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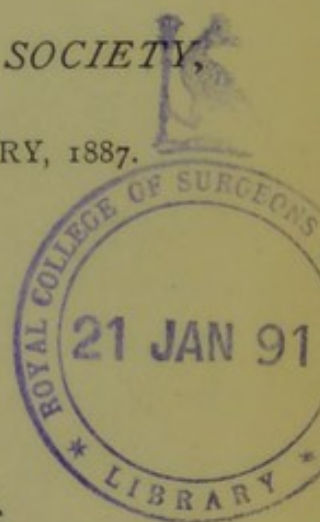
HOW TO PREPARE FOR EXAMINATIONS.

A PAPER READ BEFORE
THE MEDICAL STUDENTS' DEBATING SOCIETY,
OF THE OWENS COLLEGE UNION, 21ST FEBRUARY, 1887.

BY
EDWARD LUND, F.R.C.S.

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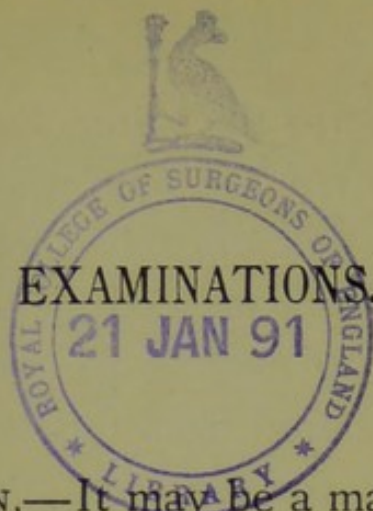
JOHN HEYWOOD,
DEANSGATE AND RIDGEFIELD, MANCHESTER;
AND 11, PATERNOSTER BUILDINGS,
LONDON.
1887.



"Come hither, sirrah, I must examine thee."

2 HENRY VI., ACT IV., 2.

HOW TO PREPARE FOR EXAMINATIONS.



MR. PRESIDENT AND GENTLEMEN,—It may be a matter of surprise to many of you that I, who have been connected for many years with a medical school, should have selected for the subject of my paper on this occasion, "How to Prepare for Examinations." The natural means to such an end would seem to be—secure the services of an able teacher, and follow his instructions faithfully; then, if the curriculum of study be in accordance with the requirements of the examiners, there ought to be no doubt as to passing the examination. As a sort of corollary, or deduction from this assertion, it might be said that frequent failures to pass any given examination, by students from any particular school, must indicate inefficient teaching. This perhaps may be true in the abstract, as a general principle, but in its individual application the inference may be grossly unfair. All that teachers and lecturers can do in their public work is to place before their students the knowledge which it is assumed they are seeking to obtain, and to state all the facts, and to illustrate the theories which are deducible therefrom, in the clearest and most simple way. The reception of this knowledge—or the efforts made to receive it rightly, and to store it in the memory—must rest with the students themselves. It is the old story told once more—a child may lead a

horse to the water, but a man cannot make it drink! It is not the food which we take into the mouth, nor even that which has been carefully and slowly swallowed, on which we feed: it is food properly digested, broken up into new forms, then absorbed into the system and elaborated from time to time in ceaseless combinations. It is by this, and by this alone, that the material structure of our bodies can be nourished, and their volume and vital energies be preserved. And so it is in mental processes: the gateways of knowledge may be wide open, facts and observations may be poured in, impressions are made upon the senses, but they are evanescent and fade away; and neither in the recesses of the memory, nor in intellectual deliberations, is there either accumulation or advancement.

Now I fear the title of my paper, if taken as of the nature of an interrogatory, may prove somewhat misleading. I do not propose to ask and then to answer the question—"How are we to prepare for examinations?" There are many methods by which this may be done. I would rather put the matter more positively, as a direct statement of how, in my opinion at least, such preparation should be conducted so as to pass an examination safely, and that the proceeding may be deprived, as far as possible, of the element of chance, leaving the impress of success in this as in other important events in the future career of the student.

There is a difference between the acquisition of knowledge on any subject of study, and the practical application or adaptation of that knowledge. As far as our own profession is concerned, that which we must

never forget is the essentially practical character of our work. Science is knowledge methodically arranged. By it we answer those great questions, How? When? Where? And we are said to possess a scientific acquaintance with any subject when all the steps of our inquiry have been made so minutely that there are no gaps or vacant spaces where ignorance may cover knowledge—the investigation has been equally completed at every stage. But, to render our knowledge philosophical as well as scientific, we must be prepared to answer that other question, Why? Why are these things so? What object do they serve separately or in combination? And what may possibly be the ultimate effect if, with our present knowledge, this result be obscurely seen?

It is while dealing with the philosophy of any subject that we are apt to indulge in theory, or, perchance, give the reins to our imagination, and soar beyond the dry outline of facts, wandering often only further from the truth. The student who indulges in such flights of fancy may have much passing pleasure therein, for to have an aptitude for painting theories may appear to him to advance our art. He may so love knowledge for her own sake as to be accounted a true philosopher; but, alas! these mental exercises must be used only as working theories, helping for the time to furnish the chambers of the mind, the philosophy of the subject being held in abeyance until all the steps in its scientific study have been fully assured.

I can speak with some authority in this respect, for, until quite recently, my time being spent during the

academic year in the daily company of students, I have had ample means of observing the lines of thought and the modes of action which have conduced most frequently to their success. I have seen, on the other hand, men of great capabilities, with much mental power, had it been rightly trained, upon whose ill-directed efforts nothing ensued but failure. For more than twenty years I taught Anatomy—for more than ten I have been occupied in teaching Surgery—and it is because I see, in reviewing my experience in these engagements, the possible relation between effects and their causes, that I am anxious, to-night, to set them clearly before you, so that, knowing the evil, you may discuss the remedy.

The remarks I am about to make will be applicable to all classes of students—in arts as well as in science—but, of course, they will be more especially directed to students in medicine.

Examinations are arranged in two classes, competitive and pass-examinations. In the competitive, the candidate seeks not merely to pass the examination, but to do so in such a way as to obtain honours, or some coveted position which shall mark him for future advancement; or else, as in the examinations for the public services, he strives to obtain a certain number of marks which shall raise him in the published list of candidates, and so secure for him the privileges incident to such distinction.

In order to assign to each, as fairly as possible, his position in the list, in relation to the other candidates, the examiners are compelled to give a very high

number of marks as the maximum, so as to allow of the widest possible range in assessing the value of the answers returned to the questions, from the first upon the roll to the last, which will receive the minimum number of marks the examiners can accept. Such examinations, therefore, are rendered needlessly severe, or such minute differences could not be represented, and too large a proportion of the candidates would have to be bracketed as equal. But, in pass-examinations, with whatever object they may have been undertaken, to secure a degree, or to receive a licence for any special duty, it is required that the student should exhibit only the minimum rather than the maximum amount of knowledge. There is no inducement held out to him to go beyond the minimum, unless it be to make his prospect of success in the examination the more secure. The standard is set as low as possible, consistently with proficiency in the special subjects of examination, and this being arranged beforehand, those who attain the exact number of marks demanded—generally half of the possible total—are allowed to pass ; all the others are refused.

In seeking to pass a competitive examination, the student is bound to over-exercise himself in its preparation—that is, he must take in the largest possible range of study so as to be prepared with far more than may be really asked for, that he may out-distance his competitors on as many subjects as possible.

If the knowledge so acquired were really useful knowledge, susceptible of ready application to practical purposes, such competitive examinations would be of

the greatest value to the general student in the progress of his education, as far as actual preparation is concerned, even if he were advised at last, not to go on to competition. But this, unfortunately, is not the case. Much, very much, which has to be got up, as it is called, for a competitive examination for the public services is superfluous knowledge, and asked for only as a test, by its presence or its absence, of the nominal position which the student who supplies it shall be entitled to take in the pass list of the examination.

There are certain examinations which have this special peculiarity: in one or more of the subjects, as we shall presently see, the examination is taken on unseen matter. In classics, for example, it is sometimes declared beforehand that the student will be examined on passages selected from the writings of some well-known author, such as Cicero or Virgil, and the limit is defined by naming the particular book or chapters for the examination. At other times it is required of the student that he shall be prepared to translate and analyse passages taken, without previous selection, from any of the less-known Latin classics. There is an obvious difference between these two conditions, for, where the extent of the subject has been definitely given, a good memory may serve largely to help the student who possesses only a sort of mechanical acquaintance with the force and beauty of classic literature. And this same principle, when applied to the more practical subjects of an examination, will make a vast difference in the labour required for preparation, and the probable result.

This leads me to remark upon what often happens as an ill effect of this overtraining. By trying to take in too much, to tax the memory rather than to exercise the judgment, the effort so exhausts the mental powers that, although temporary success may be achieved, and the prize be won, all taste for the subject is destroyed, and the man no longer cultivates the early aptitude he may have displayed.

And here I would pause for a moment to consider the consequences which follow from the course of study pursued in our older universities, the object of which would seem to be, so to train all the faculties of the mind that each, in succession, may be ready to be exercised in its own department, whatever may be its future sphere of action; the courses of study given in our universities must, therefore, of necessity, deal in generalities. They may have reference to principles, but these principles cannot be of too wide an application: they have their applications, but these are rarely touched upon, and are left with the students for future development.

Hence it is that a university education must, if it be framed in accordance with such a plan, be very extensive in its range and of universal adaptability—it ought, in fact, to be *in universum*.

To bring about this result it is imperative that undergraduates at a university should have sketched out for them curricula of study minute and definite in extent. Certain books are put before the student at the commencement of his studies, all dealing with the principles of the science he is to take up. He is told that these,

and these only, need he study. To know them perfectly is to make his degree secure: failing to do so, it is hopeless. When the time arrives for testing the effects of the intellectual training to which he has thus been subjected during his residence in the university, he has questions placed before him which may have been taken, almost word by word, from the text-books he has been reading, the precise answers to the questions being in the books themselves. To have to deal with unseen passages, or unseen authors, is the exception and not the rule, such a mode of gauging a student's knowledge being reserved for the higher examinations in which competition exists, viz.—the examinations for honours.

Now, what is the obvious effect of all this excellent training, this admirable preparation for future work or future power to work, to experiment methodically and to interpret nature in an orderly and systematic manner? Very frequently, alas!—not necessarily—it checks originality, and deprives the student of that confidence in his own opinions which can alone be secured by direct, original, and personal observation. A man who has been trained in one of our universities on the older lines of study is ready for any intellectual contest, or rather, he ought to be, if the system has been successfully worked out; but such original, personal labour has yet to be undertaken, and it is in the prosecution of it that many of early promise so often fail—they have never tested their intellectual strength in the efforts for which those who search for truth, on their own account, must always be prepared.

Or, if we consider the question of preliminary education under another aspect, and notice what is done by students who have not had the advantage of this intellectual training, we shall find the final result of the whole matter is very often this: A student entering at a medical school with the one great object always before him, how he is to obtain his degree, or rather his licence to practise under the Medical Act, will seek the minimum of knowledge needed for that purpose, and take up the facts presented to him in a purely mechanical manner, ready to bring them forth again, when required, in the same unchanged order, as a matter of routine. "Do they ask this at the college?" for example, he will say. Or, "What must I say just to satisfy the examiner on such and such a subject?" And he may even go further than this, and he may inquire what he is to say in reply to some question which he thinks ought to be answered in a particular way, so as to support the favourite opinions of the examiner opposite to whom he may find himself placed in a *vivâ voce* examination. Now this, which is only surface work, is essentially bad: it tends to dwarf the education of the student, and it ought to be discouraged.

You will not be surprised if, in the remarks I am now about to make, I refer exclusively to the examination which many here present will some day have to pass—the examination at the Royal College of Surgeons of England, or, to speak more correctly, the surgical portion of the future conjoint examination of the two colleges.

This examination is a very complex one, inasmuch as it is partly in writing, and partly *vivâ voce*. Part is theoretical—that is to say, it has to deal with the principles of surgical pathology and treatment and the theories connected with them—and part is practical and manipulative, in the truest meaning of the term.

I know that objections have been made and still are made to the character and the conduct of this examination. As far as I can ascertain, the general objection is that it is too hurried and too short—too much of a scramble from first to last. My reply would be, as to its brevity, that, as it is a pass-examination, where a certain minimum standard of knowledge is to be asked for, it would seem, as far, at least, as the candidate is concerned—on the principle that it is better to run through the fire than to walk, he would not willingly prolong such a fiery ordeal. And when there is the other objection as to its hurried nature—that the questions are put too sharply and abruptly, by which confusion arises in the mind of the student in his necessarily quick replies—it must be remembered that he is seeking for a legal qualification, in which it is imperative that he should give proof that the knowledge vouched for is ready when wanted in all those emergencies in which the immediate skill of a surgeon may be required. If a candidate hesitates to say what he would do instantly, in a case of sudden asphyxia from the presence of a foreign body in the larynx; or how he would treat promptly excessive hæmorrhage from a punctured wound; he cannot wonder, from the nature of things, that it should tell against him when

the answers to such questions have to be pumped up from the deep recesses of his memory, instead of being always ready, floating on the surface. And if it be said, moreover, that the student under examination ought to be excused, on the score of sheer nervousness, from quickly arranging his knowledge, and so answering such vitally important questions, this plea might have some weight in a rapid *viva voce* examination ; but it can hardly hold good in that part of the examination which is conducted by written answers, in which so many students fail, and where the errors they commit are indelibly recorded.

Possibly there may be other details in the conduct of this examination which might be modified, and, if so, I can only say, as a member of the Court of Examiners, that any suggestion at all reasonable in its extent, and of practical application, will always be carefully considered by the authorities of our College.

In attempting to pass such an examination as I have here described there may be two sources of failure—the knowledge asked for may not be there, the student may not know the subject on which he is being examined, there is ignorance on his part, at least to some extent ; or he may possess the knowledge, only his memory is treacherous, and he fails to bring it forth. In the former case the cause of want of success is chronic, in the latter it is acute.

Now, how is failure to be avoided ? First, then, as soon as a student enters at a medical school, or from the first day on which he attends the practice of a hospital, his object should be not merely to do that

which shall just obtain for him a degree and nothing more. Beyond this, he should resolve, on every subject, to have a reserve of knowledge, as it is successively brought before his notice—to be always striving to know a little more than the simple yea and nay answer to any question, or the decision on any point of dispute—to consider whether the same facts may not be susceptible of a different interpretation when viewed in a different light; and whether there is not a delusive view, as well as a true one, in which they may be seen—to cultivate the habit of constantly pondering on such possible contingencies, so as to be ready to meet them when they arise—in other words, he must observe and he must reflect.

I will now explain how I would advise a student to proceed in order to prepare for the pass-examination at the Royal College of Surgeons of England for the diploma of member of the College. The examination consists of four parts or divisions: the written, the *vivâ voce* on clinical cases, the *vivâ voce* on practical work, and the *vivâ voce* on surgical pathology and treatment.

First, as to the written portion of the examination, and how to prepare for it. There can be no doubt as to the truth of the old saying, "Writing maketh the exact man." What we have to describe in writing must be done thoughtfully and deliberately, unless we resolve to reverse the proper order of things—and to write first, and think afterwards.

The student may prepare himself for the written portion of this examination by self-help alone.

Let him consider what it is that he has to do. He has, by written answers to certain questions, to prove his acquaintance with the principles of surgery, and of surgical anatomy in its more obvious applications. Take, for example, the questions which may have been asked in past examinations—

What structures would you divide in succession in a circular amputation of the thigh, at the juncture of its upper and middle thirds?

What do you understand by the term congenital hernia? And what are the conditions necessary for its production?

What are the circumstances under which an impacted fracture of the neck of the femur generally occurs? State its signs, symptoms, and treatment.

You will observe that one of these questions is purely anatomical, with a surgical reference. The two others are more distinctly of surgical import.

Before the candidate attempts to write out his answers to the first of these questions, he ought so to rehearse his knowledge of the subject, and so to arrange his facts systematically, that the examiners may see, even if here and there omissions have been made in the description, that he has an eye to the anatomy, and that he is familiar with the various stages of the dissection which he would pourtray. In the two other questions, not only must there be a good knowledge of anatomy on all the cardinal points, but the candidate must indicate, by his answers, that he thoroughly apprehends the essential elements of the causes, and the principles of the treatment to be adopted. He

must state them definitely. There must be no place for hesitation or doubt. His answer must not run in words like these, "you might do this," or "you might do that"—it must be positive and decisive. This is what "ought to be done."

I have said that you may prepare yourself for such a mental exercise as this by self-help alone. It is after this fashion. You can without difficulty trace up, from year to year, in the medical journals, the *Lancet* and the *British Medical Journal*, the questions which have been set every year at the four examinations for the diploma of membership. You will find them in the numbers of these journals for the latter half of the months of January, April, July, and October. Select any one of these questions, and sit down and write out the answer to it, as best you can. Do not look at any surgical work or text-book from which you might get information, but trust absolutely to what you can really produce from your own knowledge. Having written the paper to the best of your ability, put it away for a day or two, and do not look at it in the interval, during which you may, if you like, write out every day the answer to some other question from the same source, and so have on hand a number of such answered questions for future reference. Then, after a few days, proceed to read up all the points of interest in the subject of your first question. Having done this, but not previously, re-open your paper, read it attentively, and there will stand out before you, in bold relief, the defects in your reply, the errors and the omissions.

If this were all done on the same day, or if, knowing the question, you in any way prepared yourself for its reply, you would not reap one-half the benefit. Thus, I believe, by prolonging the mental process, by allowing a certain rest to the mind after it has been powerfully exercised in any one direction, or on any one special line of thought, before it is again directed in the same channel, we can increase immensely the power of ready and earnest attention. By frequent practice, writing out all we know at the time, on any given topic, resting awhile, then scrutinising what we have written, correcting it as we proceed, we cultivate the art of accurate description in a way such as no effort of the memory could secure.

Of course it will be a great assistance to have the whole of your written work supervised by an older and wiser head than your own. Yet, I think this should be done after your own corrections, not before; for when you have acquired, by repeated efforts, a facility in detecting your own errors, of your own accord, you have already made a sound advance on the road to precision of knowledge.

When I tell you that nearly all the candidates who are referred at the college in their pass-examination, have written bad papers, or weak papers—that is, papers to which the value of less than half marks has been assigned—it will be evident to you how very important this section of the examination must be, and how greatly it must influence success or failure.

In regard to the three other parts of the examination, the *vivâ voce*—clinical, practical, and pathological—I am

bound to tell you I do not think you can prepare yourselves satisfactorily to pass in these, by self-help alone. Here you must submit to what is the best of all methods of preparation, if not the only correct one—the catechetical method of instruction.

You must observe, and you must reflect for yourselves, and then, as the outcome of such mental exercises, you must have your accurate conclusions systematically arranged. In clinical work—that is, in exact surgical diagnosis—you ought to make your earlier observations in the presence of a tutor, who should correct you when you are wrong, or you will, in your ignorance, perpetuate your mistakes. He should be near you to guide you into the proper method of observation, always balancing, with even hand, the probabilities of a surgical diagnosis.

To be able to answer such *vivâ voce* questions correctly and rapidly is an art only to be acquired by patient observation and much practice. In every case it is desirable not to be too positive. The days are gone of blind faith in the infallibility of solitary pathognomonic signs. We know that there is nothing absolutely certain in our profession—at least, on the surgical side of it—so that in nearly every case presented to your inquiry it is well to admit of at least three probabilities—a tumour may be an aneurism, it may be an abscess, it may be a lipoma—and then, proceeding to differentiate the conditions, you may reach at last, by a process of exclusion, an absolutely demonstrable conclusion.

There is practically a difference between memory and recollection. You may be well acquainted with some fact—you may have seen some case of disease or injury similar to the one you are now looking at—you may have been told the name of the affection and its chief diagnostic points, but you cannot recall them at the moment, you cannot make your reply. You want that ready faculty possessed by some almost intuitively, of instantly recalling the mental pictures photographed in the camera of the memory; you seek in vain, at the moment, for the developing fluid which shall bring them back to your consciousness, in all the bright distinctness of renewed impressions. You are like the boy on a frosty morning, who, when asked the Latin for "cold," could not reply, and wanted more time to answer the question, saying he would soon have it, for it was at the tips of his fingers. The knowledge was there; it had once been registered on the tablets of the memory, but then, when most needed, he failed to recall it.

This, which is true in the preparation for examination in surgical clinical work, is likewise true in what is called practical surgery. It is useless for you to apply your splints and bandages, or to imitate many of the minor acts of surgery, unless someone is present who can tell you if you are wrong, and show you how to correct your error. The same is true, only in a less degree, in your preparation for the examination in surgical pathology and surgical treatment. You may have read treatises upon the subjects on which you are to be examined, and may have learned them off almost

by heart, and yet may be disconcerted and confused when some simple question is put, involving some principle a little varied in detail from that described in books, with their usual typical illustrations. To prove this, I will relate two instances in which, by simply reading, without thinking out the possible applications of the subject matter, a candidate has given a totally wrong answer to a question, having put upon it an entirely wrong construction.

A candidate, well read, no doubt, in all the minute points of pathology, but who had never studied thoroughly their general and more practical applications, was asked this question: "Now, sir, tell me, what would you say are the signs of the presence of inflammation in any part, in a surgical sense, by which you could be sure of its existence?" He sharply replied, "The escape of leucocytes!" To another candidate the question was put: "You are sent to a man with retention of urine, with a full bladder and in great pain. You are told that he is the subject of what is known as an impassable stricture. What would you do?" He replied immediately, "I would pass a catheter." "Just so," says the examiner, "but the contraction of the passage is such that this is not possible. Now, what would you do?" "I should pass a lithotrite," was the answer. No one could have made answers such as these who had been exercised ever so slightly in the practice of accurate reply, or whose knowledge was so arranged that by a single mental effort he could, at a moment's notice, marshal out in their proper order all the naturally-associated ideas belonging to any subject.

There is one source of confusion to a candidate in the *vivâ voce* examination on surgical pathology which nothing but practice and experience can overcome. It is the recognition of preparations of pathological specimens, the ordinary put-up specimens from the shelves of a museum. These are often spoken of by the student in a somewhat disparaging manner, as "pickles;" and many a rejected candidate has said afterwards that it was the "pickles" that did it! I know very well that, even to the experienced pathologist, a newly put-up specimen may not always be quite intelligible as to what it represents, or of what special morbid condition it is an illustration. After a little practice, however, in examining such specimens, being always careful to identify the precise anatomical relations of the specimen, before you attempt to define the pathological, I do not think you can fall into any serious mistakes. There is this to be said as to the two parts of the *vivâ voce* examination—the clinical and the pathological—a candidate is really, for the time, under conditions very similar to what happens in an examination in classics on unseen matters. He must have prepared himself for the whole range of surgical knowledge, for he can never tell what classes of cases may appear in the clinical, or upon what special subjects he may be examined in the pathological. And more than this, he cannot with certainty prepare himself by reading any particular text-book or text-books. The questions he will have are put in the most general terms, and only those principles of surgery, or those means of diagnosis and treatment

most usually followed, are such as will satisfy the examiners.

Before leaving this part of my subject, I wish to state that I am so convinced that facility in answering questions can only be acquired by practice that I would strongly advise every student to seek the assistance of a tutor, or a "coach," or a "grinder," before he presents himself for examination. The tutor is supposed to exercise a general supervision of his work, and to point out in what subjects he is the weakest, and to what he ought chiefly to attend: the "coach" will take a more personal interest in his studies, and will, no doubt, help him by the aid of artificial memory, or by graphic description, to keep ready in his mind data or facts of grave importance: while he who will allow himself to be called by the somewhat undignified title of a "grinder," is one who will guarantee that, if passed through his mill, the student shall come out polished so smoothly, at all parts of the surface, as to slip with ease through the meshes of the finest net any examiner could spread out before him!

I firmly believe there are many students, not idle students, and men of not inferior capacity, but men who have taken in an abundance of valuable facts—have read with care many useful treatises on surgical subjects—who, nevertheless, have not the power, without extraneous help, so to systematise their knowledge that it may be ready when wanted. What they need is exactly what a "grinder" can supply. The subjects of study must be gone over step by step, the essential points must be clearly marked, the less important elimi-

nated, and the mind of the student must receive just that training at the end of his course, which, if he had used it from the commencement, and through the whole term, would have served him as a perfectly natural process.

There was a time when "grinding," as it is called, was very objectionable. It took the otherwise idle, ignorant student, and, by the exercise of his memory alone, it sought to smear him over with an amount of knowledge which was hardly skin deep. But, as examinations are now conducted, this sort of varnishing will not do. The examiners endeavour by their mode of action to neutralise its influence, for while mere cram may serve for questions of routine, the student, thus superficially informed, will certainly fail as often as the routine system is departed from.

To sum up the whole matter, I would say, the correct way in which to prepare for examination is to begin early. In your early studies, when you first take up any subject, let your acquaintance with it be thorough, and as extensive as possible. Deal with ideas rather than with words; and translate the ideas of your textbooks, as early as possible, into words of your own. Write and re-write such paraphrases in terms of accuracy and terseness.

Be always on the look out for the reasons of things. Ask yourselves constantly why is such or such a thing done first, or left, it may be, to the end of an operation. Early learn to doubt, and try to receive as little as you can on trust. The *verba et acta magistri* are very good, they are worthy of attention, but they are not all.

Catechise yourselves, that is, be always asking yourselves questions which you should seek to answer there and then, if you fear to be catechised by others, which is far better. Try to explain to another any difficulty you may have met with in your studies, for, in doing this, you will soon find out whether or not you understand it yourself. Above all things, practise the art of writing, and remember what I have said as to the value of this element, in at least *one* of your examinations—that one in which I am deeply interested—not only that you may obtain your surgical diploma in your first attempt, but that I may be spared, in my present capacity as an examiner, the pain of seeing you in the list of those candidates whom we are compelled to send back to their studies by reason of their lack of knowledge.