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UNIVERSITY QUESTIONS IN ENGLAND.

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ALL the great university questions are now under consideration in England, in connection with the intellectual and social progress of the nation. With regard to some of them, what is going on there is instructive to us here. The general subject is, perhaps, even more important in our case than in that of England, because, apart from the interests of literature and science, a democratic society stands in special need of the elevating, refining, and moderating influence which is exercised by great intellectual institutions. We have been made sensible by recent occurrences in Canada of the folly of attempting to import into the New World the conservatism, or what is deemed such, of the Old World; but there is another kind of conservatism, consisting in the development of tempering agencies of a rational and permanent kind, which good citizens in a democratic country are specially called upon to cultivate. The improvement of these means of

training national character is perhaps a more hopeful, while to many it is certainly a more congenial, line of reformatory effort than direct conflict with demagogism, faction, and corruption in the political arena.

1. There is one difficult problem with which the reorganizers of universities have to deal in England, but which does not specially concern us here—the adaptation of the medieval colleges to the requirements of modern society. Oxford and Cambridge were, till the other day, exclusively, and they still are distinctively and substantially, federations of colleges; and all the colleges either were founded in the Middle Ages, or if founded after the Reformation, preserved the mediæval type. All were originally clerical, celibate, and quasi-monastic in their rule of life, as well as in their structure, though their objects were not, like those of the monasteries, prayer and religious contemplation; but prayer and study; All Souls' College at Oxford alone be-

ing intended rather as a chantry than as a literary institution by its founder, whose wish in later times was negatively observed by sinecurism combined with social exclusiveness. Till 1854 the mediæval codes of statutes remained legally in force and continued to cut off the colleges from intellectual progress. But in 1856 the bulk of them were swept away by a Commission of Reform under the authority of Parliament. The British Parliament never formulates principles, but in the University Reform Act it practically established the principle that the inviolability of a founder's will must be confined to his main object, and that all details must be subject to revision by proper authority whenever change of circumstances might render it expedient. Fifty years was the period taken as the limit beyond which no founder's foresight with regard to the best means of giving effect to his main object could be expected to extend; and the commissioners were empowered to deal freely with the details of every foundation which had been in existence for that period. This question is one which the people of the United States may some day be called upon to consider, if they do not wish their noble treasury of endowments to become a museum of donor's whims; at present it seems to be governed not so much by the philosophy of Turgot, the writer of the famous article in the *Encyclopædia*, as by the arguments of Daniel Webster, which are not philosophical, but forensic. A covenant with the dead may be kept in the letter, but if Time, the unceasing innovator, has broken it in the spirit, and there is no legislative power of bringing the spirit and the letter again into agreement with each other, the dead man himself is the most wronged. Scrupulous respect for the sanctity of property is a popular feeling so invaluable that we might well bear much inconven-

ience rather than impair it in the slightest degree; but it would surely not be difficult to make it plain to popular apprehension that there is no robbery in abrogating provisions which a founder himself, supposing him to be a reasonable being, would have abrogated had he lived to see their effect. A wise and thoroughly generous man would deprecate the compulsory observance of the details of his will in a public institution for fifty years, perhaps even for a single year, after his death. Even where munificence is common, as we have every year illustrious proof of its being in the United States, munificence combined with entire freedom from vanity and from the lurking desire of self-perpetuation is comparatively rare. The most noble-hearted founders of intellectual institutions are sometimes personally unacquainted with the essential conditions of success; and bounty, saddled with the enactments of ignorance, may be a dead loss to the unwary recipient. "Never look a gift-horse in the mouth" is a foolish proverb, as many a public museum and other institution can testify. If the Trojans had looked a gift-horse in the mouth, they would have seen something which concerned them deeply.

The Reform Commissioners of 1854, however, failed to deal comprehensively with the question of celibacy. Their hesitation was not unnatural. On the one hand, compulsory celibacy is at variance with the principles of modern society, and fatal to the permanency of the college faculty, the members of which, in fact, have usually taken up teaching only as a mode of employing their time and increasing their income while they were waiting for a college living or other preferment. On the other hand, to abrogate the rule would be to put an end to the social life and break up the whole system of the

college as it now exists. When the subject is mentioned, the thoughts of an Oxford man go back to an ancient dining-hall, a beautiful and noble room, hung round with old portraits of college worthies, in which all the members of the society are assembled at their meal, the fellows on the dais, the students at long tables down the room. Grace is said by the presiding fellow, and one of the scholars or junior members of the foundation, in a Latin form handed down from the Middle Ages. If it is a college festival, the "loving cup" goes round. Dinner over, the students retire to their own rooms, and there often make up parties of their own. The fellows withdraw to their "common room," where, while the wine is passed round after the fashion of the old country, the talk often runs on the affairs of the college and the characters, doings, and prospects of its junior members. The strength of corporate feeling and the attachment to the old house fostered by this system are valuable; still more valuable are the close personal relations and constant intercourse between tutor and pupil which it encourages, and upon which an old Oxford or Cambridge tutor often looks back with no common pleasure. The social bond between the undergraduate members of the college is also favourable to the formation of character and to friendship: perhaps it is partly the want of such a bond in the American universities that leads students to seek a substitute in the "secret societies." If the fellows marry, they must live separately with their families, and for the most part out of college, for the arrangement of the monastic building repels married life. There will then be an end of the college as a society; as a barrack it may remain; but as a barrack it will probably be a nuisance, for, in England at least, it would be scarcely possible to maintain discipline, or

even manners, among a large body of students rooming in the same building without the presence of the seniors. Still the quality of the teaching is the first object, and it can be secured only by the permanent devotion of the fellows, or such of them as constitute the college faculty, to their calling, with which the rule of celibacy fatally interferes. If the present commissioners can devise a mode of reconciling the improvement of the teaching with the preservation of the social life of a college, their ingenuity will deserve a crown.

2. The hideous system of religious tests imposed in Stuart times to keep the universities under the dominion of the State church has, after a protracted struggle, been removed: at least it has ceased to be compulsory; though we believe it is still legally open to the graduating student, if he thinks fit and has the clerical profession in view, to bind his conscience to formularies comprising several hundred propositions in theology, many of them controverted, before he has had time to form any well-grounded opinion. The university of Laud and Sheldon is now open to "Jews, Turks, infidels, and heretics," all of whom have taken advantage of the concessions, for the heir of the late Khedive was a student at Oxford. The major part of the fellowships has also been thrown open to laymen. But the remainder of the fellowships, amounting in some colleges to a moiety of the whole number, and all the headships except two or three remain tenable only by clergymen of the Church of England. In the Middle Ages everything literary was clerical; so that when a mediæval founder enjoined his fellows to take orders at a certain standing, he in no way prejudiced the literary objects of his foundation. But at the Reformation, literature, and science with it, passed in the main to the laity: the

functions of the clergy were narrowed to the pastoral office and theological study; and institutions of which all the officers were clergymen underwent a corresponding contraction of scope and character, besides being enslaved politically to the reactionary party with which the Established Church was identified. Clerical restrictions on elections to headships and fellowships, especially those on headships, now act as powerful guarantees for the ascendancy of the Church of England in the universities. This fortress of Establishmentarianism is closely besieged by the Liberal forces, and in the end will no doubt fall. It is being daily rendered less tenable by the manifest progress of the new opinions among the academical clergy. The presidency of a layman, even if he were neutral in theological questions, could hardly be so subversive of religion as is that of a clergyman who, as everybody believes, would at once doff his black coat and white tie if he could do so without at the same time doffing his academical dignity with an income of \$10,000 a year.

Anglican or clerical ascendancy is one question; religious education is another, though the two are naturally confounded in a country accustomed to identify religion with a State church. In a period of religious division, such as that through which we are passing, the happiest solution of the problem would seem to be a secular university open to all, with colleges each of which, while availing itself of the professoriate, libraries, and apparatus of the university, and sending its students into the common examinations, might carry on its special system of religious instruction and moral discipline within its own walls. But it would be impracticable now to appropriate the colleges of Oxford and Cambridge to different churches, and on this continent the practice of local separation has gone so far that a for-

mation of colleges on the Oxford and Cambridge plan appears beyond our reach. The progress of religious thought, if it continues in the present direction and at the present rate, will soon change the aspect of this question. In the meantime, one who has been a student and tutor in a religious college at Oxford, and who is now connected with a secular university in America, may be permitted to avow his conviction that, whatever may be the case with children, in those who are of an age to go to college spontaneity is the essence of religion; that compulsion breeds antipathy at least as often as it does the reverse; and that morally as well as intellectually the most industrious college is the best.

3. The curriculum both at Oxford and Cambridge, till about five and twenty years ago, was confined to classics and mathematics; and the study of classics at Cambridge was purely philological, while at Oxford it included ancient philosophy, with Aristotle for a text-book, and ancient history. Now, physical science, history, and jurisprudence are included as optional subjects for the final examinations, and admitted to equal honours with the old studies, though classics and mathematics are still retained as the general basis, and preserve their ascendancy to a great extent. Physical science, though it has immense attractions and will probably in time become the basis of education, does not lend itself very easily to the purposes of a university curriculum: lectures in it may be attended and notes of the lectures may be taken, but the real benefit of the study as a mental discipline cannot be reaped without going through a course of actual investigation and experiment which can scarcely be compressed into three years, even if the other studies are set aside. The system is in a state of transition and

uncertainty, which will not be terminated till we have arrived at a more definite idea than we now possess of the object and functions of universities. In the Middle Ages a university was a place both of liberal and professional education, as well as a place of general study. The liberal education was preliminary and designated by arts, the professional education was final and designated by the faculties, the whole course, liberal and professional, extending over some fourteen years. In England the professional studies of law and medicine have now migrated from the universities to London. Is it desirable and possible that they, or the more scientific parts of them should be recalled to their ancient home? Ought the university to be content with giving the student a liberal education, or ought it to put him in the way of winning his bread and butter? Behind these questions there is coming up one of a more fundamental kind which is likely to press upon us more and more. What is the benefit derived from residence at a university by the general mass of young men who have no particular taste for learning or science, and are not destined to lead learned or scientific lives? Do they, on the average, get anything in the way of useful culture or preparation for active life which repays them for the sacrifice of time, the expense and the moral risk? Would not their minds be just as well trained by the study of a profession or by business? Would they not pick up from books and journals read at home nearly as much of liberal culture as they carry away from the university? In the Middle Ages knowledge could be obtained only in the lecture-room of the professor; now it comes to you through the press wherever you are: you must still attend the demonstrator, but the lecturer might almost as well be attended by a short-hand

writer as by the class. Perhaps the answer may somewhat vary with the circumstances of different countries. In England the number is very large of young men, the sons of the territorial aristocracy and the destined rulers of the community, who do not go into professions, and who, if they were not learning something and undergoing some sort of discipline at the university, would be learning nothing and undergoing no discipline at all. Small enough, no doubt, is the benefit that many of them receive; still it is better than nothing, and by giving their sons a long course of education men of wealth and leisure pay the highest tribute in their power to the country. It is said that a young nobleman at Oxford was heard to call out from his window, "If any fellow is going anywhere to do anything, I'll go with him." In his father's halls his lordly listlessness would have been the same, and at Oxford there were, at all events, one or two places to which university discipline forbade him to go. These remarks may be extended to such young heirs of wealth as there are in the United States, and in one respect with greater emphasis. The young English nobleman or squire has, by the institutions of the country, enough political or administrative work cut out for him to prevent his sinking, as a rule, to the lowest depth of Sybaritism; but the young American millionaire, take away his college culture and the tastes that it may awaken, has no such salt provided to keep his mind and character from rotting.

It may be observed, in passing, that the effects of the old classical culture in England are not to be measured by the number and writings of the professional scholars. In these Germany has been far ahead of England, though, whoever may have been the greatest paleographer or antiquarian, it would be hard to name a greater

"Grecian" than Porson. But it would scarcely be a paradox to say that the reason why Englishmen have edited and commented upon the classics less is that they have read them more. If perfect familiarity with the classics and a thoroughly classical taste are enough to constitute a scholar, much of the best scholarship of England would be found among amateurs. Many are the instances of statesmen and proconsuls who through life have kept up their classical studies in the intervals of business, and have turned to them as an intellectual haven in their old age; while the political sentiment of the ruling class has had in it, for the last three centuries, a strong ingredient drawn from republican antiquity.

4. It became clear at least thirty years ago that a measure of university extension would be needed, especially in the interest of a large class in the north of England, generated by the marvellous growth of commerce, which desired a high education, but shrank not only from the expense of Oxford and Cambridge and the sacrifice of time, but still more from the contagion of aristocratic extravagance and the complete interruption of all business connections and ideas. A plan was framed at Oxford by those who recognized this exigency, but at the same time wished to preserve the great historic centres, the purity of the national system, and the standard of national degrees. It was proposed to affiliate local colleges, of which there were several already in existence, and to permit the junior course to be gone through and the lower degree taken at the local college, the university prescribing the curriculum and holding the examinations; while those who desired to go through the senior course and to take the higher degree would be required to come into residence at the university. It was thought that the junior course and

degree would meet the wants of men destined for business, and that a local college might provide an adequate staff of teachers and apparatus for that purpose. The plan was tabled at the time, richly endowed bodies being rather slow in their movements; but it has now been called up again, and is likely to be adopted. In the meantime, however, circumstances have changed. Owens College, Manchester, which would once have accepted affiliation, has grown to what it deems the dimensions of a university. It has claimed university powers, and, after a long controversy and much hesitation on the part of the government, it has carried its point. The resistance, which found sympathy even among the trustees of Owens College, and the hesitation of the government, marked the aversion of the friends of high education in England to the multiplication of universities which they know will be followed by a lowering of the standard.

It remains to be seen whether England, having once got upon the dangerous slope, will be able to prevent herself from sliding into that "one-horse" university system which is the bane alike of Canada and the United States, and, like some other things among us—the state of the municipal franchise, for instance—seems to be at once deplorable and past remedy, since the weaker a college is the more certain it is to cling to its isolation. If the English need a warning example, several of our one-horse universities will furnish it to them with a vengeance. Nothing can be more patent or more flagrant than the inadequacy of some of these institutions to the functions which they pretend to discharge. A primary school convicted of anything like a proportionate deficiency of teachers, books, and apparatus would be at once closed. A small university must of necessity be

a bad university. It must of necessity be narrow intellectually and socially: it cannot provide itself with a proper staff of professors, or with a good library, or with the collections and teaching apparatus which science now demands. All this is undeniable, but it will not induce weak colleges to give up their university powers.

In another way the one-horse university system is likely to do mischief. An untrammelled facility of graduation, with the present tendencies of American society, is pretty sure to produce a supply of graduates in excess of the demand. In an early stage of civilization the difficulty is in inducing men to take to intellectual callings; but now, and especially on this continent, the difficulty is the other way. Founders of new colleges hardly consider what is to be done with all the alumni whom they will send forth. The intellectual callings are becoming overstocked, and it is cruel kindness to multiply the number of cultivated and sensitive natures condemned to destitution.

Oxford and Cambridge are so richly dowered with wealth, beauty, and history, and have such a hold on the heart of the nation, that if they are true to themselves they will probably keep their place. Possibly they may even re-absorb the University of London. That institution was called into existence only by the fatal bigotry which, in the supposed interest of a privileged church, excluded half the nation from the national universities. It has no staff of teachers, and is, properly speaking, not a university but a central examining board, conferring degrees on all comers without reference to their place of education or to the course which they have gone through, otherwise than as it is indicated by the examination. About fifty years ago a new university was founded, on the model of an Oxford College, at Durham, out of the sur-

plus revenues of the cathedral. This was an unseasonable revival of a project of Cromwell, formed at a time when the communication between the north and south of England was less easy than at present. It has failed, and the university is fain to give substance to its spectral existence by an alliance with a medical school at Newcastle.

5. Another subject of discussion, and rather vehement discussion, is the system of examinations. At Oxford and Cambridge the examinations for students ambitious of honours are competitive, and more highly so at Cambridge, where the candidates are placed in order of merit, than at Oxford, where they are ranked in four classes and placed alphabetically in each class. The intensity of competition is greatly increased by such prizes as the fellowships, which are now bestowed on graduates by examination, and are of the average value of \$1000 a year. Various objections are now brought against the system. It is said that the examination test is imperfect, that students are apt to be overstrained and exhausted by the effort, above all that the proper objects of study are supplanted by ambition or pecuniary motives, and that the genuine student is prevented from following his natural bent, and forced to direct his reading to the impending examination. The practical question must be whether the good or the evil preponderates, and in England, perhaps, the weight in the scale of good may be increased by considerations which have no place in America. England is an aristocratic country, and these university honours and prizes, especially the fellowships, keep a door open for plebeian merit. On the other hand, there are aristocratic students in the English universities out of whom it is impossible to get any work without the spur. The life of Lord Althorp is in every way



interesting as a history of an upright public man; and it contains a remarkable proof of the usefulness in some cases of competitive examination. Evidently, as Lord Althorp said himself, he would have sunk into a mere sportsman, absorbed in hunting or shooting, and have been lost to the country, had not his sense of his powers been awakened and his ambition kindled by a college competition. Against mere test examinations, without competition, such as are usual in American colleges, nothing can well be said. No other method of ascertaining proficiency has been devised, and it will hardly be pretended that Newton or Faraday would have been turned from his natural bent by having to pass a college examination in mathematics or chemistry. No doubt love of the study and the duty of self-culture are much to be preferred as motives to compulsion or ambition. But to trust to these alone would be to consign a large proportion of our present students to idleness and vice. If examinations are to be abolished, the students must be picked. Imperfect, of course, any examination test is; but at Oxford and Cambridge the result generally accords with the previous reputation of the students, so that the injustice can hardly be very great. A university, of course, is concerned only with the results of literary and scientific education; it does not pretend either to impart or to test any practical qualities, except industry and perseverance, and to quarrel with the examination system for not selecting men of action is to quarrel with a circle for not being a square. That in any examination which is tolerably managed mere "cram"—that is, facts got up by rote—can compete with real knowledge few who have had experience in examinations will assert. We should like to see the man who, being ignorant of mathematics, could be crammed so as

to solve mathematical problems, or who, being ignorant of Latin, could be crammed so as to write the language correctly. But, as Mr. Lowe said, "Cram is what I know and you don't."

The student's health, no doubt, is sometimes injured by overstrain in preparing for examinations: it is probably injured at least ten times as often by the indulgences to which idleness is prone. But there is no need for overstraining. Even under the competitive system regular work for a moderate number of hours each day will do all that can possibly be done. The mind is not a pitcher; it can take in knowledge only by an active effort, of which it becomes incapable when it is jaded. In the examination itself, to produce your knowledge you must be fresh and vigorous; and the candidate who wishes to succeed had better reduce than increase the number of his hours of work as the time for the ordeal draws near. Bad habits will tell on the student as well as on other men. If your pupil breaks down, inquire whether he is over-reading himself; but inquire also how many cigars he smokes, and whether he works late at night. Rise early, reward your own virtue in so doing with a cup of tea or coffee, if Dr. Dio Lewis is not looking on; get a good deal of your work done before breakfast, when the understanding, though not the fancy, is at its best; spend the evening in recreation, and sleep well. Then if you break down, you may justly charge it to the account of examination or Evolution.

The proposal to abolish examinations presents itself in rather ominous conjunction with an almost avowed desire on the part of the holders of academeical endowments to rid them of educational duty, indeed of fixed duty of every kind, and to turn the headships and fellowships into places of literary and scientific leisure. Universities, it is said, ought to be

dedicated not to education, but to research. Scepticism still prevails as to the possibility of selecting "researchers," or of securing their activity when they have been selected; and it is not likely to be allayed by the disdainful tone in which the spokesmen of the movement denounce the idea of exacting anything of the researcher beyond his existence. Experience is against their policy. Neither the headships of colleges, which have been hitherto almost sinecures, nor the deaneries and canopies of cathedrals, which have been entirely so, have ever produced anything, even in the theological line, at all proportionate to their revenues, or which could even justify their existence. But those who do not wish to cast out education, or to bring in sinecurism, do wish to provide for research. The professoriate both at Oxford and Cambridge will certainly be enlarged; the incomes of professors will be increased, and leisure enough for private research will be secured to the professors. A certain number of fellowships will probably be left without educational duties, and the headships—the value of which ranges from \$5,000 to \$20,000 a year—saving the clerical restrictions, are likely to remain much as they are at present. The universities will also be provided with funds for the assistance of special researches, which most people deem a more prudent investment than the endowment of researchers. Already the university presses bring out books, such as the Icelandic Dictionary, which require a large preliminary outlay, and would hardly be taken up as a commercial speculation by ordinary publishers. Ample provision will thus be made for the objects which, in America, the Johns Hopkins University is specially intended to promote. But universities, if they do their work well, will beget research beyond their own precincts. They will make the profes-

sions more scientific, and thus multiply Austins, John Hunters, and Maines. They will cause many a private income to be employed like that of Cavendish or Fynes Clinton. Mr. Morgan, of Rochester, and Mr. Lea, of Philadelphia, are just as much devoted to research as they would be if they were living within college walls. The intellectual and scientific world has grown far wider than it was when everything was concentrated in the universities.

6. In throwing open the fellowships and scholarships to examination, while many obsolete preferences in elections were unhesitatingly removed, hesitation was felt in abolishing the preference to poverty. It was done, however, and in the interests of poverty itself, as is attested by the most competent authorities, who assure us that more poor youths make their way at Oxford under the new than under the old system. Need is indefinite, and the person most in need is apt to be the most importunate or the best befriended. It is a cruel benevolence which tempts a poor and virtuous youth, who would be happy as he is, into an ambitious line of life without satisfactory proof of his being able to maintain himself at the new level; and the only satisfactory proof is his success in open competition. If anything in the eleemosynary way is to be done, let it be by means of a fund secretly administered by the college authorities for the assistance of deserving students in their need. The point is mentioned because it seems to have been mooted in the United States.

7. Union of manual labour with study, the generous vision of the founder of Cornell, has never been proposed in England, though in the little universities of Scotland, it is believed, there are still students who work on the paternal farm in the vacation. The experiment appears to have failed. Study and manual labour

draw on the same fund of nervous energy, which is not sufficient to feed both; and a man exhausted by study requires relaxation, not toil. Some people seem to fancy that the labour of the hands alone is worthy of the name, and that there is something despicable in working with the brain; they might as well despise an engraving tool for not being a ploughshare. That university graduates will go back to the farm seems, under the present conditions of society, to be a dream.

8. Lastly, there is co-education. The University of London has admitted women, not without strong opposition by a part of its governing body; but the University of London, as has been already said, is nothing but an examining board. Oxford and Cambridge have undertaken the examination of women who wish to become teachers; they have always allowed every one, whether students or not, and without distinction of sex, to attend the public lectures of professors; but they still hold out against the admission of female students, though Cambridge is closely besieged by an outpost of the invader, Girton College, planted at its very gates. Every engine is plied, appeals are made not to reason only, but to sentiment, and enforced by a gentle intimidation, to which those who cherish a reputation for liberalism especially are apt to yield. Clearly enough not only this special question, but the more general and far graver question as to the future relations between the sexes, is likely to be settled by other influences than that of argument. Nature will break a settlement which reason has not dictated; but the experiment may cost us dear: we may find that it is possible to unmake women, though it is not possible to make men.

That the education of women ought to be high we are all agreed. But unless the functions of the two sexes are the same, high is not necessarily male.

If the function of men, as a sex, is labour, that of women maternity and the management of a household (and it is difficult to see how the species can be preserved under any other arrangement), the presumption is in favour of some corresponding difference in final education, and there can be no illiberality in assigning to each sex that which it needs, not that which it does not need. If the two are destined by nature to be complements of each other, to train them up as competitors is not large-mindedness but folly. The wealth of marriage will certainly not be increased by the change. No man or woman can master the whole circle of knowledge and accomplishments; the more diverse, therefore, the acquirements of the two partners, the richer the union will be. Thoroughgoing radicals spurn the idea that the interest of wedlock is to be allowed to regulate these questions; but they will find themselves in collision with very deeply-rooted prejudice. Physiological questions we leave to physiologists, who are certainly not unanimous in pronouncing that the full male burden of intellectual labour can be safely imposed on the future wife and mother. The danger would of course be greater under the competitive system of examination at Oxford and Cambridge than under the system which prevails in the United States. But it is hardly conceivable that the feelings of young men and young women towards each other in England should undergo such a change as to admit of their competing against each other. Nor are there many who would wish to awaken in the breasts of women the feelings which rivalry awakens in those of men, and which, it must be allowed, are a drawback on the good effect of the prize. No cast-iron rule need be laid down: our system must be framed not for Mrs. Somerville or Miss Martineau, but for women as a sex.

Supposing, however, that the final education of men and women is to be the same, it is a separate question whether they can receive it in the same universities. We cannot draw an affirmative conclusion from an experiment made with a few young women probably of an exceptional character, and certainly under the restraints of a novel and delicate position; even granting such experiments to have been successful, which in the case of the female students of Zurich appears more than doubtful. We have to ask ourselves whether the young women of the wealthier class generally can be safely mingled in a university with the young men of the same class. Let any mother, provided she is not an extreme radical, decide. In America there are excellent colleges for women, with full university powers, though we understand that those among them which at the outset professed and attempted to give a complete male education have found it necessary to make concessions to sex, as all universities would if the number of females in them became large. There is, in some quarters, a manifest desire to burst open doors merely because they are closed; but gratitude is due those who, like the liberal though stalwart President of Harvard, decline, in mere deference to such a desire, to jeopardize institutions which are doing good work in their own way.

9. Perhaps the list even of serious subjects would hardly be complete if we left out athleticism, the extravagant development of which in the English universities fills with apprehension many who are perfectly aware of the connection between a sound body and a sound mind. Success in athletics, notably in rowing, has now become an object competing nearly on a par with the proper objects of a university, and students plead training as a ground for the intermission of their studies, which, in fact, are incompatible with the

animalism of an athlete. This may be partly the Nemesis of previous neglect of physique, though the young gentry of England can hardly be accused of having habitually sacrificed the body to the mind; but it is difficult to believe that the abnormal and temporary development of muscle can really be conducive, as regular exercise and exhilarating pastimes are, to the normal and permanent health required to sustain intellectual labour in after-life. Whether it is not the reverse of conducive to such health is a question not to be decided by statistics confined to the cases of celebrated boating crews, which are sure to have been made up of picked men. The main source, however, of the mania, for it is nothing less, is, in England, the *ennui* of a wealthy and unemployed class; in the United States, imitation of England. University authorities have too often made themselves responsible for the growth of the tendency by the homage they have suffered themselves to pay to it. If their universities are gymnasia, their position is hardly a sound one: raw beefsteaks and the services of a trainer can be had without the expense and risk of going to college.

Horse-racing, the great pastime of the aristocracy in England, has become a sink of gambling and worse things. Rowing, pedestrianism, and other sports are being rapidly sucked into the same vortex. All alike are gathering a train of "professionals," who turn a liberal pastime into a disreputable trade. These men, mere brutes many of them, are exalted into idols, their coarse society is courted, their stolid sayings are repeated, the most ridiculous details of their bodily condition, the tidings of their catarrhs and boils, are mingled in cablegrams with the most momentous items of intelligence. They are compared to the athletes of Greece, and their matches to the Grecian games.

It is idle to think that in the industrial communities of modern times we can revive the habits of the ancient Greeks, bodies of slave-owners dividing the leisure secured to them by the labour of their slaves between the gymnasium and war. Life now is too busy and too serious. The ideal of "noble boys at play," which the Greeks are said to have realized, may be poetic, but it cannot be ours. With the Greeks, however, athleticism was not mere play; it had in it an element of usefulness which preserved it from being childish; it was a preparation for war when war was the principal business of life, and when battles were decided by personal prowess, not by long-range rifles. Rowing a shell or walking against time is almost as little connected with anything useful as trundling a hoop.

Moreover, the ancients did not confound muscular strength with intellect, or put them on a par. Hercules is represented with an unintellectual head; and there are representations of gladiators at Rome which are evidently caricatures of brute strength by artists who despised it.

At Oxford, while athletics flourished in superabundant measure, the volunteer rifle corps of the university languished and was with difficulty kept on foot. Yet here was something really Greek; here was the modern counterpart of the military duty performed to the country by every citizen of an ancient republic. At Cornell University and other institutions enjoying Federal endowments, the American Legislature has introduced the requirement of military drill and instruction. It is to be hoped that the law will take effect. Drill and rifle practice are almost as good a recreation as any

game; they are not exhausting like athletics; they are likely to give the too-bookish student just the bracing and the tone he needs. If they are not so necessary to the modern citizen as warlike training was to the Greek, they are necessary, though in a different way. War is not likely to afflict this continent since slavery is dead and Jingoism will probably not be long-lived. But war is not the only danger. The labour riots which occurred three years ago at Pittsburg and elsewhere revealed, by the lurid light of incendiary fires, the peril in which a society unarmed and without habits of military co-operation always stands. America is annually receiving from Europe masses of immigrants more or less malcontent and unaccustomed to any government but one of force; often she receives men whose trade is industrial conspiracy, and who have been ring-leaders in the bitter conflict between labour and capital in the Old World. The army of the United States is very small, and there appears to be a disposition to reduce it still further, on the ground that it may be dangerous to liberty, though it has never swerved or shown the slightest disposition to swerve from its civil duty, even under the exciting and demoralizing influence of a great civil war. A practical recognition by American youth of the military duty of all citizens in extremity is the only possible way of guarding liberty against anarchy, relieving society of its fears, saving honest industry itself from ruin, and making conspirators feel that while every one has full liberty of speech, however wild his opinions may be, those who proceed to lay violent hands on American civilization will do it at their peril.—*Princeton Review.*

## THE HISTORY OF EDUCATION.

MUCH of the attractiveness which unquestionably attaches to the study of the history of education is, no doubt, due to the fact that it is, in England at all events, a comparatively new subject. In pursuing such a course we are journeying almost along untrampled ways. It would be too much, perhaps, to say that the soil is actually virgin, so far as our own country is concerned, for the works of several distinguished Englishmen prove the contrary. But this history of education is a subject which needs revival almost as much as education itself did at the period of the Revival of Learning in Europe, when the study of the special branch required must begin. The Germans and the French (especially the former) have outstripped us in this matter. The *Pädagogik* of the one and the *Pédagogie* of the other have been formulated and methodised when we are only just beginning to think of setting our materials in order. That is mainly what we have to do. There are ample materials to hand; what is required is to get them into shape. And the very first thing to be done, seeing that the ways are thus untrampled ways, is to draw up an itinerarium, just as we should do if we were about to venture forth into a new country. By this is meant something more than a mere syllabus, which is, of course, a rudimentary necessity. A synopsis, as much in detail as possible, of the whole ground to be covered will certainly tend to clearness of conception and symmetry in arrangement. It will be the scaffolding for the future building, the outline to be by-and-by

filled in with lights and shadows, and tinted with the proper colours.

Such a synoptical view is presented in the admirable article on "Education," by Mr. Oscar Browning, in the ninth edition of the "Encyclopædia Britannica;" and at much greater length—but still as a sketch in outline—in that admirable little French work, the "Histoire de la Pédagogie," by M. Jules Paroz. To a combination of these sketches, with side-references to the works mentioned therein, the present synopsis will be largely indebted for the facts it seeks to group together. We may pass over the ecclesiastical schools of the Jews and the Egyptians, not so much because they lie outside the geographical limits of our subject, or beyond its chronological boundaries, each of which considerations may be liberally dealt with in a comprehensive survey of the entire subject, but because the Jews\* had little effect on the progress of science, and also because ample justice can be done to Egypt when one comes to consider the transplantation of Greek learning to Alexandria. The Greeks first developed a science of education distinct from theological training; and it is, of course, this secular phase of the subject with which the student of pedagogics is principally concerned. They divided their subjects of study into music and gymnastics, attaching special meanings to each of these terms. Plato is the author of the first systematic treatise on education. The sub-

\* In Paroz's "Histoire de la Pédagogie" are given the chief texts from Proverbs and Ecclesiastes bearing on Hebrew education.

ject was naturally and necessarily connected with the unfoldment of his ideal Republic; and it is in the discourse bearing that name that we find the fullest account of Plato's views on this topic; but it is also treated in the "Laws"; and the two doctrines require some little manipulation to make them harmonize. Plato's main position is that the beautiful and the true are coincident, and that the mind best fitted to grapple with the difficult problems of practical life is that which has been formed by the poetic process of the contemplation of art. Music—meaning by that term all those studies over which the muses presided—was best fitted to excite the feeling of tenderness in the minds of the young; while gymnastic exercises would strengthen their characters and bodies for the contests of life. Such a combination of the moral, intellectual and physical training, Plato calculated, would issue in the formation of the perfect character. He proposed to make instruction entirely a state affair. Aristotle, too, whose view of education is found in his treatise on Politics, also views man as part of the state. To live outside the state, he said, would require a being greater or less than man. Considering the feud that was waged between the opposed systems of Platonism and Aristotelianism at the time of the revival of learning, a detailed study of those two systems would be absolutely necessary in order to guarantee an exhaustive view of the history of education. Attention must also be given to the practical work done by Pythagoras and by the Sophists—those earliest schoolmasters—respectively.

The aim of the whole educational system of the Romans was eminently practical. It was only on the eve of the great Hannibalic War that the Roman first had anything like a literary education; and even so early as that Greece began to take Rome cap-

tive, for the Roman tutors, as well as the Roman writers, were frequently Greek slaves. There is something surely characteristic as to the genius of the two nations when we find the *scholæ* of the Greeks become the *ludi* of the Romans. Under the Empire education was systematised; and Horace has left us an amusing picture of his experiences as to the tender mercies of the "Plagosus Orbilius." One great authority on the subject of Roman education is Quintilian. He treats the subject, so to say, parenthetically, as, in fact, Plato and Aristotle had done before him. His work is on Oratory; but he introduces incidentally a complete sketch of a theoretical education. Perhaps Quintilian has been as much drawn upon by later theorists in education as old Robert Burton's "Anatomy of Melancholy" was by miscellaneous writers, and sometimes with as slender acknowledgment of the source. John Milton said that the oratorical training prescribed by Quintilian was competent to do even more than it proposed, and to fit a man not only for the rostrum of the rhetorician, but to make him perform, justly, wisely, and magnanimously, all the offices, both public and private, of peace and war.

Leaving behind us for the moment these old world ideas on the subject of education, and approaching the line of delimitation laid down by the University of Cambridge for the commencement of the subject proper, we find, first of all, the Christians down to the fifth century educated in the Pagan schools. It was at Alexandria that special provision was made for Christian education under the auspices of Clement and of Origen respectively. The later Latin fathers, Tertullian, Cyprian, and Jerome, would have the line rigidly drawn between the two systems; and Augustine, when the prayers of Monica at last prevailed,\*

\* Paroz, p. 65.

condemned with some bitterness the system to which he owed so much of his influence. In the Middle Ages the contrast was between monasticism on the one side and chivalry on the other. The education was that of the cloister or of the castle. Its object was to form the hermit or the knight. The respect in which the female sex was held largely differentiated the two views. On the one side woman was regarded from the point of view of St. Antony; on the other from that assumed by the Troubadour. Though leavened, of course, with a strong element of ecclesiasticism, the educational work that was done within the walls of the monasteries is not to be despised. Monte Cassino,\* Fulda, and Tours did good service in their day and generation; but they certainly did not succeed in combining the *dulce* with the *utile*. The ascetic idea was carried into education, and study was not made a pleasure, or Quintilian's idea of tenderness in discipline carried out. The course of seven sciences or liberal arts divided into the *trivium* (grammar, dialectics, and rhetoric), and the *quadrivium* (arithmetic, geometry, astronomy, and music) was thus described in two doggerel hexameters:—

Gram., loquitur; dia., vera docet; rhet.,  
verba colorat;

Mus., canit; ar., numerat; geo., ponderat;  
ast., colit astra.

One of the earliest expositions of this system was that of Martianus Capella, who, in 470, published his *Satyra* in nine books, the first two being devoted to what he called the marriage of Philology and Mercury, and then a separate book to each item on the trivium and quadrivium respectively. Cassiodorus, about the year 500, wrote the treatise, *De Septem Disciplinis*; and Cicio Janus compiled a

metrical astronomy in hexameters, much after the fashion of the *Propria quæ Maribus* and *Asin Præsenti*, which school-boys had to learn in the days of the old Eton Latin grammar. Over against the seven articles of the monastic quadrivium stood the seven knightly accomplishments. These were to ride, to swim, to shoot with the bow, to box, to hawk, to play chess, and to make verses, sometimes in Latin, oftener in Italian or Provençal. It would scarcely be possible to imagine a sharper contrast than between the two rival *trivia* and *quadrivia*, summarising, as they did, two utterly opposed types of character and training.

There were exceptions, of course, even in the dark ages, to the prevailing gloom. It was not all dark. There were, for instance, the schools of Charles the Great, concerning which Mr. Mullinger has written an interesting work, taking those schools as typical of the revival of education in the ninth century. Less than a century after Charlemagne, King Alfred restored letters and schools in England, when they had been almost extinguished by the Danish invasion. Yet his efforts were as unfruitful after his death as Charlemagne's had been in France: and the darkness deepened into the Egyptian gloom of the tenth century, when, it has been significantly said, no heresies appeared. Even in this century, however, the darkest of Christian literature, the Arabs had flourishing schools of learning from Bagdad to Cordova. Of their seventeen universities, Cordova was the oldest, and had a library of 600,000 volumes. An elementary school was attached to every mosque, in which reading and writing were taught, and the pupils learned to recite poems by heart. The rise of the scholastic philosophy and of troubadour poetry, the institution of universities, and the return to a profound study of the

\* See Mullinger's "Schools of Charles the Great," p. 42.



Greek and Latin classics were the literary steps during and after the eleventh century by which the revival of learning was reached. From the twelfth and thirteenth centuries—the era of the schoolmen—date twenty universities, including those of Paris, Montpellier, Oxford, Cambridge, Bologna, Padua, Rome, Salamanca, and Lisbon. Many of them were special as to their faculties; Bologna being devoted to law, and numbering 12,000 students at the end of the twelfth century; Salerno made medicine its peculiar province, and Paris was thronged with students who were anxious to probe the border-line on which theology and philosophy met.

Certainly the most interesting of those communities which preceded the Renaissance was that of the Brethren of the Common Life, established at Deventer, in the Northern Netherlands, with affiliated institutions at many other places. Though the rule was to all intents and purposes monastic, yet no vows were taken; and while the instruction given was originally intended to be purely religious, yet the rigorous repudiation of secular learning was afterwards relaxed, and the result of the combined regimen was the formation of such a character as Thomas à Kempis, author of the "Imitatio Christi," whose real name was Thomas Hammerlein, and who entered as a student at Deventer\* in the closing years of the fourteenth century. All these types of education, however, disappeared before the Renaissance and the Reformation. It is necessary to keep apart these two distinct events, to which M. Taine applies the names of the Pagan and the Christian Renaissance respectively. The education of the Renaissance is best represented by Erasmus; that of the Reformation by

Luther and Melancthon. Speaking of the new life of this period, Mr. Oscar Browning terms it "the marvellous resurrection of the mind and spirit of Europe when touched with the dead hand of an extinct civilisation." "Then," adds M. Taine, "literature shot forth like a harvest." But we must not forget that our aim is scholastic—let us say in preference *pædagogic*—and not for the moment literary, in the ordinary sense of that word. Two names stand out prominently in this revival of letters, and each has claims upon our consideration. In 1424 Vittorino da Feltré, who died in 1477, had gained fame as the first practical schoolmaster of the Italian Renaissance: and Castiglione, who was born the year after Da Feltré's death, left us in his *Cortigiano* (the Counter) the sketch of a cultivated nobleman of those days. Each of these, however, affects a stratum of society which cannot by any extension of the term be called popular. Erasmus meets us one section lower down. He has left us a minute account of his method. He stands at the very antipodes of Mr. Lowe, for the child is to be formed into a perfect and a pious man by means of Latin and Greek. The Latin, however, that Erasmus would have taught was to be a living, not a dead, Latin, just as the Greek of De Quincey was not a dead Greek when he turned a *Times* leader into it for amusement, or as the Greek of Professor Blackie is not a dead but a living Greek, when, writing to modern Greeks, he cuts pleasant jokes to them on the old language. The great point Erasmus insisted upon was that letters were to be taught *inter ludendum*. The old Roman name for the school was to go back to its original etymology. Before the revival of letters female education had declined, but Erasmus would make the education of girls as important as that of boys. Thus he stands at the very op-

\* See for an interesting picture of Life at Deventer, "Christian Schools and Scholars." Vol. II., p. 337. published anon., reprinted by Longmans (1867).

posite point of the compass from the old ascetic, monkish system.

But still even this was the education for the few. It was Luther who, as has been well said, "brought the schoolmaster into the cottage" and laid the foundations of the system

which is the chief honour and strength of modern Germany, a system by which the child of the humblest peasant, by slow but certain gradations, receives the best education which the country can afford.—*The Schoolmaster, London.*

(To be continued).

## RECENT CHANGES IN THE MATHEMATICAL EXAMINATIONS IN THE UNIVERSITY OF CAMBRIDGE.

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THE mathematical examinations conducted in the University of Cambridge have long exerted a powerful influence on the study of mathematics both in England and in the Colonies; a short account of the recent changes made in the rules for conducting the examinations may therefore be not without interest for the readers of the *Canada Educational Monthly*. I confine myself to the examination for mathematical honours. This examination is open to students who have resided at the University for above three years and a quarter; those candidates who satisfy the examiners are divided into three classes, called respectively, Wranglers, Senior Optimes, and Junior Optimes; and each class is arranged in order of merit.

I shall not attempt to trace the history of the Cambridge mathematical examinations very fully; this will be found with sufficient detail, up to the year 1850, in a work by the late Dr. Whewell, entitled, *On a Liberal Education in General, and with Especial Reference to the University of Cambridge*. The general tendency of the changes successively introduced

has been to render the examinations more severe, by increasing the extent of matter involved and the amount of time occupied.

In January, 1839, the examination for the first time occupied six days; on each day two papers were set; to some of the papers two hours and a half were assigned, and to others three hours. In January, 1848, a considerable change was made; the examination now occupied eight days, and was divided into two parts. First, the elementary subjects were taken during three days, and candidates who failed to satisfy the examiners in this part were not allowed to proceed to the second part, which occupied five days and was devoted to the higher subjects. The elementary subjects may be roughly defined as those which do not require the use of the Differential and Integral Calculus. The method of conducting the examinations, commenced in 1848, continued until 1872 inclusive, with very slight modifications. Subsidiary regulations were introduced from time to time, the main object of which was to define the range of the examination; and on the whole the following subjects

were explicitly excluded: Electricity, Magnetism, Heat, Elliptic Functions, LaPlace's Co-efficients, Capillary Attraction, and the Figure of the Earth.

A system of examination which remained substantially unchanged during twenty-five years, may be supposed to have worked reasonably well; but in these days of incessant revolution, an institution which has endured for a quarter of a century is naturally exposed to the charge of being superannuated. Accordingly, another system was introduced in 1873: the examination now occupied *nine* days, and extended, with scarcely any exception, over the entire range of pure and mixed mathematics.

In a volume entitled, *The Conflict of Studies, and other Essays connected with Education*, published in 1873, I discussed the new system of examination just introduced, and passed a very unfavourable judgment on it. The force of the objections then urged has been fully justified by experience; the difficulty of conducting a competitive examination by written papers over such an enormous extent of subjects, soon became obvious, and such attempts as were made to overcome the difficulty proved to be quite inadequate.

Accordingly, a Committee, called in academical language a *Syndicate*, was appointed in May, 1877, to consider the higher Mathematical Studies and Examinations of the University. The *Syndicate* presented a report to the University on March 29, 1878; in this the difficulties which had been found to attend the working of the scheme commenced in 1873, were thus stated in moderate and cautious language:

"At present this examination is conducted in accordance with a scheme which, approved by the Senate on June 2, 1868, first came into operation in January, 1873. The principal changes introduced by that scheme

lay in a large addition to the subjects of examination and in the arrangement of the subjects in divisions, each division having a definite amount of credit, or marks assigned to it, made known approximately beforehand to the students. Although the experience of the working of that system is still a short one, the *Syndicate* believe that it is long enough to show that the system exercises an unfavourable influence on Mathematical study. By the extension of the range of subjects the severe strain of the competition has been intensified to an injurious extent; and, moreover, the hope expressed in the Report recommending the scheme, that Students would be encouraged by the new regulations to acquire an accurate and well-digested knowledge of a few subjects, instead of attempting imperfectly to master a great number, has not been realized. In the words of the Mathematical Board (Report, May 15th, 1875) it appears that the attention of the great majority has been spread over too wide a field for accurate or thorough knowledge to be attained in any division. The *Syndicate* are satisfied that under the present system a large number of Students are led, in the hope of gaining higher places in the Tripos, to attempt matter really beyond their grasp, to the neglect of that habit of thoroughness and precision in the less advanced subjects in which the educational value of the study in great degree subsists."

The *Syndicate* suggested a new scheme, which however was only partially accepted by the University; the principal novelty which it exhibited being rejected. The most advanced mathematical subjects were thrown into two groups, which were to be taken in *alternate years*, while the elementary subjects, and what we may call the *intermediate* subjects, were to be taken every year. One

of these two groups consisted of Higher Algebra; Higher part of Theory of Equations; Higher Analytical Geometry, Plane and Solid; Hydrodynamics, including Waves and Tides; Sound; Physical Optics; Conduction of Heat; Vibrations of Springs and Bars; Elastic Solids. The other group consisted of Finite Differences; Higher Definite Integrals; Elliptic Functions; Theory of Chances, including Combination of Observations; Newton's Principia, Book I., Sections ix., xi.; Lunar and Planetary Theories; Figure of the Earth; Precession and Nutation; Electricity; Magnetism. Thus the suggestion amounted to this, that a student might entirely omit one of these groups or the other, according to the year in which he presented himself for examination.

It is obvious that many objections may be urged against this rough mechanical remedy for the unwieldy extent of the examination, and we cannot wonder that the University refused to adopt it. A more advantageous method of obtaining the end might have been proposed. Let the examination extend every year over the elementary and intermediate subjects, and in addition let certain of the most advanced subjects be taken, notice of which has been given at a previous date, say three years before. Thus if an important work were prescribed on any high mathematical subject, as for example, Probability or Electricity, this would naturally be appointed as a text-book for examination; and on the other hand University professors might arrange their lectures so as to assist students in mastering a selected subject. However, as the University rejected the proposition of a fixed cycle of subjects, the Syndicate had to devise some fresh expedient.

Accordingly, on October 25, 1878, the Syndicate made another report to the University, and the suggestions

then offered were adopted. Thus, finally, a new scheme has been constructed, which will come into operation for the first time in 1883. The main provisions of the scheme are these. The examination will in future be divided into three parts. The first part, consisting of the elementary subjects, will occupy three days; those who fail to satisfy the examiners on this part will not be allowed to proceed further. The second part, consisting of the intermediate subjects, will occupy three days. Both these parts of the examination will be carried on during the month of June; and the candidates who pass will be arranged in order of merit in the three classes of Wranglers, Senior Optimes, and Junior Optimes. Only the Wranglers will be allowed to proceed to the third part of the examination, which is to occupy three days of the following December, and to include all the advanced subjects. These subjects will be arranged in groups, and the questions so adjusted as to allow a candidate to distinguish himself on a selection of the subjects, made by himself. Candidates who satisfy the examiners in the third part are to be placed in three divisions, and each division is to be arranged *alphabetically*.

The most important point in the new scheme of examinations is that involved in the word *alphabetically*. This is the first attempt which has been made to moderate the excessive competition which has for a long time attended the higher mathematical examinations at Cambridge. At the University of Oxford, the system of placing the men in classes, and arranging each class alphabetically, has long prevailed; while at Cambridge, arrangement in order of merit has been almost universal. Each system has its disadvantages, and it has been said that Oxford examiners were often tempted to wish for the Cambridge

system, and Cambridge examiners to wish for the Oxford system. At Cambridge, however, there is a growing desire to moderate the excessive competition, and many hope that the last scheme for regulating the mathematical examination will effect some improvement.

A few words must be added with respect to another examination on high mathematical subjects, namely, that for Smith's prizes. Dr. Smith, formerly Master of Trinity College, left in 1768 two annual prizes, now amounting to about £23 each, for two commencing Bachelors of Arts, the best proficient in Mathematics and Natural Philosophy. From the year 1769 to the present date the prizes have been annually awarded; the examination takes place a few days after the close of that for mathematical honours, but is conducted by another set of examiners. When the prizes were originally instituted, the examination by which the places of the Wranglers, the Senior Optimes, and the Junior Optimes were determined, included other subjects besides Mathematics and Natural Philosophy; and accordingly there was nothing strange in the institution of a special examination and prizes for these selected subjects. But the former examination has now for many years been confined to the subjects for which the Smith's prizes are bestowed; and thus the anomaly is presented of two independent examinations, conducted in the course of a single month, for apparently the same end. The existence of the second examination seems to have been defended on the ground that it was different in character from the first, and devoted in general to the more advanced parts of Pure and Mixed Mathematics. But the system which was commenced in 1873 removed even this slender excuse for a double examination, because it extended the first examination

over the entire range of mathematics; and in the work already named the present writer endeavoured to shew that the continuance of the Smith's prizes examination, as then conducted, could not be justified. In this matter also time has decided in favour of the writer's opinion; for since 1873, the undesirable result has too frequently occurred that the Smith's prizes examiners, by their award, have reversed the judgment already pronounced by those who arranged the list of wranglers. For example, in the year 1879, the first, second, and third wranglers were passed over, and the Smith's prizes given to two candidates who stood next on the list of wranglers. In the last scheme for conducting the mathematical examinations, it is proposed that the examination for Smith's prizes should cease, and the prizes be in future given for the best two essays on a subject or subjects in Pure Mathematics or Mixed Mathematics.

In conclusion, I will briefly advert to one circumstance which exerts a strong influence on the studies and examinations of the University of Cambridge, namely, the valuable prizes which, under the name of *Fellowships*, are gained by those who secure the foremost place in the Academic contests. The emoluments of a Fellowship vary according to the conditions of tenure and the financial prosperity of the different colleges; as a rough average, we might perhaps take an income of two hundred and fifty pounds a year for ten years. In most cases the fellowship is terminated by marriage, and in many cases cannot be retained for more than an assigned period, unless the holder becomes a clergyman of the Established Church. As a testimony of ability and an introduction to a future career the indirect value of a fellowship considerably exceeds the direct money payment. A late eminent

Cambridge scholar considered that the *first* place in either Mathematical or Classical Honours might be estimated as worth ten thousand pounds. In a recent biography of Bishop Selwyn, justly honoured on both sides of the Atlantic, the posterous estimate is offered that a Fellowship was equivalent to sixty thousand pounds. However, when reduced to sober fact, the value of a Fellowship, direct and indirect, is a substantial amount; and on the average, the first six or seven wranglers succeed in obtaining fellowships. Hence arise many distinctive characteristics of the University system; for instance the severe competition and the strong excitement connected with the examinations for honours. To this it is owing that the mathematical instruction is almost entirely in the hands of *private tutors*; every candidate seeks for the special training which may best suit him in his struggle for distinction in the examinations. Thus, too, it happens that the professors of

the University, though men of the most conspicuous ability and reputation, do not gain many hearers of their lectures. Quite recently a distinguished Professor gave a course of lectures to a single student; the notebook of the student showed that the course had been extremely good. Perhaps, however, the attempt to teach the higher parts of mathematics by lectures is a mistake, and should now be abandoned in favour of the publication of standard treatises.

The Universities of Oxford and Cambridge are at present in the hands of Commissioners appointed by Parliament for the sake of effecting changes and reforms. Time will shew whether any success attends their efforts; the united revenues of the colleges in the two Universities cannot fall short of half a million of pounds annually, and all must wish that such a large income should be expended in the most advantageous manner.

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## THE HUMAN EYE: ITS STRUCTURE, FUNCTIONS, DEFECTS, AND PRESERVATION.

BY T. W. MILLS, M.A., M.D., RESIDENT PHYSICIAN OF HAMILTON CITY HOSPITAL.

THE human eye has been, since poets sung, the theme of rapturous description in their undying numbers; its glances have kindled into devotion more hearts than all the rest of the features of the face combined; its use brings more knowledge than any other sense, perhaps than all the others, apart altogether from reading, by which latter, by the way, less of our real knowledge is acquired than we suppose. In barbarous ages the greatest punishment inflicted, short of death, was the loss of the eyes. The blind

are, universally, objects of the greatest pity; yet in view of all this there is, if not a sad lack of knowledge in regard to the means of preserving the eyesight, certainly a lamentable decay in the world's ocular power in the mass, and an ever-increasing necessity to use at a very early age the various forms of "artificial eyes"—one of the results of our "advanced civilization" of which we are wont in this century to be so proud. Before the discovery of printing and the diffusion of reading matter, any sort of dissertation on

the eye would have been comparatively superfluous. "In much wisdom is much grief" indeed, as far as the organ of sight is concerned, in modern times at least. It is a fact of which educators, parents, and all interested in general progress cannot be too well aware that: (1.) In general weakness of the organ of vision, and in short-sightedness, there is a notable increase in the number of persons affected throughout the civilized world. (2.) This is most marked in the most highly civilized countries; lands in which illiteracy is least common, and in which the highest learning abounds, notably in England, France, America, and Germany, especially the latter. (3.) The age at which short-sight commences and reaches a most inconvenient degree of development is constantly and rapidly lessening; so that now a vast number of very young children are near-sighted. (4.) In both the number of persons affected and in the age at which the disease or infirmity appears, there is a marked change for the worse within the past decade. The aim of the writer, in this paper, will be to so far deal with the subject and so explain in a brief and popular way the anatomy and physiology of the eye that those of his readers who may not perhaps be fully aroused to the importance of the subject already will feel that it is one of those matters which should daily influence the actions of educators who may, by a few common-sense safeguards, assist in preserving the most valuable of our organs of sense, and thus confer on their students a lasting benefit.

*Anatomy and Physiology of the Eye.\**—Let any student who desires

to understand the anatomy of the eye and have therefore a sure basis for a sound physiology, obtain two ox's eyes, the large size of which is an advantage in this case; boil one until it is quite solid throughout, and preserve the other for use in the natural state: both should be fresh. Divide the boiled one with a sharp knife in a direction from before backwards; this will show the relative position of the different parts, especially of the various bodies that act as lenses; while a transverse section of the un-boiled eye (best made with a sharp scissors) will present a more truthful and detailed picture of the general appearance in life. The following, to describe briefly, may be observed, and the appearances are sufficiently like those of the human eye to answer almost every purpose; 1. Entering at the back, nearer the internal than the outer part of the ball the *optic nerve*: afterwards expanding as the innermost coat or tunic of the eye, is the *retina* which is almost transparent and of very delicate structure; its purpose the reception of impressions from the rays of light. 2. Next to this, passing outwards, the *choroid coat*, thicker than the preceding and rendered quite opaque by abundance of black pigment; its purpose the absorption of rays of light passing through the *retina*, so that they may not be refracted and thus blur the image; this is also the *vascular* coat, or that in which blood-vessels are most abundant. 3. Outermost, the dense, tough, inelastic, thick *sclerotic* tunic; whose great purpose is to confine, keep in place, and protect the more delicate parts within. 4. All these tunics end abruptly anteriorly, where, like a segment of a smaller sphere set into a larger, or like a watch crystal in its case, we see the thick but perfectly transparent and colourless *cornea*, which is without blood-vessels and in structure allied to cartilage. 5. Sus-

\* The reader is earnestly urged to pursue the study of the eye by the dissections proposed, as difficulties will then disappear that will otherwise be insurmountable. The technical terms are not essential to a correct understanding of the subject; but are inserted for those more especially who may wish to have their knowledge in a scientific form.

pended like a circular curtain, with an opening in the centre (*pupil*), across the eye and attached at the junction of the *sclerotic* with the *cornea* is the *iris*, a muscular structure the most delicate of this class in the body, composed of fibres that radiate from the circumference to the centre, but with a ring of circular fibres to control the size of the central opening or pupil; the purpose of the entire arrangement being, in fact, to regulate the quantity of light admitted to the *retina*. 6. Some little processes (ciliary bodies) which serve to steady the crystalline lens. 7. The *crystalline* lens, a bi-convex, beautifully transparent object, with a very hard centre. This object is the most important of the refracting bodies in the eye; the *aqueous humour*, which fills up the space in front of the lens before and behind the *iris*, being comparatively unimportant. 8. The *vitreous humour*, intermediate in density between the aqueous and crystalline lenses fills the greater part of the cavity of the ball which lies behind the crystalline lens. The supernumerary apparatus connected with the visual organs is especially important, not to vision, but to the preservation of the main parts of the eye in good order; and in protecting and saving it so that it may perform its functions agreeably and for as long a period as the general organism of the individual may last. Of these supplementary parts the principal are: 1. *Eyelids*, which are composed of cartilage (translucent) covered with skin externally and mucous membrane internally, in the latter of which some glands are imbedded. 2. *Eyebrows* and *eyelashes* to protect the eye from dust, sweat, excess of light, etc., not to speak of their relation to comeliness. 3. The *lacrimal gland*, situated at the upper and outer part of the socket of the eye; its secretion (tears) serving to cleanse the eye constantly, and to lubricate an organ

that is in almost continuous motion during waking hours; the surplus fluid being carried off into the nasal cavity by the *lacrimal duct*, situated at the inner angle of the eye-lids. Special attention is directed to the *conjunctiva*, the mucous membrane that lines the inner surface of both lids and is thence reflected across the front of the globe of the eye in which part it must, of course, be transparent. This membrane is of the utmost importance: in almost all diseased states of the organ of sight it is more or less inflamed. "Sore eyes" generally means inflammation of the *conjunctiva*—it is, in fact, very much exposed. If a clear idea of the anatomy of the eye has been gained, in the practical way proposed at the commencement of this description, the physiology of the organ of sight may be readily comprehended.

*Physiology of the Eye*.—The rays of light pass through the transparent *conjunctiva* covering the *cornea*; then through the latter are admitted through the pupil, the size of which depends upon the action of the *iris* (a reflex one)—the opening being greater the smaller the quantity of light; when the rays reach the aqueous humour, or rather when passing through the *cornea*, refraction begins. While owing to the crystalline lens being bi-convex its refracting power is so great that with the help of the vitreous humour when the rays reach the back of the eye and fall on the *retina* (chiefly that point called the "yellow spot," the most sensitive part) it is found that they have crossed each other so that the image formed is necessarily inverted. Now were it not that the *iris*, which is opaque from its being pigmented on its posterior surface, cuts off all but central rays, and thus focuses the image at the back of the eye; and were it not that the *choroid*, by its pigment, absorbs rays that pass through the *retina*, there could be no



perfect image formed, and consequently no distinct vision. Now, that the crystalline body acts as a powerful lens may be demonstrated by removing it from the freshly obtained eye of some animal and placing it over a mark, such as an arithmetical character, when it will cause the latter to appear much magnified.

To understand clearly the various aberrations in vision, the manner in which the image is formed on the retina must be kept very fully in view. It must be remembered that by the power of motion in the eyes by which they adapt to the position of the object, and by the power in the lens capsule by which the lens itself is altered in shape, the eye can quickly and readily suit itself to the distance of objects; and always when perfect vision is to be attained must the image fall exactly on the retina—not before it or behind it. What change takes place in the anatomy of the eye which renders the subject short-sighted (*myopic*)? A very marked one indeed. The eye becomes too large; its long diameter too great, that is its antero-posterior diameter, (its measurement from before backward.) The greater prominence of the segment of the smaller sphere (cornea), the greater bulging of the eye; the staring appearance of *myopic* eyes is due to this real enlargement. Exactly the opposite takes place in the eyes of the aged; they get smaller; partake in the common shrivelling and waste; the eye is shorter from before backwards, in consequence the cornea and crystalline lens flatten. As a result of these two opposite states it will at once be seen that the *myopic* eye refracts light too strongly, while the *presbyopic* eye does not focus strongly enough. The one class of persons have therefore to use concave, the other convex glasses, to correct the respective deficiencies of their organs of sight. The near-sighted

person brings objects close to the face so that the lenses of his eyes may be required to exert more refracting power—in other words, to bring the image in the proper place on the retina, and not before it. As distance from the object lessens the amount of refraction required for a perfect image, the aged hold objects off to correct the defect of their organs. The great evil, however, that educators have to grapple with is *myopia*, which is increasing noticeably in all our schools. Before inquiring into its causes it may be well to consider some of its necessary sequences. By watching anyone looking at an object, it will be observed that the nearer the object is brought to the eyes, the more they incline inwards towards the nose, until finally they cannot move any further in this direction, when they give up, as it were, either closing and then looking outwards or forwards, or in some way altering their direction. Each eye is moved by six muscles attached behind to the most posterior part of the socket, and in front a short distance behind the junction of the sclerotic and cornea. Now if from any inherited weakness, or if from excessive use in turning the eyes inwards, due to *myopia*, any of these muscles get relatively weakened, the result must be that the stronger ones will overpower the weaker—the eye will involuntarily turn in the wrong direction, and squint (*strabismus*) will be the result. Again, the excessive motion of the ball, perhaps the undue pressure on it, together with the constant bending down of the head to look at books on tables, to write, etc., favours congestion or excess of blood in the visual organ, and thus exaggerates the size of the eye, and of necessity the *myopia*; so that if old habits be persevered in the case must go from bad to worse. Moreover there are few *myopic* persons who are not weak-eyed, if not subject to at-

tacks of actual inflammation. But what are the causes of this prevalent infirmity in the youth of our day? This is a highly important question for educators to consider. Waiving a scrofulous taint, poor digestion, owing to faulty habits in eating, etc.—the cause above all others that is operating in producing this form of degeneration, as of so many others among intellectual people, is excessive use, and especially in this case over-use, amid unfavourable surroundings. Now happily we can, if we will, strike at the root of these evils. What are the facts? A very young child is required for five or six hours of each day to look at small characters in books, on maps, black-boards, etc., and to “pay attention” all the time. This is not all; he is required again to con books, for some hours often, at night. Now if any other organ were thus used, would it hold out any better than the eye? With the youth preparing for a severe examination this strain is frequently continued till midnight, or after it. No man ever burned “midnight oil,” for any length of time, who did not pay for it sooner or later, and dearly too, by some defect in the organs of vision. But after all, it is not alone to over-use, but to a very large degree to the circumstances under which the organs are used that *myopia* must be attributed in not a few cases. The great law of rest is violated as in the case of no other organ of the body, unless perhaps, the brain. The student does not cease to look when his eyes are warning him by the sense of fatigue. When the light becomes an enemy why does he not withdraw his eyes from that enemy? Most people will stop eating when their stomachs are full; very few are equally ready to shut out excess of light from the eye. The eyes, however weakly they may be, rarely suffer in the open air with diffused day-light. Educa-

tors must deal with two capital evils: (1) The introduction of light into the school-room in such a way that it falls directly on the visual organs of the pupils. (2) Leaving rooms entirely unprovided with any means of regulating the supply of light. A steady light is most essential; every one knows the consequence of looking steadily at the sun—momentary blindness; surely then sudden changes must tell injuriously, if in a less degree, than in the case just cited. Now observe that in the open air the eyes are but little exposed to such sudden changes. A third matter must be attended to by the parent and the student himself—that is, protecting the eye from the direct glare of lamps. All persons should have an ordinary shade on the lamp by which they read; while those afflicted with *myopia* should take special precautions as to position of the body, etc., so that the eyes may have just the exact quantity of light they can comfortably bear; and that coming to them in a direction such that neither by reflection nor refraction shall it impinge directly on the organ of sight. During sleep the room should be dark, so that the eye may have perfect rest; to lie facing a window will act injuriously on this sensitive organ; for it will be remembered that, though the eyes be closed, the cartilages of the lids admit a certain quantity of light. The great remedy for almost all ordinary ailments of the eyes, and especially of short-sight, is rest. Books must be abandoned, especially at night; the rooms used dimly lighted; the window-blinds green or blue, and numerous other common sense precautions taken to ensure as much optical rest as possible. All oculists are agreed that spectacles to correct *myopia* should be used; the writer has, however, known a case of well marked short-sight cured in two years with attention to the principles of

rest insisted upon above, the use of blue glasses merely to protect the eye; with attention to the general health. It is almost needless to remark that in this case there was decided relaxation from the severe strain of study that had been indulged in for some time previous, and to which the myopia was almost entirely due. The writer would draw special attention to a fact not commonly recognized, that an over-heated, dry, and impure atmosphere has a most injurious effect on the eye-sight. There are a great many other points in connection with this subject that demand attention, but this paper has already

reached a sufficient length, nor can the great question of the education of the eye be taken up on this occasion without unduly trespassing on the reader's patience, which has been somewhat taxed already, unavoidably in a subject requiring unusually close attention. If the anatomy and physiology of the organs of vision have been made clear; if serious practical mistakes have been exposed; if the few common-sense hints offered be acted upon; some little service will have been rendered for a class of cases that do not reflect favourably on our civilization.

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#### OPPORTUNITY.

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In harvest times, when fields and woods  
 Outdazzle sunset's glow,  
 And scythes clang music through the land,  
 It is too late to sow.  
 Too late! too late!  
 It is too late to sow.

In wintry days, when dreary earth  
 Lies cold in pulseless sleep,  
 With not a blossom on her shroud,  
 It is too late to reap.  
 Too late! too late!  
 It is too late to reap.

When blue-eyed violets are astir,  
 And new-born grasses creep,  
 And young birds chirp, then sow betimes,  
 And thou betimes shall reap.  
 Then sow! then sow!  
 And thou betimes shall reap.

## ARTS DEPARTMENT.

ARCHIBALD MACMURCHY, M.A., MATHEMATICAL EDITOR, C. E. M.

Our correspondents will please bear in mind, that the arranging of the matter for the printer is greatly facilitated when they kindly write out their contributions, intended for insertion, on one side of the paper ONLY, or so that each distinct answer or subject may admit of an easy separation from other matter without the necessity of having it re-written.

We have received solutions to a number of the questions proposed in our last issue, but our space will admit of giving only two of them; these are by the proposer, Prof. Edgar Frisby, M.A., Naval Observatory, Washington. Solutions were also sent in to the same problems by Messrs. Barton and MacMurchy, University College, Toronto.

It is with special pleasure that we direct the attention of our readers to the article on recent changes made in the rules for conducting the examinations for honours at the University of Cambridge, which appears in this number, from the pen of the eminent and well-known Cambridge Mathematician, Isaac Todhunter, M.A., F.R.S., widely known in this country through his many and valuable works on Mathematics. The writer of the article is also the author of the volume "The Conflict of Studies, and other Essays connected with Education," published in 1873, a book which every educator should have and carefully read.

## SOLUTIONS.

A solution for the following has been asked for:

Let  $ABC$  be an isosceles triangle;  $BA$ ,  $BC$  equal sides; produce  $BC$ ; draw  $ED$  cutting  $AC$  in  $D$  so that  $ED=DF$ ,  $E$  point in side  $AB$  and  $F$  in side  $BC$  produced; prove  $EB+BF=AB+BC$ .

—Let  $ABC$  be an isosceles  $\triangle$  having the  $\angle BAC = \angle BCA$ . Produce  $BC$ , and draw  $EDF$  so that  $ED=DF$ ; then  $EB+BF=AB+BC$ . Join  $EC$  and  $AF$ , and draw  $EG+FH \perp AC$ . Then since  $ED=DF$ ,  $\triangle EDC = \triangle CDF$ , and  $\triangle EAD = \triangle DAF$ ,

$\therefore$  whole  $\triangle AEC =$  whole  $\triangle CAF$ ,

$\therefore \perp EG = \perp FH$ ,

and  $\angle EGA = \text{rt. } \angle = \angle CHF$ ,

and  $\angle HCF = \angle BCA = \angle BAC$ .

$\therefore EA = FC$  (26.1),

to each add  $EB$  and  $BC$ ,

$\therefore EB+BF=AB+BC$ .

F. BOULTBEE, Univ. Coll.

40. Sum to  $n$  terms and to infinity.

$$\frac{7}{3 \cdot 4 \cdot 5 \cdot 6} + \frac{11}{4 \cdot 5 \cdot 6 \cdot 7} + \frac{17}{5 \cdot 6 \cdot 7 \cdot 8} + \dots$$

The second differences in the numerator are constant, and therefore it can be assumed to be of the form  $(an^2 + bn + c)$ , making  $n=1, 2$  and  $3$  respectively, we have the three equations

$$a + b + c = 7$$

$$4a + 2b + c = 11$$

$$9a + 3b + c = 17$$

whence  $a=1, b=1, c=5$ ,

and the  $n^{\text{th}}$  term is

$$\frac{n^2 + n + 5}{(n+2)(n+3)(n+4)(n+5)}$$

This can be resolved into partial fractions of the form

$$\begin{aligned} & \frac{A}{n+2} + \frac{B}{n+3} + \frac{C}{n+4} + \frac{D}{n+5} \\ &= \frac{n^2 + n + 5}{(n+2)(n+3)(n+4)(n+5)}, \end{aligned}$$

whence  $A = \frac{7}{6}, B = -\frac{11}{2}, C = \frac{17}{2}, D = -\frac{25}{6}$ .

If we had reduced the left-hand member to a common denominator and equated numerators, the coefficient of  $n^3$  would have been  $A+B+C+D$ ; and as there is no  $n^3$  on the right-hand side, we have plainly  $A+B+C+D=0$ , and this will always happen when the general term has its denominator at least two dimensions greater than its numerator.

The series then becomes, by giving  $n$  successive from 1 to  $n$ ,

$$\begin{aligned}
 S &= A \left\{ \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+2} \right\} \\
 &+ B \left\{ \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+2} + \frac{1}{n+3} \right\} \\
 &+ C \left\{ \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+3} + \frac{1}{n+4} \right\} \\
 &+ D \left\{ \frac{1}{6} + \dots + \frac{1}{n+4} + \frac{1}{n+5} \right\} \\
 &= A \left( \frac{1}{3} \right) + (A+B) \frac{1}{4} + (A+B+C) \frac{1}{5} \\
 &+ (B+C+D) \frac{1}{n+3} + (C+D) \frac{1}{n+4} + D \left( \frac{1}{n+5} \right) \\
 &= \frac{A}{3} + \frac{A+B}{4} + \frac{A+B+C}{5} \\
 &- \left\{ \frac{A}{n+3} + \frac{A+B}{n+4} + \frac{A+B+C}{n+5} \right\}
 \end{aligned}$$

because  $A+B+C+D=0$ .

Substituting the values of  $A$ ,  $B$ ,  $C$  and  $D$  this becomes

$$\frac{5}{36} - \frac{3n^2 + 15n + 25}{3(n+3)(n+4)(n+5)}$$

when  $n$  is infinite this value is equal to  $\frac{5}{36}$ ,

because  $\frac{A}{n+3}$ ,  $\frac{A+B}{n+4}$  and  $\frac{A+B+C}{n+5}$  are each equal to 0.

NOTE.—All the middle terms vanish because  $A+B+C+D=0$ ; and this method can be applied to all those series the general term of whose numerator is at least two dimensions lower than the denominator, and when any term can be found from the preceding by changing  $n$  into  $n+1$ .

Proceeding in the same way with question 41,

$$\frac{11}{2 \cdot 3 \cdot 4 \cdot 5 \cdot 6} + \frac{35}{3 \cdot 4 \cdot 5 \cdot 6 \cdot 7} + \frac{81}{4 \cdot 5 \cdot 6 \cdot 7 \cdot 8} + \frac{155}{5 \cdot 6 \cdot 7 \cdot 8 \cdot 9}$$

etc., we see that the third differences are constant, and the general term becomes

$$\frac{n^3 + 5n^2 + 2n + 3}{(n+1)(n+2)(n+3)(n+4)(n+5)}$$

$$A = \frac{5}{24}, B = -\frac{44}{24}, C = \frac{90}{24}, D = -\frac{44}{24}, E = -\frac{7}{24}$$

and as before,  $A+B+C+D+E=0$ .

and the series is

$$\begin{aligned}
 &\frac{5}{24} \left\{ \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+1} \right\} \\
 &- \frac{44}{24} \left\{ \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+1} + \frac{1}{n+2} \right\} \\
 &+ \frac{90}{24} \left\{ \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+2} + \frac{1}{n+3} \right\} \\
 &- \frac{44}{24} \left\{ \frac{1}{5} + \frac{1}{6} + \dots + \frac{1}{n+3} + \frac{1}{n+4} \right\} \\
 &- \frac{7}{24} \left\{ \frac{1}{6} + \dots + \frac{1}{n+4} + \frac{1}{n+5} \right\} \\
 S &= \frac{5}{24} \left( \frac{1}{2} \right) + \frac{1}{24} (5-44) \left( \frac{1}{3} \right) + \frac{1}{24} (5-44+90) \\
 &\quad \left( \frac{1}{4} \right) + \frac{1}{24} (5-44+90-44) \left( \frac{1}{5} \right) \\
 &- \left\{ \frac{5}{24} \left( \frac{1}{n+2} \right) + \frac{1}{24} (5-44) \left( \frac{1}{n+3} \right) \right. \\
 &\quad \left. + \frac{1}{24} (5-44+90) \left( \frac{1}{n+4} \right) \right. \\
 &\quad \left. + \frac{1}{24} (5-44+90-44) \left( \frac{1}{n+5} \right) \right\}
 \end{aligned}$$

The intermediate terms all vanishing, this readily reduces to

$$\frac{73}{480} - \frac{4n^2 + 34n + 86n + 73}{4(n+2)(n+3)(n+4)(n+5)}$$

the value when  $n$  is infinite being  $\frac{73}{480}$ .

These results can be easily tested in both cases by making  $n=0, 1, 2, 3, 4$ , etc.

For this problem

$$n=0 \text{ gives } S=0,$$

$$n=1 \quad S = \frac{73}{180},$$

$$n=2 \quad S = \frac{7}{240}, \text{ \&c.}$$

In the first problem we have  $n=0$   $S=0$ ,

$$n=1 \quad S = \frac{7}{3 \cdot 4 \cdot 5 \cdot 6}, \quad n=2 \quad S = \frac{82}{3 \cdot 4 \cdot 5 \cdot 6 \cdot 7},$$

$$n=3 \quad S = \frac{860}{3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8}, \quad n=4 \quad S = \frac{9240}{3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 \cdot 9}$$

which can be easily verified.

PROBLEMS.

69. Solve  $x^2y + xy^2 = a^2b + ab^2$

$$\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{a^2} + \frac{1}{b^2}.$$

70. Solve  $(x+y)(x+z) = a^2$

$$(x+z)(y+x) = b^2$$

$$(z+x)(z+y) = c^2.$$

71. Solve  $\frac{1+x^2}{(1+x)^2} + \frac{1-x^2}{(1-x)^2} = \frac{2x}{3}$ .

72. Solve  $\sqrt[3]{a-x} + \sqrt[3]{x-b} - \sqrt[3]{a-b} = 0$ .

73. If  $S$  be the semi-perimeter of a  $\Delta$  whose sides are  $a, b, c$ , and  $r, r', r'', r'''$  the radii of the inscribed and three escribed circles, prove that

$$S : S-a : S-b : S-c :: \frac{1}{r} : \frac{1}{r'} : \frac{1}{r''} : \frac{1}{r'''}$$

74. Find the locus of a point such that the sum of the squares of the tangents from it to two given circles will be constant.

75. If  $a, b, c$  be the lengths of the chords of three consecutive arcs of a circle, prove that when these arcs together make up a semi-circle, its radius is given by the  $= n$

$$4r^2 - (a^2 + b^2 + c^2)r - abc = 0.$$

76. Given the external and internal bisectors of the vertical  $\angle$  of a  $\Delta$ , and the sum or difference of the sides, construct it.

77. Prove that  $\frac{\sin 8A}{\cos 3A \cos 5A}$

$$= \frac{\sin A + \sin 3A + \sin 5A + \sin 7A + \sin 9A}{\cos A + \cos 3A + \cos 5A + \cos 7A + \cos 9A}$$

$$+ \frac{\sin A + \sin 2A + \sin 3A + \sin 4A + \sin 5A}{\cos A + \cos 2A + \cos 3A + \cos 4A + \cos 5A}$$

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78. Let  $ABC$  be a triangle;  $D, E, F$  the points wherein its sides are touched by its inscribed circle;  $H, K, L$  the feet of the perpendiculars from the vertices of the triangle  $DEF$  on the opposite sides;  $\Delta, R, r$

the area of the triangle  $ABC$ , and the radii of its circumscribed and inscribed circles; and  $\Delta_1$  the area of the triangle  $HLK$ , prove that

$$\Delta_1 : \Delta = 2R : r.$$

79. If the squares of the sides of a triangle are in arithmetical progression, the tangents of the angles are in harmonical progression.

80. If  $A, B, C$  be any three quantities;  $S_1, S_2, S_3, l_1, l_2, l_3$  the G. C. M's and L. C. M's of  $B$  and  $C, A$  and  $C, A$  and  $B$  respectively; and if  $G, L$  be the G. C. M. and L. C. M. respectively of  $A, B$  and  $C$ ,

prove that  $\frac{L}{G} = \sqrt{\frac{l_1 l_2 l_3}{S_1 S_2 S_3}}$ .

81. Given  $x+y+z=0$ , prove that

$$\left(\frac{y-z}{x} + \frac{z-x}{y} + \frac{x-y}{z}\right) \left(\frac{x}{y-z} + \frac{y}{z-x} + \frac{z}{x-y}\right) = 9.$$

82.  $ABC$  is a triangle; a new triangle is formed by joining the feet of the perpendiculars drawn from the angles  $A, B, C$  on the sides respectively opposite to them: prove that according as one side of the original triangle is an A. G. or H. mean between the other two, so is the cosine of one of the semi-angles of the new triangle an A. G. or H. mean between the cosines of the semi-angles of the other two.

83.  $ABCD$  is a quadrilateral; two points  $P, Q$  are taken in  $AD, BC$  respectively such that  $AP : PD = CQ : QB$ . From  $P, Q$  lines  $PP', QQ'$  are drawn parallel and in same direction as  $BC, DA$ . Shew forces represented by  $AB, CD, PP', QQ'$  are in equilibrium.

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84. In the equation  $ax^2 + bx + c = 0$ , find both values of  $x$  in the following cases:

1st,  $a=0$ ; 2nd,  $c=0$ ; 3rd,  $a=c=0$ ; 4th,  $b=c=0$ ; and 5th, when  $a=b=0$ .

85. Solve the equations  $x^3 + y^3 = 35$ ,

$$x^2 + y^2 = 13,$$

giving the six values of  $x$  and  $y$ .

86. Solve  $\frac{11}{x-3} - \frac{39}{x-4} + \frac{45}{x-5} - \frac{17}{x-6} = 0$ ,  
giving the three values of  $x$ .

87. Prove that  
 $(ax+by+cz)^2 + (bx+cy+az)^2 + (cx+ay+bz)^2$   
 $= 3(ax+by+cz)(bx+cy+az)(cx+ay+bz)$ ,  
if  $a+b+c=0$ , or if  $x+y+z=0$ .

88. If  $x+y+z=2s$ , then will  
 $(s-x)^2 + (s-y)^2 + (s-z)^2 + 3xyz = s^3$ .

89. If  $x+y+z=0$ , then will  
 $2(x^3+y^3+z^3) - 9xyz (x^2+y^2+z^2)$   
 $+ 21x^2y^2z^2 = 0$ ,

and also  
 $x^6+y^6+z^6 + 9x^4y^4z^4(x^2+y^2+z^2)$   
 $- 30x^2y^2z^2 = 0$ .

90. If  $\frac{b^2+c^2-a^2}{2bc}$  always lies between  $\pm 1$ ,

then will the sum of any two of these quantities be greater than the third.

91. If  $(-x)^2 + (-1)^2 = y^2$ , show that its value is given by the equation  $y^2 - 3y + 2 = 0$ , and solve this equation.

92. If  $A, B$  and  $C$  are the three angles of any plane triangle whose area is  $\Delta$ , then will

$$\cot A + \cot B + \cot C = \frac{a^2 + b^2 + c^2}{4\Delta}$$

$$a^2 \cot A + b^2 \cot B + c^2 \cot C = 4\Delta$$

$$1 + \cot^2 A + \cot^2 B + \cot^2 C = \frac{a^4 + b^4 + c^4}{8\Delta^2}$$

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## CONTEMPORARY OPINION ON EDUCATIONAL TOPICS.

### PROFESSOR HUXLEY AT OXFORD.

Prof. Huxley's address to the prize-winners at a recent Oxford University contest is so full of good advice to students, and so suggestive to teachers, that we give the following extracts from it:

"Upon whatever career you may enter, intellectual quickness, industry, and the power of bearing fatigue are three great advantages. But I want to impress upon you, and through you upon those who will direct your future course, the conviction which I entertain that, as a general rule, the relative importance of these three qualifications is not rightly estimated; and that there are other qualities of no less value which are not directly tested by school competition. A somewhat varied experience of men has led me, the longer I live, to set the less value upon mere cleverness; to attach more and more importance to industry and to physical endurance. Indeed, I am much disposed to think that endurance is the most valuable quality of all; for industry, as the desire

to work hard, does not come to much if a feeble frame is unable to respond to the desire.

"Everybody who has had to make his way in the world must know that while the occasion for intellectual effort of a high order is rare, it constantly happens that a man's future turns upon his being able to stand a sudden and a heavy strain upon his powers of endurance. To a lawyer, a physician, or a merchant it may be everything to be able to work sixteen hours a day for as long as is needful, without yielding up to weariness. Moreover, the patience, tenacity, and good humour which are among the most important qualifications for dealing with men, are incompatible with an irritable brain, a weak stomach, or a defective circulation. If any one of you prize-winners were a son of mine, and a good fairy were to offer to equip him according to my wishes for the battle of practical life, I should say, 'I do not care to trouble you for any more cleverness; put in as much industry as you can instead; and, oh, if you please, a

broad, deep chest, and a stomach of whose existence he shall never know anything.' I should be well content with the prospects of a fellow so endowed.

"The other point which I wish to impress upon you is, that competitive examination, useful and excellent as it is for some purposes, is only a very partial test of what the winners will be worth in practical life. There are people who are neither very clever nor very industrious, nor very strong, and who would probably be nowhere in an examination, and who yet exert a great influence in virtue of what is called force of character. They may not know much, but they take care that what they do know they know well. They may not be very quick, but the knowledge they acquire sticks. They may not even be particularly industrious or enduring, but they are strong of will and firm of purpose, undaunted by fear of responsibility, single minded and trustworthy. In practical life a man of this sort is worth any number of merely clever and learned people. Of course I do not mean to imply for the moment that success in examination is incompatible with the possession of character such as I have just defined it, but failure in examination is no evidence of the want of such character.

"And this leads me to administer, from my point of view, the crumb of comfort which on these occasions is ordinarily offered to those whose names do not appear upon the prize-list. It is quite true that practical life is a kind of long competitive examination, conducted by that severe pedagogue, Professor Circumstance. But my experience leads me to conclude that his marks are given much more for character than for cleverness. Hence, though I have no doubt that those boys who have received prizes today have already given rise to a fair hope that the future may see them prominent, perhaps brilliantly-distinguished members of society, yet neither do I think it at all unlikely that among the undistinguished crowd there may lie the making of some simple soldier whose practical sense and indomitable courage may save an army led by characterless cleverness to the brink of destruction, or

some plain man of business, who by dint of sheer honesty and firmness may slowly and surely rise to prosperity and honour, when his more brilliant competitors, for lack of character, have gone down, with all who trusted them, to hopeless ruin. Such things do happen. Hence let none of you be discouraged. Those who have won prizes have made a good beginning; those who have not, may yet make that good ending which is better than a good beginning. No life is wasted unless it ends in sloth, dishonesty, or cowardice. No success is worthy of the name unless it is won by honest industry and brave breasting of the waves of fortune. Unless at the end of life some exhalation of the dawn still hangs about the palpable and the familiar; unless there is some transformation of the real into the best dreams of youth, dependent upon it whatever outward success may have gathered round a man, he is but an elaborate and a mischievous failure."

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#### MR. GLADSTONE AT WELLINGTON COLLEGE.

Recently Mr. Gladstone, while on a visit to his son-in-law Mr. D. J. Medley, Head Master of Wellington College, Hants, was made the recipient of an address dwelling upon the interest with which his family connection with the school would be remembered in its history, and claiming his sympathy, as a friend of learning and education, for one of the youngest of English public schools.

Mr. Gladstone in reply said—"Mr. Medley and gentlemen, you have been pleased to say that this day is a day of great interest to you. I can assure you in return, with equal sincerity and truth, that it is, and is of necessity, a day of great interest to me. There are few, if any, days of greater interest, or of pleasure, and satisfaction, or days that one would more readily multiply, if opportunity permitted, than days in which those who have run their career, and that in my case a somewhat long career, are permitted to come into company and close contact with the young among their countrymen, with those who are passing through the same stage of



life that we have passed through, and through the same school discipline, with its perils, its opportunities, its responsibilities, and its advantages. This contact brings to mind the reflection, "What is the meaning of the English Public School?" and in this address you have most appropriately reminded me of its character by your reference to your own position, and by the comparison which you draw with the position of another great public school. You could not have made an allusion more grateful to my feelings than your allusion to Eton. You know, gentlemen, what your own impressions would be about anybody who did not look back in an enthusiastic gratitude on the public school to which he had himself belonged. That is characteristic of us all. We are none of us impartial judges, and I would almost say we ought not to be impartial judges of the relative position of those public schools separately taken and judged. As to Eton, perhaps I might say without offence that she has obtained in many, if not all respects, a kind of primacy among the public schools of England, and such is her position, such the incidents of her history, her situation, her visible and palpable features, that if a foreign friend consulted me upon the objects that he should make a point of seeing in a visit to this country, I should say to him, "Unless you see Eton you will not have seen England." (Loud cheers.) But that does not create any tendency to injustice or indifference in the estimate of other schools. The public schools of England correspond in the general character of the picture Eton presents in bringing into most interesting association what is old and what is new. At the beginning of this century they could hardly be called more than about four or five in number. Since that time the population of Great Britain has fully doubled in number, but the public schools of the country have increased in a much larger proportion, and might probably be called now four times as many as they were at the beginning of the century. Continuing, the right hon. gentleman gave the scholars the following advice:—The great business of this training is not merely to

enable you to obtain professional success, it is to make you men—men in the highest sense, and in the highest degree. It is to bring out all your capacities, not for the sake simply of the purposes they are to serve in life, but for their own sake. The whole of life is, after all, simply an education, and the professions and businesses to which you may be hereafter devoted, are only part and portion of that education. Don't suppose they are ends in themselves. Their ends, as far as you are concerned, are the effects that they produce upon your character and your faculties, and there comes into view what undoubtedly must be admitted to be the danger of the new system—of the modern spirit in education. I know not whether it is owing to our degeneracy—I am afraid it is the truth that we have a much smaller amount in this 19th century of the disinterested, ardent, enthusiastic love of knowledge for its own sake than our forefathers had five hundred years ago. But our system of education is now marked by a method of sharp competition and of immediate rewards. I acknowledge all the benefits of that method. I see the great results that it has produced; but there is a peril in it also, and that is the peril of your believing that when you have gone through the school, when you have obtained the prize, when you have realized the professional success as the consequence of early distinction, you should look upon that success as the end of your education. It is not the end of your education. The end of your education is in the effect it produces upon yourselves, upon the state to which it brings you, and in which it leaves you; and the distinction is a very real one, for there are many who acquire much knowledge, yet whose minds remain comparatively barren, simply because they have been content to look upon knowledge as a mere commodity, as a mere tool intended to work out some exterior purpose, and they have forgotten that it is only part of a great, comprehensive, and noble process to which we are all subjected in this life for the unfolding, the ripening, and the purifying of character, for enabling us in the highest sense to discharge our

duty to God and to man. It is necessary for you all not only to be stirred up to the keen pursuit, which I should be the last to discourage, of those prizes which are open to you, either at school, in college, or in life, but never to forget that there are higher enjoyments and higher duties connected with the due appreciation of knowledge for its own sake, and to remember that it is the effort to win, rather than the victory, which has real value. For while the victory in a competition may be the means of laying the mind asleep, and inducing it to rest upon what it has done, yet the effort, the true, honest, manful effort, whether it be successful or not, will have left its mark upon the character, will have left you more competent and more vigorous for the discharge of every other duty, and better disposed to face and grapple with the difficulties which in one shape or another must be your lot in life. Well, gentlemen, you are here destined for many careers, many of you, no doubt, following probably the example of distinguished parents, will devote your lives to the defence of your country in the military profession; some of you will find your way into the sacred profession, which has in other times been held to be one of the loftiest to which a human being could devote himself, and which I believe, so far from declining in its importance or in that true promise of internal reward that it offers, is becoming from day to day more and more arduous, and for that very reason more and more honourable, more and more attractive, as it ought to be, to honourable minds. Many of you will find your way into other professions; some of you will probably take part in the government of your country, but rely upon it that it is not for one of those professions alone, it is for all, that the benefits of education are intended. They all rest upon the same footing. They are all directed to the same end—the end of giving glory to God by the performance of duty, by the due use and full improvement of the faculties which He has given. In this process you are engaged; you are not the first generation of scholars that has passed the Wellington College,

but you are amongst the first. Let us think what this College is to be in future times. I do not entertain any doubt but that, as it has already taken, so it will permanently hold, a high and honourable place amongst the institutions of the country. I trust, and I believe, that generations hence, others, worthier I hope than I, may stand where I am now standing, to encourage the youth of that day, as I would fain encourage the youth of this day, to honourable, determined, and manful exertion."

#### MR. BRIGHT AT BIRMINGHAM.

The present Mayor of Birmingham, Alderman Collings, having occasion to inaugurate the opening of the new municipal building, did not seek, as is customary, to secure the presence of some royal or other distinguished personage for the occasion; but preferred to do it in a much more significant and praiseworthy fashion by inviting all the elementary teachers of that important midland town to a conversazione. This event is noteworthy as indicating the estimate in which the teaching profession is beginning to be held in England. Its importance was enhanced by the presence of Mr. John Bright, who made a speech on Education, the sentiments of which were quite in harmony with the occasion. In the course of his remarks, Mr. Bright said: "I beg to thank the Mayor for permitting me to be here to-night. I think that to see these rooms, to see this audience, to feel that I am in the presence of five or six hundred persons who are engaged in the honourable office of teaching in the elementary schools in Birmingham, is a great pleasure. The meeting I hold to be one of a peculiar and of a very interesting character. I do not know where such a meeting has been held before. Certainly, for myself, I have never been present at such a meeting, and I think the Mayor has acted wisely, kindly, and in accordance with his character, and in accordance with the course he has taken during his year of office, in asking the school teachers here to-night, on a night when these rooms are being opened for the first time,

and thus to express his strong sense of the great importance in this community of Birmingham of the teachers in all your schools. Now, I am always sure to say something that some people do not approve when I have to speak to a great number of my fellow-countrymen. I shall be very careful to-night not to give any reasonable offence to any one; but I was going to say that I am not sure that it would have been possible for the Mayor to have sent out cards of invitation to five, or six, or seven hundred persons of any other class in Birmingham where he would have had so much that is important to the present and the future of this great community. Suppose he had brought 500 or so of the most skilful artisans—and no town in England, or perhaps in the world, could find 500 men superior to your best 500; but then these 500 work merely in the dead metal; they make something beautiful for ornament and valuable for use, but it is made and it is done with, and it is subject to no further change: it has no special influence upon the future. But if he had taken another class and he had sent for all the ministers of religion—ministers of the Established Church and of the Nonconformist bodies—not for the same number—there are not, probably, so many in the town—but if he had had so many, I venture to say that even they are not so important in a community like this as are the teachers whom I am now permitted to address. It has always been a subject, not of wonder, but of grief, that I have been compelled to believe that there is hardly any effort—so great effort—in any direction with so little result as the effort that is made by the ministers and teachers of religion. Ministers of religion have to speak mainly to, and teach, adults. They have a material that is not plastic and upon which they can make little impression! I think there is hardly anything more to be lamented, to feel more sorrowful about, than the knowledge that many men should work hard as ministers of religion and produce so little effect upon those among whom they minister. The teachers in your schools are in an entirely different position. They have a plastic material on which they

are able to impress their minds and their sentiments, and there is no doubt whatever, that, though that plastic material may be moved and worked and impressed for evil as well as for good, seeing that, I hope, the great mass of the teaching in all our schools tends infinitely more to good than evil, we may expect that they may make an impression of lasting benefit upon the young minds with which they constantly come in contact. Now, I must make another observation, and that is with regard to what we mean by education. It is not books alone. It is not what they call the "three r's." If you want a simple, a plain education, reading, writing and arithmetic, those things are very good, and for the bulk of men they are sufficient for their work in life. It is not even classics and mathematics, of which, in my day, when I was young, I knew nothing, and of which I have not acquired any knowledge since. I regard what are called classics—that is, the ancient languages of Greece and Rome—as rather luxuries than anything else. It is a great luxury to know anything that is good and innocent. It is a great luxury to know a great deal of the past, not that it makes you more powerful to do much, but it gives a great pleasure to the person who knows, and I do not believe myself that there is anything in the way of wisdom which is to be attained in any of the books of the old languages which at this moment may not be equally attained in the books of our own literature. Therefore, I think a man may be as great a man, and as good a man, and as wise a man, knowing only his own language and the wisdom that is enshrined in it, as if he knew all the Latin and Greek books that have ever been written. But now, I say, there is another sort of education beyond that of books. I think Milton describes this sentiment in speaking of some ancient people or person; he speaks of him as deep-versed in books and shallow in himself; and there is no doubt that there are people who know almost everything that can be known in the library, and yet can hardly make their way from one street to another. But what I want to say, and I will not take up your time many mo-

ments, is, that I think, with regard to teachers, they have two entirely different branches of labour; they have that of instructing their pupils from books, and they have that of instructing them from their own conduct and their own manner. You want to teach a child—I must say it is better than book learning—you want to teach a child to be gentle; not the gentleness that is weakness, for there is a perfect gentleness which is combined with great force. You want humanity—humanity to animals is one point. If I were a teacher of a school, I would make it a very important part of my business to impress every boy and girl with the right of his or her being kind to all animals. Well, then, there is the quality of unselfishness. There is much selfishness in families. Selfishness in families is the cause of misery, and the cause of great injustice. Unselfishness and a love of justice, these are qualities which come, if you offer them, to the child's or the young person's mind with a special invitation; their very nature is such that they cannot receive them except with liking and approbation, and I have no doubt that it is possible for the teachers in the elementary schools in Birmingham during the next ten years or so, during which they will have two or three generations of children under their care—it is possible for them so to impress their minds on these subjects that twenty years hence it will be seen and felt over the whole of the town that there is an improvement in these respects in the general population. Now, these are things which I think it behoves the teachers of these schools to bear in mind. They cannot possibly have too high a sense of the responsibilities of their position and of their duties. The sense of that is growing over all the country. Since the School Act passed, the demand for teachers, men and women, has enormously increased. The consideration in which they are held is also very much enhanced, and you know, I hope and believe, that the remuneration which is given for teaching is probably twice as much as it used to be. I know, with respect to some schools that I have myself an intimate knowledge of, that, going

back to the time when I was a scholar myself, I believe that the masters of those schools at this moment are receiving three times the remuneration they were receiving fifty years ago. If that be so, they ought to be much better than they were then; they ought to occupy a much higher position than they occupied then, and feel that upon their course depended, to a large extent, the character of our population in future times, and not the character of our population as speaking of individual men and women, but the actual position and honour and greatness of our country. I agree with what the Mayor has said with regard to much we should expect to receive from the school system. There are difficulties. I heard it said the other night in a speech by a nobleman who occupies a very high position in the politics of the country that he thought the complaint that was made of extravagance by certain persons in Parliament had reference only to the extravagance of the school system. Well, I would have no extravagance in the school system if I could help it. Nothing that was done for ostentation, nothing that was done for show, but whatever can be done to make education real, to raise the character of our population, and exalt the sentiment of the people; whatsoever can be done by the expenditure of money and the devotion and the earnest effort of good men and good women, like the 500 or 600 I see before me, that I would do and have done. And although there may be those, and there are those, who think it proper, in public speeches, to slander the educational efforts of the people of Birmingham, I am quite sure it is done only by those who are not acquainted with what you are doing; and if they were acquainted with it as you are and as I am, to a certain extent, there would be no voice lifted here and hereafter against the School Board or the people of Birmingham for the course they have taken with regard to the education of their community. I only exhort you to go on, and consider there is nothing in this town that is more essential to the town's future prosperity and greatness than the good and sound education of your children, and every

one of you, as teachers, will feel that you have been a party to, you have been one of the leaders in, the greatest work that the population of Birmingham has yet undertaken to complete. I thank the Mayor very much for having permitted me to come here to-night, and I thank you very much for the kindness with which you have listened to the observations I have thought it right to make to you.

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#### LORD GEORGE HAMILTON ON GRAMMAR.

Lord George Hamilton, M.P., distributed prizes in the Bolton school recently, and in the course of an address to the pupils he pointed out the necessity of adhering to the strict rules of grammar. He was bound to say that the House of Commons was no exception to the rule. The utterances which were there dignified by the name of speeches were very slovenly and very slatternly performances. There was a very remarkable contrast between the speaking of the young men and that of the old men, and the advantage was entirely in favour of the older generation. Anybody to be successful either as a student or as a teacher of science must be an accurate speaker, precise in the use of his words, and must know exactly the meaning of the words he used. It was by this means that a few great men such as Professor Huxley and Professor Tyndall had elevated lecturing into an art. No doubt science must have a vocabulary of its own, because words must be invented from time to time to express the results of experiments and discoveries which were unknown to our ancestors. Now it seemed to him a curious combination that art and science should be taught together in the same classes. A famous historian said,

that in the past, art had flourished most under Monarchies, and science under Republics. We believed that our present form of Constitution and Government combined the essence of both. Speaking from his observations at the Paris Exhibition, Lord George Hamilton said, that what surprised foreigners was the evidences of originality and imagination of Englishmen, who were supposed to be a very stupid and dull people. Amongst the special subjects which he thought required the attention of the rising generation was political economy. This nation must, sooner or later, be called upon to settle the great economical problem, and for all those who wished to take part in controversies, it was necessary that they should have some knowledge of political economy. The controversy which must sooner or later arise was not, as some people put it, Protection against Free-trade. The question seemed to him to be this—How England can best obtain in foreign countries those advantages of Free-trade which she has herself so freely conceded to all nations who wished to trade with her. A knowledge of political economy would soften, and possibly terminate, some of the disastrous differences of opinion which take place between masters and men. In conclusion, his Lordship said the advantage enjoyed by the citizens of the town was not merely that they had in their primary schools the advantages of a sound education, but that they had in the secondary schools, and also in their great public library, the means of afterwards improving their minds, and thus acquiring that knowledge and that information which would ultimately enable them more faithfully to perform their duties, both privately and publicly, as members of a great and influential community.—*English Exchange.*

## PUBLIC SCHOOL DEPARTMENT.

(Contributed to, and under the management of, Mr. S. McAllister, Headmaster of Ryerson School, Toronto.)

## THE TEACHER IN THE SCHOOL ROOM.

THE teacher should never lose sight of the fact, during the five or six hours daily he is entrusted with the control of his scholars, that in accordance with the opinion stamped with the authority of ages, and by the sanction of the law, he is

## IN THE PARENT'S PLACE.

The more he keeps this fact before him, the more likely is he to be successful. Of course there are varying circumstances which would never come within the range of a parent's experience, but pertain rather to the functions of one who administers for the good of a community. In all matters, however, that pertain to mental growth and habits of right-living, it will stand the teacher in good stead if he keeps his ideal position constantly before him.

## BE PREPARED FOR EVERY LESSON.

It is a common fault with young teachers to think that when their professional studies are ended, they are thoroughly equipped for all the requirements of the school-room. They need only a few days' experience to find how mistaken is their opinion; and if they are wise, and withal conscientious, they will not be content to give the mere froth of their minds to their scholars, but will come to the school thoroughly prepared so to conduct all the work of the day that at its finish they may feel that in imparting knowledge to, exercising control over, and directing the efforts of their scholars, they are masters in the highest sense. We know of no occupation among men that can impart a pleasanter feeling than this. The clergyman, for in-

stance, after the most earnest and successful ministrations in the reading-desk and the pulpit is not at all sure that the seed he has endeavoured to sow has not fallen upon stony ground, or among thorns, which are too prevalent in every congregation, a fact which Mr. Bright not only admits, but accounts for in his own vivid way in the speech delivered at the Birmingham Teachers' Conversazione, which we insert elsewhere. One of the prime conditions of accomplishing any aim in the school room is

## GOOD ORDER.

"Order is Heaven's first law" was the approving comment a wise inspector made as he observed a teacher who had just taken charge of a school spend the first half-hour in drilling his scholars to enter the school in a becoming manner. It is wise to begin well; and a teacher who does not personally superintend the orderly entrance of scholars into a school-room, as well as their passage out, need hardly complain if during school hours he does not secure that quietness so necessary to successful work. When once the scholars are placed in their seats, the great effort of the teacher, as an aid to good order, should be to

## KEEP THEM EMPLOYED.

From the moment children enter the school-room, part of their training should be to have their whole time and attention devoted to the work required there. No matter how many classes a teacher has to manage, he should consider it a necessary test of his efficiency to keep them all at work. To do this with younger children of course requires their exercises to be varied, as is the case in the Kindergarten. But whatever variety there

be, let it be introduced by the teacher, so that not for a moment will the children feel that they are without his helping and directing hand.

Whenever children are found to relax attention from the lesson they are at, it must be taken as an indication that it is either wearisome, or is not being taught them in a manner to secure the sustained effort needed to master it. It will be wise then to introduce some exercise that will restore the teacher's control, such as the copy of a drawing on the blackboard, a simple song, a few gymnastic or calisthenic movements, or a vocal exercise in the simultaneous utterance of letters, syllables, or of words of difficult pronunciation. With older scholars, a short discussion of some public topic, particularly one that can, in even the remotest way, be connected with the lesson, will be found a profitable means of varying the work. Whatever relaxation is introduced, let the teacher be quite in earnest about it, and make it as much a part of the school routine as the most important lesson; children will then not be in danger of the notion that the school room is a place for play and not for work. Indeed, on this point we cannot be too strict. Every child should be indoctrinated with the notion that the school-room is as sacred to the serious work of education as the church is to religion.

Some teachers, in their zeal to secure quietness in assembling and dismissing classes, insist upon the children walking upon tip-toe. There is danger in distorting children's feet in this, and we would by no means recommend it. Scholars, by a little solicitude on the part of the teacher, can be induced, we will not say *made*—for even in trifles children should have the prompting to correct deportment from within, not from without—to walk with but little noise, and at the same time with ease. The only time tip-toe walking might be insisted on is when a class is at work, and the passage along the floor of any scholar might disturb it. One more point must be attended to in maintaining proper order in the conduct of classes, we mean

#### SPEAKING WITHOUT LEAVE.

A scholar should on no account be indulged in the utterance of whatever comes uppermost in his mind in connection with a lesson, or in giving expression to his feelings, even when he feels himself aggrieved, without first receiving permission. Teachers must remember they are shaping the characters of those under them, that they may pass through life with some comfort to themselves if not with success; and to do so they must learn to hold their tongues, and to control their feelings. Besides, unlicensed speaking, however pertinent it may be to what is going on, may prove a serious hindrance to the success of a lesson. A careful teacher can soon accustom scholars to await a sign, a look, or a word of permission before speaking, particularly if he is scrupulous to recognize the right or the expediency of speech on their part. These remarks particularly apply to those teachers who wisely permit and encourage their scholars to be not mere passive listeners, but active thinkers, in the progress of a lesson. We have hitherto dealt with good order as a means to an end, but it is an important end in itself; even if a child has learnt nothing but this at school, it is an acquisition that will be a life-long benefit to himself as a member of a civilized community, the very existence of which depends upon the subordination of each individual will or desire to the good of the whole. Its importance will be enhanced in proportion as it is secured by self-control, which is obedience to principles, rather than control of the teacher, which is obedience to persons.

#### SIR ROWLAND HILL AS A SCHOOLMASTER.

The death of Sir Rowland Hill reminds us that we have lost one who first came into public notice by trying to carry out what was then considered the quixotic notion of managing a school without corporal punishment. Sir Rowland was happy in having a father who, from the earliest childhood of his family, was accustomed to reason and argue with

them upon all subjects that had a tendency to develop their intellects and extend their knowledge. In this respect he resembled the father of John Stuart Mill, although he proved himself but a poor bread-winner, for Rowland with his brothers, all of whom afterwards reached distinction, knew, as he expressed it, "the terrible inconvenience of being poor." He gave them other bread—which is or should be, the great aim of all education to give—he taught them how to think. He had inspired them with an insatiable thirst for knowledge, with devoted loyalty to truth and honour, and with a self-denying regard to the feelings and opinions and rights of others. Rowland's schooling ended when he was twelve years old. He then became assistant to his father in a small school. At a time when other boys are thinking of leaving school, he, with his brother, began to reform defects which they observed in their father's management. He took upon himself the management of the accounts, and with such success that before long he had the satisfaction of paying his father's creditors in full. While his brother aimed at improving the methods of instruction, he attended to the discipline and organization, which he said was his *forte*. Long before Dr. Arnold's name was heard of in connection with Rugby, Rowland Hill had upset many of the received notions on education. He abolished corporal punishment in his school, without in the least diminishing respect for his authority. Knowing that he was hot-tempered and even passionate, he, to cure himself of this defect, publicly announced to his pupils that any one who saw him out of temper might, before the whole school, inform him of the fact. He strove to make the school, as far as possible, a self-governing one. Hence, says the authority from which we quote:—"An almost perfect democracy was established. Each boy had even the right of being tried by a jury of his school-fellows whenever a charge was brought against him by one of the masters. The whole school elected what would be called its sixth form boys—guardians as they were called in the school that the Hills had established at Hazelwood, near Birmingham. These guardians

formed a kind of parliament, which, with the help of the masters, who composed an upper house, ruled the school. They met often to deliberate, and their sittings were drawn out over many an hour by the eagerness of the young debaters."

Attention was drawn to the school by a book written by his brother and coadjutor, Matthew. It was favourably noticed by De Quincey, and so highly thought of by Bentham, that he declared that after reading it he had thrown aside all he himself had written on education. The school attracted the notice of such leading minds as Wilberforce, Brougham, Grote, Joseph Hume, and Miss Edgeworth, and Rowland used to boast that he had the largest school in Warwickshire, filled by boys that could be almost made to govern themselves through a high sense of duty and not from brutal fear. It must be remembered that this was before Arnold had taken hold of Rugby. It is nevertheless interesting to know that the great qualities which made the inventor of the penny post one of the great benefactors of this century were first brought into wholesome exercise in the practice of improved methods to educate the young. It would be interesting to read the constitution and code of laws of his school. They filled a volume of upwards of one hundred pages. Doubtless we could find many things to amuse as well as instruct us, for Rowland was a hot-headed enthusiast, and in his old age he was known to smile at some of the crude theories he tried to carry out in his school, and was heard to express a doubt as to whether he would send children of his own to such an institution.

While he kept charge of the school he actively employed himself with public questions, and thus became acquainted with most of the leading men of the country. At the age of thirty-seven the desire for employment that would exercise less of a strain upon his nervous system impelled him to give up his school, and to devote his entire attention to public questions. He almost at once started the agitation for a reform of the postal system, and henceforth his career became the property of the nation.



AT the late Provincial Convention, Mr. David Johnston, of Cobourg, the first Vice-President, and Chairman of the Public School Section, hinted at the probability of his early retirement from the active duties of his profession, owing to increasing years. We find by a recent file of the *Cobourg Sentinel* that this has actually taken place. We cannot allow the occasion to pass without expressing our regret at the loss to the profession, of a public-spirited, patriotic, and earnest-minded teacher.

We have more than once had scholars whom Mr. Johnston had trained, and their mental and moral calibre gave evidence of the highest style of the teacher's handiwork.

Mr. Johnston's retirement will be a loss not only to the town of Cobourg, but to the Province. He has shewn an untiring sympathy with all that concerned the advancement of education and of the profession. He was a member of one of the first County Associations held in the province, and for many years past has been a regular attendant at the Provincial Conventions, in which he always took a prominent part, not as a time-server nor in the spirit of self-aggrandizement, but as one who regarded the interests of education and the independence of the teacher as too sacred to be bartered for either power or pelf. We can only wish that in his retirement he may enjoy the *otium cum dignitate* which is the proper

reward of his laborious and well-spent life.

THE *London Times*, in a thoughtful article on the School Board elections that occur on the 27th of November, shews a thorough appreciation of what the London School Board has done, and points out that the election cry of "Efficiency with Economy" is as capable of being used for the defence as for the attack of the Board. The providing of education for more than a quarter of a million of children, who would otherwise have been left uncared for, sinks the question as to whether it might not have been done at a cheaper rate into absolute insignificance. More education means less juvenile crime; and one form of crime the Board has stamped out. There is no longer the old supply of pick-pockets, trained in the manner of *Oliver Twist*. The reformatory and industrial school render this impossible by turning out seventy to eighty per cent. of their inmates to earn an honest livelihood.

By latest advices we find that out of the fifty members elected on the 27th November, nine are women. Amongst these we shall be disappointed if we do not find such names as Mrs. Westlake, Miss Muller, and Miss Richardson, who have taken an active and enlightened part in School Board work in London, either as members of the Board, as in Mrs. Westlake's case, or as managers of schools, as in the case of the other ladies.

Dr. H. Rink, the author of a recent work on the Interior of Greenland, estimates the area of that inhospitable land at 512,000 square miles. The surface is wholly covered with ice, and is constantly engaged in the formation of material for icebergs, which probably take one hundred years to travel to the sea. In one of the ice-fjords the portion of glacier annually pushed in and set afloat as ice-bergs has been calculated to constitute a cubical body 900 feet high, two miles long, and two miles broad. The whole system of river drainage is represented a continuous sheet of ice.

THE gross cost per annum for pupils in the London Board Schools is £2 10s. 11½d. sterling, or \$12.40 each.

To enforce the compulsory clause of the English Education Act, the London School Board employs 208 visitors, over whom are placed eleven superintendents, whose duty it is to bring truants, and those children neglected or put to work before the legal age by their parents, within the influence of school training. The total cost of compulsion for London amounts to the good round sum of \$141,020.

In Russia there were, in 1865, but 8,000 elementary Schools with 280,000 pupils. Now there are 24,000 of the former filled by 1,000,000 of the latter; but this is far from meeting the requirements of a country containing 12,000,000 children between the ages of seven and thirteen.

## HIGH SCHOOL DEPARTMENT.

MILITARY DRILL IN HIGH SCHOOLS  
AND COLLEGIATE INSTITUTES.

Some months ago the Dominion Government devised a scheme for the introduction of Military Drill into Schools and Colleges, of which due notice and explanation have been supplied to those interested through both the Ontario Minister of Education and the Department of Militia and Defence. The object of the Regulations is a good one ; but like every other scheme set on foot by those who have not a practical knowledge of the condition of our schools, it is unsuitable to the condition of Ontario, whatever adaptability it may have to that of the other Provinces. So far as we are aware, there have been no applications under this Order : the Hon. Mr. Masson will have found out by this time that to be successful the Regulations will have to be completely remodelled.

The Dominion Government proposes to supply gratuitously to those Schools or Colleges which can raise and maintain a company of 40 members, (1) the services of a drill instructor for one month, during which period there would be, we suppose, four or five hours' drill a day, and (2) rifles and accoutrements, and suitable books for Military Instructional purposes.

School Boards are in turn expected (1) to hold themselves responsible for the safe keeping of the arms and accoutrements, and (2) to see that the members of their company keep themselves supplied with uniform clothing of a pattern and colour to be approved by the Government.

Such, in brief, is an analysis of the Regulations. The practical objections to the scheme from an Ontario High School point of view, are as follows :—

It would seriously interfere with the regular school routine. Classes would be broken up, owing to the necessity for some of the members being present at the daily drills, and it would be literally impossible to maintain any kind of organization. A later Regulation allows the annual drill to be put in at two separate periods, but this would only slightly improve matters. It cannot surely be the intention of the Government to have the drill instructor perform his duties after the ordinary school hours ; and in these days when High School masters can hardly overtake the work now expected from them, it is extremely unlikely that they will sanction, even for a few weeks, such an interruption to the regular course of study. No doubt, from one point of view, such an interruption might be productive of good results to the pupils themselves : we are painfully aware that they are often too much hurried, and that the break in the usual routine of mental discipline would have manifold advantages, but the exigencies of the Master's position under our present system of Departmental Examinations are now such that in the race for prestige, and in some cases in the struggle for existence, there are few who would care to handicap themselves in this way. It is, further, very questionable whether even a month's steady drill is the maximum a well devised scheme should aim at. From the teacher's standpoint, drill should have an educative influence, and to have much value as such, it should form part of the studies in the school programme. This it does in several of our High Schools and Collegiate Institutes, in some of which it is taught by the regular masters themselves, who, for reasons which will be obvious to all teachers, form the most efficient class of instructors. The Gov-

ernment scheme contemplates the appointment of Drill-Sergeants who are to spend a month every year at those schools which organize companies under the Regulations. It is certainly too much to expect School Boards which have already provided drill instructors to discard them, when, except the possession of arms and accoutrements, the new scheme would confer no benefit on them, but on the contrary would put them to serious loss and inconvenience. This provision in the Regulations might suit localities unable to procure a competent instructor, but when we consider that, to obtain the arms, etc., there must be at least 40 members in the company, there seem to be few places able to come under the operation of the Order which might not also provide suitable Drill-Sergeants.

If there were nothing else to shipwreck the scheme, the clause which makes it imperative for members of the companies to possess uniform clothing, would be enough to do it. The uniforms would have to be supplied by the members themselves, or by the School Boards. A sufficient number of the former might be found in a few cities and towns rich enough to do so, but the latter feel the ordinary expenses heavy enough without launching into what the much suffering rate-payer would certainly regard as an unwarranted expenditure. This part of the scheme should be dropped; or, better, the Department itself should supply cadet companies with clothing as they now do the volunteers. The advantages gained to the country at large would far more than counterbalance the expense. Whatever benefits would result from the success of this movement would be shared in by the Dominion, and it is therefore only proper that the cost should be defrayed out of the public exchequer. The Instructors in our High Schools, who have already proved themselves competent, should be confirmed in their places, and the students under their charge subjected to such inspection as might be deemed advisable. Places unable to provide suitable instructors, might, if desired, be supplied with them by the Militia Department.

Some ten or twelve years ago a still better plan was in existence, though for a variety of reasons it was then not so successful as we believe it would now prove. The sum of \$50 a year was granted to those schools which maintained at least 20 pupils well drilled under a competent instructor. A grant of a small sum like this, or indeed, a proper supply of arms and accoutrements and uniforms, would cause the establishment of many a school company throughout the Province, and in the end turn out to be more useful, and less expensive, than the present well-meant but impracticable scheme.

As every one is impressed with the necessity for some such provision as the Hon. Mr. Masson aims at, we are sure he will have the support of every Canadian in the carrying out of any system of military instruction suited to our condition and requirements.

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#### HIGH SCHOOL REGISTERS AND BLANK FORMS, ETC.

A good deal of unnecessary trouble is often caused to masters by the regulations of the Department in reference to registers.

These are at present supplied to High Schools by the Public School inspectors. Is there any good reason why they should not be sent direct to the High School Board or the High School master? Delays of weeks have sometimes been caused by adherence to this unnecessary regulation. Let us have a little common sense infused into the Depository management. The less the friction, the pleasanter will it be for every one.

In the matter of blank forms for half-yearly returns of attendance, the same economy in little things, for which the Department has been distinguishing itself of late, also crops out. An application for enough forms to contain the attendance of a large school has been met with a refusal and the advice to rule forms similar to the one sent. The matter is certainly of no great moment, but it is a mode of saving the public funds which the public can afford to dispense with.

After his half-year's work, it is task enough for the master to have to spend, in some cases, hours over his return, without being forced to make out the form which is to contain it. Let each school, each half-year, have enough and to spare.

### HIGH SCHOOL INSPECTION.

It is impossible to avoid concluding, that as at present conducted, the inspection of our High Schools gives satisfaction neither to the profession nor to the public. In official circles much importance is attached to this mode of testing the results of a master's work, and to the influence for good of such supervision. But the opinion is confined mainly to departmental and other officials; it is by no means admitted by others interested in the question. So long as no money was allotted on the results of inspectional visits, little interest was taken; but the state of matters is now different, and it is only right that the wishes of the intelligent body of men, whose abilities and labours are thus appraised, should have every reasonable guarantee that the results obtained are at any rate approximately correct. In connection with this subject, we desire to submit the following statements, for the consideration of the Minister of Education:—

(1.) At the last session of the Ontario Parliament, many members expressed the opinion that the High School Inspectors do not devote sufficient time to their proper duties, and that in many localities their work is inefficiently performed.

(2.) The High School masters, in annual convention, *unanimously* passed the following resolutions:—

(a.) That the amount payable on the results of inspection should be determined at the end of each year and a half, on a conjunct report of the three inspectors, it being understood that each inspector would devote himself to the examination of those subjects on which he is admittedly competent to form an opinion.

(b.) That in view of the fact that the

grading of the High Schools, and the distribution of a large portion of the legislative grant, are decided according to the results of inspection, it is desirable that the High School inspectors should be enabled to devote a greater amount of time to the work of inspection at their semi-annual visits.

(3.) That by their own admissions the inspectors are not competent to examine in some of the subjects on the High School programme, notably, drawing, music, and drill; and that though their decisions in some departments of study are accepted without demur so far as their scholastic ability is concerned, very grave doubts are felt by those interested when *each* of the inspectors undertakes to appraise the "quantity and quality" of the work done in the Upper Schools.

(4.) That the half-yearly apportionment on the results of inspection is so exceedingly minute in its details, that it is calculated to produce the apparently erroneous impression that the condition of the schools has been as minutely investigated. To illustrate this, we refer to the apportionment for last half-year, and we find the following:—

In (a.) "School accommodations," etc., there are *fifteen* grades, represented by the following sums:—\$20, \$18, \$17, \$15, \$14, \$13, \$12, \$11, \$9, \$7, \$6, \$5, \$4, \$3, and \$0.

In (b.) "Number of masters employed," etc., there are *seventeen* grades, represented by the following sums:—\$22, \$18, \$16, \$15, \$14, \$13, \$12, \$11, \$10, \$9, \$8, \$7, \$6, \$5, \$4, \$3, and \$0.

In (c.) "Character of work done in the Lower Schools," there are *seventeen* grades, represented by the following sums:—\$18, \$17.50, \$17, \$16, \$15, \$14, \$13, \$12, \$11, \$10, \$9, \$8, \$7.50, \$7, \$6, \$4, and \$3.

In (d.) "Quantity and quality of Upper School work," etc., there are *twenty-five* grades, represented by the following sums:—\$51, \$48, \$44, \$42, \$37, \$36, \$30, \$28, \$24, \$23, \$19, \$18, \$16, \$15, \$12, \$10, \$9, \$8, \$7, \$6, \$5, \$4, \$3, \$2, and \$0.

In (e.) "Discipline," etc., there are *nine* grades, represented by the following sums:—

\$6, \$5.50, \$5, \$4.50, \$4, \$3.50, \$3, \$2, and \$0.

In *Music, Drawing, and Drill*, there are thirteen grades, represented by the following sums:—\$18, \$15, \$14, \$12, \$9, \$8, \$7, \$6, \$5, \$4, \$3, \$2, and \$0.

In connection with the above statement it is necessary to bear in mind that there are only 104 High Schools and Collegiate Institutes, and that the amounts apportioned to each school vary from year to year, so that apparently a fresh valuation is made at each inspectional visit.

(5.) An alteration in the grant to each school should indicate an alteration in the character of the teaching. By those Trustee

THE teacher whose mind shall not become a desert must drink daily from the fountain of his calling. Forty eager pupils cannot quench their thirst for knowledge by looking at an empty vessel.

THE early years of life have the principal influence in moulding character. I believe, in truth, that a person can so mould the child by the time he is ten years old, that no future training can dispossess his mind of the principles inculcated.

THE teacher must know how to enter into the hidden recesses of the youthful mind, and from that point work outward and upward. The pupil is like a treasure in the sea, and the teacher like a diver who goes to the bottom to bring it up. If you do not descend and ascertain first exactly where the child's mind is, you will not bring him up where you are. The descent of the teacher is essential to the ascent of the pupil.

A BIT OF SARCASM.—The Booth Board School has closed its austere portals against a depraved young hussy of eight, who is not ashamed to hang ornamental beads in her ears. The Board holds that it is flying in the face of Providence, as girls have ears for no other end than being boxed. This is clearly the beginning of school-board sumptuary laws, under which the ribbons of female pupils should be replaced by string or untanned leather; their hair should be uniformly cut to within a quarter-of-an-inch of their heads; and it would be well if their teeth could be dyed a nice, modest color—say drab, or dirty blue. The stuffs recommended by the department are, for girls a good strong sackcloth, and for boys a fine tarpaulin.—*Funny Folks (Eng.)*

Boards that pay any attention to the eccentricities of this financial thermometer it is so regarded, and masters who can conceive of no reason for a change in the apportionment have before this suffered needless and unjustifiable humiliation.

Under these circumstances two questions suggest themselves:—

(1.) Is it in the interests of education to continue a system that attempts to make so minute discriminations? and (2.) Are the means at present employed in arriving at these conclusions satisfactory?

To both of these the High School masters give an emphatic negative.

AT an examination in Geography in one of our Public Schools, the scholars were required to state the products of various countries, and one youth in despair answered as follows:—

England.....Cotton, coal.  
Russia.....Lost track of them.  
China.....Not under my observation.  
Arabia.....They are cast down.  
France.....Knew them once, but know them no more.  
Switzerland....Gone forever.

THE following are among the rules laid down by a contemporary for the conduct of Teachers' Meetings:—

1. Select a place of meeting most convenient and attractive for the great majority of those concerned.
2. Hire a good hall.
3. Make a good programme.
4. Make the speakers stick to their allotted time.
5. Allow time for fair discussion so long as the addresses are brief and pertinent.
6. Conduct the work by the clock. Commence at the appointed time if only one is present. The audience waited for does not demand so much attention as the audience present.

IT is one of the best evidences of a progressive spirit in the teacher when a subscription is made for some good educational journal, and readers of such are amongst the most public-spirited and intelligent of the profession.—*Exchange.*

## CONTRIBUTORS' DEPARTMENT.

THE "INTERMEDIATE" AND THE  
DECAPITATION OF HEAD MAS-  
TERS.

To the Editor of the *Canada Educational Monthly*:

SIR,—I have read with pleasure your remarks of last month on the shameful action of the Lindsay School Board, in dismissing the Principal of the High School, in consequence of the failure of his pupils to pass the last Intermediate Examination,—a circumstance for which the Board was undoubtedly more to blame than Mr. Dobson.

I shall look with interest for your further remarks on the case, for, if the security of a Head Master's position is to be made contingent upon the results of the "Intermediate," or of any Departmental Examination, irrespective of what School Boards may do to make efficient the teaching staff of the schools, it will be a serious matter to every one of us in the profession. What has befallen Mr. Dobson, and Mr. Miller, of the Walkerton High School—whose case I should also like to see you take up—may be the experience of any Head Master, if the passing of the "Intermediate" is to continue to be made the gauge of success in a teacher's work without reference to the other substantial results of his teaching, and irrespective of the aid his Trustees may afford him in enabling him to meet the tests of Departmental Examiners. Surely, however, the injustice that has been lately done at Walkerton and Lindsay will not be repeated elsewhere.

Your examination into the circumstances of these cases will be of good service to the profession, and I doubt not will do much to prevent the repetition of injustice and wrong. Thank heaven, however, we are going to have but one "Intermediate" a year!

Gratefully acknowledging the independence and ability with which THE MONTHLY is conducted, and wishing it every success,

I am, Sir,

Yours very truly,

A SUBSCRIBER.

—Our Correspondent, in the above letter, skirts the edge of a matter that might possibly be made the subject of some consideration and public discussion at the present moment. Particularly opportune, it occurs to us, would be its consideration just now, while attention is being directed to the wrongs of the two Head Masters, who have been relieved from their duties through failure, under exceptional circumstances, to pass their pupils through the recent Intermediate Examination. We refer to the words, in our correspondent's letter, "if the passing of the Intermediate is to continue to be made the gauge of success in a teacher's work, *without reference to the other substantial results of his teaching.*" There is no doubt that in the minds of most School Trustees the result of the "Intermediate" is the sole indication of success in teaching, and is the only criterion, in their often limited apprehension, of whatever progress has been made in the school work for the year. To this short-sighted view of the matter, Mr. Dobson and Mr. Miller have undoubtedly been sacrificed. It would seem, therefore, to be of moment to consider what other views of the subject can be presented so that Trustees may be made to see the value of the teacher's *all-round* work—rather than that of any special and forcing period—and to have their minds sobered to a modest judgment upon the merits of work tested solely by examinations. The High School grant being based on the result of an examination, of course, seriously warps the minds

of Trustees and predisposes them to take a prejudiced view of other tests of school progress than that of Departmental Examinations, upon which the grant depends. But this cannot be said to be fair to the teacher, and it becomes positively immoral when the means of enabling the school successfully to pass these tests are withheld by the false economy that too often governs School Boards in the administration of their trusts. As a matter of fact, it is well known that the tests of an examination day are often delusive and unreliable. Experience has again and again proved this. The best results of well-directed instruction, and the earnest toil and energy of the teacher, rarely display themselves to an examiner's eye, and indeed, often remain concealed during the years of school. The same may be said of the moulding effects on character of school training and discipline, which are seldom seen and never appraised in an examination paper. Even in book instruction, the results of honest teaching and of a well-digested course of study, do not always reveal themselves. Constitutional timidity, or a too excitable temperament in the pupil, often hinder him from doing justice to himself. Moreover, the system of inspection is not faultless, nor is the Inspector himself always in that judicial frame of mind that best fits him to try the issues upon which so much depends. In the case of outlying schools, special stress may be pardoned on this point, as, however robust may be the Inspector, and however equable his temper, the necessity of economizing time, and the remembrance of even a *mauvais quart d'heure* on the road, are enough to upset his equanimity and darken his mood. We do not of course argue for any laxity in inspectoral work, nor for any reduction of the standard of education to which the schools have now been happily raised. On the contrary, we desire to see maintained a rigid and competent inspection, and a curriculum as scholarly and high-class as it is practicable to insist upon. But what we contend for is a more enlightened and considerate appraisal, by Trustees particularly, of the teachers'

every-day work, and not that that shall be solely tested by the results of a chance and solitary examination, subject too often to the accident of the moment, and which the teacher frequently enters upon at a disadvantage for which his School Board alone is responsible. The work required now to be done by the High School Master is of so varied and complex a character, and exacts so much of labour and attention in its performance, that School Boards can hardly be too generous in dealing with their Principals, and in supplying a staff of competent, well-paid assistants as will enable them to do justice to themselves and ensure the character and efficiency of their work. This at least we might expect at the hands of Trustees, and it would seem to be greatly desiderated at the present moment, viz.:—that before they undertake to contrast one school with another, and to hold their Head Master responsible for any short-comings in their own special trust, they should justly weigh the circumstances that stint or withhold success from his labours, and be sure that his failure is not the result of the short-sighted and illiberal administration of his School Board.—ED. C. E. M.

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 THE TEACHERS' INSTITUTES  
 GRANT AND DEPARTMENTAL  
 "STAR" LECTURERS.

To the Editor of the *Canada Educational Monthly*:

SIR,—Can you tell me whether any of the \$50 annual grant to Teachers' Institutes finds its way into the pockets of the Central Committee? I have been informed that some of the members receive pay for their services at Conventions in addition to their travelling expenses. Is this so, or is it, as I hope, a slander on the good name of these public-spirited gentlemen? I had always understood that the only reward expected was the thanks of the teachers, and I was surprised when informed that dollars and cents form, in some cases, an important ingredient in the composition of the thanks.

Yours respectfully,

ENQUIRER.

October 25th.

--We have no personal knowledge of the matter to which our Correspondent refers, though the statement has reached us, from two independent sources, that a portion of the Government grant to an Institute was in a late instance made use of to fee a lecturer for his services—beyond the sum that could justly be claimed for legitimate travelling expenses. Under ordinary circumstances, a charge for a lecturer's expenses might be liberally construed, and the treasurer's conscience need not be stretched to honour it. But we are under the impression that these Institute Funds are not available to pay an honorarium to a lecturer. If they are, however, there is no occasion for concealing to whom they are paid. No one, we should think, would trade on professional disinterestedness while receiving a *quid pro quo* for his services.—ED. C. E. M.

#### THE MONTHLY AND ITS SUPPORTERS.

To the Editor of the *Canada Educational Monthly*:

SIR,—Having heard that the MONTHLY is published in the interest of a certain section of the teaching profession and of certain publishing houses, I would like to know whereon rests the evidence that this is the case. As a subscriber to the journal, I have certainly observed that some of those in an influential position keep aloof from it, or do not write over their own names; and now that the journal has been placed upon a new basis, I think it would be a pity if any real or apparent objections of this kind could be made against the publication. We need a journal in which the interests of every section of the profession will be attended to fully and impartially.

Yours, etc.,  
TEACHER.

TORONTO, Nov. 4th, 1879.

—Emphatically we answer our correspondent in the negative! THE MONTHLY has

never been, and is not now, published in any other interest than that of the profession, and the profession as a whole. Neither has it been, nor is it now, issued in the interest of any one publishing house, or of any number of them. The initial prospectus of the Magazine announced that the publication would be issued as an independent organ of the profession, and in the spirit and letter of that promise it has appeared and been conducted. To ensure its maintenance in this character, its proprietorship has recently been assumed by a Joint Stock Company composed almost wholly of members of the teaching profession, purposely drawn from its various branches, to make it more truly a representative publication. That the Magazine from its start has had the support of those active in educational work, and imbued with a fervid professional *esprit*, has been due to the fact that its aims were high and its character independent. But while having this special support, it has not been exclusive. It invited and invites aid from all quarters; and the spirit of its management has been to do justice to all. Those "in an influential position" whom our correspondent notices as having kept aloof from it, have doubtless done so for good reasons. Possibly other and more cherished interests claim their labours: they do not, at any rate, conceal their personality in this journal. Their co-operation, however, was not unsolicited, though their courtesy was as scant as their aid. But with the attitude of a section of the profession, the Magazine has nothing to do. Its interests are of a more extended and embracing character, which every issue happily augments. A new year gives promise of wider fields to occupy, and of larger opportunities for work. Misrepresentation may still follow us, but there will be much to compensate. What we have already accomplished bears its own testimony; what we may yet do, the aid of our friends will make possible.

EDITOR C. E. M.



## CONTEMPORARY LITERATURE.

MANUALS FOR TEACHERS. No. 4, On Discipline. No. 5, On Class Teaching. Philadelphia: Eldredge & Brother.

The Manual on "Discipline" displays the same admirable characteristics as the three previous volumes already noticed in these pages; and is evidently the work of one who knows whereof he speaks.

We know of no better text-book on the subject to put into the hands of a student-in-training for careful and systematic study.

The writer views the weaknesses of both pupils and teachers with the sympathetic mind of one who has "felt the same." He does not fall into the too common error of writers on Education, of setting up an impossible standard, but lays down rules which every teacher worthy of the name, by exercising proper care, may follow. For example, in connection with the enforcing of obedience, he offers the following "hints:"

1. Make up your mind what rules it is desirable to follow, and abide by them.

2. Let your most important rules be reduced to writing.

3. Have no rules which you cannot enforce.

4. After giving an order see that it is obeyed.

5. Do not use language which implies that your pupils will desire to violate the order you give.

6. Give your commands in a firm tone, without shouting or repetition.

7. Have a definite way of doing everything.

8. Exercise special vigilance at the change of lessons.

9. Always have something definite for your class to do.

10. If necessary explain the reason for your demands.

In enumerating the characteristics of good discipline, he says, it should be *regular, natural, unobtrusive, kind and just*, and he might have added *firm*.

In his chapter on Motives, he says, "it is often worth while to explain the object of a rule, and to show its practical utility."

It is better still to make the rule at a time when its necessity or utility is obvious to the class.

He explains that punishment has a two-fold object, (1) the reformation of the offender; (2) the deterring of others from the commission of the offence, but he omits to show how far the latter object should be kept in view. It should have no recognition in regulating the extent of the punishment; because it would be very unjust to impose punishment upon a culprit to correct faults that others, for whose conduct he is not responsible, may in the future commit; nor can it always decide the nature of the punishment, for that too often has to be regulated by the character of the scholar. Our author does not agree with many others in regard to Impositions; he considers them very suitable for such offences as truancy, lateness, inattention, and neglect of home lessons, remarking that it is only reasonable that the time a scholar, in these offences, takes from work should be compensated for by time taken from play. In further confirmation of this view, he adds this consideration, that giving impositions for these offences is a means of disciplining the mind of the pupil to a proper estimate of the value of time.

With much of this we agree, and we think he is right, too, in recommending the exercise of a little good humoured ridicule to lessen the vanity and conceit of some scholars, and the tendency to magnify trivial grievances of others.

We will conclude with a quotation from the chapter on "Habit," which will afford a fair specimen of what this valuable little volume contains. "Authority is to be used only so long as is necessary to give reason time to acquire the power of ruling the conduct. Hence, as impulse comes under subjection, the young should enjoy more and more freedom. They should no longer be directed by precepts in every minute detail of conduct, but should be left to apply principles for themselves. They should be suffered to encounter temptations such as they have hitherto been exempt from, and should in this way be gradually disciplined against that time when they will leave home to become their own masters."

We have not to read far in the Manual on "Class Teaching" before we find unmistakable indications that it is the production of an intellect of a different order from that which gave us the previous Manuals. The book contains much that is worth knowing, but it is put before the reader in such a jerky style that he must bolt it as a restless Yankee does his food, and with as little benefit. For example, when the writer wishes to tell us that the advantages of class instruction are a saving of time to the teacher, a benefit to the pupils by begetting sympathy, emulation and competition, and by making the knowledge of some the property of the whole, he does so thus:—"The advantages of class instruction are manifold. The class saves time. Twenty may be instructed in the same time as would be required for one. It thus sets the teacher free for other work. But it has greater advantages. Look at its forces. These are sympathy, emulation and competition. The brighter ones are there to stimulate the dull. The special knowledge of some is made a common possession."

Notwithstanding the spasmodic character of the author's style, a great deal that is valuable may be learned by a careful study of his little book. Take, for instance, the following remarks on Teaching:—"To teach is to enable the learner to do. It may be to work with the mind, as in arithmetic and grammar; or, with the hands, as in penman-

ship and drawing; or, with the voice and ear, as in reading and singing. Its aim is always to give power and skill. . . The development of the pupils' faculties and their disciplining, that is, the placing them completely under his control, are the prime aims in teaching." The last chapter on Class Management is perhaps the most valuable one in the book, and will well repay studious perusal on the part of even the most experienced teacher.

These volumes complete this series of Manuals, and the National Society in England, as well as the Messrs. Eldredge in America, have conferred a special benefit upon teachers by their publication.

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HARPER'S LATIN DICTIONARY, founded on the translation of Freund's Latin-German Lexicon, edited by E. A. Andrews, LL.D. Revised, enlarged, and in great part re-written by Charlton T. Lewis, Ph. D., and Charles Short, LL.D. New York: Harper Brothers; Toronto: Willing & Williamson; Oxford: At the Clarendon Press, 1879.

This imposing volume, which we had barely time to notice in our last issue, and which we confidently recommended to students and scholars as a great store-house of criticism and research, has, on further perusal, amply justified that opinion, embodying, as it does, the results of the latest and ripest scholarship in the literature and language of the Latin tongue. It is an exceedingly opportune work. The translation of Dr. Freund's great Latin-German Lexicon, edited by the late E. A. Andrews, LL.D., and published in 1850, a work in extensive use throughout England and America, has, in some departments of lexicography, been for more than fifteen years almost obsolete.

The Classical Professor, the Classical Master in the High Schools and Collegiate Institutes, the Honour-man in Classics at College, and the critical student have all felt the need of some work embracing in moderate compass the results of recent minute research in manuscript authorities, of profounder inquiry into the origin and history of Latin words, and of the nice discrimination

of meaning which renewed attention to the text has established, as well as of the disentangling of intricacies effected by recent writers on Latin syntax.

The work before us is the result of a series of earnest and conscientious efforts by the publishers to meet this need. A sufficient guarantee of the merit of these efforts is the imprimatur of the Syndicate of the Clarendon Press at Oxford on the title page.

From the publishers' preface we learn that the revision of the original work was begun fifteen years ago by the author, Dr. Freund, who carefully revised it and re-wrote a few of the less satisfactory articles, and supplied about two thousand additions. The sheets were then placed in the hands of the well known Prof. Drisler, the late Dr. Anthon's colleague in Columbia College, New York, but that eminent scholar advised the entire reconstruction of the work. Owing to Prof. Drisler's numerous engagements, the work of re-editing passed into the hands of Prof. Charles Short, of Columbia College, and Charlton T. Lewis, Ph.D., who have brought it to its present magnificent completion. The publishers make grateful reference to the valuable help received from another scholar, Gustavus Fischer, LL.D., of New Brunswick, N.J., by whose learning and research many articles have received a fulness and completeness of treatment hardly attempted before in a Latin Lexicon. They also acknowledge their obligations to Professor Lane, of Harvard College, for many suggestions and corrections, the fruit of his ripe scholarship, and to Mr. Geo. W. Colford, the proof-reader, for his patient skill in successfully accomplishing what must have been a singularly tedious and irksome task.

The work is now published in mammoth octavo form and, as before, in triple-columned page, the word *sub judice*, as well as chapter-heading, being distinguished from the rest of the article by different type, the matter being arranged under different heads, as first planned by Freund, in the original work, and since adopted in whole or part by nearly all lexicographers.

.. A careful inquiry into the various elements

of Latin-English lexicography, such as the grammatical, the etymological, the exegetical, the synonymous, the chronological, the rhetorical, and the statistical, will show, we think, a very decided advance upon all previous efforts to produce a volume at once convenient and complete.

Into an examination of these various features we do not propose to enter, but shall content ourselves with a few cursory observations upon some topics that seem to call for notice. There is a very large amount of new material. Some idea may be given of this by stating that the old edition numbered 1663 pages, the new 2019, the page being larger in the latter, and that the discussion of the letter A occupies three-fourths of a column in the old, and four entire columns in the new! Nothing, we think, could more clearly show the advance that has of late years been made in matters relating to verbal criticism, than a comparison of the two editions on the word *abs*.

While following out in the main the plan of treatment adopted by Freund, the present editors have felt warranted by the demands of the age to depart from his views on the treatment of etymology in a lexicon,\* and to advance boldly into the fields of Comparative Philology to garner there the choicest sheaves of that inviting science.

We welcome the presentation of this new material. A generation that has sat at the feet of Max Muller, or for whose youth a Primer on Philology has been prepared, cannot be content with anything less, we mean no jest, than the root of the whole matter. The school-boy who has been taught to notice crude forms and roots, as given in Dr. White's admirable Grammar-School Texts, no less than the quondam student of Donaldson's *Varronianus*, will be able to prosecute his investigations along the lines indicated by Dr. White, and not run the risk of stumbling *sub luce maligna* of the older Lexicon. Compare, for instance, the copious treatment of the word *gramen* in the new edition with that in the old, or in Anthon, or White, or Smith, or any other of the common

\*See page xii.

Dictionaries, not to mention Facciolatti's wilderness.

Another feature of great importance is the thorough revision of the orthography. Briefly to state the change: The editors have almost entirely adopted Brantbach's spelling, as given in his Latin Orthography. We may now confidently look for some uniform action by future editors as to the spelling of words in Latin Classics for use in schools. In a very short time, when a third edition of Kennedy's Virgil is called for, we shall not find that admirable scholar fearing to wound the susceptibilities of his practised reader writing Vergil in his text and Virgil on the cover.

The occasional errors in quantity that marred the correctness of the old edition have been carefully sought out and removed. We have known the incorrect marking of *tamen* in the old edition spoil a line of otherwise good verse. But why (says the reader, did) not (the stupid) use a Gradus? Simply because a Gradus does not discriminate between the various meanings of a Latin word of different epochs, and ought not to be used in writing verse. It is in this discrimination that the Lexicon before us will take its place above all others; and, for this reason, we would advise all students ambitious of cultivating a pure style in Latin, to study the word as treated in this work.

There are, of course, omissions. A brief note on the quantity of *fidus* in compounds, and a longer note on *pro*, in composition, would have greatly enhanced the value of these articles. The variations of quantity in *ferri* and *statum* are passed unnoticed. But these are very trifling omissions, and in no degree detract from the general merit of the work.

No department of lexicographical investigation or elucidation seems to have been neglected. The mere student of English literature, in quest of the exact meaning of his author, will find opportune help in discovering the meaning of difficult phrases in such English classics as *Paradise Lost* and *The Fairy Queen*. See the elegant reference to Milton P. L., iii, 7, *sub voce, audio*.

It would be unpardonable to pass without notice the copious references to many authors scarcely mentioned in the former edition, but whose writings have been diligently collated for the present work. Especially is this remark true of the Vulgate and the Christian Fathers. With this edition the student of Patristic literature may read his favourite Father as comfortably as he would the Ciceronian Erasmus.

We notice in the new edition the excision of the specimens of the oldest monuments of the Latin language, and the list of words in Italian and French derived from the Latin. The latter appendix being a mere list of words in their mature form exemplifying no laws of growth and development, was of little philological use, and will not be missed. The growth of the French from the Latin will be studied to infinitely more advantage in the pages of Brachet or Littré. It would not have been amiss, we think, to have retained the specimens of oldest Latin, though they are to be found in such common books as Donaldson's *Varronianus*.

We cordially recommend this new edition of a favourite Lexicon, an edition which may almost be regarded as a new work, to all students of Latin literature, but especially to the Teaching Profession and the student of Honour Classics in the University. We feel satisfied that a careful and constant use of it will greatly conduce to the growth of sound and accurate scholarship.

G. H. R.

THE SKIN AND ITS TROUBLES. New York: D. Appleton & Co. Toronto: Hart & Rawlinson.

This is the seventh of the series of *Health Primers*, prepared by several eminent medical and scientific men of London. They are intended to be useful and reliable guides in all matters pertaining to the health of the people. In the ninety-four pages of this little book a great deal of useful information and much good advice, based on extended knowledge and experience, are given. The remarks on the cleanliness of the skin are particularly good. We cannot

say the same of those about clothing, which deal too much in generalities to be of much use to persons seeking guidance.

The writer devotes several pages to *Ringworms*, which teachers cannot fail to benefit by reading. He speaks of it as a fungus,

and strongly urges that "in schools, and other institutions, the greatest precautions ought always to be in force, of a preventive nature, and, when a case of ringworm occurs, complete isolation should be carried out."

## EDITORIAL NOTES.

### THE LINDSAY DISMISSAL CASE.

From the brief comment, in our editorial note of last month, on the dismissal of the Head Master of the Lindsay High School, it will be inferred that the Trustees of that Institution, in their action in the case, have not distinguished themselves by any scrupulous regard for fair dealing, or by any considerations which should have had weight with intelligent and honourable public men. The facts of the case are these:—Mr. Dobson was appointed some eight years ago to the Head Mastership of the High School, during which period, though having only one assistant, and working in a locality by no means productive of promising school material, he was able to do his work with creditable success, and to maintain a fair character for the school under his charge. We have the testimony, to the efficiency of the Head Master's work, of the Mayor of the town (Col. Deacon), one of the few members of the Board who seems to have acted with honour and fairness in dealing with Mr. Dobson. At one of the Board meetings, Col. Deacon said of the Head Master's work, that "in 1875 he passed six third-class teachers, one in law and one in medicine; in 1876, four third-class teachers, and one in law; in 1877, eight second and eleven third-class teachers, and one in law; in 1878, nine second and seven third class teachers, and two in Arts; or a total of fifty-five in five years, which he (Col. Deacon) did not consider bad work at all." In 1879, from a

variety of circumstances, which form a substantial defence of the Head Master, he was unfortunate enough to fail in passing any of his pupils through the Second-class or Intermediate Examination,—a circumstance as exceptional as it was notable, and which sharply aroused his School Board from its lethargy and the indifference with which most of its members had previously regarded his work. The circumstance of this untoward result of the Midsummer Intermediate was, as may readily be conceived, a cause of deep chagrin to Mr. Dobson, though the parsimony of the School Board which left the efficiency of the school, with an average of eighty of an attendance, to the labours of a Head Master and one assistant, with the occasional help of another, might well absolve the principal from sitting severely in judgment upon himself. But besides the indifference of Mr. Dobson's trustees to the efficient equipment of the school—manifested not only in their refraining, until too late, to appoint a permanent third master, but in their indifference to supplying until recently, and even then with some qualification, a really capable and efficient first-assistant—Mr. Dobson has had to contend against the rivalry of High Schools in neighbouring towns, each supplied with at least four masters, though not having a much greater average attendance. The situation, moreover, was more grave in Mr. Dobson's case, as these rival schools were situated in centres where public intelligence and sympathy, in the interest of a high standard of education,

is not demoralized by the illiteracy and stinginess of Trustees, against which Mr. Dobson had largely to contend, and whose connection with school matters can only result in lowering the character of the schools under their control. But Whitby, Port Perry and Bowmanville, with their efficient staffs and liberal School Boards, no doubt would not only attract the better class of pupils that would otherwise go to the Lindsay School, but, by their greater efficiency and higher character, would also place the institution under Mr. Dobson's charge at a moral as well as a professional disadvantage. This much it is only just to say in exculpation of Mr. Dobson. But awakened for the moment from their supineness, by the result of the Intermediate Examination, let us see what was the action of the Lindsay School Board with reference to the trust they had previously shamefully neglected, and what their attitude towards the masters in charge of the school. Here, unfortunately, we stumble upon what, in the main, has been the evident cause of failure, and the explanation of the low standard of the institution, viz.: the incapacity and obstructiveness of about one-half of the Trustees, and their inability or unwillingness to devise remedies for the improved administration of the school's affairs that would be at once just and honourable in their relations to the masters in charge, and intelligent and scrupulous in their duty to the school. Instead of manfully accepting their share of the responsibility for what had befallen the school, the first move was to hold the Head Master wholly accountable for the state of things that had come to light. Unreasonable and inconsistent as this was, it was but the first act of injustice done Mr. Dobson by his School Board. For a time juster views prevailed, and a majority of the Trustees espoused the Head Master's cause. Meantime private calumny was active, and the malignity of ignorance began to do its work. Still there was no official arraignment of the incriminated Head Master, and the unsuspecting victim went on with his duties. The local press, of course, had its say on the subject, but with little

chivalry of feeling, and with no desire to serve other than party interests at the Board. Finally, a meeting of the Trustees was held to consider the re-appointment of the teaching staff of the school, and those having the confidence of the Board were asked to apply for re-engagement. Mr. Dobson was one of those solicited to send in his application, and, accepting the implied endorsement of his professional efficiency, he responded to the invitation. Four days afterwards, the Board that had just practically expressed its confidence in the principal, and had not hitherto preferred a charge or, so far as Mr. Dobson knew, officially entertained a doubt of his usefulness, dismissed him! To crown this outrage, and to shield those who had so cruelly reversed their vote in favour of Mr. Dobson, the proceedings at one of the Board meetings were suppressed, and a subsequent session failed to right the Principal's wrongs. It would be painful to dwell on this matter further, and we leave the Lindsay School Board to the pleasant recollection of its grim work, with the stigma which attaches to it in its act of treachery and dishonour. As we deal in another part of this issue with the attitude of Trustees in relation to the "Intermediate," we need not here draw any lessons from the above recital of facts. We again extend to Mr. Dobson our sympathy with him in the painful position in which he has been placed, and repeat the expression of our hope that his professional reputation may not suffer from the injustice of which he has been the victim.

#### THE WALKERTON HEAD-MASTER-SHIP.

The case of Mr. Arnoldus Miller, of the Walkerton High School, is, in the main, identical with that of Mr. Dobson, though the dismissal of the former gentleman, we are glad to say, was unattended by the circumstances which so painfully marked the Lindsay case. To Mr. Miller, however, the issue has been sufficiently disastrous, and that without a shadow of reasonable justification on the part of his School Board. But

were this otherwise, Mr. Miller's many years' labour in their service might have counted for something. Eight of his twenty years' work as a teacher had been spent among them. For three years he had worked single-handed, and for the past five he had had but one assistant. Whatever reputation the school had was due to him. He had, moreover, raised the attendance from seventeen to nearly a hundred pupils. He had passed seven University matriculants, three of whom had gained scholarships. He had also turned out four law students, nineteen second-class, and fifty third-class teachers. Yet all this record must be forgotten in presence of the short-comings of a single examination. We fear for the largeness of the trust reposed in School Boards if dismissal for inability to pass a certain number of pupils, or even none, through the "Intermediate," is to be made the rule. If this injustice is to continue, we fear, also, for the educational interests of the country, for good teachers will not accept positions where the tenure of employment is so uncertain. But what craze has come over Trustees in this matter? Do they not know that the truest aim of education is to train the mind rather than to cram it? And what boots it, save for the trifling Government grant, how many shall pass the "Intermediate," if the mental faculties of the pupils are being wisely developed, and their powers of acquiring knowledge rightly trained? Results will come by and by, and they will be the more satisfactory if the right processes of education are not reversed. That wiser counsels among Trustees may yet prevail in regard to this matter, must be the sincere wish of every true friend of education, as well as of the teacher. Meantime it is a pity that good men like Mr. Miller and Mr. Dobson should become the victims of narrow views and false notions.

#### A MUSEUM FOR TORONTO.

When is Toronto to have a proper Museum? This question appears to evoke but little or no response, and yet, how important an instrument in education is a good Museum! Canada is very much behind the age in this

respect. One of the first remarks made to us the other day by a Canadian gentleman who had just returned from a tour round the world, was to this effect. He noticed in all the Australian Colonies large, fine and prominent buildings which the citizens took a pride in pointing out as their Museums. We do not expect to find in such places the treasures of art and the wonders of science in the lavish profusion noticeable in the Museums of European capitals. But we may well look to see in a Colonial Museum the best possible selection of aboriginal implements, tools and ornaments, of local fossils, of the fauna and flora of the country, and the relics of its early history. Supplemented by good copies and casts of pictures and statues, and by original sketches by provincial artists, such a display would have much to attract, and in time we might hope that growing wealth and love of art would bring original paintings across the ocean. We notice an interesting account in our contemporary, the *Revue de Montreal*, of the opening of the Museum in that city, and hope that Toronto will hasten to follow this example. In order to give a lively interest to such a venture, an energetic management is needed. The new plan of loan exhibits should be resorted to, in order to prevent the institution from becoming stale and unprofitable; no slight danger when we consider the natural scantness of a newly-established collection. Many of the curious old pieces of furniture and household relics of the early settlers' days which were shewn by the York Pioneers at the last exhibition, might have been kept, with the leave of their owners, for temporary purposes, at such a Museum. Again, the recent collection of early printed books shown in Toronto, on the occasion of the Caxton celebration, demonstrates the fact that we are not as a country at all destitute of the material for most interesting literary and bibliographic display.

It is to be hoped that some one having the higher education of the country at heart will make a move in the matter at as early a date as possible.

## EDUCATIONAL JOTTINGS.

**HONOURS TO A CANADIAN.**—We are pleased to notice that an esteemed contributor to the Mathematical Department of this Magazine, Professor Edgar Frisby, M.A., formerly of Toronto, and now in charge of the Naval Observatory, Washington, has been honoured by the American Government with the commission to proceed to California, to observe and report upon the total eclipse of the sun, to take place on the 11th January next. The location selected for Professor Frisby's observations, is a point on the Pacific Coast, about 250 miles south of San Francisco.

Professor Frisby is a graduate of Toronto University, and won the Silver Medal in Mathematics in 1864. His talents and high repute as a Mathematician have deservedly won for him the present acknowledgment of the United States Astronomical authorities.

**PUNCTUAL** attendance is secured in the Liverpool Board Schools by closing the doors against late scholars at 9.15 in the morning, and 1.30 in the afternoon.

**THE** English Kindergarten Society lately held its annual meeting in London. It is in a prosperous condition, numbering 217 members, of whom 40 are new ones since last meeting. Its funds show a handsome balance, and of the twenty-two candidates who presented themselves for examination under its auspices, not one was plucked, but all received first-class certificates.

**PROFESSOR BLACKIE**, of Edinburgh, lately, in a short address in connection with a bazaar that had been held for the purpose of aiding the students of the University to clear off a debt upon their Club, expressed very pithily his opinion of this means of raising money. "It was a proper thing to spoil the Egyptians on all occasions. No greater good could be done to the public than that of taking money out of the pockets of the people for a laudable object."

By a new law to be introduced by the Minister of Education of Belgium, elemen-

tary instruction in that country is to be freed completely from clerical control by a plan of "neutralization," and agitation is going on to bring secondary Schools and Universities under the same law. Compulsory education is regarded as a necessary and indispensable consequence of this secularization, or rather, nationalization of the Schools.

## EDUCATIONAL INTELLIGENCE.

**COBOURG COLLEGIATE INSTITUTE.**—We observe that the Principal has made arrangements for "Half-hour Lectures," to be delivered at the Institute, by ministers of the town, and others, every alternate Friday at one o'clock,—the exercise constituting the close of the week's work. This is a capital arrangement, for both pupils and the public; and Mr. McHenry will be thanked for his enterprise. The first address was delivered by Rev. T. W. Jeffrey, Methodist Minister, on the subject, "Incentives to Earnest Study," which was treated in an able and thoroughly practical manner. The Rev. gentleman first very forcibly showed the importance of useful knowledge, and then dwelt upon the various incentives to study, as the only means of its acquisition. The students and ex-students present manifested the deepest interest in the address, which cannot fail of inspiring them with greater earnestness in the pursuit of their studies. It is intended that these half-hour lectures form a definite and valuable adjunct to the regular work of the school; the senior pupils being required to furnish an abstract of each address, after its delivery.

**VICTORIA UNIVERSITY.**—The friends of this institution throughout the country have conceived the happy idea of raising what are termed "District Scholarships," varying in value from \$100 to \$25, to be renewed, it is expected, from year to year. The total sum thus placed at the disposal of the Senate is \$1,190, and, at a special convocation of this body on the 4th instant, the allocation resulted as follows:—

1. *Matriculation*, \$425.—The department



of Classics, \$100; Mathematics, \$100; English and Modern Languages, \$75; General Proficiency, \$100 and \$50.

2. *Undergraduate Course.*—In the department of Metaphysics, \$50 at the end of the fourth year; Logic, \$25, end of second year. Classics, \$50 at end of first year; \$90, end fourth year. Mathematics, \$50 at end of first year; \$75, end of second year. Natural Science, \$75, Physics, end of second year; \$50, Chemistry, end of third year; \$25, Mineralogy, end of fourth year. French and German, \$50, end of fourth year; English, \$50, end of fourth year. Theology: \$50 and \$25, Systematic Theology; \$25, Old Testament Exegesis; \$25, New Testament Exegesis; \$25, Hebrew; \$25, New Testament Greek.

These scholarships, added to former inducements, must greatly increase the popularity and efficiency of this University.

A scheme for holding "Local Examinations," after the model of Oxford and Cambridge, was introduced, and advanced well towards maturity.

Examiners and Associate Examiners were appointed, also a Committee to prepare a course of study for the Doctor's degree in Theology.

The matriculating class is quite large, as will be seen from the list given below:—

Bellamy, J. S., private study; Bryers, E., Cobourg Coll. Inst.; Buchanan, T. C., Cobourg do.

Caldwell, J. W., private study; Campbell, W. A., Peterboro' Coll. Inst.; Clark, J. L., Stanstead Wesleyan College and Cobourg Coll. Inst.

Dean, W. H., Lindsay High School.

Eldridge, G. S., Cobourg Coll. Inst.; El-

liott, G. A., private tuition; Emaberson, T., Cobourg Coll. Inst.

Greenwood, W. J., Collingwood Coll. Inst.

Herrington, W. S., Cobourg Coll. Inst., and Brantford do.; Hincks, W. H., private study; Holman, E., Cobourg Coll. Inst.; Hopper, S. T., Cobourg do.; Horkins, W., Campbellford High School; Hossack, D. C., Cobourg Coll. Inst.; Hnycke, E. C. S., Campbellford High School.

James, C. C., Napanee High School.

Laird, E. C., Whitby High School; Langford, A. L., Brantford Coll. Inst.; Lazier, J., Cobourg do.

Morris, T. J., Goderich High School.

Pasco, R. M., Cobourg Coll. Inst.; Popham, E. S., Cobourg do.; Payne, G., Cobourg do.; Powell, F. K., Cobourg do.

Rice, A. T., Cobourg Coll. Inst., and Brantford do.

Scott, L. B., Peterborough Coll. Inst.; Shenick, A.; Shipman, R. H., Port Perry High School; Staples, S. G., Cobourg Coll. Inst.; Stobbs, J. T., Sackville, N. B., and Brantford Coll. Inst.

Watson, G. R., Waterdown High School; West, G. H., Cobourg and Brantford Coll. Insts., and private study; West, R. M., Campbellford High School; Williams, H., Cobourg Coll. Inst.; Willoughby, H., Peterborough do., and Cobourg do.

*Honours in Classics.*—First-class: Campbell, W. A.; Greenwood, W. J.; Watson, G. R. Second-class: Laird, F. C.; Langford, A. L.

*Honours in Mathematics.*—First-class: Bellamy, J. S.; Herrington, W. S.; Morris, T. J. Second-class: Watson, G. R.

The names are arranged alphabetically, and not in the order of merit.