* A certificate will be received from any registered practitioner.

† This certificate must be obtained from a public vaccinator recognised by the Local Government Board.

The examination of candidates for certificates of qualification to act as assistant, in compounding and dispensing medicines, will be as follows:

In translating Physicians' Prescriptions.
In the British Pharmacopœia.
In Pharmacy, Pharmaceutical Chemistry, Materia Medica, and Medical Botany.

By the 22nd section of the Act of Parliament, no rejected candidate as an assistant can be re-examined *until the expiration of three calendar months* from his former examination.

Fees.

For the first examination, three guineas, which sum is retained in case of rejection, and accounted for subsequently.

For the second examination, three guineas.

For an entire examination, six guineas, half of which is retained in case of rejection, and accounted for subsequently.

For an assistant's certificate, two guineas, which sum is retained in case of rejection and accounted for subsequently.

Modified Examinations.

1. All Graduates in Medicine of British Universities will be admitted to a Clinical and general examination in the practice of Medicine, Pathology, and Midwifery.

2. Licentiates of the Royal College of Physicians, London; of the Royal College of Physicians, Edinburgh; of the Royal Colleges of Physicians and Surgeons, Edinburgh; of the King and Queen's College of Physicians, Ireland; of the Faculty of Physicians and Surgeons, Glasgow; and of the Apothecaries' Hall, Dublin, will be admitted to a *vivâ voce* and Clinical examination in Medicine, Pathology, Midwifery, Forensic Medicine, and Toxicology.

3. Any candidate who has passed his first examination for the License of the King and Queen's College of Physicians, Ireland; the joint License of the Royal Colleges of Physicians and Surgeons, Edinburgh; or for the single License of the College of Physicians, Edinburgh; the Licence of the Faculty of Physicians and Surgeons, Glasgow; the first professional examination for the Degree of M.B., or Master in Surgery in the Universities of Oxford, Cambridge, London, or Durham; or the second part of the professional examination for the Degree of M.B., or Master in Surgery in the Universities of Edinburgh, Aberdeen, St. Andrews, and Glasgow; or the first examination for medical and surgical degrees in the Irish Universities; or the first examination for the License of Apothecaries' Company, Dublin, will be admitted to examination, partly in writing and partly *vivâ voce*, in Practice of Medicine (including Clinical Medicine), Pathology, Therapeutics, Midwifery, Forensic Medicine, and Toxicology. And those candidates who have not undergone an examination in Anatomy and Materia Medica will, in addition, be examined *vivâ voce* on those subjects.

4. Members of the Royal College of Surgeons, England; Licentiates of the Royal College of Surgeons, Edinburgh; and Licentiates of the Royal College of Surgeons, Ireland; and all candidates who have passed the first Anatomical Examination of the Royal College of Surgeons, England; the Royal College of Surgeons, Edinburgh; the Royal College of Surgeons, Ireland, will have to undergo the two examinations, but are only exempt from *writing* on Anatomy and Physiology in their first examination.

5. The cases of graduates of foreign and colonial colleges or universities will be considered on their respective merits.

All candidates, unless registered, will be required to produce their Diploma.

Examination in Arts.

An Examination in Arts will take place at the Hall three times in the year, viz., on a Friday and Saturday towards the close of the months of January, April, and September.

Testimonials of proficiency in general education will be received from any of the Licensing Bodies under the *Medical Act* of 1858, viz.:

The Royal College of Surgeons, England.
The Society of Apothecaries, London.
The Royal College of Physicians, Edinburgh.
The Royal College of Surgeons, Edinburgh.
The Faculty of Physicians and Surgeons, Glasgow.
The Royal College of Surgeons, Ireland.
The Apothecaries' Hall, Ireland.

And also from the following national, colonial, and foreign Educational Bodies., viz.: a Degree in Arts of any University of the United Kingdom, or of the colonies, or of such other Universities as may be specially recognised from time to time by the Medical Council.

Oxford—Responsions or moderations.
Cambridge—Previous examinations.
Durham—Examination for students in their second and first years.
Durham—Registration examination for medical students.
London—Matriculation examination.
Oxford, Cambridge, Durham—Local examinations (senior and junior), Certificate to include Latin and Mathematics.
The Oxford and Cambridge Schools' Examination Board.
Edinburgh, Glasgow, Aberdeen, St. Andrews—Preliminary examination for graduation in Medicine or Surgery.
Edinburgh—Examination of (senior) candidates for Honorary Certificates under the local examinations of the University of Edinburgh.
Dublin—University entrance examination.
Queen's University, Ireland—Entrance examination; examination for the Diploma of Licentiate in Arts; previous examination for B.A. Degree.
First Class Certificate of the College of Preceptors.
University of Calcutta, Madras, Bombay—Entrance examination, Certificate to include Latin.
M'Gill College, Montreal—Matriculation examination.
University of Toronto; King's College, Toronto; Queen's College, Kingston; Victoria College, Upper Canada—Matriculation examination.
University of King's College, Nova Scotia—Matriculation examination or responsions.
University of Fredericton, New Brunswick—Matriculation examination.
University of Melbourne—Matriculation examination, Certificate to include all the subjects required by the General Medical Council.
University of Sydney—Matriculation examination.
Codrington College, Barbadoes—1. English Certificate for students of two years' standing, specifying the subjects of examination. 2. Latin Certificate, or "Testamur."
Tasmanian Council of Education—Examination for the Degree of Associate of Arts, Certificate to include Latin and Mathematics.
Christ's College, Canterbury, New Zealand—Voluntary examination, Certificate to include all the subjects required by the General Medical Council.

Recognition of Lecturers and Schools.

No Lecturer will be acknowledged by the Court who is not connected with a recognised Medical School, or who teaches on more than *two* branches of Medical Science.

The Lecturer on the Principles and Practice of Medicine must be a legally registered Physician.

The Lecturer on Materia Medica and Therapeutics must also be a registered Physician, or a Licentiate of this Court of four years' standing.

The Lecturer on Midwifery must be a member of one of the legally constituted Colleges of Physicians or Surgeons in the United Kingdom of four years' standing; or he must have been a Licentiate of this Court for the same period.

Hospitals and Dispensaries.

No Hospital will be recognised by the Court unless—

1. It contain at least 100 beds.

2. It be under the care of two or more legally qualified Physicians, such Physicians being Fellows or Members of the Royal College of Physicians, London; of the Royal College of Physicians, Edinburgh; or of the King and Queen's College of Physicians, Ireland, and a legally qualified Resident Medical Practitioner.

3. The Physicians give lectures on Clinical Medicine, and instruction in Morbid Anatomy.

No medical practice will be available, unless it be attended in conformity with the course of study prescribed for students.

The above Regulations only apply to the two and a half years' study at a recognised school or hospital.

By order of the Court of Examiners.

THOMAS R. WHEELER,
Secretary.

Apothecaries' Hall,
London, E.C., 1880.

For information relative to these Regulations, students are referred to the Beadle, at Apothecaries' Hall, every day between the hours of 10 *and* 4 *o'clock; on Saturdays,* 10 *to* 2*; excepting Good Friday and the following Saturday, Easter Monday, Whit Monday, the first Monday in August, and the* 25*th and* 26*th of December, on which days the office will be closed.*

It is expressly ordered by the Court of Examiners, that no gratuity be received by any officer or servant of the Court.

Information on all subjects connected with the "Act for Better Regulating the Practice of Apothecaries" may be obtained on application to Mr. J. R. Upton, Clerk of the Society, at the Hall, every day (Saturday excepted), between the hours of 1 and 3 o'clock.

Name in full.

Wednesday, December 14*th,* 1881.

Apothecaries' Hall. Questions for the First Examination.

Anatomy.

1. Describe the heart, including its vascular and nervous supply.

2 Describe the superior maxillary bone, and mention the muscles attached to it.

3. How is the stomach supplied with its blood and nerves?

Physiology.

Describe the minute anatomy of the kidney.

Chemistry.

1. What are the products of the Combustion of Coal? How may they be respectively recognised?

2. How may Cyanogen be obtained? State its properties.

3. How are Sulphur and Mercury respectively obtained? Describe their respective properties.

4. How may the specific gravity of solids, liquids, gases, and powders be respectively determined?

Materia Medica.

1. What are the chief preparations of Opium in the B. P.? Give the ingredients of any four of the respective preparations.

2. What are the preparations into which Bismuth enters in the B. P., and how are they respectively ordered to be prepared?

Botany.

What are the functions of the leaf, root, and the various parts of a flower respectively.

Name in full.

Wednesday, December 14th, 1881.

QUESTIONS FOR THE SECOND EXAMINATION.

Medicine, Pathology, and Therapeutics.

You are expected to answer *five* questions, one being on Pathology and one on Therapeutics.

1. Describe the causes, symptoms, and treatment of Idiopathic Erysipelas.

2. Mention the causes of Hæmaturia and the considerations which would aid you in your diagnosis. Give the treatment.

3. Describe the symptoms, diagnosis, and treatment of Inflammatory Croup, and Laryngismus Stridulus respectively.

4. Give some account of the Pathology of Cardiac Dropsy, pointing out the exact seat of the diseases which lead to it.

5. In what diseases may Digitalis and Prussic Acid be advantageously prescribed? Write your prescriptions in unabbreviated Latin, containing one or other of these medicines, with two or three other drugs suitable for the object you have in view in prescribing them.

Midwifery, and the Diseases of Women and Children.

Three questions to be answered.

1. Mention the indications for the use of the perforator; describe that instrument and the mode of operating.

2. Enumerate the causes of obstructed labour from a faulty condition of the soft passages, and give the treatment for each.

3. Describe the symptoms, diagnosis, and treatment of acute Hydrocephalus in children.

Forensic Medicine and Toxicology.

Three questions to be answered, one being that on Toxicology.

1. Give an abstract of the signs of Pregnancy from the commencement of the seventh month, specifying those which are certain.

2. Classify the diseases which are most commonly feigned, and state how you would detect the imposture, respectively.

3. Describe the symptoms and treatment of acute and chronic poisoning by the Salts of Copper. Give the tests for Copper in solution and in organic liquids and in articles of food respectively.

APOTHECARIES' HALL OF IRELAND.

The following are the bye-laws and regulations, rules relating to marking, and the printed questions both at the primary and final examinations visited :—

APOTHECARIES' HALL OF IRELAND.

Bye-laws and Regulations regarding the Preliminary and the Professional Education and Examinations required for the License to Practise the Profession of Apothecary.

The Preliminary Education and Examination.

Compulsory Subjects :

1. English Language, including Grammar and Composition,* Modern Geography,† and the leading events of English History.

2. Arithmetic and Algebra : Arithmetic, including Vulgar and Decimal Fractions ; Algebra, including Simple Equations.

3. Geometry : First Two Books of Euclid.

4. Latin : The First Two Books of Livy, or the First Two Books of The Æneid of Virgil and Latin Prose Composition.

5. One of the following

Optional Subjects :

(*a*) Elementary Mechanics of Solids and Fluids, comprising the Elements of Statics, Dynamics, and Hydrostatics. ("Elementary Mechanics of Solids and Fluids" if not passed at the Preliminary Examination must be passed at the first part of the Professional.)

(*b*) Greek ; (*c*) French ; (*d*) German ; (*e*) Logic ; (*f*) Botany (*g*) Elementary Chemistry.

The following Books are recommended :—Clyde's Geography ; Smith's Compendium of English History ; Ganot's "Popular Natural Philosophy ;" The First Book of the Anabasis of Xenophon or First Book of The Iliad of Homer ; Fénelon's "Télémaque ;" Schiller's "Wilhelm Tell ;" Whately's "Logic ;" Silver's "Outlines of Botany ;" Roscoe's "Elementary Chemistry."

The Preliminary Arts Examination

Will be held at the Hall four times in the year, viz., *the third* Thursday in the months of January, April, July, and October, at the hour of Eleven o'clock, A.M.

Unsuccessful Candidates will be remitted to their Studies for a period of *six* months.

* "The General Medical Council will not consider any examination in the English language sufficient that does not fully test the ability of the candidate :—(1) To write sentences in correct English on a given theme, attention being given to spelling and punctuation as well as to composition ; (2) to write correctly from dictation ; (3) to explain the grammatical construction of sentences ; (4) to point out the grammatical errors in sentences ungrammatically composed, and to explain their nature ; and (5) to give the derivation and definition of English words in common use."

† The geography is made obligatory on students on and after the 1st January 1882.

THE PROFESSIONAL EDUCATION AND EXAMINATIONS.

Every Candidate for *the License to practise* MEDICINE and PHARMACY must produce Certificates to the following effect:—

1. Of having passed an Examination in Arts recognised by the General Medical Council previously to entering on professional study.

2. Of Registration as a Medical Student from the Registrar of a Branch Medical Council, at least forty-five months before admission to the final professional Examination.

3. Of being twenty-one years of age, and of good moral character.

4. Of Apprenticeship or Pupilage to a qualified Apothecary, or of having been otherwise engaged at *practical* Pharmacy for a period of twelve months subsequent to having passed the Examination in Arts.

5. Of having spent *four* years in Professional Study.

6. Of having attended the following Courses, viz.:—

CHEMISTRY	During One Winter Session.
ANATOMY AND PHYSIOLOGY . .	„ One Winter Session.
DEMONSTRATIONS AND DISSECTIONS .	„ Two Winter Sessions.
BOTANY AND NATURAL HISTORY .	„ One Summer Session.
PRACTICAL CHEMISTRY (by daily instruction in a recognised Laboratory)	„ Three Months.
MATERIA MEDICA	„ Three Months.
PRINCIPLES AND PRACTICE OF MEDICINE	„ One Winter Session.
MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN	„ Six Months.
PRACTICAL MIDWIFERY at a recognised Hospital (attendance upon twenty cases.)	
SURGERY	During One Winter Session.
FORENSIC MEDICINE	„ One Summer Session.
INSTRUCTION in the Practice of Vaccination under a Public Vaccinator, recognised by the Local Government Board.	

7. Of having attended, at a recognised Hospital or Hospitals, the PRACTICE OF MEDICINE AND CLINICAL LECTURES ON MEDICINE, during two Winter and two Summer Sessions; also the PRACTICE OF SURGERY AND CLINICAL LECTURES ON SURGERY, during one Winter and one Summer Session.

8. Of Practical Study, *with care of Patients*, as Apprentice, Pupil Assistant, Clinical Clerk, or Dresser in Hospital, Dispensary, or with a Registered Practitioner.

The examination for the License to Practise is divided into two parts:—

The first part comprehends Chemistry (including Physics), Botany, Anatomy, Physiology, Materia Medica, and Pharmacy.

The second—Medicine, Surgery, Pathology, Therapeutics, Midwifery, Forensic Medicine, and Hygiene.

The first part may be undergone after the candidate has passed an examination in Arts, and attended the requisite Courses of Lectures; and the second, after the completion of his studies at the termination of the fourth winter session.

Candidates at the examination in Anatomy are liable to be called on to perform dissections; and at the examination on Surgery, to perform one or more minor operations.

Candidates are required to know the use of the Microscope, and to distinguish diseased structures and morbid products.

The Professional Examinations

Will be held quarterly, and will commence on the first and second Monday in the months of January, April, July, and October. They will be carried on as follows :—

The first part, on the first Monday, at eleven o'clock A.M.; and on the Tuesday and Wednesday succeeding, at the same hour.

Subjects :—Chemistry (including Chemical Physics) and Botany, Monday; Anatomy and Physiology, Tuesday; Materia Medica, and Pharmacy, Wednesday.

The second part or final examination, on the second Monday, at eleven o'clock A.M.; and on the Tuesday and Wednesday succeeding, at the same hour. On Thursday, Clinical examination.

Subjects :—Medicine and Surgery (including Pathology and Therapeutics), Monday; Midwifery and Diseases of Women and Children, Tuesday; Forensic Medicine and Hygiene, Wednesday; Clinical examination, Thursday.

The first three hours of each day will be devoted to writing Answers to Papers, and afterwards there will be an Oral and Practical Examination on the same subjects.

Certificates and Diplomas will be granted to the successful candidates on the Friday following, at three o'clock P.M.

Candidates who fail to pass the first part of the Professional Examination will be remitted to their studies for three months, and unsuccessful candidates at the Final Examination will not be readmitted until after the expiration of six months.

Doctors of Medicine of any of the Universities of the United Kingdom, and Licentiates of a Royal College of Physicians or Surgeons of any of the Royal Colleges of Surgeons, whose qualifications as such appear in the *Medical Register*, and who, having first passed an examination in Arts, have also spent twelve months at Practical Pharmacy, may obtain the License of the Hall by undergoing an examination—the former two in Pharmacy,* and the latter in Medicine and Pharmacy.

Candidates for the Professional Examinations must lodge their testimonials and the fees, and enrol their names and addresses with Mr. Charles Wright, the Clerk at the Hall, in Dublin, a clear week prior to the day of examination.

Candidates for the Certificate of Assistant must produce satisfactory proof—

1. Of not being less than sixteen years of age.
2. Of having spent two years at Practical Pharmacy, under the superintendence of a duly registered Apothecary or Pharmaceutical Chemist
3. Of good moral conduct.

N.B.—The examination for the Certificate of Assistant is held on Fridays at the Apothecaries' Hall, in Mary Street, Dublin, at two o'clock P.M., and embraces the subjects of Pharmacy, practical and theoretical, Materia Medica, the British Pharmacopœia, and the translation and compounding of Medical Prescriptions.

The Apothecaries' Hall, Dublin, Mary Street,
September, 1881.

* The examination in Pharmacy will include Practical Pharmacy, Pharmaceutical Chemistry, Toxicology, Medical Botany, and the British Pharmacopœia.

MARKING.

Observe the following rules in marking :—

1st Class.—Answers in each subject (written and oral taken together) up to 50—good mark.

2nd Class.—Answers to each subject (written and oral taken together) up to 40—middling.

(These two classes entitled to pass, if approved of by the majority of the Examiners in consultation.)

3rd Class.—When the returns show " Bad " in any *one* subject (written and oral), the case to be referred to the whole Court for adjudication.

4th Class.—When the Returns show " Bad " in *more* than one subject (written and oral), the candidate to be remitted or rejected.

Marks are only used as an aid to memory, and are translated into words —good, middling, bad –it being found that numbers do not express the judgment of the various Examiners so exactly as words.

Questions Set in the Examination at Apothecaries' Hall of Ireland.

General Chemistry.

1. What are the chemical symbols and equivalent weights of Nitrate of Barites, Sulphate of Ammonia and Alumina, Phosphoric Acid, and Chlorate of Potash.

2. How may it be proved that a solution contains the Sulphates of Zinc, of Alumina, and of Ammonia.

3. What is Ozone believed to be? and how may its presence be demonstrated?

4. How may Uric Acid be obtained from Urine, and what are the tests for it?

5. Describe the Solar Spectrum, and how it is produced?

Pharmaceutical Chemistry.

1. Why is Acetate of Soda used in preparing Syrup of Phosphate of Iron?

2. When Chlorine, or Iodine, is added to Sulphurous Acid, what chemical changes occur?

3. How does Sulphuretted Antimony differ chemically from Sulphide of Antimony?

4. Why is Cream of Tartar now named Acid Tartrate, and not Bi-Tartrate, of Potash?

5. How may it be proved that a lozenge contains pulvis Ferri?

Pharmacy.

1. " Liquor Hydrargyri Perchloridi." How is it obtained, and what is its dose?

2. " Extractum Filicis liquidum." Describe the process for preparing it, its appearance; and state the ordinary dose.

3. " Calcis Hydras." How is it prepared, and state the preparations in which it is employed.

4. "Ferri et Ammoniæ Citras." Name the ingredients employed in this preparation; state its appearance and dose; and the preparation it is used in.

5. "Confectio Terebinthinæ." What are the ingredients employed in making it; describe the order in which they are directed to be used; state the dose.

Materia Medica.

1. State the mode of obtaining Kino; mention its characters and test; name its preparations; and give the composition of Pulv. Kino Comp.

2. Describe the process for obtaining "Saccharum Lactis;" mention some of its characters; give the composition of the powder containing it, and its dose.

3. State the processes for obtaining Oleumyristicæ and "Oleum Myristicæ Expressum;" give some of their distinguishing characters, and the preparations in which they are employed.

4. Name the different species of "Buchu" mentioned in B. P.; state their distinguishing characters, their preparations, and the supposed active principle.

5. Give the source of "Arsenious Acid;" its Pharmacopœial preparations, and the strength and dose of each.

Physiology.

1. State the physical and leading chemical properties, and the composition of bile and of lymph.

2. What varieties of Cartilage are found in the human body; state whether differences exist in connection with these structures at different ages, and what they are?

3. Contrast the adult and fœtal circulation, stating the several differences of the valves and vessels in each case.

4. State some of the functions attributed to the nerves; how have the nerves been classed in relation to their functions?

5. State the composition of human milk; contrast it with that of the cow.

Anatomy.

1. Name the relations of the left subclavian artery in its first stage.

2. Give the divisions of the Duodenum, and the length, position, and relations of each; mention the ducts which open into it.

3. Give the origin, course, and distribution of the Pneumogastric Nerves.

4. Describe the knee-joint, and give the attachment of its ligaments.

5. Give a general description of the Spleen, and mention the course and termination of the Splenic artery and vein.

Medicine.

1. Give the chief symptoms and causes of Intestinal obstruction; the indications and means of relief; and the general prognosis.

2. Name the several forms of Bronchitis, and state the differential diagnosis of the *Capillary* form, the persons most disposed to it, its pathology and treatment.

3. Describe the accompanying signs and morbid anatomy of the *Granular* form of Bright's disease of the kidney.

4. What diseases are attributed to the presence of Germs, and how do they gain access into the human system?

5. Mention the most reliable Antiseptics, and explain their mode of action.

Hygiene.

1. Mention the principal contagious diseases; how they are propagated; and state the most effectual means of arresting their progress.

2. Enumerate the diseases chiefly incident to British residents in hot climates, and the sanitary precautions necessary to prevent their occurrence.

3. Describe a convalescent ward, with all its requirements for the treatment of patients recovering from fevers, or pulmonary or abdominal diseases.

4. Give an account of the contaminations with which the air we breathe and the water we drink are constantly charged; their deleterious effects upon man; and how they are analysed.

5. Describe the effects of bad drainage throughout a populous district, and the most approved system of sewerage.

Medical Jurisprudence.

1. What means would you resort to in a case of drowning to restore suspended animation.

2. In Arsenical poisoning how may Hydrated Peroxide of Iron be quickly prepared?

3. In cases of death by drowning, how soon does the corpse usually rise to the surface, and why?

4. In slow Tartar Emetic poisoning, what are the symptoms; the treatment to be adopted; and the tests for detecting the poison?

5. How may it be known that a wound or burn has been produced after death?

Surgery.

1. Describe the appearance and symptoms of a case of Colles' fracture of the radius; state the treatment. Mention the appearance of an old case in which treatment had been neglected.

2. What malignant growths of the mamma have you seen? Describe the more important, and state the treatment.

3. Describe a case of strangulated femoral hernia, giving the symptoms; state the treatment required.

4. Name and describe the most approved division that has been made of burns.

5. Describe dislocation of the lower jaw, its varieties and treatment.

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Spottiswoode & Co., Printers, New-street Square, London