mathematical, he can never enter the temple of science at all. At best he can take but a cursory peep. I am well aware that the world gets along by compromise, and I have no objection to a year or so being devoted to the mere instruments within the walls of a university; but let it be understood, that, even when we accept this, we must yet demand a much higher qualification in the matriculant than we do now. After a year spent among the instruments, the student, at the age of about nineteen, should be in a position to throw himself into real studies, — philology, philosophy, history, literature, art, physical science. To take the encyclopedic round would be impossible nowadays; but by the thorough investigation of a department he gains admission to the idea, and becomes a scientific thinker. Discipline in one department, properly understood and properly pursued, is discipline in all. He thereby attains to that reverence for all knowledge, and that large philosophical comprehension, which is the consummation of all true self-discipline. Thus it is that the mere intellect becomes permeated by the emotions which lie at the heart of all ideals, and becomes itself ideal and universal in its *personal* aims. This is what culture truly means.

Too briefly for the great subject, but not too briefly, I trust, for understanding, I have indicated the function of the university in education. Out of it the equipped man issues to encounter the buffets of life, and do the work which his hand findeth to do; but he can never forget that he has enrolled himself a citizen of the city of reason, and that he is a freeman of it by divine right.

All stages of educational progress you will, I trust, see gain their true significance, from their genuine ethical outcome, — their contribution to harmonious inner life, and harmonious outer living.

S. S. LAURIE.

COMPETITIVE EXAMINATIONS.[1]

THE subject which I have chosen for this evening's discussion you will probably regard as a well-worn one. But the working of examinations has now undergone the test of a lengthened trial; and much of the controversy respecting their educational value, which raged some ten years ago, has in a great measure subsided.

It therefore occurred to me that a retrospective view of what has been said or written by advocates on both sides of the question might be useful, if taken in the light of our accumulated experience.

It will be in the memory of most of us, that, between the years 1870 and 1880, our magazines teemed with articles on the subject; and there is so much that is suggestive and worth recording, that I must crave your indulgence for making frequent extracts from different papers. According as writers were interested in maintaining the old public-school system of education, or the system supported by the modern examination coach and so-called 'crammer,' they ranged themselves against or in favor of competitive examinations.

Some of the arguments hurled at the concoctors and upholders of the examination system were the following: —

Examinations led to cramming on the part of the candidates; i.e., preparation by pure memory-work, leading to a parrot-like acquaintance with facts and phrases, and even this knowledge quite transitory, learned for the purpose of the examination, and forgotten as soon as it was over.

The reasoning-powers were said to be stultified by disuse.

Imagination and originality were crushed.

The strain of competition would undermine the health of the young.

The artificial stimulus of competition would take the place of a healthy love of study for its own sake, and, when withdrawn, the genuine interest in work would never return.

In the Indian civil service the result would be that the worst candidates would be selected, and the best rejected.

On the other hand, the advocates of examinations contested these points one by one, and maintained the opposite conclusions. They affirmed that the competition and rivalry excited was a positive good in the training of the young; that, to make a great struggle for a place in an examination, even but once in a lifetime, was itself an education to a naturally indolent mind; that the system afforded the only method, free from chance or favoritism, of selecting candidates for innumerable appointments in life. They also maintained (and not without reason) that prizes for learning, and orders of merit, advanced the character of the teaching given to the whole of a school.

Amongst the opponents of the system, we find Dr. Birdwood, in an address before the Society of arts about the year 1873, — an address indorsed and eulogized by the *Standard* in a leading article at that time, — denounced the army and civil-service tutors as "a gang of examiners, and the directors of the new East India competitive examination Dodge company." But in this anathema it is clear that he ought to have included the civil-service commissioners, who are the real directors of those examinations.

[1] From the *Educational times*, April 1. A paper read before the College of preceptors.

The *Fortnightly* for June, 1875, contains a long article by Professor Sayce, which, from beginning to end, is a tirade against the whole system.

From much that has been written tending in the same direction, it will suffice to make an extract from a very able article by Mark Pattison, in No. 1 of *Mind*, 1873, bearing the title 'Philosophy at Oxford:' —

"The whole of the literary and philosophical teaching in Oxford is in the hands of young men, — the tutors of the colleges. As a class, these men abound, when they begin life, in energy and ability. They overflow with zeal, and the desire to act upon their pupils. But the zeal is not the zeal of the enthusiastic votary of science, who sees a vista of infinite progress opening before him, and desires to associate younger minds in following up the track. The young teacher, as turned out by us, has never been on any such track. He is an honor-man and a prizeman; *voilà tout!* and he knows the sure road to make others win honors and prizes, the road by which he himself won them. He is embarked on the career of teaching at twenty-five, say, and he finds himself at once the slave of a great teaching-engine, which drives him day by day in a round of mechanical work."

On the mode of preparation for examinations in philosophy, he goes on to say, —

"For two years the pupil is forced along a false road of study, in which neither science nor philosophy encounters him. Memory is really almost the only faculty called into play. Were they facts with which the memory is thus charged, the inadequacy of the system would be apparent at once. But in the preparation for this examination, instead of facts, the memory is charged with generalized formulas, with expressions and solutions, which are derived ready-made from the tutor. The first principle of philosophical, nay, of intellectual training, viz., that all should be educed from the pupil's own mind, is here inverted: all is poured into him by his teacher. The teacher does as much, and the pupil as little, as possible. The utmost that the student can acquire from the system is, that he has learned to write in the newest style of thought, and to manipulate the phrases of the last popular treatise."

Later on, however, we find more moderate views prevailing. In the *Nineteenth century* for April, 1878, Canon Barry of King's college, London, writing on 'The good and evil of examinations,' says, —

"We can now afford to take the wise advice of Carlyle, 'to stop shrieking, and inquire.' There seems to be no inconsiderable danger that to an exaggerated trust in examinations there may succeed an excessive and indiscriminate condemnation of them. Whenever one party vaunts a medicine as a panacea, their opponents are seldom content without denouncing it as a mere sham, or perhaps a deadly poison. . . . I hold it possible, by an examination, deliberately and carefully conducted, to test and to estimate, in those who are submitted to it, not only formed knowledge on this or that subject, but intelligence, thoughtfulness, and promise of future growth."

The whole subject will be found exhaustively treated in Todhunter's 'Conflict of studies,' 1873, and, four years later, in Latham's 'Action of examinations.'

First and foremost amongst the evil things which have been charged to the account of examinations is *cramming*.

Now, if the nature of competitive examinations is such as to involve, as the necessary and sufficient preparation for passing, the storing the memory with a mass of unclassified facts, and the accumulation of a huge heap of undigested knowledge, then the ultimate benefit accruing to the candidate is easy to foresee: it will be of the smallest possible amount, or the result may be even positively injurious to him. An examination which necessitated a mental process of this kind would be framed in the worst possible way, yet I find that it is such a process as this which is popularly denoted by 'cramming.' The term must therefore be equivalent to 'preparation for a bad examination.' But are all or any of the existing public examinations of this description?

That many candidates attempt to pass these by acquiring a mere mnemonic acquaintance with the several subjects, and that a very few succeed in the attempt, is the probable truth; but to infer that most of the candidates do so, is an *ex pede Herculem* mode of reasoning, the fallaciousness of which appears at once. For, let any one carefully inspect the papers set in the university, the Indian civil service, and the Woolwich examinations, and then ask himself if it be possible for a successful preparation for any one of these to be accomplished by the process of unintelligent 'cramming' just described. The answer ought to be an unqualified negative, and must be so if the examiners do their duty. In fact, much of the charge of inefficiency brought against these examinations must be borne by those who originate and conduct them. On this point, Canon Barry holds similar views, and says, —

"I maintain that an examination ought always to be able to defeat those crammers, who are properly so called. If it does not, the fault is to be traced to the imperfect discharge of duty by examiners. Those who carelessly set stock questions, and questions which can be answered by

memory without thought, or make their papers a field for the exhibition of their own cleverness and their own peculiar theories (without considering what may rightly be expected from the young men or boys examined, and what is therefore likely really to test their knowledge and capacity), simply court failure. There seems to be too little appreciation of the exceeding difficulty of the task of thorough examination. Examiners are burdened with a mass of work which they cannot get through except in a perfunctory manner, and which even then so utterly wearies them out, that this faculty of judgment and comparison is lost. They themselves sometimes seem to act as if any thing would do for an examination paper, and, unless they are strangely belied, are far from preserving a uniform standard in their arbitrary and irrevocable decisions. But the fault lies, not in the principle, but in the administration. It is remedied, not by giving up examinations, but by examining better."

In the address before referred to, Dr. Birdwood expressed the views held, then and now, by a considerable class, when, after drawing an ideal picture of the lamentable effects of this so-called system of cramming upon the Indian civil service, he boldly proposes, as a remedy, to hand over all the appointments to the universities and the public schools. This advice is doubtless consistent. If the knowledge which it is at present necessary for candidates to acquire, over and above that which they can obtain at the public schools, is only so much useless rubbish, unfitting instead of fitting them for the sphere in which they have to act, then the sooner it is dispensed with, the better. But it is difficult to discover where the *gravamen* of the accusation lies. The fact that a special education of a higher order than that which the public schools will give is required by the civil-service commissioners is obvious enough; but it is not easy to see how a better education can make a man worse: it certainly cannot be proved to do so by giving it an uncouth name. The rapid strides of science, and its intimate relation to all civilization and progress at the present day, led the commissioners to recognize the truth that a wider foundation than heretofore had to be laid for the education of those who are destined to take active service in the field. For the mere onlookers, a liberal education, according to the ideas of the old *régime*, may suffice. The public schools may remain faithful to the traditions of the past, and continue to insist that two dead languages constitute for all time the one necessary and sufficient basis for the complete education of the Anglo-Saxon. But the world will not stand still forever to worship this ancient 'idol of the den.' The movement which has resulted in draining, year after year, some of the best blood from our public schools, is but the beginning of a process which will ere long leave them dry and lifeless, if they persist in disregarding the signs of the times. It would be as useful to make technical botany, geology, or chemistry the universal substratum of school-education, as the Latin and Greek tongues; for the average school-boy never gets beyond the dead symbol of the language, which bears no fruit for him. The philosophy of history, the poetry, wisdom, and learning of the ancients, all that constitutes the hidden life of such studies, is lost to him through the obscurity of the medium. Neither can he arrive at this knowledge in such a way, any more than the ear can arrive at sweet sounds by learning the rules of harmony and thorough bass. And just at the time when those studies might begin to educate, in the true sense of the word, they are laid aside forever.

The charge of specialty and inutility which has been brought against the civil-service examinations is singularly inappropriate. We find the following astounding statement: "The training required (that is, for the civil-service examinations) was absolutely injurious, and was good only for the competitive examination itself, and worthless for all else beyond as well as below it. To fail in the examination was bankruptcy in purse, in mind, and in soul." Now, since the subjects in which the specialty consists are almost wholly comprised under the heads of modern languages, literature, and some of the chief branches of physical science, — subjects the knowledge of which forms the very life-blood of our social and commercial systems, — it is impossible to conceive that the circumstance of having paid more than ordinary attention to such branches of study could unfit a young man for making his own unaided way in the world, after having failed to secure a civil-service appointment. In fact, the argument, such as it is, recoils with tenfold force upon the public schools with which the comparison is instituted. It is there that the course of education pursued is special, and the results comparatively worthless. It is there that subjects which are of use only to the man of letters, or the professional linguist, are dragged into undue prominence, and made to form the staple of the instruction offered, without discrimination, to all. If the hypothetical youth who has been early stranded in life had just left a public school, he would perhaps have acquired a facility in writing execrable Latin hexameters, or in making equally bad translations of Euripides; but in the elementary knowledge useful in a score of professions he would be utterly and hopelessly

ignorant. In truth, if the heroes of Greek and Roman mythology had been indeed divine, we could hardly have expressed our belief and devotion more practically than by adopting the grammar of their language as the common basis of education in the nineteenth century. Perhaps the afflatus still clings to the disused words, and man's progressive improvement may somehow be indissolubly connected with the repeated incantation.

We are told that the public schools produce 'formed men,' and the competitive examinations 'crammed men;' but the antithesis is not clear, and definitions of the terms employed would have been acceptable. It is doubtless true that independence of spirit and self-reliance are created at the public schools, and the result, as far as it goes, may be very valuable; but intellectual training is at least of equal importance with social in formation of character, and it is the former that we assert to be inefficient. The term 'cramming' is either a perfect myth, as Mr. Todhunter has affirmed it to be, so far as it has reference to the examinations in the University of Cambridge; or, if its present application be a legitimate one, it means, in the pupil, more than usually hard and intelligent study, and, in the tutor, thorough and painstaking teaching. The boy who is taken from the public schools to be 'crammed' for the competitive examination, is brought into incessant contact with his tutors, is individually assisted in his studies, his difficulties are explained, and, if idle, he is perpetually encouraged to work. The specialty of the method consists in giving individual attention to each pupil, and so, by obviating waste of time and waste of effort, enabling each to take the shortest road to the end desired. It is obvious that such a method involves more actual teaching; yet with reference to the expense attending this tuition, and which has been represented as enormous, I am confident that a fair average would show that it does not surpass, even if it equals, the cost of education at the public schools. It is impossible to resist suggesting an amendment to Dr. Birdwood's proposal. Let the public schools alter their curriculum to suit the requirements of the competitive examinations, and treble their staff of masters, and let them do this without raising the school fees, and they will at once become formidable rivals of the so-called crammers.

Granted, however, that the evils complained of, and so much exaggerated, exist in any degree whatever, the subject is one which demands immediate and serious attention. The whole tone of education in this country is being influenced, and in some directions entirely determined, by the character of competitive examinations. And it is therefore hardly possible to overrate the importance which attaches to these examinations, and to the question 'How can they be made most serviceable?' In the last edition of the 'Encyclopaedia Britannica' there are some pertinent remarks on this head. The writer says, —

"It is found that some branches of study are better suited for examination than others. Certain studies endow the pupil with the faculty of *doing* something he could not do before, such as translating foreign languages, or solving mathematical problems; and there are others, like history, which, though they may add greatly to the wealth of the man's mind, yield no such definite faculty or technical dexterity. We can test the possession of the first sort of acquirement directly, by calling on the student to put in practice the powers he is expected to have acquired; but, with respect to the latter, we can only ascertain that he recollects some portion of what he has prepared. By choosing these portions judiciously, we can tell whether the student has carefully studied the subject and linked the various parts of it together, but we cannot make sure of the permanency of this knowledge. Young men used to examinations will pick up just the information suited in a very short time, from an analysis or a tutor's note-book, and forget much in a few days. This power of 'getting up' and carrying is not without practical value. It is the power which enables a lawyer to master a mass of details, and we may allow credit for this, for it shows a good analytical memory; but it must be observed that what is thus rewarded is not so much a knowledge of the special branch of study, as a *power of acquiring*, which, very probably, might be applied to one subject as well as another. It requires great experience and judgment in an examiner to deal with subjects like history and literature. He must have an eye for the cardinal points, and must know how a student ought to hold things together in his mind. If he yield to the temptation which seems to beset examiners, of picking out 'things not generally known,' and minute details which a wise man is content to leave to be looked up when he wants them, then a kind of artificial knowledge, solely for use in examinations, will be engendered."

The opinion that there is something in the nature of examinations which renders them, of necessity, not only inefficient as a test of mental culture, but absolutely prejudicial to the interests of education in general, is, I am convinced, erroneous. I believe that the capabilities of the competitive examination, regarded as an instrument for directing education and for proving its results, have never yet been fully recognized. I do not think that attention has been concentrated upon

the subject which its importance demands; and the reason for this may be, that the real magnitude of the effect producible through the agency of these examinations is overlooked; and this is partly through the simplicity of the agent itself, and partly on account of the difficulty of observing the subsequent effects upon individuals. It is curious to compare the seeming inadequacy of the means employed with the actual vastness of the result. Some dozen or twenty questions are set in each of a few papers once or twice a year, and the whole machinery of education in innumerable schools and colleges is guided at the will and pleasure of the examiner. The instrument placed in his hands is the examination paper, and he can fashion it as he pleases. Any branch of study may be admitted or excluded, and I maintain that it is in the power of the examiner, not only by the selection of questions to give prominence to any particular department of the subject of a paper, but also by judicious apportionment of marks to give weight to certain mental excellences of the candidate over and above the mere exercise of memory and rule of thumb. No doubt a discrimination of this kind is already exercised in some degree: but, in order that such a method of awarding marks should become practically effective, it would be necessary that a complete understanding should exist between the examiner on the one hand, and the pupil on the other; for, since all efforts of the candidate, both before and during examination, are certain to be regulated by his idea of what will be likely to pay, it is evident, that, if his notions on this point differ widely from those of the examiner, the best intentions of the latter may be frustrated. As examinations are at present conducted, very little or no information is given about the method of marking adopted. The one fact ever present to the mind of the candidate is that he has to answer correctly the largest number of questions he can within the allotted time.

For the sake of illustrating what is, perhaps, the most serious defect in this system of examination against time, let us suppose the case of two students in mathematics, A and B. A is brilliant, but not profound. B is profound, but slow. Six questions being proposed to them on paper, A answers them all in one hour, while B only answers four out of the six in the same time. Again, six more advanced questions being set, requiring more original thought, A is unable to answer any one of these, but B answers them all in five hours.

Now, suppose A and B to compete for mathematical honors at Cambridge, in the old tripos examination. A number of questions of the first sort, all within the scope of A's ability, are answered by him in the allotted time; B answers two-thirds of that number, and is accordingly beaten by A. The paper probably contains no questions of the second sort, and, even if it did, B would not venture to grapple with them, being deterred by the fear of losing marks, since in the time which the solution of one of these questions would take he would be able to deal with three or four of the easier ones. That such a result would be mischievous, will probably be admitted. In the ordinary affairs of life it is rarely of any consequence, when a matter is submitted to the judgment for decision, whether five or ten or fifteen minutes be occupied in coming to a conclusion. In the higher walks of science it is positively of no consequence whatever, the importance of arriving at a truth at all outweighing all consideration of the time occupied in the process. As an original investigator, A would be altogether surpassed by B. Why, then, should a premium be offered to mere rapidity of thought, in preference to any other excellences which might be displayed, in an examination the avowed object of which is to gauge the mathematical abilities of the competitors? If such ability as that of A's were usually allied with power, the objection would lose its weight, but the rule is probably the reverse of this: slowness is found allied with profundity and strength, quickness of conception with lack of great mental power.

Often the real difficulty of a question does not appear on the surface, and much time is frequently wasted in exploring the paper, and in attacking questions which have to be relinquished when their real difficulty is perceived; and in this way chance has much to do with the results, for nothing short of a deliberate analysis of the contents of the paper (for which there is not time) would enable the candidate to do himself justice by attacking those questions which alone he would be able to answer in the time allowed. It would also tend to definiteness of aim in preparing for any examination, if it were clearly stated by the examiners that marks would be accorded for certain excellences in the style of answering questions, and marks deducted for certain blemishes; and the more minutely all this could be specified, the less random would the results become, also the more would the character of that course of education, which it ought to be the sole object of the examinations to render perfect, be brought under the influence and direction of the examiners.

What I wish to insist upon is, that the evils which have been complained of as belonging to the system are not evils inherent in competitive examinations as such, but that they are due, wherever they exist, to accidental imperfections

in the mode of carrying out such examinations. It is obvious that any elaboration of the scheme of examinations, of the kind which I have very imperfectly suggested, would increase the labor and cost of conducting them. To insure satisfactory results, it might prove needful to engage a whole committee of examiners where but one is at present employed. Still, in view of the overwhelming importance of the effects of these examinations upon the education of the youth of this country, any objections to change founded upon considerations of economy must be regarded as trivial.

In conclusion, I may say that there appears to be a consensus of opinion in favor of the pass examination, with the subsequent arrangement of candidates alphabetically in one, two, or three divisions, thus reducing competition to a minimum. The College of preceptors has, I believe, never swerved from this principle, and a justification of it is surely afforded by the very marked success which has attended their examinations for a long period of years. The dangers, such as they are, cluster round the competitive examination, with its order of merit attached; and it is pretty generally agreed that young people should not very frequently be called to engage in these contests.

G. S. CARR.

THE LONDON COLLEGE OF PRECEPTORS.

THE erection and dedication of a handsome new building for the use of the London College of preceptors has called renewed attention to a most serviceable institution, and one which American educators should know something about. A writer in the *Athenaeum* gives a summary of its history. It is this college, far more than the ancient universities, that regulates and directs the education of the English middle classes.

The College of preceptors had a humble beginning. In 1846 some private school-masters, impressed with the ignorance and incompetence of numbers who called themselves teachers, met together, and ultimately resolved to form themselves into a society with the object of affording to the public a test of the qualification of teachers, and of thus, in course of time, excluding from the ranks of the profession all charlatans and impostors. The college increased rapidly in numbers, and secured the interest of distinguished patrons, among them the late Marquis of Northampton and Sir John Lubbock, by whose aid it succeeded in obtaining the royal charter by which it was incorporated in 1849. The preamble of this charter embodies very clearly the views of the original founders. The college is incorporated "for the purpose of promoting sound learning, and of advancing the interests of education, especially among the middle classes, by affording facilities to the teacher for acquiring a knowledge of his profession, and by providing for the periodical session of a competent board of examiners, to ascertain and give certificates of the acquirements and fitness for their office of persons engaged, or desiring to be engaged, in the education of youth." These primary objects of the college, it may at once be said, have hitherto been carried out but to a limited extent and with small success. At first, by a strange irony of fate, the result of its operations was to aggravate the evil it sought to cure. In the report of the schools inquiry commission, Mr. Fitch stated that in his district the objects of the college had not been fulfilled to any appreciable extent, and that several school-masters of good standing who had once supported it "had withdrawn themselves in disgust at the shameless use which was made in advertisements of the letters M.R.C.P. by men who were wholly unqualified;" and as late as 1868 Mr. Joseph Payne, in a paper read at a meeting of the college, put the plain spoken question, "Can any one wonder that school-masters by hundreds, finding that high rank in a learned corporation was to be obtained at the rate of seven shillings a letter, should have availed themselves of the golden opportunity?" The council have ever since steadily discountenanced the use or abuse of these mystic letters. The only grades the college recognizes for which diplomas are granted are associate, licentiate, and fellow. These grades are conferred after examination, partly in general knowledge, and partly in the theory and practice of education. The qualifications for the lowest grade are about on a par with those of a first-class certificated teacher, the licentiateship corresponds to an ordinary degree, and the fellowship may fairly rank with an honor degree at the universities. The College of preceptors deserves full credit for having first recognized the necessity of a professional examination, and for setting an example which the older universities are slowly following. So far, it has succeeded in attracting few teachers, and those mostly of an inferior class; but the failure is due, not so much to any defects in the scheme, as to the general indifference of the public.

By far the most important event in the history of the college was the establishment of the examination of pupils. This was begun in 1850, and was in full operation in 1854; that is, four years before the university local examinations, and two years before those of the Society of arts. In spite of the competition from these and other examining boards, the college examinations have steadily