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THE CANADA

EDUCATIONAL MONTHLY

FEBRUARY, 1900.

SECONDARY EDUCATION IN ITS BEARINGS ON PRACTICAL LIFE.*

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I.

WHEN I received through our host the honor of an invitation to be present at this meeting, I thought it would be best to choose a thoroughly practical subject for our discussion. I am deeply conscious that it is only your invitation which makes it not presumptuous of me to speak at all before such a gathering as this. The topic submitted to you is a practical and a difficult one. It raises, indeed, one of the greatest difficulties which beset the problem of secondary education, regarded not in its administrative or political aspects (about these I shall, of course, say nothing), but in its bearing on livelihood and life.

This leads me briefly to refer to an important feature of all scientific study of educational problems. You have to combine in it two distinct but equally necessary things. You need, as you need in the planning and construction of a battleship, the kind of technical skill which can only be acquired by years of exact and concentrated study. But you also need, not in a merely general

way, but on points of detail and design, the constant criticism of the men and women who watch the working of the schools, who have themselves experienced their merits or defects either in their own persons or through their children, and who are best able to judge whether the machinery is producing what it claims to produce. There is no other subject which calls in the same way for the constant combination, at every point, of highly expert knowledge with non-expert comment and suggestion. It is perilous to have either alone. To use a word coined by John Stuart Mill, no pedantocracy can be trusted with the sole charge of a thing so necessarily human as the school. On the other hand, it is just as vital for Britain to have schools organized, equipped, and taught up to the highest known point of quality and excellence as it is for us to have a navy, which is the mirror of all that can be done to date in the way of construction, gunnery, and seamanship.

The subject of education is full of open questions. It is an aspect of

* An address delivered at Howick, Northumberland, on August 26th, 1899.

life, and, therefore, it is never long in one stay. Any invention or discovery which changes the way of ordinary people's lives must necessarily affect, sooner or later, the school also. Education has to readjust itself to every great change which shifts the old order; to the results of the steam engine, the railroad, the electric telegraph, even to those of stenography, the typewriter, and the phonograph. Its aims and methods are being directly influenced by the vast progress of America, by the unification and industrial development of Germany, by the opening of Africa, by the stir in the Far East, by our own quickened sense of Imperial duty. And still more profoundly is the work of the school touched by those deep movements in human thought, those tendencies in scientific and philosophical discovery, which slowly but irresistibly change men's outlook on life and conduct and the future.

Perhaps only four times in recorded history has Europe passed through as difficult a time of transition as that which has now lasted 100 years, and is yet far from over. The gravest problems in national education are due to this, and to no other cause. All we can do is frankly to face the facts, and do the best we can as prudently and as sympathetically as we can. I will ask your indulgence while I lay before you a few difficult questions, and ask your help in solving them.

II.

In regard to secondary education, nothing is more striking than the degree in which all the more advanced nations are standing before the same problem—puzzled, a little worried, but convinced that some solution must be found. The problem, though for each country essen-

tially a national one, is international too.

Take Prussia for example. In common with the whole civilized world, we admire the superb efficiency, the administrative precision, the faultless discipline of certain sides of Prussian secondary education. But less than ten years ago these words were publicly used by the Kaiser, with reference to the Prussian secondary schools. "The course of training, which they provide, is defective in many ways. The classical philologists have laid the chief emphasis on learning and knowledge, not on the formation of character and on the actual needs of life. If one talks with an advocate of the system, and tries to explain to him that youths must, in some measure, be practically equipped at school for actual life and its problems, the invariable answer is that such is not the mission of the school; that the school's chief concern is the training of the mind; and that if the training is rightly ordered, the young man is placed in a position, by means of that training, to undertake all the necessary tasks of life. But I think we cannot go on acting from that point of view any longer."

I will now turn to America, which is the educational antipodes of Prussia. Within the last few months there has been published a work on "The Social Phases of Education," by Mr. Dutton, superintendent of the admirable schools of Brookline, Mass. He writes, "Education in America has clung too closely to old ideas and conditions, and has not adapted itself easily to new situations. . . . It has been too abstract and general, and has not recognized the place vocation holds in the life of the individual and the nation." In other words, he holds that, even in America, the secondary

school has to review its work in its bearings on practical life.

In France, where the literary tradition has been raised to a point of exquisite fineness unsurpassed elsewhere, the struggle between the new demands and the old educational doctrine is fiercer than elsewhere. It will not surprise us, therefore, to find criticism on the existing regime of secondary schools expressing itself in less measured and even in fanatical terms. For example, in his book on "L'Education et les Colonies," Monsieur Joseph Chaille-Bert draws a doleful picture of the tendency of some secondary schools to paralyze the gift for practical enterprise. "Your education," he writes, "turns out officials, literary men, dons, recruits for the liberal professions, but it cannot form men who will wrest wealth from nature, men of energy in practical life, employers, traders, colonists. The exceptions are only those whom the subtle atmosphere of your schools has found too dull to teach or too practical by nature to be spoiled. You take a lad and for the seven or eight years of his secondary school life you make him consort with the greatest spirits the world has ever seen" (with those whom Milton calls "the cited dead") "with Plutarch and the heroes of classical history; with Sophocles and Euripides; with Lucretius and Virgil; with Socrates Plato, Montaigne, Pascal, Kant. You have led him along the staid less peaks of human thought, and by so doing, you have, in a sense, spoiled him for practical life! You have ennobled him, I grant you, but in a sense you have spoiled and softened him. You have raised him out of his old condition, and spoiled him for what would naturally have been his condition in the future. You have made the life of contemplation or of speculative thought mark him for her own."

I remember hearing it said that one powerful argument which used to be urged against education in former days in the West Riding, was that, if you were educated you couldn't make as much money as you could if you weren't.

To these I would add a few words more, written by the Procurator of the Holy Synod of Russia, Monsieur Pobyedonostseff in whom, whatever our judgment on his opinions, we must recognize one of the strong minds of Europe. "Seduced by the fantasy of universal enlightenment, we misname as education a certain sum of knowledge acquired by completing the courses of schools, skillfully elaborated in the studies of pedagogues. Having organized our school thus, we isolate it from life. We ignore the fact that the mass of children whom we educate must earn their daily bread. In the interests of some imaginary knowledge, we withhold that training in productive labor which alone will bear fruit. It is an unhappy day when education tears the child from those exercises of his early years through which he acquires almost unconsciously the taste or capacity for work. Everywhere (officially organized) education flourishes at the expense of that real education in the sphere of domestic, professional, and social life, which is a vital element of success."

What is most significant in these four criticisms is that, though they proceed from different countries and from observers singularly various in their points of view, they all are directed to the same joint in the educational armor of the modern state. It is impossible to resist the conclusion that the bearing of secondary (and, indeed, of primary and university) education on practical life is likely to become one of the important questions of our time.

III.

Dr. James Ward once made a profound suggestion to the late Mr Quick. He hinted at a history of education on new lines, namely, that he should try to ascertain (1) what each generation took the child to be; (2) what it endeavored to do for the child, and (3) what means it employed in order to do it.

Let us apply this idea to the question now under our review.

Plutarch tells us that Agesilaus, the King of Sparta, was once asked what he thought children ought to learn. The educational system of Sparta was, of course, the admiration of many thinkers in antiquity, and, therefore, there was much point in putting to Agesilaus this searching (though apparently simple) question on educational procedure. The King's answer was that "they should do as children what they would do as men." In other words, was a little man in short clothes, and early education ought to be an epitome of the practical life which the lad was destined to lead.

A very great French writer, discussing the question of education rather more than three hundred years ago, quoted the phrase of King Agesilaus, and added an approving comment of his own. "It is no marvel," said Montaigne, "that such an education (as Agesilaus recommended) produced so admirable effects." . . . "We should instruct children not by hearsay, but by action, framing them not only by precepts and words but principally by examples and works."

Now, if this idea of practical education has been before the world for so many centuries, commended (as we have seen) on high authority for more than two thousand years, reinforced by the influential arguments of one of the most brilliant essayists in modern literature, and moreover,

an idea which obviously "jumps with" the practical interest and sympathy of the average parent—all these things being so, how is it, it may be asked, that such an eminently desirable invention has not been long ago universally adopted? How comes it that, even to day, so many critics can find it necessary to denounce what they would agree with a famous writer in calling the "letter puffed pedantry" of the school?

There is, I think, only one conclusion to be drawn. The thing cannot be as simple as it looks at first sight. Seneca groaned over the defects of education. "We learn," he said, "we learn not for life but for the school. *Non vitæ sed scholæ discimus.*" But let us put the plain question, "How, in point of detailed fact, are you going to make children 'learn for life' at school?" There is the rub. That is the point which has puzzled so many of the philosophers. Many of those present will know, as I do, from that best of all books—actual experience, that it is one thing to talk about teaching and quite another thing to teach. The first is sometimes easy; the second is invariably difficult. True teaching is not a trade or a knack, but a fine art, one of the noblest, one of the most self-sacrificing, and one of the hardest arts in the world. We may depend upon it that if Agesilaus had been right, the history of Sparta would have been different, and with the history of Sparta the history of Hellas, and with the history of Hellas the history of the world. In short, the thing is not so simple as it looks.

The best fruit of education is not mere knowledge or even aptitude, though both are good. But it lies in an attitude of mind and heart towards nature, towards life, towards work, towards fellow men and the

future. The shorter the time available for schooling, the more skilful should be the effort rightly to refine and temper the judgment and sympathies of the child. And, in so far as knowledge and direct instruction bear a part in this process, they should be strictly kept at a right angle towards practical life. But they should not be prematurely specialized. They should contain—so to speak, *in solution*—the elements of that measure of liberal culture which the life prospects of the child permit us to regard as being within his or her ultimate reach—without injury to bread winning, to family claims, and to personal service to the local community and the State.

Sometimes, however, behind the demands for a more, practical education there lurks a darker purpose. For example, I have read parliamentary speeches delivered in a foreign country which leave one in little doubt that the speakers resent the school, and the village school in particular, because it is the vent-hole of new ideas. Through its agency, it is argued, there seems to pour out the social discontents, the crude notions, and the distempered hopes which act as a solvent on the old order. The idea seems to have seized some minds (I do not refer in these remarks to our own country) that, though it may be unwise or impracticable to abolish the rural school, there is a possibility of so remodelling its curriculum as virtually to keep the bulk of the rural population *adscriptos glebæ*, or, at any rate, to arrest a process of unpalatable economic change.

Waiving for the moment all question as to the rightness of the intention, I greatly doubt whether it could be put into practice. The school, it is true, is a potent factor in social progress, but it is not easy to withstand or reverse certain pen-

etrating social tendencies by means of the school and of the school alone. The school can be got to cooperate with progress, or it may remain sleepy and dull; but the third alternative, namely, using it as the instrument of reaction, looks easier on paper than hitherto it has proved to be in practice. Great social and spiritual movements are in the air. They are as pervasive as air. The school may affect to ignore or may even protest against them, but, in so far as an intellectual or social change has become economically or spiritually inevitable, it will pay as little heed to the embargo of the school as the cuckoo did to the stone wall in Borrowdale. Great tidal movements of economic or spiritual change sweep over the world with irresistible force; walls and windows cannot withstand them. They always produce some mischief, always much discomfort, always disturbance and pain. *But they prevail because they are needed*, and, after a time, things right themselves on the new plane. What the school can do is to bend all its power to the task of understanding the inner significance of each new, and perturbing movement. It should diagnose the symptoms, and seek to detect, and then bravely to remedy the evil against which the movement is a needful, though a more or less unconscious, protest. Then, but not till then, will it be in a position to influence the movement through its sympathetic understanding of it. Then, but not till then, will it be able to elevate, to enlighten, to ennoble the movement; perhaps even to divert it from doing ignorant mischief and to direct it to its proper aim.

In every shape or form, the idea of stunting the life-aims of little boys and girls, and of artificially dwarfing what would otherwise have been

their intellectual stature, seems to me to be a violation of the fundamental principles of Christian liberty. Towards any advances it may make, I trust that the same answer may be given as once on a time an official in a Government office is said to have made to a caller's proposal. Reporting the interview to his chief, the official wrote, "I told him that I couldn't if I would, and that I wouldn't if I could. He thanked me for my courtesy, and withdrew."

But in thus protesting against the tendency to use the school as a dehumanizing agency, I would earnestly plead for the adjustment of its work to the environment in which it is placed. By this I don't mean that the school should seek to chain a child to the surroundings amid which he is born. But let the school interpret to the child the meaning and the opportunities of the world in which he is growing up. If the child's surroundings are remedially evil, let the school be free not to spare criticism. Don't muzzle it on social questions. But let it always, in that criticism, have practical remedies in view, and leave the child to a sympathetic understanding of other people's difficulties and of the unseen drawbacks, as well as the visible attractions, of other people's lives. This means that the teacher must have a real interest in, and love for, the institution, the place, or the kind of life in which he seeks to interest his pupil. Interest and love are the most infectious things in the world.

We ought not to forget that the intellectual conditions of our time forbid us to provide for our children, and least of all for country children, a starveling curriculum. You can't confine a school, which is to train character and expand the intelligence of young children or youth,

either to purely commercial subjects or to purely agricultural. That would be like following the example of the Shetland minister who preached for a year and a half on the twelve wells of water and the three-score-and-ten palm trees which were in Elim, devoting one Sunday to each well and each palm tree.

The danger of over-early specialization springs also from a fact to which I have not yet referred. It is by no means generally possible to predict, until he is fifteen or over, what kind of calling a boy's aptitude would best fit him for.

But, for the normal development of childhood, a course of skilfully-unfolding studies is appropriate and educationally fruitful.

We sometimes forget how unstable the unformed character is. It has been well said, "We are not the simple, straightforward units we fancy ourselves to be. We are, rather, an undulating and varying unity of impulses and powers, growing slowly by effort and discipline into the unity of the perfect man."

It is the ideal of education, in a free, self-governing country, to promote and guard this growth; to guide it into its fittest direction; but always with reverent regard for its native powers and for its individual promise. Above all, should we not abstain from any attempt to cast in the iron-mould of quasi-military discipline that which should develop into the orderliness of the free and self-respecting will?

IV.

I hope that the drift of my remarks has not been towards showing that the secondary school can have no bearing on practical life. That is very far from what I meant. Two sentences, written by a Frenchman, go very near the

heart of the matter. "That which the school ought to develop before all things, in the individual whom it trains, is the man himself—namely, heart, intelligence, conscience. But it must not be forgotten that the first and best safeguard that our schools can give for the morality of the man is to create in every scholar an aptitude for, and a liking for, that labor by which he will live."

Now, gentlemen, have the secondary schools, which we ourselves attended, done that for us?

Some of us can thankfully say that every day we live we realize more clearly what was done for us at school. No institution is perfect; least of all do good institutions think themselves so; but we may say, without challenge of denial, that we have in this country some secondary schools which, on the most essential points of educational influence, are absolutely without a rival in the world. Let us seek so far as may be to cherish and extend their best traditions.

But that is far from true of all. And there are others, of which their alumni might say, what Corneille said of his protector, Richelieu, "He has been too much of a benefactor to me for me to abuse him; but he has done me too many bad turns to deserve my good word."

With your leave I will try to examine a little more in detail how far our secondary schools do, or can, prepare for practical life.

By practical life, I mean the whole range of callings—professional, commercial, industrial, adventurous, military, administrative, directive, legislative, official, social—for which those boys are being prepared, on whom it is worth while to make the capital outlay involved in a course of secondary education, extending up to 16, 17, or 19 years of age, as the case may be.

(1) For a certain kind of practical life, the English higher secondary schools give a training which is universally admitted to be the best thing of its kind in existence. They train leaders of men. This is very largely due to two things: First, because they are chiefly boarding-schools—and a big boarding house at an English public school is a miniature world, the boys at the top having duties of administration and of responsible oversight. Secondly, it depends a good deal on the tradition of organized school games. They teach a boy to think of his side rather than of himself; to clench his teeth and put the thing through.

In saying this, you will understand that I don't mean to advocate athleticism as the final cause of education. But athletic interests are valuable in their way, as the gentleman knew who put the advertisement in the *Church Times*: "Little Boy, whose cricket is promising, can be received at once in high-class school in health resort for nominal fees."

(2) It should not be forgotten that, in former times, secondary education was only possible for the few, and that its curriculum had the special purpose of preparing boys for the more literary of the liberal professions.

This has left a very deep mark on the studies and traditions of our higher secondary schools.

An American writer gives it as his opinion that "the study of a dead language makes the student mentally, no less than physically, stoop-shouldered and shortsighted."

Of course (not to mince words) that is silly; but all the same, we may question whether in some schools some other form of intellectual discipline might not be made as searching and found more appropriate. Personally, I think that for the highest grade of education,

though there may be other things as good, there is nothing better as a basis than a really first-rate classical training.

On this point, however, three provisos seem necessary.

(a) Classical education, as we know it at its best in England, is not undiluted Latin and Greek, but Latin and Greek language, history and literature, used as vehicles for general culture. You will remember Dr. Arnold's remark, that the sixth and seventh books of Thucydides are not ancient but modern history.

(b) In intellectual discipline, quality matters at least as much as subject matters. The substitute for a good classical education will have to be very good indeed. Slipshod French and inaccurate German won't do the same work that Latin and Greek do in a first grade higher school. And it is not easy to change a great educational tradition quickly. When you have a good teacher, of ripe experience and great influence, it would be madness to lose him. In all education quality matters, not quantity. And the higher the grade of education the truer this is.

(c) A great educational tradition is one of the most precious things in the world. It is the outcome of generations of hidden self sacrifice. It is the living influence which makes a school great.

The history of education teaches no lesson so frankly as this—that reform is always possible, but that sudden revolution is always disastrous.

(3) There seem to be at least four main types of curriculum which are at present needed in secondary education—the fully classical, the semi-classical (*i.e.*, Latin but no Greek), the predominantly scientific, and that which takes living languages alone as the basis of a training based predominantly on

linguistic discipline. All four, with some sub-varieties, seem indispensable. So long as all are made as good as brain, adequate equipment, and devoted service can make them, there is no cause to arrange them in a hierarchy of educational merit.

I would urge, however, that each alternative curriculum should have a distinct bias. If you give every subject a claim to an equal place in every course, you spoil all. But some initiation into scientific discipline, and some real introduction to humane letters, are absolutely indispensable in every curriculum. An education lacking either science or the humanities cannot be called a liberal education. It means, in Milton's words—

“Wisdom at one entrance quite shut out.”

Some knowledge of man and some knowledge of nature; training in accuracy of observation, in truthfulness of record and in exact felicity of verbal expression are the indispensable factors. The balance of the studies, which will secure those benefits, may well vary according to very numerous patterns, and according to the needs and teaching power of individual schools.

Of course, a parent would choose one or other type of curriculum, according to his son's aptitude and probable future. But, beyond this, ought not the curriculum to bear some closer relation to the after-life of the boys in the school? Up to sixteen, I should personally say—perhaps not quite decisively as things stand, but nevertheless—no. The prime aim of a secondary school is to lay the foundation of culture—and it is hard to do that, according to the best standard of our time, before sixteen.

Beyond that age, it seems to me arguable that, without being specialized, the curriculum might be (so to

say) tinted in view of the future calling of the pupil. Something to this effect is proposed for agricultural secondary schools in an interesting paper by Mr. Mortimer, of Ashburton School, in Devonshire. We have the principle recognized already in the army classes in our public schools. It is still more definitely acted on in the secondary schools for future officers in the German army. Our navy, of course, has its own higher secondary education. And one of our most pressing needs seems to me to be some first grade non-classical secondary schools, like the Prussian Real schulen, giving a purely modern (but not a Philistine) education of the very highest quality, based predominantly on linguistic discipline in the mother tongue, in French and German (or Spanish); going to a good point in mathematics; teaching history and literature and geography vividly, searchingly, and with careful selection of selected topics; and disciplining every pupil, by practical experiment and later philosophical teaching, in the methods and the broad generalizations of modern science.

We sorely need in some districts that type of liberal education which is a natural avenue to a keen intellectual interest in modern commerce and industry. One of the most striking distinctions between Germans and Englishmen is that the former often take a much stronger *intellectual*, as distinguished from a commercial, interest in their business in life. As trade and industry become more international, a thorough knowledge of other living tongues, besides our own, becomes more and more helpful and necessary to us. Business again is becoming more and more an intellectual calling. A man needs to

follow foreign developments, and to do this he must not only know some foreign languages but must habitually realize by travel and study what the countries stand for in the world's development. Further, in the case of youths destined for trade and industry, I would plead for some teaching in economics, and in the ethical aspect of the problems of capital and labor.

(4) It remains to say that secondary education should have a direct bearing on the duties which men will fulfil as citizens, as officials, as office-bearers in municipal or other forms of local public life. There never was a time in the history of the English speaking peoples when so much turned on the maintenance of a high standard of personal character and of intellectual acuteness in various departments of local government. Here is one of the greatest of the tasks which lie before English secondary schools.

Not a little of our success in governing other races, and of our feeling of imperial obligation, comes from the training given in our best secondary schools. We shall need to train more and more of our lads to bear "the white man's burden."

(5) This brings us face to face with the highest of all the duties of a school. But the more intensely we feel the paramount value of this part of its work, the less shall we desire to speak of it in public. You will remember that Dr. Arnold, of Rugby, one of the greatest of English teachers, said that all the scholarship that ever man had is infinitely worthless in comparison with even a very humble degree of spiritual advancement. Whatever else they do or aim at doing, may our schools teach faith, hope, and love, and that the greatest of these is love.

THE ADVISABLE DIFFERENCES BETWEEN THE EDUCATION OF YOUNG WOMEN AND THAT OF YOUNG MEN.

PRESIDENT JOHN FRANKLIN GOUCHER, OF THE WOMEN'S COLLEGE
OF BALTIMORE.

Ideals and opportunity are two essentials of success. In the absence of ideals effort would be without an intelligible goal and achievement would have no proper gauge. An ideal clearly perceived in conditions which make its approximation impossible would be tantalizing if not revulsive. The discussion of "the advisable differences between the education of young women and young men" cannot ignore these two essentials. It should be based upon clear perceptions of the ideals to be sought, the distinguishing characteristics of those to be educated, and the object and nature of education.

The terms young women and young men exclude infants and children, as well as persons of maturer years, and include young people who are from sixteen or seventeen to twenty-one or twenty-two years of age. This rules out of the discussion primary and secondary education, also graduate and technical education, and limits our consideration to college education.

Graduate and technical education appeal to the student largely as an instrument. College education addresses the student as a person. The object of college education is not to make a living, but to make a life. It is the unfolding, by instruction and training, of the whole nature towards its highest possibilities. It is something else and something more than the mastering of languages and sciences important as these are as agencies and accessories. It has to do with the men-

tal, physical, æsthetic and spiritual natures; it aims at the healthful development of each and the proper correlation of all attributes and functions of the complex nature into a symmetrical personality. It includes everything which enters into or influences the formation of character, and aids the individual to the mastery of himself at his best.

If the terms young women and young men are synonymous and are not used to designate and in a measure describe persons or classes of different characteristics, there is no need for a discussion, for if the two classes are identical in nature, functions and ideal, their education should be identical.

But if the nature has a purposeful relation to the ideal and both nature and ideal in one class differ essentially from the nature and ideal of the other class, their functions cannot be identical, competitive or substitutable to more than a limited extent, and the education should be so adjusted to the nature and ideal of each, that its functions will not be impaired, but strengthened.

There are physical and psychological differences between young women and young men. These are inherent, indicative of the sexes and determine the functions to which each is adapted. These inherent differences are in process of development and establishment between the ages of fourteen and twenty-one. Their establishment makes considerable, and, in many cases, severe drafts upon the system. In one class this process is much more protracted

and exacting than in the other, but its exactions may not be disregarded without great peril, for their proper establishment and maintenance is of prime importance to health and efficiency. An attempt to ignore them would contradict the historic and scientific necessities of the development of the race.

Scientifically: Development always emphasizes peculiarities and registers itself in individualization. In the lower orders of life exchange of functions is not impossible, but as they advance distinctions which were rudimentary and scarcely discernible become pronounced, determining appearance, character and use. Interference with or suppression of these characteristics is not progress, but degeneration.

Historically: In the lower stages of civilization woman had to do nearly every form of work. She was mother, teacher, agriculturist, purveyor, manufacturer, merchant, banker and general drudge. Man occupied himself with such employments as were incidental to aggressive or defensive warfare. Civilization has developed increased efficiency and realized excellence by specializing the work of each. Civilization and interdependence develop side by side. As we rise in the scale of civilization the demands upon woman concentrate more and more, yet maintain as great variety within their narrower limits, while the demands upon man are multiplied, but simplified by processes of specialization. The suggestions of the earlier condition are the characteristics of the later. Woman's special work is still centred in the home and circles outward, while man's special work is outside the home and circles inward, each essential to and supplementing the other.

Man's success is through concentration, continuity of work, and

cumulative results. He must be a specialist, limiting his field if he would intensify his power. His strength is in persistence. The diffused man is pilloried as "jack of all trades, master of none."

The highest function of womanhood is motherhood. Her whole organization is adjusted to the accomplishment of this. She is of a more intense nature, has keener insight and stronger passions, is more conscientious in details and less skilful in generalization than man. The laws written in her nature require her to stand nearest childhood, and make her the determining factor in the moral, æsthetic and social atmosphere of the home, which is the embryo and exponent of society and civilization. Her work becomes more difficult and further reaching as it becomes more closely related to those subtle forces which determine destiny. The hope of the race is in the success with which she does this work. The demands upon her are varied, involved and numberless, and her success will depend upon her versatility. She needs alertness and equipose, judgment and skill, taste and tact, a nature enriched with varied and exact knowledge, beautified by culture, chaste and strong through discipline, lofty in ideal, and possessing the incomparable grace of unselfish ministry. Thus, and thus only, as wife, mother, embodiment, and inspiration of the best in society, an ever new revelation of the meaning, beauty, and power of the gospel of love and ministry is she qualified to meet the varied demands of family life.

The family, and not the individual, is the unit factor of the Christian civilization. The ideals for womanhood and manhood are not independent and substitutional, but supplemental. The woman is to be

"an helpmate for man" at his best. They are not superior and inferior, for either without the other is incomplete. Neither has a sphere, for each is but a hemisphere, "and they shall be one." The attempt of either to live in any other way is sure to be not concentric as to purpose, but eccentric. Some males and some females, from choice or circumstances, are, and possibly always will be, non adjusted—like the person who wished she had been born a widow with two children—but they fall short of the ideal, and must be considered and provided for as exceptions. The ideal womanhood and manhood are to be found in the family, for this is the unalterable provision for the continuance of the race, and education, whatever else it does or does not, should not fail to prepare the two diverse but supplemental personalities for this dual unity.

The education of people as people is quite a modern thing. For centuries there have been here and there examples of the influence of educated women, but the higher education of woman as a class is of recent effort. The problem is still in its experimental stage and cannot be settled offhand. The need for and ability of women to take college education is demonstrated by their record and conceded by the intelligent, but its scope, the methods by which, and the conditions within which, the most desirable results can be realized are still open questions.

Coeducation, whatever that is, has not satisfied the requirements. The term is indefinitely used to designate variables which it does not describe. There is no institution where the sexes are educated alike. Restrictions are always placed upon the young woman, which are not solely determined by age, stand-

ing, or purpose, but by their sex. In some of these institutions the young women and young men are required to use the gymnasium at different hours and given different exercises. In others the young women are practically excluded from its use, and in all they are excluded from the baseball, football, lacrosse and boating teams, and denied the systematic training given these. The hours, places, and special conditions for intercourse with young men are regulated; the methods and frequently the content of instruction are varied. Differences are always recognized, and must be for prudential reasons and to meet the demands of society, for there is a deep seated and general conviction, prejudice, opinion, or judgment—call it what you please—that there are radical differences between the two sexes.

In every well-regulated family there is a marked difference between the treatment of the boys and girls. The one-roomed cabin in the South and West is an evil of the same kind as the crowded tenement house in the city, for each makes more difficult that individualization of the sexes which is for the best interests of both. When the problem, confessedly difficult in the family, is further complicated by multiplying each unit by one or two hundred, dividing the direction among a diverse faculty, at a time when the sexual distinctions are in the crisis of their development, the work limited to three or four years, and these years included in those when the assertiveness of youth is at its maximum, and willingness for routine at its minimum, it is manifestly important that classification and individualization be applied as far as possible, in order that means and ends may have the best approximate relations to each other.

The attempt to educate young women and young men as one usually assumes that one to be the young man, and the adjustments of the work are generally made with reference to maintaining the standard, just like institutions whose sole purpose it is to prepare young men for the demands of commercial, civil or professional life.

Young women as a rule are not aided in their best work as students by the presence of young men. The results are variable. With some it is dissipating, with others it produces an undesirable reserve, and with others an unhealthy tension and nervous strain.

The high grade, thoroughly equipped colleges for women, established at great expense during the past two or three decades, have more applicants knocking at their doors than they can accommodate. This is a demonstration of dissatisfaction with the coeducational experiment. This dissatisfaction is greater than it seems. According to the last report of the Commissioner of Education, 1896-7, there were 429 young women pursuing college education in the United States for every million of the population. Of these 223, or 52 per cent, were in coeducational colleges and universities, and 206, or 48 per cent., in the separate colleges for women. To appreciate this fact we must remember—in the not remote past, the only opportunity for women to secure a thorough college education was in the coeducational institutions.

The large number of coeducational institutions proposing to do college work—there are 335 of them scattered all over the country—afford proximity, home residence, parental guidance, and comparative inexpensiveness to many who would not go away from home to a coeducational institution. The colleges for

women are less numerous, more remote from their clientele, and without state aid, yet the students in the colleges for women constitute 48 per cent. of the entire number of young women seeking college education.

Cash outlay is in many cases the determining factor in attendance upon a coeducational institution. The colleges and universities receiving federal and state aid are able to offer inexpensive, and, in many cases, free tuition, and they number among their students of college grade 5,533 young women, or 35 per cent. of all who are attending coeducational institutions.

Of the 15,652 women in the coeducational institutions of the United States seeking college education, 11,453, or 73 + per cent., are in the institutions north of the Ohio and west of the Mississippi rivers. This includes all the new states and territories, where the pioneers have been so busy laying foundations and developing resources that they have made but little and in some states no provision, other than coeducational for the college training of women.

Of the young women who in 1896-7 were doing college work in the coeducational institutions, only one in 21 + received the degree of A.B., while in the colleges for women one in 14 + attained to that degree. Great is love and propinquity is her high priest, and it would be interesting if we had the facts at command to determine how far marriage before graduation accounts for these striking figures, but we are safe in saying, leisure and concentration are conditions of culture. When concentration is necessary the object sought should determine the things to be eliminated, and freedom from obtrusive opportunities for social intercourse in part accounts

for the excellent showing of the colleges for women.

The college education of women has entered upon the fourth stage of the experiment.

The *first* was the pseudo college training, in the so-called "female colleges." The name was a concession to the times. The schools served a purpose and marked an important advance, but gave way to the larger requirements of the problem.

The *second* was coeducation, or the attempt of young women to get their education in colleges for men. It has made for itself a record and will continue to have a clientage among those who live contiguous, or believe competition with the opposite sex to be helpful, or would improve their opportunities for early marriage, or think the differences between young women and young men are not of such a character as to be considered in education, or let the cash outlay required determine their selection.

The colleges for women, which already contain 48 per cent. of the young women seeking college education, have been engaged in the *third* stage of the experiment, namely, the attempt to give in separate institutions education identical, in matter and method, with that provided for men, or the attempt to

use man-making methods for woman-making purposes.

The longings of woman for culture, her intense desire for the opportunities which man possessed, the fact that she was prejudged unequal to such severe and comprehensive work, and the further fact that men had set the standards of excellence, made her unwilling to accept anything less or anything else than that which was found in the colleges for men, and all the best colleges for women modelled their courses, instruction and administration after their standards.

But what is identical education? Is it to be identical with the age when only Greek and mathematics were required, or is it to be identical with the college of a few years ago, when the curriculum was inflexible and cut up into four years of required work with no opportunity for electives or even alternatives, or which of the great schools of to day shall be selected as the model, and who shall define it in exact terms, or if it is so defined, who can guarantee the definition will describe the provisions, limitations and requirements twelve months hence, or if it can be defined, imitated and administered to women, is it to be supposed or desired that the results will be identical with those realized with men?

—*The School Review.*

THE NURTURE OF MORAL IMPULSES.

HON. HENRY SABIN, DES MOINES, IOWA.

A TEACHER said to me the other day: "I don't understand that boy. He is a strange mixture of good and evil. He is courteous, good-natured, and prepares his lessons well, yet I can feel that his influence is generally on the wrong side. Certain boys who trouble me when he is here are quiet and well-behaved when he is absent. He has his moods. There are some weeks when he is all right, and then there are others when he is all wrong."

In reply I said: "Have you ever studied him? I do not mean have you thought about him, but have you considered his traits as inherited, or as developed by his surroundings or by the vicious nature of his early training? Are you not taking too many things for granted as being bad in his tendencies and impulses? Motives are powerful, but the only way to destroy the influence of a bad motive is to supplant it by a better one. The impulses under which that boy acts may be due to the love of fun innate in every active child. You cannot whip it out of him. Perhaps that which seems to be a disposition to annoy you is simply a desire for the notoriety which comes from being counted a leader among his mates."

This is only a part of a conversation which lasted for an hour. When we parted I think each of us had a new line of thought opened up for investigation.

We are more the creatures of impulse than we are of habit. One child is obedient because his impulses lead him in that direction, and another is constantly disobedient for the same reason. The

larger part of children's attitudes toward any particular question is of that unhesitating, unquestioning kind which does not stop to analyze with a view to determining the right or wrong view of the matter in hand.

Impulses may be born with the child or they may be created by the environments of his earlier years. When hereditary, they should be encouraged if good, suppressed if bad, by careful, judicious nurture. I use the word nurture because it more nearly expresses our present needs than the usual formal term, training.

I grant that we have none too much moral training in our schools. Much of it is weak and ineffective, but, such as it is, much better than nothing. It is also undoubtedly true that most of the teachers in our schools are anxious to do the best work in this field which is possible under the circumstances. Formal ethics, lectures and talks calculated to lead the pupil up to a point at which he may discern the right from the wrong, every right motive and the all powerful influence of example, are brought to bear upon the child in attempts at moral training.

But we need on the part of parents and teachers much more of the spirit of moral nurture, of that inward culture, which by a hidden process shapes and forms the life. Only a true understanding of this will enable us to reach the living springs of action which lie in the recesses of the heart, and thus prevent the formation of habits of thought and action which are wrong, because based upon wrong

impulses of which no one had taken cognizance. The moral growth of the child should be directed with this fact in view. The entire instruction of the school and the nurture of the home should be such as to predispose him toward those things which are right, honest, pure and truthful. Instruction in ethics alone will not suffice. He should dwell continually in an atmosphere of high moral purpose and of right living. Hence, we cannot be too careful as to the influences which surround the child from his earliest infancy.

His æsthetical nature cannot be separated from his emotional. A statue, a picture, a flower rouses his feelings of love for the beautiful, and the emotions thus created lead to right impulses in the heart. The same is true in other respects. The presence of that which is grand in nature leads often to loftiness of purpose. Nobleness of character, grand, unselfish deeds, as well as living examples, can be made to stir the childish mind to efforts toward that which is noble and grand, even in the everyday life of the common man.

Pictures on the walls and works of art to cultivate the taste, absolute cleanliness of person and tidiness of dress on the part of teacher, an appropriate fitting-up of the room and the school premises, contribute to create a new sense, almost unconsciously leading to the formation of correct impulses, which in turn induce right action. The voice, the eye, the manners which characterize good "breeding," a thousand little things which are so attractive to children—these may not be neglected, although they are but seldom included in what the schools technically term "moral training."

Impulses are born of the heart. They spring into being without any

conscious volition on our part. We often say, "My first impulse was to do so and so; but upon reflection I concluded not to." Not only, then, must we train the child so that the first impulse must be right as a general thing, but so that he may, when necessary, subject his impulses to the judgment of reason and conscience. The power of self-control not habit alone, is the thing we must study. Habit may be overcome by a quick impulse under great provocation, but the all-powerful will never fails at a critical moment when it is most needed.

A clean conscience void of offence, a strong will, prompt to assert itself, and a keen desire to do what is right, are the foundation without which it is hopeless to attempt to create in the mind of the child a tendency toward right impulses.

When we say of a man or child that his impulses are all wrong we reveal a terrible defect in his character, and at the same time we destroy the basis of confidence in his conduct. On the other hand, when we are convinced that a man's intentions are good, that his impulses are in the right direction, we raise the presumption that his action will be in the line of rectitude and in accordance with his best judgment.

The question at once arises as to what means are at our disposal for the nurture of moral impulses in the child's life. If we could have the child from the earliest dawns of consciousness the task would not be so difficult. The example and teaching of the mother, the songs with which she sings him to sleep, the tone of her voice, the atmosphere of the home, all combine and conspire to impress his mind with the beauty of that which is true and good.

But unfortunately too many parents, perhaps the larger number,

give very little thought to anything beyond caring for the physical in bringing up the child. "He is not old enough to know" is too often the excuse of indolence or of ignorance. The child is never too young to be influenced by his surroundings or to be nurtured by the mother's love. Prevent and form, restrain and encourage; but the child is in a sad plight indeed who must be reformed when he reaches the shelter of the school. Formation and growth are natural processes. Reformation is unnatural. It is not seldom that the teacher wishes that she could blot out the first five years of the child's life and begin with him where the mother should have begun—in the cradle. To use the words of Horace Mann, "The wheels of the moral machinery are rusted" when the child comes under the teacher's care. Perhaps it will be found that they never have been made to revolve. It is of infinitely more importance to prevent the formation of bad habits than to know how to break them up after they have been acquired. Here is the strongest claim which the true kindergarten has upon our confidence and support. It plants itself upon the principle that education is only development beginning with the first dawn of consciousness. The child is the center, and the ever-widening circumference of existence can be made to include the good and exclude the evil if only right impulses are nurtured with every day of the child's life.

This nurture must not be spasmodic; it must be steady, consistent,

and loving, true to childish nature, and adapted to individual want. Neither should it be narrow or contracted. A broad and generous culture of that which is good in the child, a tender and judicious encouragement of all right impulses, a recognition of every good actuating motive, will lay the foundations for moral strength in coming years.

Some one writes that "mere ideals taken nakedly, abstractly and immediately are the cheapest things in the market." That may be true, but life without ideals would be barren and desolate. The fact that every one has ideals in some form is a convincing proof of the wisdom and goodness of Providence. An ideal cherished in the heart often lightens the work of the laborer, sweetens the cup of poverty, and encourages and cheers those who seem ready to perish, worn out by the toils and struggles of life.

I have said but little of habits. Habits are only a part of our acquired nature. I have not referred to "building character," because the teacher can no more build character than he can build a tree on the school-house ground. Character cannot be created. It is a thing of growth. Only by patient, persistent and wise nurture of those good impulses which I have never yet failed to find in the heart of the little child can character be developed as the plant from the seed, until its roots are so deeply imbedded in the life of the man that adversity cannot blast it nor temptation remove it.

—*Education.*

MISSION WORK IN CANADA.

BY REV. ROBERT JOHNSTON, D.D., LONDON.

(Continued from page 32.)

What solution has the Church of Christ in our land for the problems that attend the coming of these people? What provision has she for their deepest need? What but the Gospel that has proved itself the solution for such problems in other ages? What but the Gospel that is still the power of God unto salvation unto everyone that believeth, be he rude barbarian or cultured Greek? We cannot, we will not, despair of the ability of the Gospel to meet such serious problems as these, when we remember what it already has done for Anglo-Saxon nations, whose ancestors, when Rome was changing her palaces, from brick to marble, were wandering, rude savages, in their forest fastnesses.

The hopeful feature in connection with the problems of immigration is that, in coming to a new land, the minds of men are inclined to open to new influences and to accept the spirit of new surroundings. Leaving behind, oftentimes, conditions with which they have grown weary, they find in the new world a freedom which they recognize with astonished gladness, and finding this associated with the religion of the land that they have adopted as their own, and that they are prepared to love, their minds are rendered at least free from unhappy prejudice. The work of evangelization among them may be difficult but it is possible; it is most easily possible while the life that they have adopted is new. It is not to be dreamed of that the Church is to neglect these strangers; neglect means national peril and religious decline. Evangelize them, and

among heterogeneous multitudes flocking to us there may be created, not only a national spirit, but what is of far greater moment, a healthy morality and a regard for Christian institutions which will stand as a bulwark for the land in days of peril. Every reason that can be urged, from that of our own safety to that of love for our own King and desire for His glory, is here to encourage us in the work. Not only is the responsibility pressing but the opportunity is inviting. It is another Pentecostal opportunity for the Church; here are men speaking the polyglot languages of Europe and Asia, who, if evangelized, will serve the Church to-day as did those long ago, who carried from Jerusalem to their own lands the treasures of the Gospel. Every consideration which has weight for the encouragement of those missions, which are called "Continental," carried on by the churches of Great Britain, and many of those considerations which weigh with our churches in the noble enterprise of Foreign Missions to the heathen, are here to encourage and constrain us in the prosecution of a work, a grander and more hopeful than which God never gave to any Church. With no humbler watchword than "Canada for Christ" can the Church be satisfied; to labor to that end is a privilege high and inspiring.

I mention one other consideration, in view of which the importance of Home Mission Work in Canada is apparent—the *perils incident to the rapid accumulation of great wealth.*

That opportunities for such accumulation of wealth are here, the

resources of our land and results attained clearly show; that these opportunities are not to be allowed to slip past for want of eager hearts and hands, the spirit of our age assures us. While no age can be referred to as one in which material prosperity was despised, it is nevertheless true, that there has been none marked by a greater lust for gold than our own. The almighty dollar looms large on every horizon of life, and in a new land, where circumstances lend themselves to the rapid accumulation of riches, the dangers attendant thereon are especially menacing. Men are seeking the West with the glitter of gold before their eyes. Not alone those who dare the dangers of the Klondyke trail, but those also who come, content with the toils of the cattle-ranch or the prairie-farm, come with this object before them—material prosperity. The Pilgrim Fathers turned the prow of the Mayflower toward the setting sun and steered for Plymouth Rock in the fear of the Lord, seeking in the new world "freedom to worship God."

"What sought they thus afar?

Bright jewels of the mine?

The wealth of seas, the spoils of war?

They sought a faith's pure shrine."

But the thousands that throng the portals of the New World today seek one thing—wealth, and all too often are content to secure it at the cost of sacrificing religious privileges, holy ordinances and even the form of religion. In this fact lie dangers most serious, that menace the religious life of our land, dangers that, in my opinion, loom threatening, and near above all others—the dangers of mammonism and luxuriousness.

Commercial interests are all too frequently supreme; they not only control our elections, frame our laws,

and decide our policy towards other lands, but they trample upon those institutions of the home and of religion which are essential to a healthy national life. Commercial interests override the Sabbath and make of a holy day a holiday, of a day of rest, a day of toil; they invade the home and refuse the time required for the simplest forms of family religion; they establish, buttress and protect that Moloch of all evils, the liquor traffic; they support the hydra-headed monster Vice, and worst of all, they degrade a vigorous manhood into a mere gold-gatherer, and debase him from his heaven-born destiny to a state of satisfaction with earth. That these evils are magnified and intensified in new lands where everything encourages to unresting toil, and no church bell rings to bid men look up from earth to heaven, I need not pause to assert. What is to save our land from these dangers? What is to give to our young men the open eye and the upward look? What is to permeate our commerce, our mining, our manufacturing, our farming, so that upon the wheels of the reaper and the rake, upon the shuttle of the loom, the lever of the engine, the pick and shovel of the mine, shall be engraved "Holiness unto the Lord"? One thing and one thing only—the Gospel of Jesus Christ ministered by His church which is His body. We have not lost faith in the power of the Gospel to meet every need of the soul and of society; we must not lose sight of the responsibility of the church charged with the Gospel's message. If ever there was need in Canada for a liberal and aggressive policy of Home Mission effort it is to-day, when the youth and manhood of our land are dreaming that the word "success" has but one meaning, and that an earthly one.

As one who loves his land I would rather see a foreign foe upon her shores, and hear the roar of hostile guns at her gates, and listen to the call summoning the young men of the land to the perils of the quarter-deck and the loneliness of the sentry's watch, if so they might learn lessons of hardship and unselfishness in the service of their country, than I would see them self-centered, spending the summer days of peace, looking eagerly with earth-filled eyes for gold and, finding it, spending life in an effeminate luxury.

Were there no perils of emigration, were there none of rapid settlement, this feature of life in the new land should be sufficient to summon the Church to her most earnest and untiring efforts in the work of Home Evangelization.

The result of Home Mission Work, results already evident—although the work thus far has been mainly the sowing for the harvest yet to be reaped—it would require time to tell; they cannot be tabulated, can only indeed be but dimly indicated, and yet they are sufficient to cause the whole Church to say with humble rejoicing, "What hath God wrought?"

The existence and prosperity of the entire Presbyterian Church in Canada may rightly be described as the result of Home Mission effort, for our Church to-day, with her thirteen hundred ministers, and two hundred and twenty thousand members, with one out of six of the population worshipping in her temples and expressing loyalty to her teaching, and with her total income of two and a quarter millions, all this is the fruit of the toil of early pioneers who, from the Churches of the British Isles, from the Dutch Reformed Church and other Presbyterian bodies of the United States, were stirred by the

spiritual needs of Canadian colonists, and came to labor over presbyteries that in those days comprised entire provinces. It were an honor to mention them did time permit—Kinlock of Ireland, Cook and Smith of Scotland, Gilmore of the Loyalists, Bethune, at one time the only Presbyterian minister in what is now Ontario, McDowell of New Jersey, and others like minded, who sowed the seed of which to-day we reap the harvest. The Canadian Church would be disloyal to her own past were she to cease to put in the forefront of all her enterprises the work of Home Evangelization.

Our own Home Mission work covers a period of over thirty years. During that period quite four hundred aid-receiving congregations have become self-supporting, and more than that number of new fields have been opened up, while contributions for Church schemes have increased six-fold. The work of French Evangelization, which may be regarded as a department of Home Mission effort, has, under the fostering care of Dr. MacVicar, made marvellous progress. Ninety-two stations are supplied by the sixty-eight workers among the Roman Catholics of Quebec, and it is estimated that quite thirty thousand persons in French Canada call themselves Protestants, while, greatest gain of all, there is perfect liberty in preaching the Gospel in every part of the province that is chiefly Roman Catholic. It is, however, in the new districts west of the great lakes that the most remarkable victories of Home Mission effort have been achieved. Thirty years ago there was, in all that territory, one presbytery consisting of one self-supporting congregation, two missions to white settlers, and one mission to Indians; four workers manned the field. To-day that same

territory is occupied by two synods, comprising fifteen presbyteries; a staff of three hundred and fifty ministers and missionaries take the oversight of one hundred and seven teen self-supporting congregations and more than two hundred mission stations, together with twenty-four missions to Indians and Chinese,— in all providing religious ordinances in more than a thousand centres. A college, efficiently equipped, numbers about two hundred students in its classes of arts and theology, and the two hundred communicants of thirty years ago have increased to twenty thousand.

Do the figures seem small in a land so great? Remember they are the promise of the harvest, the earnest of the coming victory. There are results that cannot be indicated in figures. The Presbyterian Church has done the pioneer work, and gained for herself a place in the respect and affection of the settlers of which she may be humbly proud; her strong doctrine and simple worship are congenial to the bracing spirit of the West; her missionaries have not fainted at hardships, nor been overcome by opposition; they first, for the Church followed the trail into the Klondyke, and now four noble standard bearers labor at the mine-mouths to save the gold hungry multitudes from perils unseen but real; they were the pioneers in the Kootenay and Kettle River districts; they have followed the lumberman and the settler to the far outposts of British Columbia and northern Ontario, and they have not been forgetful of the claims of the dusky red men deprived of his hunting grounds, nor of the almond-eyed visitor from the Middle Kingdom. Noble men our home missionaries have proved themselves, and they have been nobly led by Findlay of northern Ontario, and by our

Bishop Missionary, whom Providence gave to our Church in the hour of her need, to whose Scotch grit, American enterprise and Canadian loyalty, sanctified by a noble devotion to Christ, our land owes more than to the policy of statesmen or the adventure and enterprise of capitalists,—our Superintendent of Home Missions in the west— Dr. Robertson. The Presbyterian Church has done the pioneer work; she has been honored in doing it; is she to hold the place so well won, or are others to enter into her labors? The answer, I know, is with ourselves, and yet not wholly with ourselves. I venture to utter a word of appeal to the representatives of the British churches. This work is your work as well as ours, for you and we are one, for

“When men unto their noblest rise
Alike forever see their eyes;
Trust us, Old Britain, we are true,
And in your noblest one with you.”

As we are one with you in fealty and in faith, so we cherish the hope that you will recognize your unity with us in our common interest of conquering and conserving this middle link of the Empire for Christ. We have had your interest and your aid in the past, we need it still, for not yet are our resources sufficient to undertake the work alone. Yours are many of the sons and daughters who came to us, and your privilege it is to aid us in surrounding them with those ordinances and Christian safeguards that have served so effectively to develop the sturdy Presbyterianism of the Old Land. Yours it is to be sharers with us in the toil, and yours too shall be a share in the triumph.

For the triumph will come; Canada for Christ shall still be our watchword. Three years ago, we lit with you our bonfires round the world in jubilant thanksgiving for

the long reign of her whom five hundred millions love to call their Queen ; from Rocky Mountain summit and prairie mound the firelights glowed ; from Lake Superior's pictured rocks and fair Muskoka's myriad sunlit lakes ; from where St. Lawrence rolls to the music of Niagara's orchestra, on through the fairy maze of Thousand Isles and past Quebec's grim walls, and from the rugged shores of Labrador's

stern rocks the blaze that hailed Victoria, Queen, ascended. But not with this are we content, nor shall we be, until from every home the fires of loyal consecration to our Saviour King ascend and our brave Dominion, in boundless width, exhaustless wealth, and beauty unsurpassed is placed a glistening jewel in the coronal of our King on whose head are many crowns.

EARLY VOYAGES ON THE UPPER ST. LAWRENCE.

PR. F. A. SHORTT, QUEEN'S UNIVERSITY.

IT was in 1613 that Champlain first explored a portion of the Ottawa, above Montreal. In 1614 the first priests came to Canada, being sent out at the expense of the commercial company which controlled it. These were four Recollet fathers, whose duty it was to minister to the religious needs of the colonists, and establish missions for the conversion of the Indians. In 1615 Father Joseph Caron accompanied a band of Hurons to their homes in the West. A little later in the same summer he was followed by Champlain, who went with the Huron Indians on an expedition against the Iroquois into what is now northern New York State. On returning to Canada, both Champlain and the priest remained with the Indians the following winter. Champlain had reached the Huron country by means of the Ottawa route, and in going to the Iroquois territory he followed the Trent river system down to the Bay of Quinte, and from that across to the south side of the lake past Amherst, Wolfe, and the smaller islands. He returned by the same route, making no attempt to try the

upper St Lawrence, reaching Lower Canada by the Ottawa, as before.

Immediately after this the Iroquois, taking the aggressive, successfully encroached upon the territory of the Hurons and threatened the extermination of the French, their allies. What with the difficulties of the rapids, and the dangers from the Iroquois who sat by them, the French long found that route closed to them. Thus the St. Lawrence, from Lake St. Louis to Lake Ontario, remained unknown to the French, except from Indian hearsay, for nearly half a century after they had penetrated to the Georgian Bay and Lake Huron. By 1642 the French had reached Lake Superior, and had explored Lake Michigan. In 1646 the first Jesuit missionary, Père Isaac Jogues, went to the Iroquois settlements to the south of the lakes. He went, however, by way of the Lake Champlain route. The following year, on his return to the Iroquois, he was put to death on the charge, it is said, of having raised the devil among them.

This incident, followed by other acts of aggression on the part of the Iroquois, suspended friendly inter-

course between the French and these tribes for some time. But in 1654, on petition of one of the chiefs to have the French make a settlement among them, Father Simon Lemoine went to Onondaga. Being assured safe conduct, he went by way of the St. Lawrence route; the first Frenchman, not a captive, to make that trip.

In explanation of the friendly overtures of the western Iroquois, we find that at this time they were threatened by other Indian nations to the west and south of them. To the south they were in conflict with the Andastogues, who had already driven some of the Cayugas out of their country, and compelled them to take refuge on Lake Ontario, in the neighborhood of the Bay of Quinte. From the west the Cat and Neutral Indians were on the eve of attacking them. The Iroquois, therefore, not only desired to make peace with the French, but to obtain their assistance against their nearer enemies. Under these circumstances Lemoine made his journey. From his journal, given in the "Jesuit Relation" for that year, we obtain a short account of his trip up the river.*

"On the 17th day of July, 1654, St. Alexis day, we set out from home with that great saint of many travels, toward a land unknown to us." Thus, while the ancestors of most of us were eagerly following the first movements of Cromwell's Protectorate, while that great man was preparing to meet his first Parliament, in the wilds of America a French Jesuit missionary was making the first ascent of the Upper St. Lawrence.

"On the 18th, following constantly

*The quotations from the "Jesuit Relations" are from the newly published edition, edited by R. G. Thwaites, and published by Burrows Bros., of Cleveland, Ohio.

the course of the River St. Lawrence, we encountered nothing but breakers and impetuous falls, thickly strewn with rocks and shoals." This refers to the region of the Cascades, Cedars, and Coteau Rapids, between Lake St. Louis and Lake St. Francis. "The 19th. The river continues to increase in width and forms a lake, pleasant to the sight and eight or twelve leagues in length." "The 20th. We see nothing but islands of the most beautiful appearance in the world, intercepting here and there the course of this most peaceful river. The land toward the north appears to us excellent. Toward the rising sun is a chain of high mountains, which we named after Saint Margaret." Those who know the western end of Lake St. Francis will recognize this as a charmingly simple and accurate description of that portion of the river. As yet, none of the lakes or rapids on the course is given a name. Only the chastely blue mountains, which form so fitting a background for the peaceful beauties of water and island, are named after St. Margaret. But the name is given at too long a range. Even that of "St. Mary," bestowed later, will not endure. Those nearer to them, doubtless finding them less ethereal and saintly, will name them later the Adirondacs. On the 22nd they encountered the Long Sault Rapids, though yet unnamed, and these, he says, "compel us to shoulder our little baggage and the canoe that bore us." "On the other side of the rapids, I caught sight of a herd of wild cows, pasturing in a very calm and leisurely manner. Sometimes there are seen four or five hundred of them together in these regions." These were evidently not buffaloes, but caribou deer, because, as described later, they would not answer to the buffalo, and almost all the other

early voyagers speak of the caribou and other deer as being very plentiful in this region. They came to be regularly counted upon as a supply of food, being easily killed as they swam from the islands to the main land.

Another species of wild animal, whose aggressive enterprise has secured for it a prominent place in the early annals of America, also abounded in this region. Wherever they halted they became a prey to the mosquitoes, who are represented by the pious father as resting not day and night, and as more terrible to face than death itself. They continued to have difficulty with the rapids between the Long Sault and the Thousand Islands. On the evening of the 25th "we arrived at the mouth of Lake Saint Ignace, where eels abound in prodigious numbers." This is that region of the lake of the Thousand Islands between the Brockville Narrows, or Chippewa Point, and Wellesley Island. In the large stretches of shallow, muddy-bottomed water, on the north and south sides of the river and off the lower end of Wellesley Island, there was a perfect paradise for eels, of which they took full advantage, leading, in turn, to the Indians taking much advantage of them. Thus this eel fishery was famous among the Indians for hundreds of miles around, and during the season the neighboring islands and shores were seldom without their Indian camps.

Lemoine and his band evidently took the southern or American channel through the islands. He notes the rocky cliffs along the route, but rather exaggerates their height and grandeur, as he speaks of being "everywhere confronted with towering rocks, now appalling and now pleasing to the eye." Noting the scantiness of the soil in many

places, he says, "It is wonderful how large trees can find root among so many rocks."

Here they encountered for some days thunderstorms accompanied with heavy winds "On the 29th and 30th of July the wind storm continues and checks our progress at the mouth of a great lake called Ontario we call it the lake of the Iroquois, because they have their villages on its southern side. The Hurons are at the other side farther inland." But at this very period the Iroquois were passing over to the northern shore, making war upon the Hurons, driving them back, killing many and making captives of others, especially the women and children. Hence, before long, both sides of the lake were in the possession of the Iroquois, and the first mission established on the northern shore, the Kenté mission, was among a branch of the Iroquois, the Cayugas.

Having reached Lake Ontario, we need not follow the worthy father in his subsequent adventures among the Onondago Indians. His stay was short; for by the middle of August he was on his way back, and once he and his companions reach the river they have an easy voyage, broken only by the irresistible pursuit of game, everywhere abundant and easy of capture. Almost no particulars are given of this return trip. On the 6th of September he is put ashore on Lake St. Louis, about twelve miles above Montreal, his Indians being afraid to run the Sault St. Louis, now the Lachine rapids.

This trip of Lemoine's to the Onondagas having roused the jealousy of the Mohawks, he had to promise to visit them also. This he accomplished in the following year, 1655. He left Montreal on the 17th of August with twelve Iroquois and

two Frenchmen, and a month later he had reached the Mohawk village of Agnie. Few details are given of this voyage. In the Relation for the year the summary runs thus: "The route is one of precipices, lakes and rivers, of hunting and fishing, of weariness and recreation, varying in different parts. Soon after their departure our travellers killed eighteen wild cows within less than an hour on prairies prepared by nature alone for those own rless herds. They were wrecked a little farther on in an impetuous torrent which carried them into a bay where they found the gentlest calm in the world." As usual, when they got beyond the river they found game much scarcer, and they were almost starved before they reached their destination. Owing to troubles between the Iroquois and the Algonquins they could not return by way of the St. Lawrence, but were compelled to make a very fatiguing overland journey to the south.

This same year another journey up the St. Lawrence was made by Fathers Joseph Chaumont and Claude Dablon on their way to the Onondaga settlement. They left Montreal on the 8th of October, 1655, and the details of the trip are recorded in Father Dablon's journal. After making the portage of the St. Louis, or Lachine rapids, they crossed Lake St. Louis on the 9th. The 10th being Sunday, they rested. "On the 12th we ascended many rapids by dint of hard paddling." Having caught sight of some Mohawks, they had to spend the night on guard for fear of their attacking the Huron portion of the band. On the 13th and 14th, their provisions failing, and having no luck either in fishing or hunting, they were reduced to the extremity of eating a wild cow which had been drowned. The wild cow he des-

cribes as a "species of hind—these animals having horns like the stag's, and not like those of our European bull."

"The 15th. God made us pass from scarcity to abundance by giving our hunters eight bears." Next day it rained, and they feasted and rested. On the 17th they killed thirty bears and had another great feast, after which they drank bear's grease and rubbed their bodies over with it. Strange to say, only one of the band suffered from nightmare in consequence. But he had such a realistic attack of that malady that he could not get over it when wakened; and the whole company spent a day and a half in reducing him to a normal condition. The places are yet unnamed, but it appears that this incident occurred in the neighborhood of Lake St. Francis, for, on the 20th, they "passed the falls of the lake after dragging our canoes through four or five rapids in the space of half a league" This evidently refers to the Long Sault. "Early on the 24th we reached Lake Ontario, at the entrance to which five stags were killed toward evening." What he calls Lake Ontario is what Lemoine called Lake St. Ignace, being the lower part of the Lake of the Thousand Islands. For Dablon the lake evidently extends below Brockville, for, he says, "furious rapids must be passed, which serve as the outlet of the lake: then one enters a beautiful sheet of water, sown with various islands, distant hardly a quarter of a league from one another. It is pleasant to see the herds of cows or deer swimming from isle to isle. Our hunters cut them off on their return to the mainland, and lined the entire shore with them, leading them to death whithersoever they chose. On the 25th we advanced eight leagues up the lake's mouth, which is barely

three quarters of a league wide. We entered the lake itself on the 26th, proceeding seven or eight leagues. Such a scene of awe inspiring beauty I have never beheld; nothing but islands and huge masses of rock, as large as cities, all covered with cedars and firs. The lake itself is lined with crags fearful to behold, for the most part overgrown with cedars. Toward evening we crossed from the north to the south side." This was evidently across to Alexandria Bay, by the foot of Wellesley Island, for he continues: "On the 27th we proceeded twelve good leagues through a multitude of islands, large and small, after which we saw nothing but water on all sides." From this and other accounts we learn that the route to the Iroquois country followed the Canadian shore up to the neighborhood of Grenadier Island, then crossed over to the American shore in the neighborhood of Alexandria Bay, thence following the American channel through the Thousand Islands, and up between Wolfe Island and the southern shore, into Lake Ontario. More than ten years were yet to pass before any Frenchman should take the northern route and look upon the site of Kingston.

The Onondagas remained steadfast in their purpose of having the French establish a regular settlement among them. They continued, with some impatience, to press the matter upon the two Fathers during the winter which they spent with them. Hence it was deemed expedient that one of them should return to Quebec to explain the situation to the Governor. The journey was undertaken by Father Dablon, who left Onondaga on the 2nd of March, 1656. The season was exceedingly unpropitious for such a journey, hence the sufferings of the

Father and his band of about twenty Indians were very great. The continued rains, in addition to the extreme discomfort which they afforded, weakened without removing the ice on the lake, while they opened up many of the streams. Thus they could proceed by neither winter nor summer modes of travel.

By the 17th of the month they seem to have reached the Lake of the Thousand Islands, though, as in his previous account, he regards Lake Ontario as reaching below Brockville. In going down the American channel from the head of Wolfe Island, partly on the river and partly on shore, he describes their progress as follows: "We passed all the seventeenth with feet in the water, weather rough and road frightful. At times we had to climb with feet and hands over mountains of snow; again, to walk over great ice blocks; and again, to pass over marshes; plunge into thickets, fell trees for bridging rivers, cross streams, and avoid precipices; while at the day's end we had made barely four short leagues. On the eighteenth we proceeded six leagues. On the nineteenth, St. Joseph's day, as we were pursuing our course over the ice of the great lake, it opened under one of my feet. I came off better than a poor Onnontaguehronnon hunter, who, after a long struggle with the ice, which had given way under him, was swallowed up and lost in the water beyond the possibility of rescue. Having escaped these dangers, we entered a road of extreme difficulty, beset with rocks as high as towers, and so steep that one makes his way over them with hands as well as feet. After this we were again forced to run three leagues over the ice, never stopping for fear of breaking through, and then to pass the night on a rock opposite

Otondiata, which is on the route commonly taken by beaver hunters." This is the earliest mention of Otondiata, a famous Indian stopping place on the highway of war and the chase, between the Iroquois settlements to the south of the lake and the Huron territory and beaver grounds, reached by the Gananogue river and the Rideau lakes. The St. Lawrence river was commonly attained by way of the Oswegatche. Otondiata, which means, it is said, the "stone stairs," was the chief camping place in the neighborhood of the eel fishery. In various references to the place, from this time on, the name is applied to different localities, both among the islands and on the mainland, from Brockville to Grenadier Island. In the present account it is probably Grenadier Island, or one in its vicinity, which is intended, that being the locality where the crossing was made from one shore to the other, in going and coming from the western Iroquois country. Thus the narrative continues: "We made a canoe for crossing the lake; and, as we were a company of twenty, a part went first. On nearing the other shore they struck their prow against an ice floe; and there they were all in the water, some catching at the battered canoe, and others at the ice that had wrecked it. They all succeeded in saving themselves, and after repairing their boat of bark sent it back to us that we might follow them. We did so on the night of the twenty first of March. We had eaten for dinner only a very few roots boiled in clean water, yet we were forced to lie down supperless on a bed of pebbles, at the sign of the Stars and under shelter of an icy north wind. On the following night we lay more softly, but not more comfortably, our bed being of snow, and the day after rain attended us on a frightful

road over rocks fearful to behold, both for their height and for their size, and as dangerous to descend as they were difficult to climb. In order to scale them we lent one another a hand. They border the lake; and, as it was not yet wholly free from ice, we were forced to undergo this labor.

"On the morning of the twenty fifth a deer delayed us until noon. We made three leagues, in pleasant weather, and over a tolerable road, finding very seasonably at our halting place, a canoe or rather whole tree-trunk hollowed out, which God seems to have put into our hands for completing the passage of the lake without fear of the ice.

"On the morrow seven of us embarked in this dugout, and in the evening reached the mouth of the lake, which ends in a waterfall and turbulent rapids. Here God showed us still another favor, for, on leaving our dugout, we found a fairly good bark canoe, with which we accomplished forty leagues in a day and a half, not having made more than that on foot during the three preceding weeks, owing both to the severe weather and the bad roads.

"Finally on the thirtieth of March we arrived at Montreal, having left Onnontague on the second. Our hearts found here the joy felt by pilgrims on reaching their own country."

On learning of the attitude of the Onondagas and of their menacing anxiety to have the French accept their invitation to make a considerable establishment in their midst, the Quebec authorities found themselves in a very perplexing situation. If they declined the proffered hospitality and friendship, they were threatened with an Iroquois invasion. To accept the invitation, however, was to put their heads into the lion's mouth, and no lion's moods

were ever more difficult to forecast than those of the Iroquois. The faith of the Jesuits, not in the the Indians, but in God, carried the day, and it was decided to accept the invitation.

This Jesuit faith was of the most unquenchable kind. Failure in missionary enterprise was taken to be no less an indication of Divine guidance, than the greatest success. With all their faith, experience had taught them to expect but slow progress. Hence every success was regarded as a more or less marvellous intervention of the Divine Spirit, while failure merely meant the preparation of the soil for a glorious harvest by and by. Even extremities of torture and death represented but the crowning favor of Heaven in selecting the victim for the supreme honor of martyrdom. The inspiring words, "Sanguis martyrurum semen est Christianorum," were ever on their lips. Where every defeat was a victory, and every victory a triumphant miracle, we have the conditions which go a very long way towards making possible the impossible.

The company which left Quebec on this enterprise consisted of about forty Frenchmen, a party of Onondagas who had come down for them, some Senecas who had also come seeking an alliance, and a party of Hurons. The whole company left Quebec, on the 7th of May, 1656, in two large shallops and several canoes. On the 8th of June they left Montreal in twenty canoes.

From the journal of one of the missionaries we learn some particulars of the journey from Montreal. "We had not proceeded two leagues when a band of Agnieronon Iroquois (Mohawks) saw us from afar. Mistaking us for Algonquins and Hurons, they were seized with fear and fled

into the woods, but when they recognized us, on seeing our flag—which bore the name of Jesus in large letters, painted on fine white taffeta—flying in the air, they approached us. Our Onnontaerannon Americans received them with a thousand insults, reproaching them with their treachery and brigandage; they then fell upon their canoes, stole their arms, and took the best of all their equipment. They said that they did this by way of reprisal, for they themselves had been pillaged a few days before by the same tribe. That was all the consolation gained by those poor wretches in coming to greet us.

"Entering Lake St. Louis, one of our canoes was broken, an accident which happened several times during our voyage. We landed, and our ship carpenters found everywhere material enough wherewith to build a vessel in less than a day—that is, our savages had no difficulty in procuring what was needed to make the gondolas which carried our baggage and ourselves.

"We killed a number of elk, and of the deer which our French call 'wild cows.' On the 13th of June, and the three following days, we found ourselves in currents of water so rapid and so strong that we were at times compelled to get into the water in order to drag behind us, or carry on our shoulders, our boats and all our baggage. We were wet through and through; for, while one-half of our bodies was in the water, the sky saturated the other with a heavy rain. We exerted all our strength against the wind and the torrents with even more joy of heart than fatigue of body.

"On the 17th of the same month we found ourselves at one end of a lake which some confound with Lake St. Louis. We gave it the name of St. Francis to distinguish it

from the one which precedes it. It is fully ten leagues long, and three or four leagues wide in some places, and contains many beautiful islands at its mouths. The great river Saint Lawrence, widening and spreading its waters at various points, forms those beautiful lakes, and then narrowing its course it once more assumes the name of river.

"On the 20th of June we passed the grand sault. Five fawns killed by our hunters, and a hundred catfish taken by our fishermen, made our troubles easier to bear. Our larder was as well stocked with meat and fish at that time as it was deficient in everything at the end of our journey.

"Toward evening some hunters perceived us, and on seeing so many canoes in our company they fled, leaving behind them some booty for our people, who seized their weapons, their beaver skins and all their baggage. But, capturing one of those hunters, we found that he belonged to a tribe of the Andastæronnons, with whom we were not at war. Our French, therefore, gave back to them what they had plundered; this, however, did not induce our savages to display the same civility.

"On the 27th of June we passed the last rapid, which is half way between Montreal and Onnontagé—that is, a distance of forty or fifty leagues from both places.

"On the 29th, after travelling night and day because our stock of provisions was getting very low, we met three canoes of Annieronnons returning from man-hunting, who brought back with them the scalps of four savages of the Neds-percez nation, and a woman and two children as captives.

"On the 1st of July we perceived and gave chase to a canoe; when we overtook it we found that it be-

longed to the village of Onnontagé. We were told that we were expected there, and that Father Joseph Chaumont, who had remained there alone, was in good health."

Arriving at Onondaga in due course, the French established themselves there, but being threatened with a general massacre two years later, they had to abandon the place in 1658. In 1660, desiring to restore friendly relations with the French, the Onondagas and the Cayugas sent back four French prisoners, and desired a Jesuit missionary to return to them. Father Simon Lemoine went in 1661.

Relations with the Iroquois in general, and the Mohawks in particular, continued to be very unpleasant and uncertain, until after M. de Tracy's celebrated winter expedition against the Mohawks in 1666, by way of the Champlain route. This thoroughly alarmed all the nations of the Iroquois league, causing them to make and maintain for a number of years a peace with the French.

These years of peace gave opportunity for an immense development of French enterprise, alike in the line of establishing missions and making those celebrated exploring expeditions, which extended from Hudson's Bay to the Gulf of Mexico. As giving direction and encouragement to this golden age of French colonial expansion in America, we find in Canada the greatest of the Intendants, Talon, and the most celebrated of the Governors, Frontenac; while in France itself there was the greatest of French ministers, Colbert, representing the most powerful of French monarchs, Louis XIV.

By fostering the Seminary of St. Sulpice at Montreal, securing them the privilege of establishing missions among the western Indians, and

stimulating a friendly rivalry in such enterprises between the Jesuits and the Sulpicians, Talon sought to encourage the expansion of French power and control over the various Indian nations. As part of this movement we have the establishment, by the Seminary of St. Sulpice, of the Kentè mission among a branch of the Cayugas in 1668, M. Trouvè and M. Fenelon, a near relative of the celebrated Bishop of Cambrai, being the pioneer missionaries in that region.

An account of the establishing of the mission is given in an appendix to the History of Montreal, attributed to Dollier de Casson. The account consists mainly of a letter from M. Trouvè, one of the missionaries. He says they set out from Lachine on October 2nd, 1668, accompanied by two Indians from the village of Kentè. They surmounted safely the obstacles between Lakes St. Louis and St. Francis, partly by portaging and partly by dragging their canoes up the river. On Lake St. Francis they discovered two famished Indian women and a child, fleeing from captivity among the Iroquois. Instead of allowing them to go on to Montreal, the two Indians who were with the missionaries insisted on taking the women and child with them. After Lake St. Francis they

spent four days in overcoming the most difficult rapids on the whole river, referring to the Long Sault. They rested from their exertions on one of the larger islands in the river. While there, one of the savages, seeking comfort from a small keg of brandy which he had brought with him, became intoxicated, and at once irresponsible and uncontrollable. He sought to kill one of the captives, but she took to the woods, escaping the fury of the Indian, but facing starvation on an island from which there was no means of egress. The other woman and her child were finally permitted to seek safety in the direction of Montreal, which they eventually reached. Even the lost woman, after being five or six days a prisoner on the island, was discovered and taken to Montreal by a band of Hurons. No further details are given of the journey, except that they reached Kentè on the day of the festival of St. Simon and St. Jude, and were well received.

This was the beginning of the settlements on the Canadian side of the lake. Soon after this Cataract was visited, and an establishment begun there. But that marks the opening of a new era of exploration.

—*Queen's Quarterly.*

"THE LAND OF BURNS."

"Fair Dumfries, rare Dumfries, forever dear to me,
Of burgh-towns the pick and wale, the bonniest place I see."

"Auld Dumfries" is one of the most interesting of Scottish towns. Its history extends back into the dim past, when the Roman legions drove the early inhabitants of that district northwards. Kings have lived within its walls; great affairs of the nation have been transacted there; and some of the most mo-

mentous events in the annals of Scottish history have occurred in this old town. At the present time the old moats and mounds in the neighborhood afford evidences of the early occupation of that district by the Romans, while the ruins of castles and religious houses tell many a story of the exciting days of

early Scottish history. The important part which Dumfries has played in the history of Scotland is sufficient of itself to add interest to any survey of its past and its present features. Added to this is the fact that the Patriot Bard of Scotland lived there and died there—this fact has overshadowed all others, so that the district has become known as “the Land of Burns.”

Dumfries is picturesquely situated on the River Nith, whose peaceful waters flow through the counties of Ayrshire and Dumfriesshire, both consecrated by the genius of Burns. The “Sweet Afton” of his song joins it before crossing the Ayrshire boundary, and afterwards it flows along the western division of Dumfriesshire into the Solway Firth some nine miles from Dumfries. The surrounding country is hilly and abounds in historical associations and places once the haunts of genius. The town stands in a sheltered position on the left side of the Nith, while on the opposite bank is the small but modern city of Maxwelltown. Although having separate councils, they are practically united for municipal purposes.

Almost every town in Scotland has its traditions and institutions which can be traced back to very early times. The burghers take a peculiar pride in these, and it is always a source of great satisfaction if they are able to refer to any particular date, as the time when some royal personage or great man visited or resided in their town. The good citizens of Dumfries possess these traits like wise, and they recall with pleasure that Dumfries was once a royal burgh. It was in Dumfries that Robert the Bruce slew the false Sir John of Badenoch, otherwise known as the “Red Comyn,” and struck the first blow for freedom. The

hopes of the Baliol party were crushed by this act; all Scotland rallied to the support of Bruce, and the result, after eight years' hard fighting, was the great victory of Bannockburn.

There are many other interesting persons connected with the early history of Dumfries. Among those whose names are held in grateful memory is the Lady Devorgilla.

“A better ladye than she was none,
In all the Isle of Mare Bretane.”

This noble lady erected several religious houses in the neighborhood, and about the year 1275 constructed a bridge across the Nith, which is still in use. When this was built, bridges were scarce, and it was then considered a noble structure. With the advance of modern civilization this old bridge has become useless for heavy traffic, and is only used by foot passengers now. Still later, this same benefactress founded “Sweetheart Abbey,” near Dumfries, and in 1289 she founded Baliol College, Oxford, in memory of her husband, John Baliol.

About a mile from Dumfries, near a bend in the River Nith, stand the roofless ruins of Lincluden Abbey,

“Yonder Cluden's silent towers,
When at moonshine midnight hours,
O'er the dawy bending flowers
Fairies dance sae cheerie.”

It was erected in 1164 by the munificence of one of the Lords of Galloway, and in its day has served as a monastery, church and royal retreat. Margaret of Anjou, the wife of Henry III. of England, found a refuge there after the defeat of the Lancastrian party at Northampton in 1461. In the north wall is the tomb of the Princess Margaret, daughter of Robert II. of Scotland. This tomb was once a very beautiful one, and it still retains traces of its former excellence. Within an

arched recess is a sarcophagus and above it is the effigy of the princess. But Dumfries, before everything else, is the shrine of all lovers of Burns, for it was there that he passed the most fruitful eight years of his life. It is true that he had won fame previous to his life in Dumfries. He had been feasted and lionized in Edinburgh, the idol of a day, but in all that there was nothing to aid him materially in his struggle for a livelihood, and shortly afterwards he leased a farm at Ellisland, six miles from Dumfries. To this place he brought his "Jean," and together for some time endeavored to coax a living from the farm. At the same time he found opportunities of conversing with the muses in his lonely walks through Nithsdale, or beside the gently flowing Nith. It was then that he wrote "To Mary in Heaven," a beautiful embodiment of tender memories. He held the farm for three years, at the same time acting as excise officer for a division near Dumfries. At the end of that time he obtained a promotion and also an increase of salary. Then he removed to Dumfries, where he resided until his death in 1876. To this period of his residence in Dumfries, Scottish literature is indebted for such exquisite lyrics as "O' a' the Airts the Wind Can Blow," "Flow Gently, Sweet Afton," "Ye Banks and Braes O' Bonnie Doon," and "John Anderson, My Jo." It also gave birth to that noble song of reunion so dear to every Scotchman's heart, "Auld Lang Syne"; to the patriotic verses, "Scots Wha Ha'e"; and to the poetical magna charta "A Man's a Man for a' That." This period embraced the most fruitful, as well as the happiest years of his life, but there were many times when he endured "the supreme misery of making three guineas do the business of five." The great-

ness of the man arose above the exigencies of his circumstances. The essential nobility of his mind flourished amid all the impediments of his surroundings, and produced the richest flowers of exuberant fancy in song and poetry.

He formed a happy circle of friends in Dumfries, in whose company he passed many a social hour, and where he frequently read his poems. His favorite haunt in those days was the Globe Inn on High street, now called Burns' Howff. A pretentious sign at a narrow opening in the wall on High street gives the first indication of the whereabouts of this inn. A narrow close leads from this to the rear of some large stores, where the old building still stands, just as it did in Burns' time; the room in which the poet and his companions usually passed their evenings is of moderate size, finished in walnut. In one corner stands the chair in which Burns always sat and on the wall is a picture representing the poet riding in a storm while composing the martial strains, "Scots Wha Ha'e." In another part of the town on Burns Street stands his home. It is an old-fashioned, plain-looking, two storey-house, with stone steps at the front, small windows, and to all appearances more like a peasant's cottage than the home of a poet. But genius possesses a subtle charm and often makes the most unpretentious thing interesting, and so it is that thousands annually visit this humble building in an old part of the town. It is interesting also to note that the present owner of this house derives a handsome income from the small fee charged the eight or nine thousand tourists who visit it each year. The poor Scottish bard who once lived there toiled hard to earn a living, his genius then unrewarded, while his fame

now enables others to enrich themselves.

In a corner of St. Michael's churchyard stands the tomb of Burns. During his life he was a regular attendant at this old Presbyterian church. For years after his death his pew was preserved, but with late changes in the interior of the church this has been removed. His tomb stands in the north east corner of the churchyard surrounded by the great silent company. The tomb is the largest there and the interior is very beautiful. The poet's remains rest within a sarcophagus, while on the background the poet is represented at the plow looking upwards into the face of an angel hovering over him, as the source of his inspiration. It is a striking representation of the greater part of the life of the Ayrshire peasant. There is another monument of Burns, which represents him sitting on a stump, with his dog at his feet, while on the pedestal are inscribed some of his most famous lines. Some have almost become proverbs of the language—

"The best laid schemes o' mice and men,
Gang aft agley,"

while others breathe the spirit of that larger brotherhood—

"It's coming yet for a' that,
When man to man the world o'er,
Shall brothers be for a' that."

He sleeps now in the churchyard of St. Michael's, the national bard of Scotland, honored by his countrymen, and beloved wherever an inspired strain can strike a chord in the human heart.

Many other distinguished literary men have been connected with Dumfries. Barrie, the happy delineator of Scotch character, attended the academy there, and Scott has described many scenes in that neighborhood, and the originals of many of his characters lived there. Helen Walker, the "Jeannie Deans" of the "Heart of Midlothian," and Robert Paterson, the "Old Mortality" of Waverley characters, are both buried within a few miles of Dumfries. Craigputtock, the wilderness home of Carlyle, is twelve miles distant, and the great moralist was in the habit of making annual visits to his brother in Dumfries. Ecclefechan, his birthplace, is just a few miles from Dumfries and is visited constantly by numbers of his admirers. To the scenes of "Maxwellton's Braes," the sweetest of Scotch songs, and "Kirconnell Lea," where "Fair Helen" and her lover lie side by side, is a pleasant afternoon's walk.

To appreciate fully the beauty of the land of Burns, and the charm of these associations, it is necessary to visit them and to listen to the stories which many an old resident there can tell of his countrymen whose genius has added lustre to their country. The history of the country as read in its ruins and traditions has made "Auld Dumfries" an interesting place for all travellers, while the songs of Burns and others less famous have embalmed the memory of scenes around it in the sweetest strains of language.—G. L. S. in *McMaster University Monthly*

COME THEN.

Nay, come not now—when buoyantly your
feet

With lightest, softest footstep treads the air,
And joyously you smile on all you meet,
And from your life have banished care;

But when the fragrant flowers in your crown
Are scentless, and lie still in bleak and
cold,

Weary with the strife, you're sad and old—
Come then.

Nay, come not now! The world rings with
your name,

And on the highest wave is proudly rolled.
All men applaud you, and your gracious reign,
While your fame has brought you gold;

But when the Path grows longer with each
fight,

And faithlessness and grief their furrows
press,

And crowded is your life with loneliness—
Come then.

—Kate E. Pierce in *The Bookman*.

EDITORIAL NOTES.

Deliver not the tasks of might

To weakness, neither hide the ray

From those, not blind, who wait for day,

Though sitting girt with doubtful light.

“That from Discussion's lips may fall

With Life, that working strongly, binds—

Set in all lights by many minds,

So close the interests of all.”

We have certainly reached a stage in our educational affairs, as in the other affairs of the century, when the practical has come to stay. Among the subjects taught in our schools, reading, writing and arithmetic are still the chief exponents of the practical in school work, though it is often still an enigma for the moment for teacher and pupil when either is asked why so much time is spent in training the class to read aloud. The elocutionary drill of reading aloud in school is, after all, only a means to an end, and when the process of reading, reciting and speaking are compared, the comparison but leads to their identity as the best means towards the highest aim of all education, namely, the training of a child to think deliberately and logically. Writing is a training of the hand and eye and bears a kindred relationship to composing which reading does to speaking. Yet there is a practicability about the writing exercise which is not to be as directly recognized in the elocutionary drill. There is a bread-

and-butter element in the caligraphic training of the hand, and when one considers how impossible it has become for the youthful candidate for a bank clerkship, or for any kind of a clerkship, to secure a position should he be possessed of an unbusiness-looking handwriting, there is common sense in the floutings of the parent who claims that his son continues to be the worst of writers. The worldly-wise teacher will, therefore, seek to have only the best of handwriting in all his classes, though, possibly, he may be convinced, as an educationist, that penmanship is but a mechanical art, and has little or no connection with the immediate training of the pupil's mental faculties.

But a new phase of this practical art has come to force itself upon our educational reformers. The function of the pen in correspondence and office work has come to be usurped by the typewriter, and the typewriter, as a practical outcome of business necessities, has evidently come to stay. And the old, ar-

gument, advanced by the parent in favor of good writing, stares the teacher in the face, with the typewriter *in posse* as an operator, and the typewriter *in esse* as an expeditious machine, standing *en evidence* of the necessities of the case. If the boy, who once had nothing of the caligraphic about his handwriting, had to bemoan his rejection as an office boy, the boy who has no knowledge of the typewriter and its expeditious movements finds himself just as likely to be left out in the cold by the business man in need of a clerk. In fact, the first question now asked of a young man anxious to devote himself to commercial pursuits when he presents himself as a possible candidate for a position in any commercial house, has special reference to his ability to run a typewriter with the necessary correspondence activity. And in face of this, who is to say that the old bread and butter argument, which has been advanced for centuries in favor of an improved caligraphy in our schools, is to be set aside simply because the typewriter has taken the place of the pen?

The true function of the school is to train children to take charge of themselves, and the function is only to be seen as a fulfilment or non-fulfilment when the pupil comes to take his position in after-life. The school is no place in which the art of horse shoeing or cabinet-making is to be taught, no more than it is the place where the specialist may run his hobby in any direction. A

subject of study is only a legitimate school subject if a knowledge of it is needed by everybody. Penmanship is an art which everyone must know something about, and since the typewriter is all but sure to take the place of the pen, directly and indirectly, there can be no escape from the conclusion that an hour for class-work in typewriting is as sure eventually to take its place on the school programme as that penmanship has held its place on the school curriculum for centuries. There is no bolting in the argument, beyond the changing of implements; and the expeditiousness of the one instrument as compared with that of the other turns the argument altogether in favor of the innovation.

The facts are these, and our teachers and commissioners and trustees must face them. The public demands the use of the typewriter out of school, and are demanding its use in school. There is no business house of any standing in which the correspondence is not all typewritten. The merchants are even beginning to demand that all invoices shall be in typewritten form. The clergyman composes his sermons through the typewriter, the lawyer his briefs, the editor his articles, the author his books. The practice has become all but a universal one, and the sooner the school boards come to see the necessity for the class in typewriting, with a dozen or so machines in constant use by relays of pupils from hour to hour, the happier it will be for all concerned in school and out of school.

CURRENT EVENTS.

The *Daily Globe* of January 3rd contained several advertisements for teachers which throw some light on public education. One of these advertisements offers an assistant mastership in a high school to a suitable person willing to teach mathematics and sciences for \$600 a year. The position is one for which university graduates qualify after perhaps seven years of study. Another calls for a female teacher, who, besides her duties as a teacher, will be required to light fires and sweep the school for a salary of \$216 a year. Another calls for a male, married, Protestant, experienced second-class professional, of suitable age, weight and height to teach for \$500 a year. Another offers \$400 a year to a second class professional, and one offers a position as teacher in a rural school in the long settled county of Grenville, at a salary of \$210 a year. These advertisements, probably, indicate fairly the remuneration of teachers in the rural and village schools. The highest salary, that offered to university men, does not exceed the wages of a skilled mechanic, while the lowest does not equal the wages of a farm laborer. Though living be cheap in the country, it is obvious that these salaries are not large enough to invite or keep capable teachers. Most ambitious persons, doubtless, make haste to find more profitable callings, and the teaching profession is an endless progression of the raw boys and girls still in their teens, with the girls in

the majority. Of scholarship, there is perhaps enough. The departmental examinations are supposed to guarantee that. But what is there of character? What will be the character of a people trained in school by teachers with no higher qualification than a knowledge of square root and grammatical analysis? We doubt very much the wisdom of filling the schools with women teachers. At all events, there are few who can teach well until their characters have formed in the crucible of experience and reflection. Nor can any community overestimate the general usefulness of an experienced teacher who is in the language of advertising trustees a male. He becomes a centre of social activity, organizes meetings, settles disputes and fixes moral standards with more authority than the clergy, whose social activity is narrowed by the fact that they can command only the deference and respect of their own adherents. It is said that the Presbyterian Church has provided that all ministers shall receive not less than \$750 a year and a house. In the settled parts of Ontario it is not uncommon to see a community not larger than a school section supporting three or four clergymen. If the people can do this, they can hardly plead inability to raise the wages of the schoolmaster, who, if his functions are not as exalted as those of the clergy, deserves, at least, generous treatment.—*The Sun*.

BOOKS AND MAGAZINES.

In *Scribner's Magazine* for January Mr. J. M. Barrie's sequel to *Sentimental Tommy* is begun. As every one knows now, the title is not *Celebrated Tommy*, but *Tommy and Grisel*, which is a wiser choice. It opens very well. Mr. Barrie,

unlike many of his contemporaries, does not turn out more books than the reading public can keep track of. On the other hand Mr. Barrie is not pressed for money, the royalties of his plays bringing him in, it is said, a vast amount. Governor

Roosevelt's Life of Oliver Cromwell is also begun in the January number. The Coming of the Snow is a most charming article on a winter's day in Canada, the more particular location being New Brunswick. So far as Canadians are concerned it is an agreeable contrast to A Cold Day in Mid Canada, published in the January *Blackwood's*

The cover of the January *St. Nicholas* is a most attractive one: three children sitting on an old-fashioned settle before a fire, a large cat benevolently gazing from the cushioned top above them. The Little Boy and the Elephant is an unusual story, by Gustavus Frankenstein, unusual in character and in attractiveness. The Doubtful Member is a story for girls, by Mary E. Bradley. Elizabethan Boys is an article of considerable historical value and insight, by L. H. Sturdevant.

W. A. Fraser has a short Indian story, entitled The Home-Coming of the Nakannies, in the January number of the *Ladies' Home Journal*. This writer, whose popularity is growing, is reported to be in the habit of dictating his stories. This may not interfere with his popularity, but the writer himself would almost certainly be better satisfied if he worked over his material a little more. To each man his own method, however, and that might interfere with his spontaneity. A selection from the letters of Gail Hamilton to the poet Whittier is published in this number. The "Mother of the Stars" seems rather an odd name to give to an astronomer, even such a celebrated one as Miss Maria Mitchell.

The first story in *The Youth's Companion* for the issue of January 18th is written by Edith Wharton, the lady whose book of short stories has recently been so favorably received. April Showers is the name

of the story in *The Youth's Companion*, it deals with the ambitions of a young woman who wanted to write, and who, strange to say in a story, did not succeed, and gave up her ambitions. Among the many valuable departments in *The Youth's Companion* Current Events should be mentioned for its preciseness and almost invariable fairness of tone.

In the *Sunday School Times* for January 20th there is published an interesting article by M. N. R. Stomont on Boys and Girls in South-east Africa. This will be read with particular attention under present circumstances. Another article of immediate interest is What Moody Owed to his Pastor, by Rev. Carlos T. Chester.

The Delights of Trying to Be Somebody Else is an article on theatrical entertainments in English country houses, written by Edgar Saltus, and profusely illustrated by photographs of well-known personages, made up to go on the private stage. Home Care of the Sick is a valuable article on nursing, by J. S. Fulton. The English writer, A. J. Quiller-Couch, whose story, The Ship of Stars, has lately been the subject of much favorable comment, contributes a short story entitled The Lady of the Ship. Another entertaining short story is called Motorman Cupid; it is written by Melville Chater.

The following publications have been received:

W. C. Heath & Co., Boston: Pope's The Iliad of Homer, Books 1, 6, 22 and 24, edited by Paul Shorey; Publishing a Book, by Charles Welsh; Alice and Tom, by Kate Louise Brown

Longmans, Green & Co., London and New York: Plane Trigonometry, by Daniel A. Murray.

George Bell & Sons, London: The Age of Johnson (1748-1798), by Thomas Seccombe.

SCIENCE.

EDITOR, J. B. TURNER, B.A.

I.—BOTANY IN THE COURSE FOR
TEACHER'S CERTIFICATES.

The regulations of the Department of Education that have been in operation during the last two years, made the study of botany compulsory on those students who desired to write on the Form I. Examination, and left it an optional subject in Forms III. and IV. The new regulations leave it in doubt whether there will be a compulsory examination in Part I. of junior leaving students or not, and allow the subject as an optional one in Form IV. only; by regulation, however, a study of the subject will be required in Form I.

It need not be pointed out here the importance of a knowledge of botany, to the teachers especially of our rural schools. The introduction of the study of agriculture into the Public Schools makes it a necessity that the teachers of these schools should have a more extended knowledge of so closely allied a subject as botany than can be obtained during the first year in our High Schools and Collegiate Institutes. The fact that botany is an optional subject in Form IV. need scarcely be considered, as a very large number of the teachers mention-

ed do not reach that form where they might prosecute the study. Even to those who do pass up to Form IV. there is a great difficulty to be overcome on account of the time that has elapsed between the course of Form I. and that of Form IV.

The course in Form I. is taken up by students at a very early age, is of only a year's duration, and of that year only a part is available for effective work in botany, so that anything like an extended knowledge of even the flora of the particular locality is almost impossible, to say nothing of a working knowledge of botany generally. When the student has passed into the more advanced forms of the High Schools and Collegiate Institutes, he is two years, at least, in reaching Form IV. where he can again undertake the work of this subject, and by that time he will find that much that he had learned, and learned well, has become hazy and indefinite to him, requiring that some of the work at least be done over again.

There are, doubtless, difficulties in the way of making the curriculum more satisfactory in this respect than it is, but it is hoped that these difficulties are not insuperable.

ANNUAL EXAMINATIONS, 1899.

FORM III., CHEMISTRY.

1. Three pieces of wire, one of platinum, one of magnesium and one of iron, are held in the flame of a gas or spirit lamp. Describe and explain the results in the three cases.

2. Describe experiments (one in each case) to prove that chemical change may be caused by (a) intimate mixture, (b) light, (c) electricity.

3. Illustrate what is meant by (a) decomposition by displacement, (b) a haloid salt, (c) reducing flame, (d) an anhydride.

4. Describe and explain the results when dry sal ammoniac (ammonium chloride) is heated in a test tube (a) alone, (b) with dry quicklime, (c) with sulphuric acid.

5. Describe in detail an experiment to illustrate the law of definite proportions.

6. Three glass cylinders covered with glass plates and said to contain hydrogen sulphide, nitric oxide and carbonic oxide, are set before you. How would you proceed to distinguish the gases?

7. What weight of sulphur will it be necessary to burn in order to produce sufficient gas to neutralize 10 grammes of sodic hydrate, and what substance results? (At. wt. of sodium = 23.)

8. Two litres of acetylene gas are burned in a room. What will be the volume of gas produced, taken at the temperature of the room?

FORM IV.

1. The changes involved when two substances react on each other may vary according to conditions. Give two examples.

2. Explain how sodium carbonate may be made from sodium chloride.

3. Oxide of aluminium has both acid and basic properties. Explain

this statement, using examples.

4. Give an account of the halogen elements, showing in what respects bromine is intermediate in its chemical properties between chlorine and iodine.

5. State and explain what occurs when:—

(a) Sulphuric acid is added to potassic bromide and the mixture gently heated.

(b) A solution of ferrous sulphate is added to a mixture of dilute sulphuric acid and permanganate of potash.

(c) Hydric sulphide gas is passed into a ferric solution, acidified with hydrochloric acid.

6. When .5 grammes of a certain metal are dissolved in dilute sulphuric acid 465 c.c. of hydrogen at 0°C. and 760 m.m. barometric pressure are liberated. A determination of its specific heat gives .24. Find the atomic weight of the metal

7. Determine the base and acid in the salt submitted.

ALGEBRA.—FORM III.

(Continued from page 355 1899.)

5. Reduce to its simplest form $\left\{ -\frac{1}{2}\sqrt{a} + \sqrt{-\frac{3}{4}a^3\sqrt{a^2}} \right\}^3$

Write it $-\frac{1}{2}a^{\frac{1}{2}} + (-\frac{3}{4}a^{\frac{3}{2}})^{\frac{1}{2}}$ and cube, and we get

$$-\frac{1}{8}a + \frac{3}{4}a^{\frac{5}{2}}(-\frac{3}{4}a^{\frac{3}{2}})^{\frac{1}{2}} - \frac{3}{8}a^{\frac{1}{2}}(-\frac{3}{4}a^{\frac{3}{2}})^{\frac{3}{2}} - \frac{3}{4}a^{\frac{3}{2}}(-\frac{3}{4}a^{\frac{3}{2}})^{\frac{3}{2}}$$

$$\text{Which is } = -\frac{1}{8}a + \frac{9}{8}a = a.$$

6. Find x and y in

$$(1) x^2 + 5xy = 14, \text{ and } y^2 + 6xy = 13.$$

As the equations are homogeneous in the variable parts, a good solution is to put $y = vx$, and divide one equation by the other.

$$\text{This gives } \frac{1+5v}{v^2+6v} = \frac{14}{13}$$

Whence we find $v = \frac{1}{2}$ or $-\frac{13}{2}$.

$$\text{Then from the first } x^2 = \frac{14}{1+5v} = 4 \text{ or } -\frac{49}{29}$$

$$\therefore x = \pm 2, \text{ and } \pm \sqrt{-\frac{49}{29}}$$

$$\text{and thence } y = vx = \pm 1 \text{ and } \pm \sqrt{-\frac{149}{29}}$$

And the corresponding values of x and y are—

$$x = +2, -2 + \sqrt{-\frac{49}{29}} - \sqrt{-\frac{49}{29}}$$

$$y = +1, -1 - \sqrt{-\frac{149}{29}} + \sqrt{-\frac{149}{29}}$$

$$(b) \left(\frac{3x}{x+y}\right)^{\frac{1}{2}} + \left(\frac{x+y}{3x}\right)^{\frac{1}{2}} = 2; \quad xy - (x+y) = 54.$$

Put $y=vx$. Then the first equation gives $\left(\frac{3}{1+v}\right)^{\frac{1}{2}} + \left(\frac{1+v}{3}\right)^{\frac{1}{2}} = 2$; and squaring and reducing $(1+v)^2 - 6(1+v) + 9 = 0$; and $1+v=3$, or $v=2$.

Then from second equation,

$$2x^2 - 3x = 54 \\ \text{Whence } x=6 \text{ or } -4\frac{1}{2} \\ \text{and } y=12 \text{ or } -9.$$

7. Given that the roots of the equation $ax^2 + bx + c = 0$ are p and q , and those of $a, x^2 + b, x + c = 0$ are p' and q' ; also that $\frac{p}{q} = \frac{p'}{q'}$, prove that $\frac{a, c}{ac} = \left(\frac{b}{b'}\right)^2$.

Let $q=mp$ Then $q'=mp'$.

But $p+q=(1+m)p = -\frac{b}{a}$; and $p'+q'=(1+m)p' = -\frac{b'}{a'}$.

Also $pq = mp^2 = +\frac{c}{a}$; and $p'q' = mp'^2 = +\frac{c'}{a'}$, from the theory of the quadratic.

From these four equations we must eliminate p, p' , and m .

Now by division we get the two relations—

$$\frac{p}{p'} = \frac{b}{a} \div \frac{b'}{a'} = \frac{a, b}{a' b'}; \quad \frac{p^2}{p'^2} = \frac{c}{a} \div \frac{c'}{a'} = \frac{ca}{c'a'} \\ \therefore \frac{a,^2 b^2}{a^2 b'^2} = \frac{ca}{c'a'}; \quad \text{whence } \frac{a, c,}{ac} = \frac{b,^2}{b'^2}; \quad \text{q.e.d.,}$$

8 Two vehicles start at the same moment from two towns, A and B respectively, and travel towards each other. They meet after $10\frac{1}{2}$ hours, one taking $\frac{1}{2}$ hour more to the mile than the other. If the distance between the towns is 105 miles, what are the rates at which the vehicles travel?

Let x be the time it takes the first carriage to go a mile. Then $x + \frac{1}{2}$ is the time in hours taken by the second carriage in going a mile.

$\therefore \frac{1}{x}$ is the rate of the first carriage, and $\frac{1}{x + \frac{1}{2}}$ is the rate of the second.

$$\text{And } \left(\frac{1}{x} + \frac{1}{x + \frac{1}{2}}\right) 10\frac{1}{2} = 105.$$

From which we get $x = \frac{1}{8}$.

\therefore The first carriage goes 6 miles an hour,

And the second goes 4 miles an hour.

9. If a carriage wheel $16\frac{1}{2}$ feet in circumference took one second more to revolve, the rate of the carriage would be $1\frac{1}{3}$ miles less. At what rate is the carriage travelling?

Let the carriage wheel revolve once in t secs. Then the carriage goes $\frac{16\frac{1}{2}}{t}$ feet per sec. or $\frac{3600}{5280} \cdot \frac{16\frac{1}{2}}{t}$ miles per hour. Similarly under the second supposition the

carriage goes $\frac{3600}{5280} \cdot \frac{16\frac{1}{2}}{t+1}$ miles per hour.

$$\text{And } \frac{3600 \times 16\frac{1}{2}}{5280} \left\{ \frac{1}{t} + \frac{1}{t+1} \right\} = 1\frac{1}{3}.$$

Whence we readily find $t^2 + t = 6$; and $t = 2$ or -3 . Then the velocity of the carriage is $\frac{3600}{5280} \cdot \frac{16\frac{1}{2}}{2}$ m. per hour, or $5\frac{1}{2}$ miles per hour.

The second value of t , (-3), has also a meaning, but I doubt if many of the candidates could make much out of it.

Upon going over this paper I am not astonished that it created great dissatisfaction in the schools, and that the committee found itself constrained to pass men who made 20 or 25% on it; for a considerable portion of it is beyond the state of efficiency possessed by the average Junior Leaving candidate.