

QUEEN'S
QUARTERLY.

VOL. III.

JULY, 1895-APRIL, 1896.

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QUEEN'S QUARTERLY.

VOL. III.

JULY, 1895.

NO. I.

All articles intended for publication, books for review, exchanges—and all correspondence relating thereto—should be addressed to the editors, Box A, Queen's University, Kingston, Ontario.

SOME PRACTICAL ASPECTS OF OUR PRESBY- TERIAN POLITY.

ENDEAVOURING to make all due allowance for the personal equation which must always be reckoned upon in questions of this character, I still maintain that the Presbyterian Church in Canada to-day is the broadest in its sympathies, the most free in its administration, and the nearest in its spirit to the basis of Christian Union of all the denominations in this Dominion, and is becoming still more so every year. I am not saying that its Confession and Catechism can be the doctrinal utterances of a Catholic Church, or that other churches are destitute of the excellences claimed for the Presbyterian, but that take it for all in all it stands to the very front in the development of true catholicity and of evangelical freedom. Take for example its conception of a church, a Christian Church; it stands upon no fancied apostolic stilts saying, "The temple of the Lord, the temple of the Lord are we"; nor with imperious hand does it warn from its communion those who do not accept its view of the form of an ordinance, but declares "particular churches," or as we now would say in common parlance, the denominations, to be members of the one visible or Catholic Church. Moreover, it as plainly disclaims infallibility for itself as it denies it to others, avowing that "the purest churches under heaven are subject to mixture and error"; therefore it confessedly stands open to any consideration that can reasonably be presented in support of a needed change. Its membership is open to any who intelligently

"profess the true religion, together with their children"; even as the Pentecostal promise was declared "to be to you and to your children and all that are afar off, even as many as the Lord our God shall call unto Him." Where will you find a broader platform consistent with an evangelical faith?

This rather long utterance, ending with the query, was made to an avowed adherent of the Presbyterian Church who had been complaining of the narrowness of the faith of his fathers. His reply was ready as soon as his interlocutor was silent: "I cannot discuss doctrine or polity with you, I am a busy man, but look at the Macdonnell trouble which dragged its slow length along for two or three years, and at the late Campbell case." "Gladly with a non-ecclesiastical eye will I look at those cases in confirmation of my statement in its practical bearing", was my response, and the substance of my somewhat lengthy reply will now be given as presenting one of several aspects from which our mode of administration, points of order, and apparently tedious processes are worthy in the main of being retained and of being deservedly respected.

Let it be granted that the earlier case dragged its slow length along for two or three years; the union between the different branches of the Presbyterian Church in Canada was the result of patient endeavour and earnest prayer extending over many years and covering several honoured graves; to conserve that union intact, and to cement together diverse sections in an harmonious whole which to-day shows no line of cleavage, was worth waiting through the dragging along of the slow length; no one conversant with all the circumstances, and recognising the mutual respect and confidence now prevailing, regrets a single step in the "tedious" process, or would resent the rising to a single point of order in a course which has led to such a happy issue. But was it necessary to travel the long way round to arrive safely home? We shall essay an answer.

Let us tarry a moment to consider what true breadth of sympathy means. It is possible to advocate temperance in a most intemperate manner; it is equally possible to be most illiberally liberal. However excusable the position was that would exclude peremptorily instrumental music from public worship, we pretty

generally admit that the prohibition manifested great narrowness of vision ; it would be equally narrow on the part of those who claimed liberty in the matter to exclude, or seek to coerce, those who, conceding liberty, were themselves unwilling to use that liberty. The terms "narrow" and "broad" are used in no offensive sense ; they conveniently, if not exactly, indicate in general well understood relations. If the narrow school works harmoniously with the broad, it would be extremely narrow on the part of the broad school to deny to the narrow all the rights and privileges and sympathies claimed for themselves. Remembering this, look at the second and more recent case, as manifesting with the earlier one the happy working of a polity which compels time to elapse ere the final issue is reached ; which in short affords opportunity for excitement to cool and judgment calmly to assert its sway without repressing the free utterance of honest convictions and the respectful consideration of opposite views.

What were the facts ? A respected and loved teacher of undoubted character and of high attainments, impressed with the consciousness that the theological language of long past times did not express the truth when interpreted as the language of today, took occasion in one of a course of Sunday lectures in connection with one of our Universities to correct some—as he conceived—popular misapprehensions of the character of God ; to make in short our theological conception centre around the Christ, and to read through His manifestations, all the revelations made concerning the Father, and man's relation unto Him. The truths our friend sought to illustrate were not new. The lecturer would in his modesty be the last to claim novelty for them, but they were presented in a form peculiarly the speaker's own, with the expressed intention of awakening attention, in which endeavour they were eminently successful. The language was startling, in the judgement of many who sympathized with the views presented, ill chosen—in fact the speaker himself when challenged did not wholly justify the method of presentation. The lecture was reported, and in due course published honestly as delivered ; in the meantime a paper, professedly published in the interests of the Church, attacked with asperity, and we venture to add with unseemly haste, the position taken, or sup-

posed to be taken, in the reported utterances. The representative paper of a——(we had almost written "rival", we correct and write) sister denomination with ill-timed zeal prejudged the case, and in consequence, many with strongly conservative instincts were alarmed. The heresy tocsin had been rung, and the marshalling of forces began.

Under the excitement of imminent danger, real or supposed, it is not uncommon for deeply interested parties to "lose their heads." Contrast the calm and wise bravery of a well trained fire brigade with the efforts of a deeply sympathetic and excited crowd at a fire. We have seen crockery thrown out of a window while a mattress was being carefully carried down the stairs. We have known cases where the local church was supreme and all outside interference indignantly resented, under the pressure of present excitement determine on a course which became matter of general regret and of permanent injury, not only to the local, but to the general cause. Had the case in view been adjudicated on by popular vote at this immature stage when some sections of the press were unwisely sounding the alarm, to all human foresight division, bitterness, alienations, and persistent contentions had arisen; but the slow process of Church courts, and the recognition of rights both individual and presbyterial, have accustomed the loyal Presbyterian to a practical application of the truth "He that believeth shall not make haste." Truth and right have time upon their side, and have no occasion to fail either by undue haste or with unwise delay. Naturally the Church was aroused, and the matter brought at the earliest opportunity before the Assembly.

By an exercise of supreme power the General Assembly might possibly have passed judgement at once, though we venture to think that only by a stretch of constitutional power could such a course have been taken. That extreme course was not taken, and the utility of the training constitutional methods establish is seen in the wisdom of the deliverance which was un-animously adopted that "the General Assembly deems it proper to allow the Presbytery (of Montreal) to proceed *in the constitutional way.*" No doubt the calm judicial character of the esteemed mover of that motion had much to do with the wisdom of the action, but Principal Cayen would be the readiest to recognize

the powerful influence of training in the courts of the Church in forming that character; nor would he be second to any in urging respect for those forms which are, we rejoice to believe, not the mere traditions of the fathers, but the expression of that conviction which, recognizing the fallibility of all things human, is content to appear even at times in a ludicrous aspect, and to bear with present inconveniences, rather than risk the hasty perpetration of a wrong, or the unwise introduction of a cause of stumbling. There is no need to pursue the case further; the spirit and action of the Assembly permeated the entire Church. To repeat the words of an esteemed friend in a conversation upon the subject, "How creditable it is to the Church the amicable settlement and the unbroken confidence accompanying!—how advantageous to have constitutional modes of procedure which necessitate delays and allow time for passions and prejudices to cool. It is impossible to be too thankful for the result, and its contrast with the continued agitation in the sister Church of the United States is remarkable."

My friend recognized as something new to him, the rights of what he was pleased to term "narrow men", confessed that comprehension had a fresh meaning for him, and introduced some more strictly doctrinal questions regarding the true spirit of our Confession to the answering of which I now address myself. Meantime let me urge upon those who are under the influence of that youthful vigour without which a new country would soon fall back into its earlier chaos, that the harmony of the spheres is perpetuated by a centripetal as well as by a centrifugal force; in their mutual counterpoise

"The sun makes music as of old
Among the rival spheres of heaven,"

and a loyal submission to ordained regulations which in themselves provide for needful changes is one of the conditions of healthy progress and solid growth.

Two preliminary statements must here be permitted. I do not plead for a retention of the Confession as the exponent of the doctrine of the Presbyterian Church; as one cannot find in a foreign tongue the music of one's own, so one age with its phil-

osophies and its controversies can never rightly express the living faith of another. I believe most firmly that a simpler expression of our Evangelical faith than that of the Westminster standards is very much needed, and must eventually be given. I believe that the prolonged retention of those standards as tests or contracts, is not only unwise, but hurtful to frank and open-hearted truthfulness. We have already driven a coach and six through the six days of creation, the limited atonement theory, the marriage degrees of prohibited affinity; and we freely allow persistent pre-millennial teaching to the manifest violation of their eschatology. I am not therefore entering a side plea against either revision or displacement, but drawing attention to things as they are. My next preliminary remark is this; the Confession has been so thoroughly taken as the corypheus of distinctive Calvinistic theology, that its position on other great questions of Evangelical Christianity and of the nature of the Christian Church, has been practically lost sight of; nevertheless we venture to assert, that in these latter relations rather than in the former its real spirit is to be found, and on that line we purpose to follow its teachings in maintaining our thesis that for true Evangelical liberty and Catholic sympathy, the Presbyterian Church in Canada, while maintaining these standards, is second to none in our Dominion; and if for purposes of illustration we should be drawn into some comparisons with the declaration of other portions of the visible Church, those comparisons will be made, we trust, in the true spirit of Catholic fraternity and not in that of ecclesiastical or of dogmatic antagonism.

The words of John Robinson to the sturdy Independents as they embarked on the Mayflower for the wilds of New England, have been often quoted as those of a broad-souled, far-seeing Christian leader, and as in strict accord with the true spirit of Evangelical development:—"I am very confident the Lord hath more light and truth yet to break forth out of his Holy word. It is not possible that the Christian world should come so lately out of such thick anti-Christian darkness, and the full perfection of knowledge break forth at once." The Confession of Faith expressly states that "all decrees of councils, opinions of ancient writers, doctrines of men, and private spirits, are to be examined"

by no authority other than "the Holy Spirit speaking in the Scriptures," and as expressly disclaims finality or infallibility by declaring that "all synods or councils since the apostles' times, whether general or particular, may err, and many have erred; therefore they are not to be made the rule of faith or practice, but to be used as an help in both." This position is deserving of careful notice, expressing as it does, in a confessional form, the same sentiments as those noted of the Amsterdam refugee. "The Word of God, which is contained in the Scriptures of the Old and New Testament" is the recognized standard, but it is not asserted by the Confession that in its statements the Word has been infallibly interpreted; moreover to require of any one "an implicit faith" or "an absolute and blind obedience, is to destroy liberty of conscience, and reason also." (Conf. ch. xx 2.) In brief, the Westminster divines have attempted to formulate a scriptural theology; they formally confess in so doing their liability with others to err; and they positively state that to believe or to obey doctrines or commandments of men which have not the authority of the Word of God "is to betray that liberty of conscience; for the which they strenuously contended." In holding to the Confession of Faith, the Presbyterian Church holds to its right to change the same in accordance with its one supreme standard, the Scriptures; and denounces the right to coerce or to bind any conscience, save as it has behind it, the undoubted declaration of the will of God. In our present confessedly imperfect state, we can conceive of no greater Christian liberty, and they who in the Presbyterian Church would abridge the same, do violence to the spirit of the divines whose Confession they adopt, in other words are not true to Presbyterian polity.

And at this point we may be permitted a word or two on the Calvinism of the Westminster Divines. We hold it to be a monstrous anachronism in the development of the Christian conscience to say that while God is bound to be just, He is not bound to be generous: or that love is an attribute which, like omnipotence, God may exercise or not exercise, as He will. God cannot deny Himself, and He is Love; and though the keen argumentative style of the Pauline writings lend themselves more readily than the Johannine to a forensic system of theology,

yet Paul himself in the very height of his passionate reasoning exults in the assurance that nothing can separate from the love of God which is in Christ Jesus. That the creeds of what may be called the creed-making epoch of the Christian Church, rested their systems rather upon the righteousness than upon the love of God, can readily be understood when we remember the circumstances which called them forth. Religion had degenerated to a mere form, truth became a mere traffic, lies strutted about in the garb of sanctity, and the Church was but a shelter for all that is vile and debasing in human society. The true heart sighed for righteousness, and just indignation demanded judgement. When the foe is on your hearthstone, words of endearment are out of place, and the hand is not to bless but to smite. The God of justice and of judgement was He for whose strong arm men prayed; and from such experiences the theology which rested upon supreme will and infinite justice was forged out. Let us not misjudge its seeming harshness; the sternest faith and strongest hope rested therein. We best do homage to those men into whose rich heritage we have been born, not by slavishly wearing their armour, but by using the opportunities and instruments they have so nobly bequeathed to us in pressing on into the more glorious liberty of the children of that God whose new best name is Love. We do the Calvinistic theology itself an injustice if we rest satisfied with anything that is past, resisting or neglecting "the sanctifying Spirit of Christ" by which "the saints grow in grace, perfecting holiness in the fear of God."

In defining the Church the Confession shows a most marked catholicity. That all that have been, are, or shall be gathered into one, under Christ the head, constitute the Church, the Bride, the Lamb's wife, will be disputed by none; not even by the most bitter sectary; nevertheless the positing of that principle is in itself a manifestation of broad sympathy; nor do we judge more credit is given to the spirit of the Westminster divines than it deserves by paralleling their definition with Faber's lines:—

"For the love of God is broader than the measure of man's mind,
And the heart of the Eternal is most wonderfully kind."

The succeeding sections of Chap. xxv. make more manifest the unsectarian spirit. The visible Church "consists of all those throughout the world that profess the true, (*i.e.* the Christian) religion, together with their children"; and though the Pope of Rome, by a questionable exegesis, is declared to be "that anti-christ, that man of sin, and son of perdition," the Church of which he is the acknowledged head, is not unchurched, for this character is ascribed to him because he "exalteth himself in the Church against Christ." When it is remembered that the Reformation struggle was not yet over, that many of its graves were green, and still men walked about with their lives in their hands, the magnanimity of this recognition will be more manifest. The Church of Rome might be degenerate, but it was a degenerate Church nevertheless, needing reformation, but not re-establishment; it was still part of the Church, visible and Catholic. Of this visible and universal Church "particular churches", or as we would now say "denominations," are members. There is not only an absence of the assumption that the Church which adopts the Confession is the Church *par excellence*, but also the definite statement, that all communities which claim to be churches are more or less purely such "as the doctrine of the gospel is taught and embraced"; in other words, the Church is to be judged by its fruits, and by that standard, the Presbyterian Church confessedly stands or falls.

The nineteenth and twentieth articles of the Anglican Church are equally catholic in their tone, and simpler in their expressions, but—as it appears to us—the "Constitutions and Canons ecclesiastical," occupy a position that largely vitiates that catholicity. We have no desire to press invidious comparisons, and therefore simply draw attention to the fact that interchange of pulpits with ministers of other than episcopal communions violates those canons. In accepting twenty-five of the thirty-nine articles as part of its doctrinal standards, the Methodist Church in Canada adopts, without the "Canons Ecclesiastical", the truly catholic definition of the Church, and thus stands upon a broad basis; we venture to think, however, that by making itself professedly in its discipline a total abstinence society, and otherwise defining where Scripture gives liberty, the fellowship limits are unduly narrowed if the general rules are to be maintained. At all events,

the position is not as carefully guarded as in the Presbyterian Confession that conscience is not to be bound, save as the Word of God most manifestly declares.

The "Hand-Book of Congregationalism" prepared at the request of the Congregational Union of Ontario and Quebec, so thoroughly exalts the local church as to practically deny the larger fellowship, quoting as it does with approval William Bradshaw's dictum, that the name of a "true visible church of Christ, is improperly attributed to any other convocations, synods, societies, combinations, or assemblies whatsoever." By such a position the right which is claimed for two or three assembling together is denied to a larger number that may choose to associate when not assembling in one place. The close communion of our Baptist brethren is most assuredly the very antipodes of catholicity, and partakes in my view of the nature of an ecclesiastical crime.

Briefly to capitulate; the Confession adopted as the subordinate standard of doctrine by the Presbyterian Church in Canada is in its intent most truly progressive and catholic; disclaiming infallibility, it is ever open to change or to modification according as greater light breaks forth either upon or from its one supreme standard, the Word of God as contained in the Scriptures. No wider field or freer hand can reasonably be desired within Christian lines. Its attitude towards other denominations is avowedly friendly—even more, it is fraternal; repelling exclusive claims on the part of others, it makes none for itself, only professing its place as part of the great Church of Christ visible upon earth; to be exclusive is to be unpresbyterian. It is to be hoped that, true to its trust, the Church in Canada will never swerve from its path of true catholicity and evangelical liberty; never degenerate into a sect, forge fetters for consciences that strive to be free, or check the honest investigator that seeks further light; but with an ever widening sympathy stand witnessing for that light, the true light, even the light which lighteth every man coming into the world.

JOHN BURTON.

SOME OBSERVATIONS ON THE GREAT NORTH-WEST.

II.—SOCIAL AND ECONOMIC CONDITION.

SINCE the appearance of my first article on the North-West, in the January number of the *QUARTERLY*, I have been mildly remonstrated with for having devoted so much criticism to the extravagant statements of an immigration pamphlet which is now some years old, while passing by with much lighter reference the most recent issues of the Department of the Interior. Had I been making a special study of the Government's immigration literature this remonstrance would have had considerable force. But I was interested in the literature mainly as one of the causes explaining the present condition of the country and the character of the settlers as well as the prevalent ideas with regard to the West. I therefore selected for special observation such immigrant's guides as I found in the possession of the settlers or to which they most commonly referred. The literature which is now being circulated has not yet borne fruit; it still remains to be tested. However, as I had scored the Government somewhat for what it had already accomplished in that country, it is only fitting that I should tell whether I consider it to have made any changes for the better in its latest immigration pamphlets. Having solicited from the Department of the Interior and been generously supplied with what I take to be a pretty complete collection of the latest and most approved patterns of immigrant literature,—a collection which I confess is much larger than I was at all aware of,—I feel that if my judgment should be wrong it is not for lack of data. One or two of these pamphlets I had read before leaving for the West, the others I have since read with great interest. Taking them one with another the quality of the contents is rather uneven, and at times contradictory, showing at least an honest desire on the part of the higher officials to tell the tale as it was told to them. On the whole, the tone is much more moderate; the advantages of the country in

the best of the pamphlets, such as the "Official Handbook of Information relating to the Dominion of Canada" 1894, are but slightly over-stated, though the information is still misleading owing to the ignoring of the drawbacks. The photo-engravings and other illustrations in many of the pamphlets are of the same nature, not untrue as to the places represented but misleading as giving only the choicest bits.

There is a great difference, as many of us know, between the impression one gets of a country school when one drops in, in a casual way, on an ordinary school day, and the impression one gets of the same school when present on the official examination day at the close of the term. There is considerable difference, too, between the potatoes, turnips, pumpkins, fruit, grain, etc., on the farms of a given county and the specimens which are on exhibition at the county agricultural show. The well-clad children, the perfect lessons recited, the monster pumpkins and the tall corn stalks are all undoubted, facts and therefore much superior as evidences of the character of the country and its people to mere boastful talk about what the land and its people can do, but they are none the less misleading when taken to represent the average character of education and agriculture. Altogether I should pronounce these latest issues of the Department of the Interior a fairly good record of the examination day and big pumpkin phase of the country. One has no difficulty in recognizing that the evidence presented is all on the side of the best that can be said for the country. *Nil nisi bonum* is the standard to be respected in giving testimony. "But," I fancy some asking in indignant surprise, "is it reasonable to expect the Government, in its efforts to induce emigrants to come to this country, to dwell on its drawbacks; does any merchant in advertising his wares tell of their defects as well as of their good qualities?" Very unreasonable, no doubt, once it is recognized that such advertising is necessary. But this touches the centre of the whole social aspect of the question. Why should a country like ours be under the necessity of advertising itself in this way, and begging for population? When a man is under the necessity of advertising for a wife, or a woman for a husband, is there anything which throws more doubt on the accompanying statement of good qua-

lities than the very fact of advertising them? Moreover it is next to impossible to conceive that the more refined and elevating relations between husband and wife can be fostered under a union brought about in this way. Still, the common every-day advantages of division of labour and mutual assistance in the lower spheres may be secured, and one cannot imagine that any loftier objects were ever sought. This I take to be a fair illustration of the loss of dignity and self-respect, the disregard of all the loftier elements of national achievement and of all that is noble and refining in patriotic sentiment which must accompany the holding of one's country and citizenship so cheap and common as to advertise them in this eager and commercial fashion. One has only to read the statements of the Government and the criticism of the Opposition to recognize that almost none of the loftier ideas of national development and patriotic citizenship enters into this craving for population, but simply ideas of commercial and speculative advantage. We cannot excuse this on the ground that the economic basis of the state is the first thing to be attended to and, that secured, the rest will all come right in time. Biological science and human history alike tell us that unless we begin with a good sample of a race of high social capacity no great civilization can be expected. Nowhere in the realm of living things do men gather grapes off thorns or figs off thistles. A primitive people may, in the course of time, develop a high civilization if it has the germ of great things in it, but the retrograde specimens of a developed people never amount to anything. Contrast the quality of the New England element in the American Republic with the quality of the Poor Whites of the Southern States. The New England colonists did not arrive on this continent in the train of immigrant agents; neither did they come here merely on economic grounds and trusting to luck for any higher social development. The first settlers came with a high social and spiritual purpose, although it was a little rough and uncouth in some of its forms, and those who followed them came either with the same purpose or impelled by their own enterprise. The ancestors of the Poor Whites to the south and the stagnant Acadians to the north were brought over on our thoroughly enlightened modern basis of increasing the population and developing the natural resources of the country. What is the result two centuries or more

afterwards? The descendants of the New England colonists and of those who followed them in the same independent manner have been the social and intellectual salt of the continent ever since, while the Acadian still stagnates in Louisiana and elsewhere, and the Poor White, though from the same country and of the same race as the New Englander, is the Poor White still and likely to remain so forever if left to himself. Not to go beyond our own Ontario, if we contrast such centres of thrift as the Perth or Waterloo settlements with some others that could be named which were established at much the same time, we may see what an overwhelming importance attaches to the social and intellectual quality of the colonists who lay the foundations of a new country.

How can we hold our country so cheap as we do, and make our citizenship a thing of no account, affect to despise the social and political shortcomings of other nations and yet rejoice to enrol their failures on our franchise lists, and then expect to foster, either among themselves or our new fellow-citizens, lofty ideas of patriotism? It is impossible. That strong, modest, self-respecting patriotism, the lack of which so many of our best citizens deplore, cannot be ours together with such a cheap estimate of our country and apparently no rational estimate at all of our social and political future.

Fortunately for the social future of the country nature is more careful of it than we ourselves. By the vigour of the North-West winter the country is preserved from the overflow of Southern Europe, while the special need for brain rather than mere muscle in order to manage the fickle conditions of the West, is likely to bankrupt most of those, whether with money or without it, who have not sufficient practical intelligence to meet the requirements, and, as the North-West Mounted Police cannot absorb all the unfortunates, the rest will have to leave the country or gradually take warning not to come. The comparative failure of the Government immigration policy is indeed one of the most hopeful omens for the future of the country's civilization. This failure is especially fortunate in view of the peculiar social advantages which the Government considers this country has to offer to such Englishmen in particular as it wishes to attract.

In the official hand book to the Dominion, already referred to, as well as in other recent issues, these are the social advantages offered :—(1) No nobility. (2) Almost every farmer owns his land and may do as he pleases—a freedom unknown in older countries. (3) Local option in the liquor traffic. (4) Freedom to marry one's deceased wife's sister. (5) Religious liberty, and free and unsectarian education. (6) Paid members of parliament. (7) No pauperism; only orphans, the helpless, and the aged to be cared for. As this represents a condition not yet realized, especially as regards unsectarian education and pauperism, we may suppose that it expresses the Government ideal of what a perfect social condition should be and thus justifies the closing sentence, "Altogether, a Canadian is able to look with pride and satisfaction upon the free and independent position which he enjoys." This seven-point charter of our social liberties is no doubt well calculated to inspire with enthusiastic longings a certain element in the population of Great Britain, but it seems to me that we have a great deal too much of that element in our population already, and anything is welcome which will keep the rest out till we get the national ideal raised a few fathoms above that level of patriotic pride and satisfaction. Not that there is anything specially wrong with most of these points in themselves, but, what a selection to make as constituting a national ideal, and, above all, as showing our superiority to the mother country!

Unfortunately there is little reason for holding merely the present administration at Ottawa as peculiarly responsible for such a philistine ideal. It is simply an indication of the unfortunate influence which certain American ideas have had upon our people, and which has only gone a step further with us in finding official expression through the Government, which again might be taken to justify Sir Charles Tupper's customary boast that we are more democratic than Americans.

However, such being the social advantages offered to the immigrants who may do us the honour to occupy our waste lands, we need not be surprised to find that they often put a very liberal construction on the freedom to do as they please, more particularly in matters connected with the Government and its property. A feature that strikes one everywhere in the West is the com-

paratively slight interest shown by the settlers in the country as a whole, and especially the sort of lofty contempt for Canadians and things Canadian exhibited by many of the English immigrants. The same thing, I observe, is remarked by travellers in Australia. These persons would seem to have taken the Government at its word, and consider that they have laid the country under obligations by condescending to come and live in it. Even the Crofters in Manitoba, I am told, express much the same sort of feeling and complain because more has not been done for them. The better class of British settlers, however, the shrewd, intelligent, self-reliant immigrants who came to the country on their own account, have neither the excuse nor the desire to hold the Government responsible for their success, and, together with similar settlers from Canada or the United States they form the intellectual and social backbone of the country. Still, the tendency to regard the Dominion Government as a kind of donkey engine for assisting the settlers in all sorts of ways, is very strong, and the organizing of various influences to operate upon the Government for special purposes expresses the chief political activity of the Territories. In a typical town in the North-West I observed that the streets had never been altered from their condition as primitive prairie. There were no side-walks, except on part of the main street. There was no water-works, no sewage system, no street drains, while the scavenging seemed to depend upon the Indians and the wind. There was no fire protection, and the Mounted Police attended to public order. Yet the town had a mayor and council and levied taxes. Discussing civic matters with one of the councillors, I asked what the town council found to occupy its attention, and its revenue. "Well," he replied quite seriously, "its chief business is to keep the claims of the town and district before the Dominion Government."

The great variety of social types in a new country like our North-West makes it impossible, as I have said, to give any single typical description of its social life. Whatever happens to be the dominant element in a locality imparts to it a kind of local flavour; but the general conditions of a new country, as well as its special climatic, physical, and other features, impart to all comers certain common qualities, which may not have belonged

to any of them before coming. Thus the great hospitality of the settlers is a very general feature, as also their mutual helpfulness under ordinary circumstances. Yet, as the isolation of new settlements is conducive to the strongest friendships and mutual assistance between persons of fairly congenial temperaments, so it greatly intensifies dislikes and disputes between uncongenial neighbours. No one who has not experienced what bad neighbours signify under such conditions, can imagine how much depends upon the human element in making pioneer life worth living. Hardly anywhere in older societies could one meet with such a variety and distinction of individual character as in some parts of the West, and this seems to be particularly the case in Alberta. It is there that the "remittance man" and several other peculiar types of Englishman, nowhere known in England itself, are to be found in all their glory. From this element and its recruits from other sections of the population, come those who assume the responsibility of keeping up the 'wild and woolly' reputation of the country. Wildness I found to be composed mainly of bluster and swagger, the chief object of which is to build up a reputation for that daring and fierceness which is supposed to characterize the western desperado. Woolliness again, consists mainly in a studied and exaggerated disregard for the ordinary conventionalities and conveniences of civilized life, a sort of reaction from the usual restraints of society, and an attempt to perfectly realize that freedom to do as one pleases of which we are supposed to be so justly proud. Although the Government assures the timid that "none of the dangers from revolvers and bowie-knives so common in the United States are known here," yet this wildness and woolliness is calculated to strike with awe and admiration the fresh arrivals from Britain who here see for the first time in actual flesh and blood and upon its native heath the famous American desperado of romance. Of course the real desperado, of which there are but few specimens in the country, is seldom if ever a blustering character. Killing is with him a serious matter, is undertaken only on very important occasions, and then with as little fuss as possible. To be sure, there is a good deal of woolliness without wildness at all, and there are all degrees and stages of each, which add not a little to the picturesqueness of some western towns.

Unfortunately the extravagance of many of the English farmers and ranchers of the West has not only brought their own enterprises to destruction, but has had a bad effect upon many of the other settlers and townspeople who have fallen victims either to that undeniable charm of manner which characterizes so many well-reared Englishmen, or to a certain haughty air of superiority which characterizes certain others, not so well reared but possessed perhaps of quite as much money. Government officials among others seem to be peculiarly susceptible to these influences and the country suffers accordingly until they are found out. The costly character of the goods sold in Alberta stores would very much astonish the merchants of much larger towns and cities in eastern Canada. Bankruptcy is the natural consequence of this extravagance, often coupled as it is with intemperance. This, again, has an important bearing upon the economic condition of the country. I was much astonished to find, on my arrival in the West, that the current rate of interest in Alberta was twenty per cent; and yet, notwithstanding such a rate, the money lenders were not particularly fortunate—some had even failed after carrying on a large business for a time. Inquiring into the matter, it did not long remain a mystery. Land is of little or no value as a security, and there is not much else in the way of real estate to fasten on. Security must therefore depend either on a personal basis or on movables, mainly cattle and horses—often found to be too easily moved—and crops which are not at all certain. Of course extravagant or reckless spending means the same in borrowing, and as this fosters dishonesty it is necessary to keep a vigilant and extended watch over one's security, which is an expensive matter. Then the frequent necessity to recover so much as one can out of the remnants of an estate involves considerable loss, so that the money lender with his twenty per cent. rate or over has not an unusual profit in the end. If he obtained a large profit he would very soon have plenty of competition. At the same time the honest settler is practically debarred from borrowing money to assist him in carrying on his work, for it would indeed be a profitable occupation which could return a surplus to the borrower over such a rate of interest. In this way does the social condition of the country re-act upon the economic, and one useless class spoil the whole country for the others. Of

course incapable settlers produce exactly the same effects as extravagant ones, and extravagance and incapacity commonly go together.

Intemperance, so often the bane of new countries, is a serious social and economic evil in the West and flourishes most naturally among the least capable settlers, though, unfortunately, it ruins also many a fine specimen of the race. Astonishment at this can hardly be expressed when one takes into account all the circumstances. There we find a miscellaneous population which has not yet organized any strong and restraining public opinion, and although there is a good deal of social distinction, sometimes of a very exaggerated and grotesque type, yet there is little or no social caste with its powerful restraint. On the whole the Government's assertion of social freedom is pretty well justified, and the individual, whatever his social pretensions, is pretty free to do as he pleases. Add to this the intensely dreary aspect of the prairie during most seasons of the year and the oppressive *ennui* of the lonely life on the plains—in the foothills life is endurable and in some places even very attractive—and one is not so much surprised that the isolated settler, and especially the lonely bachelor, should seek communion with evil spirits and endeavour to obtain from within those varied and interesting episodes of life which are denied to him from without. When, also, he makes a journey to town and meets with companions in similar condition, pent-up sense is let loose and, with the aid of strong drink, life comes to be intense and real once more. Under these circumstances the decline of many a promising young fellow in the West is very rapid and recovery extremely difficult. The gold cure is much in demand, and really seems to have wrought some astonishing transformations.

The work of the missionary in the West is not always a very encouraging one. His ways are not altogether ways of pleasantness nor his paths entirely those of peace. If the churches did not insist on sending to these people for the summer months at least, spiritual comfort and instruction, such as it is, I fear there would be few church services in the West, for the average settler exhibits no great anxiety for spiritual consolation and enlightenment. As it is, the churches do remarkably well for the country, and if, as some maintain, those who have had the greatest spirit-

ual advantages in this life must fare worst in the next in case of declining to benefit by them, then without doubt the unregenerate Indians on the Reserves have but a gloomy outlook for eternity. Possibly, however, their associations with the North-West Mounted Police may help to make things easier for them.

It would be very much to the benefit of the country if the missionary could combine with his religious and moral instruction a certain amount of intellectual stimulation. Not that the better class of settlers are an ignorant or unintellectual lot, quite the reverse, but there is little encouragement to keep up their interest in the things of the mind ; yet if these interests are allowed to stagnate or fade away there is but a poor prospect for the next and following generations. Not every missionary, it is true, would be able to minister in intellectual matters to the better educated settlers, for there are some exceptionally well educated ranchers and farmers in the West, but there is no field in which a missionary of even the humblest attainments would not be able to do valuable work. Intelligence is more essential to success in the West than anywhere else in the country, and I am thoroughly convinced that unless it is fostered and in people in whom it is worth fostering, there is no future for the country worth mentioning.

Closely connected with this is the question as to what it is possible for the people of the North-west to produce profitably. Except in Manitoba, where the matter is still doubtful, it is pretty certain, in the light of present knowledge, that the country cannot be built up on wheat for export ; and if the report of the Freight Rate Commission is to be accepted few possible exports will afford much profit. However, assuming this report to be incorrect, there is still no hope for wheat, except in some temporary spurt like the present. The improvements in marine engines, and the cheap production of steel have made possible the building of lighter, stronger, and swifter vessels, more economic of coal and hence more capacious for cargo, thus making ocean freights on the safe routes far cheaper than land freights. This shipping improvement, together with the building of railroads in certain countries, has placed immense agricultural areas in close connection with the world's grain markets, of which the chief are the British.

While the supplies offered upon the markets have greatly increased during the last few years, the amount consumed has increased but very little. In Great Britain, the chief market, the total amount of home grown wheat, imported wheat and flour consumed each year is declining, being less in 1894 than in 1890 by 628,147 quarters. As a natural consequence the price has rapidly fallen, having dropped from 31s 11d in 1890 to 22s 10d in 1894. These low prices must necessarily continue till a sufficient number of competitors are crowded out of wheat raising to cut down the supply. But, if the chief producers are able or willing to grow and sell grain at such low prices, the supply will not fall off sufficiently to affect the price. Now the great increase is coming from just such countries as are willing to produce at these low rates, namely Russia and Argentina. Though other countries are cutting down their shipments of late years, yet those two countries increase theirs so rapidly as to still overflow the markets and keep prices on the decline. In 1892 Russia and Argentina supplied 11 per cent of Britain's imports of wheat, in 1893 26 per cent, and in 1894 43 per cent. When we remember that the cost of transportation from our North-west to the British market is higher than from the wheat areas of either of these countries, it is quite evident that unless our North-west farmers are content to live a half-civilized life of the narrowest economic kind, they cannot continue to raise wheat from the day they have a surplus to sell. If, then, the Government and the C.P.R. continue to send to the North-west a population capable only of wheat raising, they are simply courting disaster. The lesson to be drawn from the signs of the times, is that Canada must promptly give up the idea of becoming a regular wheat-exporting country, and must either find new uses for its wheat at home, or cease to grow so much of it. Leaving wheat growing to the more undeveloped races, Canada may find a higher destiny for her people in producing those things which require for their production, intelligence rather than muscle, and in producing which there is therefore less tendency to overcrowding. Now the chief reason why the people of Britain do not buy even as much wheat when it is cheap as when it is dear, is that the saving they make on bread enables them to buy other articles of food, especially meat, butter, cheese, fruits, etc., thus varying their diet. These

articles are pretty sure to be in increasing demand for some time to come, and just in proportion as the standard of living rises. Even though there may be no increase in the price, or possibly a small decline, yet the increasing quantities to be taken, give room for expansion, and improved production, while in supplying most of these products, the poorer races of the world cannot compete. Such articles too, suffer less from high freight rates, than the coarser products of the land.

The question, then, comes down to this :—Can the settlers of the North-West as well as the other agricultural classes of the country successfully carry on these higher branches of farming ? Undoubtedly the best of them can, and are beginning to prove their capacity, but many others certainly cannot, and my strong contention is that the Government and the C. P. R. are increasing the numbers of the latter in their wholly mistaken eagerness to fill the country. It gives me genuine pleasure to find one point at least on which I can heartily commend the action of the Government, and that is its recent efforts to teach the farmers of Canada the advantages of dairy farming and the best methods by which to carry it on. To teach the people how to help themselves is one of the highest and most legitimate functions of a government ; while the most demoralizing and illegitimate function of a government is either to step in and do the people's work for them, as in undertaking to market their products for example, or in forcing one portion of the people to contribute to the support of another, when the others are not helpless paupers. I sincerely hope that this new line of Government enterprise may be the means of practically bringing home to the Government and the people it represents the futility of trying to build up a great people on the wholly inadequate basis of population and physical labour, and above all when these are sought for at the sacrifice of national dignity and true patriotism.

ADAM SHORTT.

DIARY OF AN OFFICER IN THE WAR OF 1812-14.

(CONTINUED FROM APRIL QUARTERLY.)

THE *Tete de Pont*.—On the night of the 1st of May another alarm. It had certainly not taken me more than three minutes to dress and run to the barracks—our Voltigeurs had however already formed rank in the Square. Colonel* Halkett the Commandant of Kingston arrived a few moments afterwards. He ordered me to proceed to the Centre Bridge† with 50 Voltigeurs and a subaltern and 10 men of the 10th. This time I verily expected that an engagement was at hand. It had been rumored through the day that the enemy's fleet had been seen making for Kingston; it was not unnatural to suppose that, with the object of cutting off the retreat of the debris of General Sheaffe's small army, the Americans might land troops in the neighbourhood of Kingston. We hastened to our assigned position; the roads were abominable and the night as dark as pitch.

Three miles from Kingston flows a small river still known by the name of Cataracoui, it is bridged over at three different points within one mile of each other. While I was proceeding to the Centre bridge, two other officers were being sent to the two others with detachments of soldiers. The road which the defeated army was following (and by which Sir Roger Sheaffe eventually reached Kingston) proved to be mine.

The *Tete de Pont*‡ on the town side was easily susceptible of defence. It consisted of one entrenchment lined with timbers and fascines pierced with two embrasures for cannon. The river is pretty wide at this point—its bed is very muddy and bordered with thick shrubbery.

My first care was to render the bridge impassable; I had been authorized to destroy it with axes—I contented myself with loosening the planks. In the stillness of the night the distant sound of chopping informed us that the two other bridges were being destroyed, I deferred the destruction of mine for the fol-

*Alexander Halkett was Colonel in the Army and Lieut.-Colonel commanding the 10th Regiment, at that time forming part of the garrison of Kingston.

†This is the Bridge built over the Cataracoui Creek at the Bath road.

‡This is a term of engineering meaning works which defend the approaches of a bridge.

lowing reasons : (1) to permit General Sheaffe's retreat should he come my way that night ; (2) to prevent the enemy from collecting the floating debris with which he might make rafts and effect a crossing. My reasons found acceptance, my orders were cheerfully obeyed. A chieftain must necessarily be so clever !

The planks of the bridge were therefore loosened and left in such a way that they could at a moment's notice be removed. I furthermore directed that at the first intimation of the approach of the enemy these planks were to be piled in such a manner as to offer a protection to sharpshooters, and in this way utilize them as a first line of defence. With the number of men I now had at my disposal this task could have been performed in about two minutes, for I must add that within a few hours my party was reinforced by the arrival of 40 militia men and 20 Indians under the Chevalier de Lorimier*. I now placed six sentries in pairs, each 500 paces in advance of the other, while a dragoon was posted as viedette still further in advance of these, I also sent out a few Indians as scouts. During my absence on this duty Lieut. LeCouteur had attended to my instructions with regard to the bridge, 20 feet of which could be removed in the "winking of an eye." On my return to my post I placed my men in the position they should occupy in the moment of need, I then caused a few fires to be lighted, for we were drenched with rain. My command now consisted of : 1 Captain, 3 Subalterns, 10 soldiers of the 10th, 40 militia-men, 30 Voltigeur's 20 Indians. Total, 104 braves. We hadn't the two cannons, but come who dares !

I must say in praise of my small army that for the nonce the alert was considered genuine, that the best of spirit, activity, vigilance and discipline was displayed under very trying circumstances on this night, sufficient evidence of what could have been expected of them if opportunity had offered, in other words if the expected had happened. It had, however, been otherwise ordained in the "Great Book of Fate" the "Centre Bridge" over the Cataracoui would for ever remain an obscure, mean commonplace Bridge whose sole destination was to give passage to wayfarers, cattle drovers and countrymen over a dirty muddy stream ; for neither dragoon, patrol, sentry, nor scout saw the shadow of an enemy ! All my cleverness for naught ! My laurels

*Killed the following October at the battle of Chrysler's Farm.

to the wind! Daylight found us still on the "*qui vive*" (excepting friend Tasche, who was snoring deeply, his cheek pillowed on the rounded form of a fat Iroquois. Hush! let him sleep!, Shivering with cold rather than excitement, more inclined to sleep than to laugh, we returned to the town.

"*The Voltigeurs' Camp at Point Henry.*"—After having spent 21 days in the Barracks of Kingston, 10 days in quarters prepared by us, but not for us at a Mr. Smith's, and 4 days in a camp made by us, but once more not for us, on the heights of Kingston, we were ordered by General* Prevost on the 17th of May to cross over to Point Henry, where we now occupy tents which we again once more put up in a wilderness of stumps, fallen trees, boulders, and rocks of all sizes and shapes; sharing our blanket with reptiles of varied species; carrying out the precepts of the most self-sacrificing charity towards ten million insects and crawling abominations, the ones more voracious and disgusting than the others. Phlebotomized by the muskitoes, cut and dissected by gnats, blistered by the sand flies, on the point of being eaten alive by the hungry wood rats as soon as they shall have disposed of our provisions. Pray for us! Pray for us! ye pious souls.

Broken down with fatigue, drenched with rain, I enter my tent to find that the birds of the air have besmirched me with lime; I have no sooner sat on my only camp stool when a horrid toad springs on to my lap in a most familiar way; I cast my wearied limbs on to my couch, a slimy snake insists on sharing with me the folds of my blanket, I hastily retire and leave him in possession. Let us have supper! The frying pan is produced to fry the ration pork. Horror! A monstrous spider has selected it for his web; he holds the fort in a viciously threatening attitude in the centre of its rays, he defiantly seems to say, remove me if you dare! The flinty biscuit must be pounded and broken or one can't eat it, here again the beastly wood-bug must needs crawl under the masher, and in losing his life infect everything with his sickening odor. Oh! Captain, what can we do? exclaims my valet. *Fiat lux!* What, Sir? Light the candle, you block-head, light the candle. Let us write to our distant friends the

*Sir George Prevost had arrived in Kingston on the 11th of May accompanied by Col. Baynes, two aides de camp and 20 Sault St. Lewis Iroquois in command of Lieut. and Interpreter, B. St. Germain. Sir J. L. Yeo arrived on the 12th with two Brigades of gun boats.

excess of our misery. O ye gods, what a place this is! The candle is lighted, it is the next moment surrounded by myriads of flying things. My table is littered with writhing abominations, June bugs hasten from all sides, they besiege the light, extinguish it under one's very nose, strike you in the eye, and as a parting shot stun you with a blow on the forehead. What a paradise this spot would be for an entomologist!

We remained in this inferno a whole fortnight, but thank heavens these very unpleasant experiences came to an end and were followed by better times. After showing you the dark side of the medal it is but right you should now be shown the bright.

When we first came to Point Henry on the 17th of May, it was covered with stumps and the ground was nothing but holes and bumps. The trees had been cut down but quite recently. With much labour our Voltigeurs succeeded in levelling their camp ground. The camp consists of two rows of Marquises, facing one broad central avenue at the head of which are our Major's quarters and at the foot a small entrenchment. On a fine day our encampment presents quite a pretty sight. The Point is high and commands the view over all the surrounding country. We can here perceive the immense expanse of Lake Ontario, on the distant horizon a few wooded islands, to the right the town and its pretty back-ground; the harbour and its sailing craft; Point Frederick, its fortifications and shipyards are mapped before us; to the left is Wolfe Island with its extensive forests dotted here and there with new settlements. Away from the town and the control of the "Big Heads," under the immediate command of an officer* who is popular, we can hope to live here in peace, quietness and happily.

"*Corporal or Lance-Sergeant Chretien.*"—Cananocoui as before stated is 18 miles lower down than Kingston; we have there a redoubt. The garrison consists of local militia and a detachment from this post. Nine Voltigeurs under the orders of Corporal Chretien were on duty there on the 14th of May, when Lieutenant Marjoribanks, R.N., in command of a gun vessel cruising among the islands, arrived and landed 30 militiamen. He had discovered

*Major G. F. Herriot, the assistant superintendent of the Voltigeurs, a Captain seconded from Brock's regiment the 49th, distinguished himself greatly during the war, especially at Chrysler's Farm, and at Chateauguay as second in command under De Salaberry. He was born in the Island of Jersey Jan. 2nd, 1766. He became a Major-General, retired from the army and settled in Drummondville P. Q., where he died in 1844.

one of the enemy's gun boats on the river. He proposed to his men to attack this boat, but these good people thought otherwise; they were not yet I presume tired of life; they offered many objections to the lieutenants hostile and bloodthirsty intentions. The poltroon has powers of eloquence quite equal to those of the brave man; these philosopher soldiers used their rhetoric to such good purpose that the Lieutenant saw the futility of risking the attack with such a crew, and decided to land them at Cananocoui. From what precedes you may perhaps conclude that under the weighty arguments of these braves this bloodthirsty officer had yielded and had come to more humane and rational sentiments. Alas, no! you are wrong. They are case-hardened villains, these English tars; they live for knocks and thumps; they know positively nothing of our college logic, or, if they speak of it it is merely to ridicule and despise it; they affect to believe that there is more argument and sound sense in a grape shot than in the best argument. Strange people, do you say? Well, they are. Anyway, after landing his thirty rhetoricians (an epithet which our friend the officer emphatically qualified, it is said, with heavy words) he invited volunteers to accompany him on his venture, for he was still bent on the same sanguinary designs; one subaltern and 10 men of the 104th Regiment, Corporal Chretien and the nine voltiguers volunteered to form part of the expedition and were permitted to do so by Colonel Stone of the militia, who was commandant. These, with the boat's crew of six men, gave chase to the enemy's vessel, but failed to overtake her.

Feeling very sore and disappointed at the failure of this second attempt to close with the enemy, Marjoribanks had made up his mind not to return empty handed; he therefore decided to make a descent at the nearest American port, which was Gravelly Point.* His pilot had told him that the Yankee boats repaired to the Cape every night. He conceived the evil pleasure of cutting them out by way of surprise, and his wicked followers accepted the idea with the greatest enthusiasm.

About one o'clock on the morning of the 25th of May, two countrymen were taken prisoners off the shore, and forced to

*Or Cape Vincent. It was a small American village of about 20 houses, at the discharge of Lake Ontario. The enemy had cannon and soldiers there.

guide the marauders to the village, still a good distance off. Gravelly Point was at last reached at two o'clock. Alas! the enemy's boats were not there. A landing, however, was effected, a few soldiers of the 104th left to keep guard over the boat, and the troops, headed by Chretien, advanced noiselessly, following each other in Indian file; they reached the barracks, which stood at about 20 acres from the village, smashing in the windows and doors with their axes, they found them quite deserted. They then advanced towards the commandant's quarters without meeting the slightest resistance. A sentry was found on duty; he was told to keep quiet or have his brains battered. He managed to break away, however, taking his unbattered brains away with him. A light was burning in the officers' apartments. Chretien took but an instant to knock in the door; he was met by the officer (a major) who attempted to discharge his pistol at him (it was loaded with 20 slugs); it missed fire, however. Chretien was more fortunate; he let him have his musket charge in the stomach, laying him dead. Three other loaded pistols were found on a table, 20 cartridges loaded with slugs; there were also 2 sabres. These were the only articles the men were permitted to take away. The retreat was now ordered. When they had pushed away a good distance the Yankees, (who had run away from their barracks in a most disgraceful way even before our people had landed), now reappeared on the shore, and, for the purpose, we presume, of frightening the fishes, kept up for quite a while a desultory musketry fire. It was "*mustard after dinner.*" The two countrymen who had been seized and forced to serve as guides were then put ashore and the expedition returned to Cananocoui.

The naval lieutenant in his official report to Commodore Yeo, gave a detailed statement of Chretien's coolness and courage, together with the peril he had exposed himself to during this brush with the enemy. He further charged him to convey the despatch to Kingston. Sir George Prevost sent for him, and, besides promoting him to the rank of sergeant, presented him with the sabres and pistols looted at Gravelly Point.*

*Major Durham of Cape Vincent informs me that among the series of volumes known as the "Documents relating to the history of New York" are a series of papers known as the "Brown Papers," in which a very different account is given of this affair at Cape Vincent: the British are there stated to have been repulsed, with considerable loss in dead and prisoners. I have been unable to verify the American version of the affair.

Cananocoui.—The Cananocoui River, which draws its waters from a chain of lakes in the interior, has its discharge on the front of the Township of Leeds in the County of the same name, in the Johnston district; its mouth forms an excellent harbour—the water 12 or 15 feet in depth—and with little current. With the exception of three small portages, this river is navigable for batteaux a distance of about nine miles, when the first of its lakes is met. Its banks are as a rule steep and fringed with tall woods. It was known by the name of Thames previous to the division of the Province; the Indian name, Cananocoui, means, I am told, “where the ash trees grow.” Several fine sawmills have been erected along its course. This locality is celebrated for its healthful climate; this fact was well known to the Indians, who for generations past have been in the habit of bringing their sick here to recuperate.

About seven miles up this stream are, on both banks, quarries known by the name of “Marble Rocks.” The stone of the east bank is pure white and brilliant; that on the west bank is of various shades of green, veined with black. The white marble is of great hardness—the best file hardly produces an impression upon it—while the green stone is quite soft; it can even be worked with a knife; the Indians make their “*Calumet*” or pipes out of it. Much talc is also found in this neighbourhood. Here also and about the inland lakes are found rich iron mines, which have been worked for some years back with success. Lead and lime has also been reported. At the other end (?) of this river is a redoubt, garrisoned by a few men; Colonel Stone owns there a “fourteen saw” mill.

“*My Quarters at Cananocoui*.”—On the 27th of July, Major Heriot and three companies of the Voltigeurs were ordered to Fort George.* On the 29th I was sent to Cananocoui, in command of a *select* detachment, made up of the culls of the corps—the old, the halt, the incapables, the cripples—in short, an assorted lot of *invalids*. Voltigeurs invalids! These words coupled together are contradictory, bizarre and non-sense, I admit, but such was the case, and, to cap the joke, my redoubt was dubbed the Hospital!

Cananocoui is pretty and quite a picturesque spot—good fishing, good sport, nothing to do—all these things are delectable,

*On the Niagara River.

yet time hangs heavy. I am weary and as unhappy as any man can well be. I am consumed with "*ennui*." Colonel S——, Captain B——, and D——, a tavern-keeper, are the swells of this place. I keep myself to my miserable quarters, and do not associate with these great people. Like the good Lafontaine of old, I sleep part of the day and do nothing the rest; hunting and fishing is devoid of attractions for me. Would that some of my friends would drift this way. Nothing easier. Batteaux start from Montreal every day, and, when with me, should they be overtaken by "*ennui*," opportunities of return are just as plenty.

Shall I tell of the many attractions of my quarters? (1) My four poster consist of four rough planks, nailed to four uprights; it can accommodate six with ease; (2) My room has two large window sashes—my kitchen the same—but being fond of an abundance of fresh air, I have not provided the sashes with panes; here it can never be said "who breaks the glasses pays"* for there are none; (3) To close my quarters I would need four doors; the kitchen door is stowed away in the garret—it has no hinges; two others have their panels knocked out; the fourth consists of the frame only; (4) The walls are throughout of a rich, smoky, brown colour; they are not hung with costly gobelins tapestry, but the delicate webs of my friends the spiders festoon the ceiling; nor are there artistic paintings—such decorations are not in fashion at Cananocoui; preference is shown in my apartments for drawings in chalk or coal, representing various fantastic creatures—related to the mammoth perhaps; their prototypes certainly antedated the deluge. Now come and see for yourself if I have not told you the truth, all the truth, and nothing but the truth, about the attractions of my quarters in far-famed Cananocoui. . . .

J. L. H. NEILSON.

* "Qui casse les vitres paye" a very common saying among the French Canadians.

FOOT NOTE.—With the exception of a few detached pages containing nothing of much interest I have now translated the best of Viger's Journal such as I possess it. I have, however, been recently told that a more complete copy, perhaps the original version, covering the period from April to Nov. 1813, including the account of Sackett's Harbour expedition, the battles of Chrysler's Farm and Chateauguay, exists among the collections of Principal Verreau of the Normal School, Montreal.

THE CANON OF CHIMAY.

ONE of Landor's fancies was to get Chaucer, Petrarch and Boccaccio together and make them talk; but the symposium is a failure. Landor succeeded only when the style of his characters does not challenge comparison with his own. In this instance, his puppets merely recount three stupid stories. One feels sure that both Chaucer and Boccaccio would laughingly disown their share in the transaction, as doing them too much honour. Landor had no real comprehension of the romantic temperament of the Middle Ages; and besides he missed a golden opportunity. His fancy points to a most suggestive fact. Setting aside the well-known reference to the tale the clerk "Lerned at Padowe of * * * Franceys Petrark, the laureat poete," we know that young Geffray Chaucer was in the train of Prince Lionel on the occasion of his marriage to the daughter of Galeazzo Visconti in Milan in the year of Grace MCCCLXVI. Though only "valettus noster" he would see the mature "Franceys Petrark" among the guests. The English squire may have stood behind the chair of Laura's lover at one of the feasts. The two *may* have met. At the same time, and place, there was another young clerk, from Hainault, about Chaucer's age, and social rank, who was to make the Europe of that day forever famous, Jean Froissart, the father of Humanism, the author of *Canterbury Tales*, and the chronicler of England, France, Spain, all in the same town, under the same roof, perhaps, seeing and knowing one another, holding high converse—is not the thought enough to set one dreaming?

The third of these three mightiest would have much in common with the Englishman. He had visited the nook-shotten isle, ridden through the far north, and admired English prowess so warmly, that later Frenchman have called him unpatriotic. After all, he was no Frenchman, but a Hainaulter, liegeman and *protégé* of Queen Philippa. Chaucer and he both loved the noble

profession of arms, practised the gentle arts of making love and verses, and did not shun

“A glass of wine

That's brish and fine.”

The future Comptroller of Customs with his daily pitcher of wine from the King's buttery, and the genial priest whose five hundred francs helped to keep the taverns of Restines going, must have cracked a bottle together, if they met at all. Both knew their world thoroughly, were of it, and not mere book men, students and recluses. Both loved chivalry, both had an eye for colour, and the art of telling a tale in few well-chosen words.

Froissart is indeed half an Englishman, although he had his difficulties with our ragged speech. His transformation was completed by his first and greatest translator. Only a hundred years or so after Froissart's death, at no greater interval than separates us from the American Revolution, the great book of the chronicles was turned into “our maternall English” by a man in every way fitted for his task. A soldier himself, and a learned clerk, who loved romances, John Bourchier, Lord Berners, sat down after an active life, and in the good town of Calais to literary tasks. Men of his name helped to make the history he was to render into English. He has a thorough sympathy with the sentiments expressed or implied, and an understanding of the exploits narrated, such as can spring alone from having himself performed deeds of derring-do. The result is that Froissart has always been a greater favourite in England than in France, and a much stronger literary influence. Henry the Eighth has many evil deeds to reckon for; but let it be remembered that at his command Lord Berners translated Froissart.

The merits of Lord Berners' translation have been long obscured by the supposedly more “elegant” version of 'Johnes. There are signs that good taste is re-asserting itself. Mr. Henry Craik disposes of the superstition regarding Johnes in his remarkable note to Berners' in his *English Prose*. And no later than last month, an abridged edition of the great work has been added to the invaluable *Globe* series of Macmillans. The names of the series and of the editor, Mr. Macaulay, guarantee its excellence; but one would like to see the edition of 1812 reprinted, with the names corrected and St. Palaye's essays and Buchon's

apparatus added. The comfortable square old quarters afford such commodious browsing ground.

Since Voltaire, mediæval has meant ignorant, superstitious, and above all, stupid. The art of the Middle Ages is remembered chiefly as grotesque and its literature as tedious. Even Chaucer still suffers from these two imputations. Froissart is voluminous, but his clear, definite incidents throng upon the reader with the unending variety and vividness of life itself. Gray thought him like Herodotus. He simply is never dull. His aim is to relate, not to moralize. As his own interest in all his tales is so fresh, he cannot be languid. He lives in Chaucer's Europe, and is keenly alive to its quick-shifting kaleidoscopic colour. This impression he gives back to us in a wonderfully direct and artless way. From the very beginning he wins our confidence by his evident anxiety to be accurate and the pains he takes to learn the exact truth of every event.

Froissart's influence in England has been curiously great, as compared with France, especially since the triumph of Romanticism. Scott praised him with enthusiasm, and his debt to Sir John is not small. The most striking modern instance of inspiration drawn from the Chronicles is *The Defence of Guinevere*. Here we meet again the familiar names of Clisson, and Manny, Bonne-Lance and Tête-Noire. The incidents of the fearful truce, when the Free Companions had it all their own way, have supplied much of the material. The sorrow, too, of that fearful time has filled the verse. The impression left is that of yearning sadness, which impresses the modern reader. Morris, however, reads this sentiment into his Froissart. He tells us indeed of the Jacquerie, of whole garrisons put to the sword, none taken to mercy, of tortures and cruel punishments. Though he does not condemn them, he is not therefore callous, any more than his age. His stern warriors, lords and knights burst into tears, and their moral sense is as high as ours in regard to treacherous dealing, the treatment of messengers or of gallant men in extremity. There is no more movingly pathetic picture in any history than Froissart's simple tale of the Calais burgesses, who adventured their lives for their townsmen. These sad things are admitted, but they are crowded to one side of the canvass; the foreground and centre are occupied with the well-ordered array of armies in

shining armour on the march, with pennons and banners waving gallantly in the wind ; or castles bravely held and boldly assaulted ; or charging knights, and men-at-arms, archers and cross-bowmen giving and taking hard blows in furious hand-to-hand battle. Like the famous terrier, Froissart never can get enough of the fighting. But he feels the seriousness of life, too, as is seen in the simple moralizing over the death of Richard the Second, which forms the fitting close of his great work. In the end one feels that his characteristic note is "Viva la joia !"

If Froissart was not an Englishman, he deserved to be. His tales of the English victories in France cannot fail to stir the most sluggish English blood. The few plain words that tell the story of Cressy can hardly be read aloud without a catch in the throat. "Whan the genowayes were assembled togyder, and began to aproche, they made a great leape and crye to abasshe thenglysshemen, but they stode styлле and styredde nat for all that ; thane the genowayes agayne the seconde tyme made another leape and a fell cry, and stepped forward a lytell, and thenglysshemen remued nat one fote ; thirdly agayne they leapte and cryed, and went forth tyll they came within shotte." It is an oft-told tale ; of battles that were lost, of battles that were won ; from Hastings to Waterloo. The different generations of the island race show the same steadiness. At Fontenoy, "On voyait les majors appuyer leurs cannes sur les fusils des soldats pour les faire tirer bas et droit." At Quebec Captain Knox noticed the contrast between the cheers of the charging French and the ominous silence of the steadfast English ranks. Characteristic also is the English pride, which every foreigner notices, "Ye Englyssheme were so prowde, y^e they set nothing by any nacyon but by their owne." Hentzner records that when they see any man well made and fine looking, they say it is a pity, he is not an Englishman. There is no change in the centuries between Edward and Elizabeth ; and less than none in those that have succeeded.

Before taking leave of Lord Berners, a word should be said about the wonderful vivacity of the translation part of which is due to his original, and part to his own command of language. The recurrence of such phrases as "with bag and baggage," "stand in good stead," and the statement that the Free Companions car-

ried off everything that was not too hot or too cold or too heavy, give the page a very modern look. Sometimes the quaintness is almost comic, as when "they tooke the porter, and slewe him *so pesably* that he neverr spake word." Again the vivacity arises from the mention of picturesque detail: as that ambuscade that waited all the afternoon "in a vale among olyves and vynes." There is the whole of the sweet South in the phrase. Or it comes from the winged words that tell of some resolve or mark some desperate crisis. What can give us more insight into the spirit of the Free Companions, than the watchword of those mutinous Englishmen in Portugal? "Friends to God and enemies to all the world!" In the course of his delightful story, we come to know some of the characters intimately, and watch for their entrances upon the stage; for Manny, and Chandos, and Du Gueschin, and the Black Prince, and the great Edward himself. The gracious figures of noble ladies move in the throng of warriors like lights; the good Queen Philippa, the true and lovely Countess of Salisbury, and many more. Dame Isabel of Julliers is perhaps the most sympathetic figure of all; with her passionate love, her presents and her many letters to Lord Eustace Dambretycourt, who has left her for the perilous wars. If she be not the most engaging of all, it must be the Countess of Mountford, "who had the courage of a man and the hert of a lyon"; who seconded so well her husband's unjust claims, that when France and England made peace again, she was excepted from the conditions of the truce. Right or wrong, she wins our warmest admiration; and could she be less than loyal to her husband? The heart of her besieged city, she had the eye of a great captain for the enemy's weakness, and while the French were busy at the assault, she, at the head of a few spears, with harness on her back fell on their undefended camp. Picturesque also are those damoselles and other women whom she caused to cut their kirtles short and bear stone and pots of lime to the besieged upon the ramparts. Clear, too, as a figure in an illuminated missal, we can see her in her high window looking seaward and catching the first glimpse of the English sails coming to her rescue. Is she not the heroine of Tennyson's unnamed chronicle, the "miracle of women," that so took Lilia's fancy.

“And mixed with these, a lady, one that armed
 Her own fair head, and, sallying through the gates,
 Drove back her foes with slaughter from her walls.”

There are tantalizing hints at other characters, who pass once or twice before our eyes, and then vanish; that unfortunate captain, for example, who “loved well the game of the chesse,” and whose love of the game, and appreciation of “the goodlyest chessemen that ever I sawe,” induced him to play “for the wyne” and lost him his castle and his life. The castle of Clermont was supposed to be impregnable; but a man of experience proved that it was not. And first there entered, *rampyng up like a catte*, Bernarde de la Salle, who in his tyme hadde scaled dyvers fortresses.” Then, as now, there are interesting scoundrels, whom you both admire and condemn, like Aymergotte of Perigord, who after all his craft and cruelty and affectionate foresight for his family, loses his head through miscalculating the affection of a relative. We are as loth as good Sir John himself to take leave of that courteous knight who bore him company through the south of France, and who knew the history of every hill and every castle on the road. And how readily we could pardon more gossip about the author himself.

Father Prout thinks that Froissart and Chaucer must have met, as young men, at the court of Queen Philippa; and gives reins to his fancy of what they may have done. There is reason for the association of names. Few books will help us to understand Chaucer, especially in all that pertains to war and knighthood, better than Froissart, in Lord Berners' translation. We know, for instance, that the young Squire was a “looyer and a lusty bachelor,” and our glossary tells us that a bachelor was an aspirant to knighthood. But how much plainer is his status when we read: “they had with them yonge bachelors, who had eche of them one of their eyen closedde with a piece of sylke; it was sayd, how they had made a vowe among the ladyes of their cuntry, that they wold nat se but w^t one eye, tyll they had done some dedes of armes in Fraunce; how be it they wold nat be knowen thereof.” The list of the Knight's exploits seems to have been a sort of formula. “They knewe them for they had sene them before in Pruce, in Grenade, and in other

vyages."* So, too, the praise accorded to the Wife of Bath for cloth making. "She passed hem of Ypres and of Gaunt" seems far fet till we find the names of these two places, also a sort of formula, in Froissart. "Bare themselfe right well the war during," "in right good poynte" "by composycion" "he was as then a lusty lover paramours," "the noble and hardy Kyng Edward ye Thyrde," "for Sir Hewe Specer was about to *purchase* moch trouble to them," "to be in the Kyng's *daunger* and his," and "*came a great pase* towards thenglysshemen" all illustrate well-known lines of Chaucer: and though a mere chance handful, show what may be gleaned in that most attractive field. One notices, also, the habit common to both, of making transitions in the narrative very plain by such phrases as these: "Now let us leave somewhat to speak of the earle of Hainault;" "Now let us speke of the countesse his wife." This admirable device seems to bring them both into relation with the narrative ballad poetry.

For his own sake, or for the light he sheds on history, or human life or literature, this modern Herodotus deserves and well repays the closest study. The revival of interest in him is a healthy sign.

"And if *you* meet the Canon of Chimay," make him your companion. You will find him most attractive in the antique English vesture provided for him by the care of John Bouchier, Lord Berners.

ARCHIBALD MACMECHAN.

*Cp. I. p. 67.

KINEMATICS AND THE CYCLOID.

THE introduction into ordinary geometry of the fundamental definitions and axioms of kinematics would simplify many propositions in elementary plane geometry, and a few of the fundamental propositions in kinematics might often materially aid in the deduction of properties of the higher plane curves in a way especially advantageous to students of Dynamics. To illustrate my meaning: What better definition can be given of the tangent to a curve at any point than *the direction of motion at that point of a particle moving along the curve?*

Evidently at every instant the particle is moving in *some* direction, and at every instant it is at *some* point in the curve; the tangent then at any point is the direction of motion at the instant when the particle is at the point in question.

Again let us take the well-known proposition: "The sum of the exterior angles of any plane rectilineal figure, made by producing the sides successively in the same way in going round the figure, is equal to four right angles." (Euclid, Book I, Prop. xxxii., Cor. 2.) This immediately becomes axiomatic when we observe that the sum required is simply the total change of direction of motion of a particle in moving round the figure. Now, when the particle has made one complete circuit, so that at the end it is moving in the same direction as at the beginning, it must have turned through four right angles or a perigon. This treatment of the problem is indeed more comprehensive than the usual methods adopted in books on geometry, as it includes the case of polygons with re-entrant angles, for when the particle comes to the vertex of a re-entrant angle, it changes its direction in an opposite (negative) way to go along the following side, so that the external angle at that point must be taken negatively. Hence to make the proposition perfectly general, it is only necessary to state that the *algebraical* sum of the external angles, etc., equals four right angles.

It is however in the deduction of properties of curves of a

Since $H O K$ is evidently $B O Q$ turned through a right angle, $Q A$ which is at right angles to $B Q$ is parallel to $H K$ or P 's direction of motion, and therefore parallel to the tangent to the cycloid at P , and therefore $Q B$ is parallel to the normal at P .

If $b o a$ be the diameter of the rolling circle normal to the base $C D$, $P a$ is the tangent and $P b$ the normal to the cycloid at P .

2. *The length of the arc of a cycloid measured from the vertex to any point is twice the length of the chord drawn from the vertex to the corresponding point in the auxiliary circle.*

If q denotes Q 's angular velocity about O , Q 's velocity will be $q \cdot O K$ parallel to $O K$ and P 's velocity $q \cdot H K$ parallel to $H K$. The principal component of Q 's velocity along the chord $Q A$ will evidently be $q \cdot \frac{1}{2} H K$, which is just one-half of P 's speed along the cycloid. Hence the chord $Q A$ shortens at half the rate at which the arc $P A$ shortens, and since the chord and arc simultaneously vanish at A , the cycloidal arc $P A$ must always be double in length of the chord $Q A$.

The following beautiful result is of special interest to the student of Dynamics:

When the generating circle rolls with uniform speed, the motion in the cycloidal path is Simple Harmonic Motion.

Since o 's motion is uniform, P 's acceleration is the same as that of Q , viz., $q^2 \cdot Q O$ along $P o$. Hence P 's acceleration in its line of motion, i.e., along $P a$, is $q^2 \cdot \frac{1}{2} Q A$ or $\frac{1}{4} q^2 \cdot \text{arc } P A$. Hence P 's motion is Simple Harmonic Motion about A as a centre of force in a cycloidal path.

From the general properties of Simple Harmonic Motion it is easily proved that P 's speed gradually increases from zero at the cusp C until it attains the maximum value $2q \cdot P o$ or $q \cdot B A$ at the vertex A , and thereafter gradually diminishes until it vanishes again at the cusp D .

D. H. MARSHALL.

BROWNING'S INTERPRETATION OF THE
"ALCESTIS."

BY JOHN WATSON.

I SUPPOSE no competent authority would deny that of all our English poets Browning has expressed most fully the distinctive consciousness of the nineteenth century. Without attempting to characterize that consciousness in any exhaustive way, we may at least say that it involves a clearer perception of the claims of the individual and a firmer grasp of the unity of all mankind than was ever attained in any preceding century. And these two features go together: it is just because we have so high a conception of the possibilities of the individual life that we are dissatisfied with the imperfect sociality of the whole; and because we have so strong a conviction of the solidarity of the race that we are dissatisfied with the achievements of the individual. The very altitude of the ideal makes us charitable to the failures of the individual. Man has so many sides that it seems impossible for him to develop himself in all equally. Hence we find Browning giving us picture after picture of those who have not achieved, from some defect of energy, but who yet command our sympathy because the light which led them astray was after all light from heaven. We also find that no age or country lies beyond the range of his sympathies. The same problems he finds in all, though the form in which they present themselves is different. It would therefore have been strange if he had entirely passed over that phase of civilization which is represented by the great name of Greece, especially as his poet-wife was there to stimulate his interest in it. And when he turns his thoughts to Greece, it is characteristic that he devotes his attention mainly to Euripides. The *Agamemnon* of Æschylus he has indeed translated, but on the *Alcestis* and *Hercules* of Euripides he has lavished a superabundance of loving care, not merely translating them but giving us in his *Balaustion's Adventure*, which is perhaps the most perfect piece of constructive criticism ever written, and in

his *Aristophanes' Apology* a total estimate of the genius and the limits of Euripides worthy to rank with his best pictures of "Men and Women."

It is not a matter of accident that Browning has devoted so much attention to Euripides. The age of Euripides exhibits a striking analogy to our own age, and naturally therefore the poetic exponent of the one has a strong sympathy for the poetic exponent of the other. Euripides was born into a society, in which the old division of a governing and a governed class was giving way to a form of polity in which the whole body of the people directly governed themselves. He came at the close of that great flowering period of Greek civilization which succeeded the Persian wars—a period in which the human spirit developed with a rapidity and brilliancy that can never again find a parallel. The success with which Athens, almost unaided, had repelled the barbaric hosts of the Persian despot and secured forever the free development of European civilization, had given rise to a strong consciousness of the dignity of man, a consciousness which breathes in every ode of Pindar and in every drama of Æschylus and Sophocles. This intense consciousness of life had, however, a wider sweep than those writers were able to see. The Athenian citizen, called upon to deal directly with the highest political matters—to declare war and arrange terms of peace, to frame and administer laws, to provide for the education of the whole people—came to have a consciousness of the distinctive claims of the individual, a consciousness which at first had been merged in the wider consciousness of the state. The natural consequence was that custom and tradition no longer appealed to him with all the authority of a divine law. He was led to question the traditional religion and morality, and with the rise of this questioning spirit the mass of precedent which had hitherto been implicitly accepted lost its sanction and authority. No doubt this sceptical spirit was hardly felt by the great mass of the people, who always represent an earlier phase of thought, but it is displayed even by writers like Aristophanes who are ostensibly the champions of the traditional religion and the morality of custom. The age of Euripides was one of intellectual and political unrest, in which the old order was changing, giving place to new. But in it we can now discern the emergence of a wider conception of human-

ity than was ever realized, or could be realized, in the narrow municipal state of Greece. Thrown back upon himself the individual had to seek for satisfaction in something more universal than the old religious and political creed which had satisfied his fathers. He had to seek for a conception of life which should give it meaning, and he had to do so with the disturbing consciousness that his faith in the ideas of the past was gone never to return. It is obvious that the task of the poet in such an age of scepticism and disruption was difficult of achievement. Poetry is essentially such a picture of life as reconciles the individual to the conflict and sense of frustration of his own lot, by showing him that it is reconciled in a wider harmony; but how can the poet who has lost faith in the moral order of the world exhibit such a harmony? Manifestly, we cannot expect from him that full and assured conviction of the goodness of the world, which always accompanies an age of simple faith; and if in some measure he recovers his faith, it must be after a struggle and "so as by fire." The main interest therefore in the study of such a poet as Euripides is to see how far he succeeds in presenting life as worth living. He must do so by showing that, while the old ideas are lost, all is not lost; he must, in other words, show that the individual may come to be at unity with himself by following the deepest law of his own being. The destiny of man he must represent as the development in him of a true consciousness of self. And this is what, as we shall immediately see, Euripides actually does. The *Alcestis*, which Browning has "transcribed," is a picture of the development of a soul. We can thus understand how it was so fascinating to the modern poet. In Euripides Browning detected a kindred spirit, seeking to solve a problem the same in kind with that of the poet of the nineteenth century. For it is now a mere commonplace that we live in an age of transition and unrest. The tremendous advance of physical and especially of biological science; the rise of that consciousness of the claims of all men to the full development of their powers; the wide and free intercourse between all nations and the consequent liberation from individual, social and national prejudices; all these things have quickened the mind of man and suggested objections to traditional ways of conceiving the world. Of this wider consciousness Browning is the most powerful poetic exponent. How

far he has reached a theoretically consistent conception of life I shall not venture to say; nor is the question of more than subordinate interest, since the poet's philosophy must be implicit rather than explicit; but we are safe in saying that no poet of the nineteenth century has so well preserved an optimistic conception of life, or shown such intense sympathy for the inner life of the individual. It is indeed Browning's own express statement, that nothing is at bottom interesting to him except the development of a soul. We can thus understand how he was attracted to the last of the great Greek dramatists, and especially to that poem in which the development of a soul was the special problem. It cannot therefore fail to be suggestive if we look for a little at Euripides through the eyes of Browning. Before doing so, however, it seems to be advisable to say a word as to the development of Greek thought.

There has been much controversy as to the proper definition of religion. The difficulty has originated mainly from the wide and comprehensive view of religion which we now take. To comprehend in one formula Fetishism and Christianity, with all the intermediate stages of the religious consciousness, is no easy task. For if, like Mr. Spencer, we simply set aside all that characterises each phase of religion, and call the abstract remainder the essence of religion, we virtually put all religions on the same level, and reduce religion itself to the indefinite consciousness of something we know not what. Such a mode of conception seems to me quite inadequate, and in fact it fails to grasp one essential feature in religion, namely, its consciousness of a principle which gives meaning to life, and enables the individual to see beyond the failures and evil of the present. If religion does not idealize life, it is nothing, and I do not think that the idea of an unknown Reality of which we can predicate nothing but that it *is*, can help us to idealize life. I think that we must therefore say, that religion consists in the personal consciousness of a principle of Unity manifested in the world. Now, if we thus grasp the object of religion as a unifying principle, we shall have no difficulty in bringing together the various forms of religion, and arranging them in an orderly series. For that which is conceived to give Unity to existence may be more or less inadequate to do so. Hence there will be many phases of religion, according to the stage of development of the people or age. And the religion

will naturally be the counterpart of the whole life and thought of the people who profess it. Thus, in the tribal stage of society we must expect that the principal of Unity will be a tribal god; whereas, in a people that has developed a real polity—an organisation of society not based upon the tie of blood, but upon a political constitution,—the religion will express the higher Unity of this spiritual bond; while again in a people which has transcended even the bond of the state and grasped the essential unity of all mankind, the Unity must be of a correspondingly universal type. It must also be observed that the religion of a people, being the reflex of their whole life, must be expected to grow richer in content as that life grows richer; in other words, even within the same people, religion is continually in process of evolution. To fix a limit to this process would be to fix a limit to civilization. These somewhat abstract statements find their illustration in the Greek religion. The Greeks, there can be no doubt, at an early stage in their history, conceived of the divine as manifest in the shining heavens, the sun, the winds and other great natural objects. This religion they shared in common with the whole Indo-European race, and they brought it with them when they entered Hellas. The oldest form of religion in Greece was the worship of the Pelasgian Zeus, and the Pelasgian Zeus was originally the shining Heavens. But the distinctive character of the Greek religion lay in the fact that it represented Zeus and the other gods in human form, and therefore endowed them with spiritual qualities. The gods are not, as with the other Indo-European peoples, left in the vagueness and unspirituality of nature, but are conceived as definitely characterized beings in human shape and with spiritual qualities. Already in the Iliad, composed some ten centuries before the Christian era, Zeus, Apollo, Athene and the other gods are clear and distinct types. Yet in the Iliad there are distinct traces of an earlier phase of religion, in which the gods were not clearly separated from the great processes of nature. Thus Zeus is sometimes spoken of as thundering or as snowing, while in general he is conceived as a distinct moral person. Now this brings to light a point to which I wish to direct your attention. The Greek religion was in continual process of development. It has been said that Homer gave the Greeks their gods, and this statement we

- may accept in so far as it means that the imagination of the poet worked freely on earlier conceptions handed down by tradition, shaping and transforming them. And this process was at work during the long interval between the Homeric poems and the Greek dramatists. We must therefore bear in mind that the religion of Greece, not being fixed in canonical books, readily lent itself to transformation. In Æschylus we have an example of this process. The poet never doubts for a moment that the gods of his nation are real beings. How, indeed, should he, when in the life-and-death conflict with the Barbarian, the Greek had triumphantly repelled the invader! Could anything more clearly show the superiority of the national gods! At the same time the plastic imagination of Æschylus works upon the mass of legendary material, and seeks to give to the idea of the gods a rational content, consistent with the higher conception of life, gradually developed in the course of ages. Zeus becomes for him the representative of the whole order of society, the divine principle which shapes all things so that order and law may be secured upon the earth. Hence all violations of that order are visited with divine punishment. Man rebels against the bonds which unite the members of the family to one another, and the divine law of the world asserts its punitive power. Yet in Æschylus this divine law is not conceived as but the law written on the heart of man, the ideal embodiment of the inner law of reason, but rather as an external law to which man must submit. Sophocles, on the other hand, taking up this conception of a divine law of the world, seeks to show that it is at bottom the law of man himself. Œdipus unwittingly violates the sacred bonds of the family, and all his struggles to escape from the punishment which inevitably follows are unavailing, until it flashes upon him that in his failure to recognize the inevitable law of the world and his defiant self-assertion, he has missed the true attitude of a finite being such as man, which consists in submission to the divine will. Yet Sophocles can hardly be said to affirm that the law of human destiny is just the expression of the inner law of his own reason, and, as a consequence, that man makes his own destiny. This conception we find partially apprehended by Euripides. For Euripides, as I have said, is the poet of the individual soul: he is interested in the inner struggle of the spirit with itself, and over

and over again he presents us with the conflict between the flesh and the spirit, the lower and the higher nature. Thus he is the most modern of the ancients. How far he fails to grasp the full meaning of that conflict we shall perhaps see in the sequel. Meantime, let us, under Browning's guidance, try to extract from the successive scenes of the *Alcestis* the meaning which they are intended to convey.

The opening scene is thus described by Browning :

“ There slept a silent place in the sun,
 With plains adjacent and Thessalian peace—
 Pherai, where King Admetos ruled the land.
 Out from the portico there gleamed a god,
 Apollon : for the bow was in his hand,
 The quiver at his shoulder, all his shape
 One dreadful beauty. And he hailed the house
 As if he knew it well and loved it much.”

Now, we must remember that to the Greek spectator the idea of Apollo carried with it the most ennobling associations. He was the embodiment of clear thought, pure morality and religious veneration. His worship was to a large extent instrumental in keeping alive in the Greek mind that consciousness of national unity which otherwise might have been lost. “ His sanctuary at Delphi was the religious and political centre for the Greek tribes.” What, however, is especially important here is that the worship of Apollo demanded above all things purity of heart ; the penitent might always count on forgiveness and illumination, the false and lying tongue could not evoke his aid. But to the Greek the mention of Admetos at once recalled the legend of the purification which Apollo himself underwent. It therefore hardly required the words of Apollo to give him a clear understanding of the situation. Euripides had rather to remind the spectator of what he already knew, than to give him new information. The legend was that Zeus slew by a thunderbolt Asklepios, the son of Apollo, while Apollo in wrath

“ took revenge
 And slew those forgers of the thunderbolt,”

And so, for punishment, must needs go slave,
 God, as he was, with a mere mortal lord.”

This is an important point, for Apollo, by his eight years' service as the shepherd of Admetus, had actual experience of the lot of man, and came to have a great compassion for his pious earthly master. Moved by this sympathy he obtained for Admetus a respite from death, should any one be found willing to die in his stead.

“ But, trying all in turn, the friendly list,
 Why, he found no one, none who loved so much,
 Nor father, nor the aged mother's self
 That bore him, no, not any save his wife,
 Willing to die instead of him and watch
 Never a sunrise nor a sunset more.”

The fatal hour is at hand :

to-day

Destiny is accomplished and she dies.”

The drama, then, as we now see, is one of vicarious self-sacrifice. Alcestis voluntarily undertakes to go, in her youth and beauty, down to the cheerless abodes of the dead, that her husband may have longer life. To the ancient spectator, the sacrifice of the father or mother of Admetus would not have seemed abnormal: they had lived their life and done their work, and a few years more or less—what did that matter? Admetus was the humane and pious ruler, whose death would mean so much to his people. We must no doubt allow for the Greek way of identifying the individual with the state. From the older point of view, the individual had no claims as such: his rights consisted in his duties to the commonweal. Conversely, what was bound up with the good of the whole was of supreme importance. Of this view there are many striking instances in the Greek tragedians. Thus the foundation of the tragic situation in the *Agamemnon* of Æschylus arose out of the sacrifice of Iphigenia for the success of the Trojan War. Bearing this in mind we may, to a certain extent at least, understand how Admetus, the ruler of the state, should be willing to accept even the sacrifice of Alcestis. The lesser good must give way to the greater: the life of the family to the life of the state. There is not, in his view of the matter, any conscious selfishness. Admetus, as we are to understand, has been a beneficent ruler, as he has been a pious man, in the conventional sense of that term. His subjects not only

esteem but love him, and Apollo expressly says that he was holy like himself, i.e., that he never failed to discharge his religious duties. When, therefore, the alternative is offered to him of his own or his wife's death, we may easily imagine how, like other husbands, then and since, he persuaded himself that the public good called upon him to allow Alcestis to fulfil her promise. There is no indication that, before the fatal doom of his wife, he had realized the true nature of his act. It is in fact the bitter consciousness of what he had done, and the revolution in all his modes of thought, which constitutes the central interest of the play.

(Concluded in the next.)

L I F E .

She sings!

And sweet as birds in spring her song,
 For life is young and cares are few,
 And love is fair, and fond, and true,
 And o'er her sky's untroubled blue
 No shadows creep, nor motley throng
 Of clouds, give hint of coming wrong.
 And so she sings.

She weeps!

And fast, and bitter falls the tear;
 For youth is gone and love is fled,
 And all her heart's high hopes are dead.
 —Great clouds, athwart the blue, now spread
 Their solemn gloom, both far and near—
 Till all her world seems sad and drear.
 And so she weeps!

H. HELOISE DUPUIS.

Kingston, Ont.

INVENTIONS AND INVENTORS.

IT would probably not be wise to assert that no animal except man possesses the faculty of invention, for there are reasons for thinking that some of the higher classes of animals, at least, possess something, which if not the real inventive faculty, is closely akin to it. But man, whether prehistoric or historic, whether savage or civilized, in all ages and in all countries distinguishes himself as *the* inventive animal.

In the case of prehistoric man, the chief mementos that he has left us of his existence are remnants of his inventions—flint arrowheads, stone axes, and bone knives marking the presence of man and bearing testimony to his inventive faculties in palæolithic and neolithic ages. From still later prehistoric times have come down to us the remains of pile-supported lake-dwellings, of dug-out canoes, and of a variety of adaptations to the kitchen and to the chase, for, like savages the world over, the principal occupations of these primitive men appear to have been foraging for food, and then feasting and sleeping while it lasted.

No race of the present day is so low in savagery or stupidity as not to have numerous inventions, some of which, as the boomerang of the Australian, are worthy of a people of a higher grade, for in general, the character of a people's inventions is a pretty sure index of their position in the scale of civilization.

Invention is, in truth, one of the great factors of civilization, and the greatest inventors and the best inventions are to be found only amongst a highly civilized people.

We may go even further and say that invention and civilization react upon each other, and that while it is impossible to have a high degree of civilization without the freest use of the great inventions, so it is equally impossible to have great inventions realized except under the influence of a high civilization.

When we trace back any goodly river to its sources, we invariably find that it has its rise in the little purling rills, which, fed by springs, or summer rains or melting snows, come down from the higher lands and unite their currents in the larger

streams, while these streams gathered in from numerous valleys unite to form the tributaries which after miles of wanderings pour their waters into a single channel to form the river.

So with any one of the great inventions that minister to our comfort or assist in supplying our wants. It is the product and consummation of a thousand other inventions which preceded it, and without any one of which it would be less complete than it is, and without many of which it could never have come into existence.

The most cursory observation will show this. Consider the coat that covers our back, and think of the number of inventions which have aided in its construction under its present form. Consider the jenny that spun the yarn, the power loom that wove the yarn into cloth, the shears by which the garment was cut out, the thread which holds its pieces together, the sewing machine or the hand-needle which put in the thousands of necessary stitches; consider the large number of inventions necessary before the sewing machine, or the loom, or the jenny was possible—consider the inventions necessary to obtain and work the iron and the steel and the brass which enter into the construction of these machines—consider the numerous minor inventions such as lathes, drills, files, hammers, chisels, etc., which are necessities in the working and fashioning of the metals—and so on backwards until the mind is bewildered with the complexity of detail—I say consider all these things, and you then will be in a position to form some idea of the great part which invention plays in our modern civilization.

Nor is this a solitary instance. Every article of apparel from the apron of the South-Sea Islander, made of palm leaves or pounded bark, to the fine linen and plush and silk of the fashionably dressed lady or gentleman of our own land—every instrument of warfare from the knotted club or stone axe of prehistoric man to the thunder-mouthed guns of Krupp or Armstrong—every means of illumination from the smoking seal oil of the Esquimaux to the powerful electric arc—every musical instrument from the tom-tom of the African savage to the richly carved piano or the grand and melodious organ—every record of the thoughts of men from the totum of Indian tribes or the picture hieroglyphs of ancient Egypt to the printing press which

scatters its products by thousands over land and sea—all of these, and innumerable others tell us one and the same story, namely, that human civilization is to a very large extent the outcome of human invention.

It is a common saying that “necessity is the mother of invention”; or to elaborate the statement, that an invention is made when individual or social affairs have arrived at that stage in which the invention becomes necessary to the convenience or comfort or safety of the individual or the community. Undoubtedly this is often true, while it is probably as often untrue.

Thus the invention of the lightning rod, as a protection to life and property, resulted from the discovery of Franklin that lightning is electricity, and from the long known fact that the metals are ready conductors of electrical energy. Thus as long as men were ignorant of the true nature of lightning and believed it to be a deliverance from the red right-hand of Jove they felt no necessity for a protection against its destructive play. But when it was discovered to be a manifestation of a well-known form of energy, protection from its force became a felt necessity, and the lightning rod came into existence.

Many inventions, however, are not made because there is any pressing or even apparent necessity for them, but from an entirely different motive. Also the proverb that “necessity is the mother of invention” might with equal truth be read “invention is the mother of necessity.”

To explain what I mean—at the time of the invention of the electric light there was no immediate necessity for the invention, as gas was plenty and cheap, petroleum was abundant, and the oxyhydrogen and other brilliant lights were available for special purposes. So that the invention of the electric light did not result from any feeling of need in human affairs. But the invention of the electric light opened up so many new avenues of work, and the light became a necessity in so many new applications and processes, as to transform to some extent our social state. In doing this the electric light created a necessity for itself, and this necessity is now so great that it would be severely felt if the light and all it has done and is doing could be relegated to oblivion.

Numerous instances might be given in which inventions did

not result from any feeling of need for the good which they brought, but which coming into existence through a different motive, have so succeeded in lightening labour, or in increasing and therefore in cheapening desirable products, or in administering to our wants or our tastes in a variety of ways, as in time to make their existence a necessity on account of the modified social order which they have brought about.

Inventions may be roughly classified into the great and the trivial, with an indefinite number occupying all positions between these limits, and in some cases it is difficult to say whether something new should be ranked as an invention or as a discovery, as large numbers of inventions and discoveries are characterized by something of each.

The greatness of an invention must be measured by the effect which it exercises in the affairs of life, or in the progress of scientific thought and discovery. In this sense probably the greatest of all inventions was the letters of the alphabet, an invention so ancient as to have its foundation in traditional myths; and next this I would certainly place the invention of the Arabic system of notation and numeration, which opened the only possible avenue to the development of the immense body of medieval and modern mathematics, an invention again of which the date and the author are totally unknown.

Of more modern inventions, the art of printing, the steam-engine, the steam-ship, the railway, the telescope, the telegraph, the telephone, etc., are justly entitled to be called great inventions; some new kind of hair-pin or boot-buttoner is a trivial one.

Some of the great inventions consist of an accumulation of invention upon invention, and have been brought to their present state of perfection only after many years of improvement, and by the aggregate work and thought of many individuals; others, of more recent date, are in their present state due to one or a few notable inventors.

Most of the great inventions are founded upon important scientific discoveries, and are illustrations of the practical applications of such discoveries. Thus the achromatic telescope took its rise from the discovery made by Dollond, that in different kinds of glass the dispersive index is not proportional to the refractive index, the proportionality being assumed by Newton and

all previous physicists. The discovery by Faraday, that if a piece of insulated wire be coiled around a soft iron bar, the wire can be made to give discharges of electricity by magnetizing and demagnetizing the bar, has been peculiarly rich as a basis of inventional applications. From it has sprung Rhumkorff's induction coil, an important scientific instrument which has been made to give a continuous stream of electrical sparks, or veritable lightning, through a distance of upwards of two feet; the medical magneto-electrical machine, in which by turning a crank the patient can treat himself to the curative application of the wonderful fluid; the dynamo as improved by Gramme and Siemens and others; the electric-motor, which is a dynamo with its action reversed; and a numerous family of smaller inventions which cluster themselves about these.

In some cases, as that of the steam-engine, the fundamental scientific principle is so ancient that no record is left of its discovery; for in this particular case we know that the steam-engine in some form was known to Hero of Alexandria and his contemporaries about 125 B.C.

Many inventions have been as influential in the progress of scientific investigation as in the expansion of the arts, and it thus happens that invention and discovery go hand in hand and march forward with equal steps, each giving its aid to the other for the advancement of human work and the progress of human thought. But it is often the case that the name of the discoverer is enshrined in the nomenclature of that subject which contains his discoveries, while that of the inventor is lost in the oblivion of the past. Thus the names of Faraday, and Volta, and Weber, and Ohm have become parts of the nomenclature of physical science, and those of Caley and Hesse and Jacobi, and others of that of mathematical science; while it does not appear that any such honor awaits the name of Morse or Edison or Wheatstone.

And why should this be so? I venture the explanation that it is because of the different motives which usually actuate the discoverer and the inventor, and the consequently different effects which their labors have upon the minds and sentiments of those who see in motives something higher than mere practical results.

It was a dogma held by both Plato and Archimedes, and pretty generally assented to even to-day by men of the true scien-

tific spirit, that it is, at the least, inadvisable for scientific workers to seek to turn their discoveries to any practical use other than such as may lead to further discovery or advance the cause of scientific research. The scientific man pursues knowledge for the sake of knowing, and he reaps his reward in the mental satisfaction, arising at times to a veritable joy, which follows the making of some beautiful or important discovery. His business is not to enquire how the outcome of his work may affect human affairs, but to rest satisfied in the eternal truth that to enter into and to comprehend the ways of the Creator in this his mysterious universe must always bring to mankind good rather than evil. All that his discoveries may open up to man in the way of increased comfort, or a mastery over new forces, or a wider grasp of natural law, the scientific investigator is glad to make him thrice welcome to, for the spirit of the discoverer towards his fellow-man is one of pure benevolence.

It is doubtful how far this dogma is a proper one, and at any rate, in both ancient and modern times scientific men have, fortunately for the practical side of life, not been rigid in practising what they preached.

On the other hand, although no person will be inclined to doubt the beneficent effects of numbers of the leading inventions, if indeed of any of them, yet the spirit which in general actuates the inventor is not benevolence but the love of money. And with the exception of such scientific inventions, as have no general direct influence on public affairs, but serve only to aid in processes of investigation, an invention is made because "there is money in it." And the invention is then protected by a patent in order to cut off competition and thus to give to the inventor all the money that he can squeeze out of it.

I do not say that this is altogether wrong, for in some sense an invention is the property of him who made it, although in strict equity a greater part of some inventions should belong to the person who discovered the fundamental facts upon which the invention is based.

But if the motive of the inventor is money, it is difficult to see how from such a motive he can also expect to reap honor. Money and wealth are very necessary things in the constitution of human society, but we all know how unworthy a motive money

may become, and also that an inventor and his invention may become as grinding a monopoly as a coal-baron or a sugar-king in a protected country.

So great at times is the inventor's love of money that his description of his invention is largely an invented lie, as we see in regard to some of the smaller inventions, and especially in "patent medicines" and such nostrums as skin-beautifiers, hair-restorers, and many others. The patent medicine man is in many cases, however, a humbug, and not fit to be ranked with the noble army of inventors.

Owing to the influence which invention exerts upon civilization, it becomes important that every nation should encourage the inventor; and as he works usually with a money object in view, it is necessary that he be in some way protected; for the laborer is not much inclined to work who feels that he may be unjustly deprived of all or a portion of his wages.

But taking the whole community into consideration, is a patent the best way in which to reward the inventor?

The health of a city is all-important, and cleanliness is one of the great adjuncts to health. For this latter purpose there should be furnished a plentiful supply of pure water to every household, and especially to those dwellings which are illy ventilated and poorly drained. But if the city places its water supply in the hands of a money-greedy company or raises its water rate so high as practically to deprive the poorer classes of the power to respond, it defeats its own purpose, the very purpose for which the water supply has been provided.

So in regard to an invention that might have a beneficial effect on civilization. By granting it a patent you not only restrict its influence for the common good by raising the price of the patented article or process beyond the reach of the masses, you also prevent action in others who might have been thinking along the same line of invention, and who, influenced by more benevolent motives, might have given their invention for the good of humanity; and in this way a patent may, if it does not always, retard to some extent the advances of civilization.

It appears to me that a better way would be to have an invention submitted to a committee of experts, and if they, in their report, regarded the invention as being of marked advantage to

society, the invention should be given to the public and the inventor should receive a pension properly adjusted in relation to the importance of the invention.

I am aware that such a system might be open to grave abuses unless carefully and honestly worked, but they could not possibly be greater than the abuses existing under the present system, in which many a real inventor whose name should be a household word has died in penury and obscurity, while those who have taken advantage of his poverty to rob him of his invention, have entered into the possession and enjoyment of that to which they never had the shadow of a right in equity.

As already said, invention is a potent factor in civilization, and the great inventions, and probably the majority of the smaller ones, have a civilizing tendency, and are humane in their general effects. Thus even inventions such as gunpowder, sharp-shooting rifles, Armstrong guns, mitrailleuses, ironclads, and all other munitions of war come within this description, inasmuch as they tend, not only to lessen the mortality in individual battles, but also to bring to a speedy termination such wars as appear to become necessary from time to time; for it appears as yet that war is one of the necessary civilizing forces in this perverse world.

Thus in the war of Jugurtha against the Cimbrii in 101 B.C. we are told that about 140,000 of the enemy were left dead upon the field. Nothing like this fatality has occurred in modern times and with all our modern warlike appliances. In fact the final tendency of warlike inventions is to do away with war, and whether or not the time shall ever come when men shall beat their spears into pruning hooks and their swords into ploughshares, everything which tends towards such a consummation must certainly contain some good.

Those who, for any length of time, have followed the records of the Patent Office of any great country, such as the United States, will tell you that not much over ten per cent of all the patented inventions ever come into public use, and not much over one per cent outlive a few generations of people, while probably not more than one in a thousand are of such significant importance as materially to influence public affairs and determine to any great extent the course of future advancement; and yet many of the smaller inventions may be eminent successes for a shorter

or longer time until superseded by something else ; and possibly the great majority of them, whether successful for a few years or a few decades, exert some influence in shaping the line of development of a people. For invention begets invention, and without some of the smaller ones the greater ones could not have been ; and the country in which invention is appreciated and encouraged, although it may have many inventions of very small account, will certainly never lack the more important ones.

From a financial point of view, the small inventions are upon the whole as profitable to the inventor as the larger ones are, although it is often the case that one is compelled to wonder why certain inventions are made, or if the inventor, actuated by the usual motive, expected his invention to add anything to his income.

Thus we are told of a certain Marquis of Worcester who invented a little ball which when put into a person's mouth would forthwith shoot out so many bars and bolts that the person could neither close his mouth or remove the ball. The purpose of such an invention it is difficult to conjecture, unless the Marquis was some old-time dentist who was determined to keep his patients' mouths open, or unless he had a scolding wife and invented this means of reducing her to silence.

This invention of the Marquis' brings to mind an invention of the Esquimaux of North America, employing somewhat similar principles. The Esquimaux hunter takes a piece of elastic wood, or better of whalebone, about six or eight inches long, and makes the ends into sharp points. Then bending the piece so as to bring the points together, he fastens it in this position by freezing around it a quantity of seal or walrus fat, which in the winter of Greenland is soon effected, and thus fashions the whole into a smooth ball. This is placed in the way of the polar bear who seizes upon it as a delicate morsel and swallows it whole. Once in the brute's stomach, the whalebone, soon straightening itself out, pierces the stomach and kills the animal in a few hours.

Another inventor, having the welfare of the ladies in view, produced a parasol-holder which when fastened in some way to the shoulders of the dress, left both hands free. When it became necessary to change the position of the parasol, as upon turning a street corner, a single pull upon a properly arranged cord would

bring the parasol into the wind, or rather into the sun, something like the main-sheet of a well-rigged yacht.

Judging from the fact that this invention has never come into general use, one would infer that the ladies did not appreciate this inventor's humane efforts in their behalf.

Whether the Marquis patented his invention or not I never knew, but the parasol man certainly patented his, and he is probably the only one who knows its real effect upon the state of his finances.

The progress of invention must be dependent to a very great extent upon the progress of discovery. Thus if it were possible to discover some material which possessed the property of being unaffected by the magnet, and yet of being impermeable to magnetic action it would be possible to construct *the perpetual motion*. Many persons have, in vain, sought for such a material; and as the perpetual motion is, according to the physical law of the conservation energy, an impossibility, we must conclude that the discovery of such a material as the hypothetical one referred to must also be an impossibility.

One of the great desiderata of the present day is to get some means of producing a brilliant light without any very distinguishable amount of heat. In this case, however, it is feared that, although the solution of the problem is a possible one, the inventor will have to wait until very much further progress is made by the scientific discoverer.

And finally, the progress of invention is to a considerable extent due to the ability of the mechanic to put the inventor's ideas into material form; and thus the gradual improvement of practical mechanics is a necessary element in the progress of modern invention. To such an extent, in fact, has invention reacted upon mechanical processes, that the nineteenth century differs from the eighteenth as much in its mechanical possibilities as in its wealth of invention or in its remarkable scientific discoveries.

N. F. DUPUIS.

BOOK REVIEWS.

The Expositor's Bible.—The Book of Daniel. By F. W. Farrar, D.D., F.R.S. *The Book of Ezekiel.* By the Rev. John Skinner, M.A. Hodder & Stoughton, London. Fleming H. Revell Co., 140-142 Yonge Street, Toronto.

These two volumes of the Expositor's Bible are up to the average of their predecessors. That is high praise, for taking the series as a whole, 1887-1895, there are no English Commentaries equal to them in soundness and breadth of view, in thorough workmanship and in sympathy with all that is good in modern scholarship and methods. Dr. Farrar's exposition is characterized by his well-known exuberance of language and literary and historical illusions, and by the impetuous vehemence with which he supports his own views and pours contempt on all opponents. Mr. Skinner, the Professor of Old Testament Exegesis in the College of the English Presbyterian Church, holds generally the same critical position, with regard to the origin and perspective of Hebrew literature, as the Archdeacon of Westminster, but he calmly assumes the new positions, instead of defiantly shouting them aloud and girding at the traditionalists in almost every chapter. For more reasons than one Professor Skinner's is the better way. Biblical criticism is of little use except in as far as it enables us to understand and to appropriate, for the conduct of our own lives, the spiritual contents of the Bible better than our fathers did. If it has enabled us to do that, then modern preaching will be richer and even more helpful to the people than that to which we listened in our youthful days. But, if it only puffs students up with conceit, it has done them harm instead of good. Instead of feeding the flock, they will only stifle them—as Marget Howe put it—with the chaff and dust of the threshing mill. On this point Ian McLaren's wisdom is worthy of Solomon:—"When the Minister (Carmichael) blazed into polemic against the bigotry of the old school, the iron face (of Lachlan Campbell) quivered as if a father had been struck by his son. Carmichael looked thin and nervous in the pulpit, and it came to me that if new views are to be preached to old-fashioned people, it ought not to be by lads who are always ready and in-

tolerant, but by a stout man of middle age, with a rich voice and a good-natured manner. Had Carmichael rasped and girded much longer, one would have believed in the inspiration of the vocal points." But, while it is reverent and most reasonable, in dealing with the people whose sole desire is for spiritual food and guidance of life, always to remember that the mechanism of Scripture is secondary to the end at which Scripture aims, and that the preacher has only to do with that which is primary, it is otherwise in dealing with the Scribes who—by misleading the people as to the issues involved in modern criticism—bewilder and anger them against scholars and lightgivers, and who thus "shut the Kingdom of Heaven against men; entering not in themselves, neither suffering them that are entering in to enter." How melancholy, for instance, the contrast now between the state of things in the Old Country and in the United States. In the Republic the extreme censures and punishments of the Church are inflicted on men like Dr. Briggs and Dr. Preserved Smith, and for what offence? Simply for accepting truth which is accepted by every scholar of weight in the Presbyterian Churches of England, Scotland and of the whole continent of Europe, and which is actually taught not only in a popular series like the Expositor's Bible, but even in the Cambridge Companion to the Bible, a series specially prepared for Sunday-school teachers and the laity. When a Church persecutes its great men, the men who are God's choicest gifts to it, the evil unfortunately is not confined to the two or three individuals who may be—according to what is permitted by the spirit of different centuries—either physically or spiritually racked and tortured. It extends to the hundreds who are frightened away from study or cowed into silence, and to the thousands of the poor sheep who "look up and are not fed." The Church as a whole is thereby doomed to sterility.

Farrar on Daniel is a very readable book. Its very outspokenness and repetitions perhaps make it the more helpful to the average layman, who probably has been wont to regard it as the most wonderful of all the Old Testament prophetic books. Does he not find it in his English Bible, in the very heart of the prophetic Canon, binding the so-called major and minor prophets together? He has no knowledge that it was torn out of

its proper place and put there in comparatively recent times, by men whose reverence for the Hebrew Bible should have prevented them from taking such an unwarrantable liberty. The good men took the liberty none the less, for what will not man do, affirm or deny in deference to theological prepossessions? The Scribes who compiled the Old Testament into its three divisions never dreamed of putting Daniel with the prophets, and that fact alone shows that it could not have been written in the sixth century before Christ. In the Hebrew Bible we still find it among "the remaining books" which were appended to the Psalms, the great book of the third division, and in the very last sub-division of the books the inspiration of which was considered to be far beneath that of the Law and the Prophets. The arguments to prove that it was written about 167 B.C. by a gifted anonymous author, "who brought his piety and his patriotism to bear on the troubled fortunes of his people" at that terrible epoch are simply overwhelming.

Doctor Farrar is indignant at the insinuation so frequently made "that inability to accept the historic verity and genuineness of the Book arises from secret faithlessness and antagonism to the admission of the supernatural." But he should be above making any reference either to such insinuations or to such coarse appeals to the ignorant as "Then the book must be a forgery," "an imposture," "a gross lie" and so forth. Controversialists in the 16th Century did not think it wrong to poison the wells, or—according to well-approved Chinese methods—throw mud and stink-pots at their enemies. But those modes of warfare are not appreciated now save in a few high ecclesiastical circles. Men who have no conception that the imagination may legitimately construct moral legends or weave stories out of dim traditions of the past for highest use in the present, and that the Spirit of God may use that form of literature as readily as any other, and who are also ignorant of the inveterate tendency of Jewish teachers to convey doctrine by concrete stories and illustrations, on the principle that "the doctrine is everything, the mode of presentation has no independent value" are impervious to argument. The example of the Saviour—for the stories loosely strung together in the Book of Daniel are comparatively rude extensions of the parabolic form of teaching afterwards consecrated by Him—

might give them food for thought or at any rate cause them to moderate their tone. Since He has failed to teach them, no one else need hope to succeed.

Let us, however, always understand that the truly inspired man is he who sees "into the open secret" of the actual universe; who has insight into the very heart and soul of the multitudinous events which are taking place in the world around him, while other men are blinded by their glare and stunned by their noise, or misled by superficial appearances and by false prophets; who—in the spirit of Christ—discerns "the signs of the times" and declares to an angry world that its interpretations are wrong, and that the long-expected day of the Lord will be darkness to them instead of light, but that notwithstanding the counsel of Jehovah standeth sure and that His purposes shall certainly be accomplished. The prophet therefore invariably sees the present with absolute accuracy. He is also quite sure as to what the future will bring forth. But, dwelling on a high mount, where time and space are dissolved in the vision of God, he sees with other eyes than ours. It "is not given to him to know the times and the seasons, which the Father hath set within his own authority." To give him that power would be inconsistent with the free will of man. It is therefore vain to expect from him predictions of the exact order of coming events, according to days or years as counted by man. We must look to sooth-sayers, monthly prognosticators and spae-wives, for that sort of thing. All the prophets expected the times of Messianic blessing to come in their own day or immediately afterwards. So it seemed, in the foreshortening of the pictures presented to their glowing imaginations. Were they deceived then? No, verily. They were simply seeing with the eyes of Him to whom a thousand years are as one day and one day as a thousand years.

I conclude this necessarily brief notice with Dr. Farrar's testimony to his own appreciation of the Book of Daniel. It would be that of many others, who have been long repelled from it, as from the Book of Jonah, when they were told that they had to choose between accepting it as literal history or throwing aside the whole Bible on the principle of "*falsus in uno falsus in omnibus*." He says:—"It has never made the least difference in my reverent acceptance of it that I have for many years been

convinced that it cannot be regarded as literal history or ancient prediction. Reading it as one of the noblest specimens of the Jewish Haggada or moral Ethopoeia, I find it full of instruction in righteousness and rich in examples of life. That Daniel was a real person, that he lived in the days of the Exile, and that his life was distinguished by the splendour of its faithfulness, I hold to be entirely possible. When we regard the stories here related of him as moral legends, possibly based on a ground-work of real tradition, we read the book with a full sense of its value, and feel the power of the lessons which it was designed to teach, without being perplexed by its apparent improbabilities, or worried by its immense historic and other difficulties.

G. M. G.

Elementary Physiology. By Foster & Shore: Macmillan & Co.

A Text-Book of Physiology. By Dr. M. Foster. New edition, complete in one volume. Macmillan & Co.

The first of these books is, as the name indicates, an elementary text-book, and is intended as an introduction to the serious study of physiology. Though written entirely by Mr. Shore, the fact that it bears the name of Dr. Foster as joint author will give it an introduction to the scientific world that it could not otherwise get.

Of Dr. Foster's larger work little need be said. This edition is really his large five volumed book revised and condensed so as to bring it within the compass of a single moderately sized volume. The condensation has been achieved by cutting out all the parts on histology. There are many excellent separate works, such as Stirling's, on this subject, and the physiologist who writes a text-book nowadays on physiology should no more be expected to make it a text-book on histology than one on anatomy. Dr. Foster has also unified the work as a whole by omitting all those theoretical discussions in the larger book which made it read like a succession of articles from the *Journal of Physiology*. Not that he has excised all theory; there is still plenty of it; but it is here restrained and kept in its proper perspective in relation to the rest of the book.

K.

THE COLLEGE.

REPORT OF THE PRINCIPAL TO THE BOARD OF TRUSTEES FOR YEAR
ENDING MAY 1, 1895.

NUMBER OF STUDENTS.

The following table gives the numbers in the different Faculties for the last three years:—

	1892-3	1893-4	1894-5
Undergraduates in Arts	214	258	260
Extra-murals in Arts	38	33	67
General Students in Arts	25	31	38
Post-Graduate Students in Arts	13	15	25
Undergraduates in Law	4	4	3
" Theology	26	27	33
" Medicine	124	107	125
Students in Practical Science	—	—	5
Total	444	475	556
Or, allowing for double registrations	432	456	533

Several points in this table are worth noting. The decrease in the number of medical students in the year 1893-4 was due to the closing of the Kingston Women's Medical College. Our increase last session was chiefly in extra-murals and in post-graduate students. With regard to the first class, Queen's is—so far as I know—the only University in Canada which has put this means of systematic study within the reach of those who—after matriculating—are unable to proceed to a degree, by attending College classes. After a few oscillations—due to the discovery that the difficulties of University extra-mural study are very great—this class has increased so markedly that it is evident that our action has met a real want. Besides the direction which the Professors give, special correspondence-tutors are appointed, extra fees being charged for this form of assistance. The increase in the number of post-graduate students is also gratifying. There could be no better proof of the confidence with which the staff is regarded by the best students than the fact that they return to the old halls, after graduating, to pursue their studies further. From this class of men, the best results can confidently be looked for.

I would also call attention to the fact that our class-room accommodation is now all but taxed to the utmost. Should the present rate of increase go on, we must soon build or exclude all but fully matriculated students or over-crowd the class-rooms.

DEGREES CONFERRED.

At Convocation, the following degrees were conferred in course:—

In Medicine—M.D., C.M.....	25
In Theology (3 Testamurs and 1 B.D.).....	4
In Law (LL.B.).....	3
In Arts (47 B.A., and 16 M.A.).....	63
	—
	95

Last year the graduating class in Arts numbered 44, and it was the largest Queen's ever sent out. This year the number is 63!

In addition to the Degrees in Course, four honorary degrees were conferred. The Senate adjudged the following gentlemen worthy of the honour of LL.D.: His Excellency S. J. Way, acting-Governor of South Australia and Chief Justice of the Colony; George McCall Theal, Historiographer of Cape Colony, Capetown; George Christian Hoffmann, of the Geological Survey, Ottawa; and Robert Vashon Rogers, B.A., Q.C., Kingston. The conferring of degrees, *honoris causa*, on representative men of Australia and South Africa was intended by the University to mark its sense of the importance of the Intercolonial Conference which was held in Ottawa last July.

SCHOLARSHIPS.

We have some Matriculation Scholarships, but not one open to our 390 students in Arts. There is perhaps no University in the world so poorly off in this regard.

SCHOOL OF MINING AND AGRICULTURE.

The success of this School is most marked. In mining education, it has initiated three extensions quite new to Canada:—the holding of classes at the School for the benefit of prospectors, during the months of January and February; the sending of a member of the staff to outside mining centres, that the School may be taken to many who cannot come to it; and the establishing of a Mining Laboratory, for testing large samples of ores. Other experiments are contemplated. A Dairy School has been in operation during the past winter, attended by 115 students. All arrangements have been made for starting a School of Veterinary next October.

THE NEW FACULTY OF PRACTICAL SCIENCE.

Your action in establishing this new Faculty last year has been vindicated already, thanks to the energy and wisdom of the Dean, whose report is appended, and who—if properly supported—will make this branch of the University all that the country requires. Two rooms have been fitted up for it, in the basement, at a very moderate expense, one for teaching, the other as a workshop. The Dean asks

in his report for an instructor to superintend the workshop, and as the fees will probably meet the additional expense, there need be no hesitation in giving him authority to look out for and appoint a suitable person. But, it is also necessary to secure without delay a Professor or Lecturer in Electrical Engineering, and this appointment cannot be made, until some one interested in the new Faculty will guarantee the salary of a thoroughly qualified man. Professor Dupuis is not receiving a dollar for all the time and thought he is giving to this work. Surely the friends of Queen's and those who know how much the young men of Canada need the best practical training will strengthen his hands.

Very special thanks are due to Professor R. Carr Harris, of the Royal Military College, for his services as instructor in Civil Engineering. When one who is at the head of his profession, gives his services gratuitously, the debt is great. The amount of work done, from mere love of Queen's, is indeed remarkable.

MEDICAL FACULTY.

This Faculty deserves help, for it is helping itself and the cause of medical education with the utmost vigour. Finding that no practitioner can possibly give the required time to such studies as Pathology and Bacteriology, and recognizing their increasing importance, the Faculty has set aside a sufficient sum for the salary of a Professor, and they recommend for the chair Dr. W. T. Connell, a very distinguished graduate of 1894. The new building, which the Governors of the Hospital were enabled to erect out of the late M. Doran's legacy, is admirably equipped for gynecological cases, and its record—since it was opened—is said to be unexampled, as regards the large percentage of successful operations. One of the staff, Dr. K. N. Fenwick, has also undertaken to erect an operating theatre, and the students of next Session will have the benefit of this new building. Professor Knight's report, appended, will show the improvement as regards Animal Biology, and I would recommend that he be empowered to appoint a Fellow to assist him in Laboratory work.

Additional apparatus is required, and I now appeal to those medical graduates who have not yet aided me in equipping the Physiological, Histological, Pathological, and Bacteriological Laboratories, to come to my aid, with small or large gifts. The fund raised two years ago is exhausted, and I have promised further improvements, to cost about \$300.

FACULTY OF THEOLOGY.

In my report of last year, I pleaded for an additional Professor in this Faculty, pointing out that one could be secured if the General Assembly's College Fund were increased \$1,000 a year, and if the offer of Mr. Hugh Waddell bore fruit, but there has been no response.

In the meanwhile, we are taking what advantage we can of the Professors in the Arts Faculty, whose subjects bear most directly on Theology. The truth is that literature, philosophy and sociology might well be included in a Faculty of Theology, and that the rigid distinction so commonly drawn between the two Faculties, because the State is supposed to include the one in its sphere and the Church is understood to claim the other, is quite misleading. But, after all, it is melancholy to have a University, which includes a Faculty of Theology, without a Chair of Church History.

The Conference of the Theological Alumni brought out clearly how much our ministers are interested in the highest work done in the Faculty of Arts. The programme drawn up by them for next February is another illustration of this. I give it in full, for the benefit of those who wish to prepare themselves for taking part intelligently in the Conference:—

Forenoons.

- I. The Chancellor's Lectureship. Professor Watson on "The Philosophy of Religion of Kant and Hegel."

Books recommended to be read :

- (a) Kant—Caird's Critical Account of the Philosophy of Kant ; Vol. II., Book IV., Chapters I. and II.
 - (b) Hegel—Caird's Hegel (Blackwood's Philosophical Classics). Sterrett's Studies in Hegel's Philosophy of Religion.
- II. (a) Present-Day Problems of Canadian Preaching. Discussions opened by the Principal.

Book recommended to be read: Sanday on Inspiration (Bampton Lectures for 1893).

Papers to be written and sent in by Rev. D. J. Macdonnell, B.D., and Rev. James Bennett, B.A.

- (b) Other Present-Day Problems of Ministerial Work. Papers are invited on this subject, to be sent to the Principal by Feb. 1.

Afternoons.

- I. Sociology and Economics (under the guidance of Professor Shortt).

- (a) General view of Socialistic Schemes (J. Rae). Paper by Rev. John Hay, B.D.
- (b) Introduction to the Modern Industrial System (A. Toynbee). Paper by Rev. Salem Bland, B.A.
- (c) Problems of Poverty (Hobson). Paper by Rev. John J. Wright, B.A.
- (d) Problems of To-day (R. T. Ely). Paper by Rev. M. MacGillivray, M.A.

The following are also suggested: General Principles of Economics (J. L. Laughlin); Modern Political Society (F. C. Montague, P. Leroy-Beaulieu); Development of the Labor Problem (L. Brentano); Money and the Mechanism of Exchange (P. W. Jevons); Monopolies and the People (C. W. Baker); Social Diseases and Worse Remedies (T. H. Huxley).

II. Social Reunions of the Members of the Conference, with visits to the Library, the Museum, and the new Laboratories.

Evenings.

The Old Testament Conception of God. Rev. Dr. G. M. Milligan.
 Influence of Rome on Christianity. Rev. J. A. Sinclair, M.A.
 Influence of Greece on Christianity. Professor McNaughton.
 The Apologetic for the Times. Professor Ross.
 The Present Position of O. T. Historical Criticism. Professor Mowat.

UNIVERSITY EXTENSION.

The February Conferences are a form of University Extension. So is our extra-mural system. So are the evening lectures given every winter by the Professors.

In addition to these, Professor Shortt held classes in Political and Economic Science at two centres in Alberta, last Summer, of which I need say nothing, as he has given an account of them in the Quarterly.

BENEFACTIONS RECEIVED DURING THE YEAR.

In last year's Report, I stated that \$6,500 of the Doran bequest had been paid. The Treasurer has received since a further sum of \$7,500. The legacy of \$2,000, left by the late Mrs. Elizabeth Malloch, has also been paid.

The Honourable Senator Gowan, LL.D., has sent another donation of \$450 towards the fund which is slowly accumulating to endow a Memorial Lectureship, on Political Science, bearing the name of the late Right Honourable Sir John A. Macdonald.

The Rev. Dr. Smith will give, in his report, a full statement of all sums collected by him. The Treasurer has handed to me the following list of sums of \$100 and over received during the year through Dr. Smith:—

R. H. Klock & Co., Mattawa.....	\$ 125
John Sproat, Mansewood.....	100
Joseph Kells, Sunbury, Storrington	100
John C. Jamieson: Picton.....	100
Mary E. Heron, Ashburn.....	100

Professor Dupuis will acknowledge, in his report, which is appended, the benefactions received for the Faculty of Practical Science.

RECOMMENDATIONS.

We have now a Dean of the Faculty of Medicine, and a Dean of the Faculty of Practical Science. A Dean is still more needed in the

QUEEN'S QUARTERLY.

Faculty of Arts, to co-operate with the Registrar in disposing of applications which are made in the intervals between Senate meetings, to arrange the business for the Senate, and to attend to various matters which in the past the Principal has been obliged to look after.

The increase in the amount received from fees enables me to recommend the appointment of an additional Fellow in Moderns, and the granting of the Librarian's request, set forth in his report.

CONCLUSION.

I submit herewith the Reports of the Treasurer, of the Dean of Practical Science, of the Professors of Botany, Animal Biology and Physics, and of the Librarian, the Curator of the Museum, and the Superintendent of the Observatory.

G. M. GRANT, *Principal.*

Statement of Revenue and Expenditure for year ending 2nd April, 1895.

REVENUE.	
Temporalities Board	\$ 2,000 00
The Professors, Beneficiaries of Temporalities Board	1,050 00
Kingston Observatory, Grant from Government	500 00
Rent of Drill Shed	300 00
Rent of Carruthers Hall	1,250 00
Rent of Grounds	130 00
Chancellor's Lecturerhip (2 years)	500 00
Fees, Class and Graduation	\$ 4,018 71
Fees for Examinations, Libraries, &c.	3,995 02
Interest on Mortgages and other Securities	8,013 73
General Assembly's College Fund	19,822 93
Receipts for Scholarships	2,964 64
Interest on Jubilee Fund Subscriptions	3,310 74
Balance Deficiency	5,175 57
	<u>12,734 06</u>
	<u>\$ 57,751 67</u>
EXPENDITURE.	
Deficiency, 1893-4.....	\$ 13,260 52
Salaries—Professors and Lecturers in Theology	7,230 00
" Professors and Tutors in Arts	23,900 00
" Other Officers.....	2,155 00
Chancellor's Lectureship (2 years)	500 00
Insurance	153 00
Expended on Examinations, Library, Laboratories, Museum, &c.....	4,484 21
Expended on Practical Science Department.....	441 70
Taxes, Repairs and Grounds.....	524 53
Scholarship Account	3,310 74
Travelling Expenses.....	116 00
Advertising, Printing and Stationery	886 05
Fuel, Water and Gas	632 25
Contingencies.....	157 67
	<u>\$ 57,751 67</u>

QUEEN'S COLLEGE, KINGSTON, 27th April, 1895.

Examined and found correct.

J. B. McIVER,
Treasurer.

J. E. CLARK,
D. CALLAGHAN, } *Auditors.*

REPORT ON FACULTY OF PRACTICAL SCIENCE.

During the past Session we made a beginning in Practical Science courses. There was unavoidable delay in commencing some portions of the work, particularly so in practical mechanics. To fit up a workshop completely requires experience arising out of the wants which crop up from time to time, and even though the major machines might be furnished forthwith, yet the shop could not be complete in its equipment until actual work in it had gradually pointed out the deficiencies.

It is in this incipient state that we are at present, and although we are supplied with many of the larger and most important tools, we are not as yet in possession of many of the smaller, but frequently fully as important ones. We have two very good lathes, one of Birmingham manufacture, with a stock of appliances, and one celebrated Barnes lathe, obtained in exchange for the boiler which so long graced the rear approach to the main building. These form two important articles, but they would be of little use without power to drive them. Through the solicitations of that friend of science, Mr. A. T. Drummond, LL.B., Montreal, the Canadian General Electric Co., of Peterboro', very graciously presented us, through Mr. Fred. Nicholls, with one of their three horse-power motors, and the Superintendent of the Kingston Light, Heat and Power Co., Mr. B. W. Folger, kindly agreed to give us free power.

We are now under obligations to several other well-wishers of the new departure in this city. Mr. Sears presented us with an anvil, Mr. A. Strachan gave us ten dollars' worth of tools from his shop, and Messrs. Dalton & Strange have agreed to do the same, whenever we require tools or other appliances which they can supply, while Mr. Birkett, of the Canadian Engine Works, has kindly presented us, from his planing mill, a stock of dressed lumber such as will be required in various constructions in wood-work wrought out by the students. Mr. A. Cameron, Mr. Wm. McCartney, jr., and Elliott Bros., who were engaged in preparing our rooms for occupation, contributed respectively the following amounts: \$9.50, \$5.00, and \$5.00.

But our thanks for help received must extend beyond our own city, and in one instance beyond even our own country. At the request of Rev. Dr. Milligan, Messrs. Rice, Lewis & Son, of Toronto, gave us twenty-five dollars worth of tools and appliances, and Mr. Jeffrey, of the same city, supplemented a pretty long list out of his own hardware house.

Through Mr. Drummond also, Messrs. Alexander McPherson and Mr. Leslie, of Montreal, supplied us with a variety of vises and other

articles; Mr. J. M. Gill, of the James Smart Manufacturing Company, of Brockville, has been especially kind in not only giving us freely of such articles as he manufactures, but also in supplying a number of fine castings, destined for the construction of special pieces of apparatus, to supplement the tools and machines already in the workshop.

Of presents which serve the purpose of models, we must not omit to mention that from Messrs. Kennedy & Sons of Owen Sound, of one of their valuable six-inch turbine water-wheels, such as are being used at the Niagara canals. But, leaving our own country, we have especially to thank the Buffalo Forge Company for the presentation, through Mr. Sears, of one of their best portable forges.

Of the larger machines more particularly needed at present, is a modern shaping machine of moderate size, and we have the promise of such from one of the best manufacturing firms in the country, Mr. Bertram & Sons, of Dundas.

Next to this, but of less importance, is an upright drilling machine, and as classes grow larger and the students get further advanced, we see plainly looming up in the future the necessity of more accommodation, and of the housing of the different kinds of mechanical operations, such as smith-work, foundry-work, wood-work, and iron and brass lathe-work in different rooms.

We registered 5 students during the past Session, two of them being competent mathematicians. One, for private reasons, found it necessary to leave us in the middle of the Session, but we expect him back again. Two entered for civil engineering, two for electrical engineering, and one is taking mechanical work only.

The Faculty determined at the beginning of the Session to attempt only 1st and 2nd year work, as laid down in the calendar, and the work of these years is to a great extent along the line of Arts subjects. Of those subjects lying without, the Drawing, Surveying and Descriptive Astronomy were taught by Mr. Mason and myself.

Only two of the students were sufficiently advanced to be admitted to the workshop, and these were occupied in making two useful and instructive articles, viz., an experimental balance for studying the properties of the lever, and a differential wheel and axle.

I gave a great deal of my time to workshop instruction during the last three months, and as in future years I can employ my time to better purposes, it is urgent that a mechanical instructor be engaged, to direct students in the workshop.

I may here remark that it is the intention to turn the workshop to the utmost use by having made in it as many of the conveniences and finer appliances as can be done under the circumstances, and we hope after a few years to have the beginning of a mechanical museum.

It will be necessary during the next Session that a full experimental course of instruction be given in the subjects of electricity and magnetism.

N. F. DUPUIS,
Dean of the Faculty.

STATEMENT OF EXPENSES.

To fitting up rooms in basement	\$ 238 20
To Machinists' work	56 30
To expenses in visiting other Institutions	128 75
	<hr/>
	\$ 423 25
Paid for material and small tools.....	17 63
	<hr/>
Total Expenditure.....	\$ 440 88

REPORT ON BOTANY CLASSES.

Students present at Junior Botany Examinations	12
" " Honour " first year.....	9
" " " " second year	4
	<hr/>
	—25

During the Session I have been present in the class-room from 9 a.m. till 1 p.m., to direct those who took practical work. The microscopes asked for last year were received at the beginning of the Session, and a much larger amount of work has been accomplished than in any previous year.

Through the kind assistance of Dr. Knight, a box of alcoholic specimens for microscopic work, was obtained from "The Supply Department of the Marine Biological Laboratory" at Wood's Holl. The supply will be sufficient for some time. A collection of mounted specimens from A. T. Drummond, LL.B., has largely increased our facilities for studying the marine algae.

On April 9th I took advantage of an excursion to Washington to visit some of the Universities of the United States. At Washington I had the privilege of meeting several botanists, and under their guidance visited the Smithsonian Institution and the National Museum. Several hundreds of specimens of my own collecting are treasured up in these vast collections. At Baltimore the Johns Hopkins University was visited, and two of Queen's students were found busy with their books and apparatus. The names of sixteen Canadian students appear on its list for the present year. The University of Pennsylvania at Philadelphia, and Columbia College, N.Y., were also visited. I cannot refrain from expressing my indebtedness to all the Professors

of these institutions with whom I came in contact, for their extreme kindness and readiness to show me everything of interest in their departments. The University of Pennsylvania has a staff of 18 officers directing the courses in Biology, of whom five are Professors of Botany.

My special object was to see the apparatus and arrangements for prosecuting the study of Physiological Botany—a subject which is coming into prominence in many Colleges, and is of great importance in the scientific study of Agriculture. I hope to be able next Session to make a beginning in this work, should the Board deem it wise to authorize the expenditure of a small sum for necessary equipment. The opening of a door between my present class-room and the old chemistry laboratory, now unoccupied, is an absolute necessity for the success of my class work next Session.

The sum of \$100 is necessary to procure jars, alcohol and pieces of necessary apparatus for next Session's work. Shelves are also much needed.

Expenses for the Session, as per vouchers attached	\$ 23 79
Expenses of visiting the U. S. Universities	35 00

(Signed)

JAMES FOWLER,

The John Roberts Allan Professor of Botany.

REPORT ON ANIMAL BIOLOGY.

The total registered attendance in this department during the past Session was 95. In the junior class in arts, 6; extra-murals, 6: in first year honors, 7; extra-murals, 4: in honors, 8. In medicine, animal biology, 36; first year physiology, 30; second year physiology, 28; histology and embryology, 27, bacteriology, 17.

Why the attendance in the junior class in arts remains so small I cannot understand, unless for the reason suggested in my last report. The medical students were, during the past Session, required, for the first time, to take the pass class in junior Animal Biology. They attended the arts class in this subject, and my work in arts and medicine, has to this extent been unified. Two hours a week were devoted to practical work. This was rendered possible by the generous aid given by you and the medical graduates who provided the means for equipping the lockers of the Laboratory last fall. Besides giving the class a general view of the animal kingdom, certain types were

selected for special study. The types chosen were, in the first place, such as would assist medical students in understanding human anatomy, physiology and histology, and in the second place, they were such as had a direct bearing upon medical practice, so far as these two objects were compatible. It was, in fact, for these two reasons that the types selected were mainly those recommended by the Con-joint Board of Examiners of the Royal College of Physicians and Surgeons, England.

During the past three years I have experienced difficulty in teaching physiology to the medical students who had no previous knowledge of physics. An elementary knowledge of physics is an absolute pre-requisite to the study of physiology. I have accordingly urged, for the past two sessions, the addition of this subject to the medical curriculum, and the Faculty has agreed to require it from all candidates at matriculation after July next. Failing to take it at their matriculation, students will be required to attend a special course of 25 lectures and demonstrations in Prof. Marshall's class. In adding Animal Biology and Physics to the curriculum, the Medical Faculty is trying to keep abreast of the medical thought of the time.

In previous Sessions I had done practical work with second year men in medicine, and with honour men in arts, and with no others. Last winter I attempted it with the juniors in both arts and medicine. Consequently I had a total of 85 students doing from 2 hours to 5 hours' practical work each per week. I do not propose to increase the time spent in this way, but in order to do the work at all well, I must ask assistance for next Session. The assistance is necessary not merely on account of the increasing number of students, but because I desire to make the greatest possible use of the apparatus provided by the subscribers to the apparatus fund.

Those who have made sacrifices in the interest of this fund will be glad to know that during the past two Sessions the students in both arts and medicine have contributed to its success. During 1893-94, the laboratory fees from arts students amounted to \$93.00, and from medical students \$72.00. Last winter the corresponding figures were \$87.00 and \$104.00. Once our equipment in animal biology becomes fairly complete the annual income from laboratory fees will suffice to maintain it.

In my last report I called attention to the necessity of providing for post-graduate instruction in medicine in order that our graduates might be able to complete the fifth year of study now required by the Medical Council of Ontario. The first step towards complying with the Council's requirements has been taken in the appointment of a Professor of Pathology and Bacteriology, Dr. Connell, who will hereafter devote his whole time to these subjects. As he is not here to speak for himself, I should like to say on his behalf and on my own also, that our private rooms, in which we must prepare much of

the material for class demonstrations, are not adequately heated. During the past three Sessions they have never been warm enough to work in, from November to the end of March. The histology and pathology class-room is never warm in cold weather.

Dr. Bourinot writes me that he intends calling the attention of the Royal Society of Canada to the desirability of having a lake or sea-side laboratory established in Canada, similar to the one at Wood's Holl, Mass. Until such an institution is in operation, I would recommend that a three months' course at Wood's Holl (after having passed our junior class) should count as the equivalent of one Session in honor zoology. I would also recommend that instead of a medal in Animal Biology, the sum of \$50.00 be given to the best honor graduate of the year, on condition that he spend a season at Wood's Holl, under the supervision of the Director or Assistant Director of the Laboratory.

I have to withdraw the recommendation made last year regarding the sale of the old microscopes. With the greater experience of last winter, especially with the junior students, I see that the old instruments are exactly the ones to place in the hands of beginners, until they have learned how to use good ones.

As regards our more immediate wants I beg to submit the following recommendations :—

1. That a larger number of reference books be transferred from the University library to my laboratory,
2. That additional papier mache models for teaching comparative anatomy and physiology be purchased in France or Germany, at a cost of about \$200.00.
3. That a dust-tight case or cabinet be ordered in which to place the physiological instruments now belonging to my department ; cost, about \$50.00.

(Signed) A. P. KNIGHT,

The John Roberts Professor of Animal Biology.

THE MUSEUM.

The Curator of the Museum begs leave to report that, in the Department of Rocks, Minerals and Fossils, very few specimens have been received during the past year, all such objects being now sent to the School of Mining. As the Museum already contains specimens of

all rocks and minerals that can be procured without special efforts to obtain them from distant localities, few additions can be expected in the future.

In the Department of Zoology a fine collection of 29 birds and 4 squirrels has been received from the family of the late R. M. Horsey. The specimens are in good condition, well-mounted, and deserve special acknowledgment.

Several students have repeatedly offered to procure specimens of skins, if the Trustees would undertake to pay the necessary expenses of mounting and freight. Unless something of this kind is done, very few additions to our collection need be anticipated. The mammals of our country are fast disappearing, so that their value is fast increasing; consequently the prospects of obtaining them as gifts are continually decreasing. None except the squirrels mentioned above have been received for several years.

In the last report it was stated that the Government Entomologist at Ottawa had offered to prepare for the College as complete a collection of the Insect Fauna of the Province, of agricultural importance, as could be procured. A few months ago he informed me that he had secured the necessary cases and that the collection was in course of preparation. Other members of the Entomological Society of Ottawa are contributing specimens to the completion of the collection.

The Herbarium has been increased by a large bundle of plants received in exchange from the Missouri Botanical Garden at St. Louis, and from the Gowan prize collection of G. Guess, M.A.

Prof. Shortt also spent most of the summer in the Province of Alberta, and made a collection of the Flora of the localities in which he spent sufficient time for the purpose. His specimens are remarkably good and many of them new to the Herbarium. These additions necessitated the purchase of a larger amount of paper than was anticipated. About 2,000 sheets of specimens have been mounted during the year.

The kindness of "The Trustees of the Missouri Botanical Garden" deserves special mention. They furnish us with copies of their annual reports, which contain valuable papers, and send an invitation to the Professor of Botany to be present at their annual banquet, to which they "invite literary and scientific men, and friends and patrons of the natural sciences." The expense of the journey has hitherto prevented the acceptance of the invitation.

Expenses during the year, as per vouchers attached.....	\$ 49 44
Annual Grant	30 00
	<hr/>
Amount due Curator	\$ 19 44

The usual grant of \$30.00 will probably suffice for the present year.

JAMES FOWLER, *Curator.*

THE LIBRARY.

The number of books added to the Library during the past year has been larger than usual. This is due chiefly to the addition of two valuable collections. Early in the year Mr. J. Jones Bell, of Toronto, and Dr. Robert Bell, of Peterborough, presented to Queen's the very valuable collection of books, pamphlets, reports and papers relating to Canada, made by their father, the late Robert Bell, of Carleton Place. This collection has been placed in a separate alcove, and will be known as "The Robert Bell Collection."

The other special collection consists of an almost complete set of the British acts, reports and statistical abstracts, relating to British North America, and extending from the year 1700 to 1892.

Valuable donations were also made by the heirs of the late Sheriff Treadwell, of L'Orignal, Mr. Andrew Drummond, of Ottawa, Messrs. Macmillan & Co., and many others.

The following is a tabulated statement of the additions for the year:

Purchased.....	851
Bell Collection..	511
Other Donations ..	391
Periodicals	63
Total number of volumes	1816

This does not include the collection of British reports, numbering about 1,100 and contained in solander cases.

ABSTRACT OF FINANCIAL STATEMENT FROM AUDITORS' REPORT.

Total Receipts.....	\$ 1,574 10
Expenditure	1,544 22
Balance.....	\$ 29 88

The growth of the Library and the increasing number of students, especially of those in the advanced courses, renders more urgent the need for a general reference catalogue, which will make the contents of the Library more readily known and serviceable. Some form of the card system of catalogue, adapted to the special needs of the University, would seem to be the most suitable. I have not had opportunity to examine the various forms of the system in practical operation, and therefore am not able to present very definite recommendations. I think, however, that from \$300 to \$350 should be sufficient to prepare a catalogue of this description. One great ad-

vantage of the card system, in any form, is that it permits of indefinite expansion at very trifling cost.

During the past Session Mr. James Rollins, B.A., rendered very efficient service as assistant Librarian.

ADAM SHORTT, *Librarian.*

REPORT ON PHYSICAL LABORATORY.

Herewith I enclose the account of expenses incurred during the past Session for physical apparatus. The balance, \$322.89, is nearly all due to Messrs. Negretti and Lambra, of London, for apparatus purchased last year. They have not sent me their account, but I may get it any day.

25 students took advantage of the Laboratory last winter under the superintendence of Mr. S. A. Mitchell. If an assistant were appointed to attend all day, many more would gladly take advantage. It is to be hoped that this will necessarily follow an extension of the work on the side of the practical sciences. The work of carrying on four classes in Physics was so hard last Session that I had little time to devote to extension of Laboratory work. As this class-work is yearly increasing, there is greater need than ever of a properly paid assistant in the Physics Department.

Receipts, 1894-5--Balance	\$ 81 04
From Treasurer, Apparatus Fees	333 00
Interest	3 26
	\$ 417 30
Expenditure, as per accompanying statement	\$ 54 41
Dr. Williamson, for Observatory	40 00
Balance	322 89
	\$ 417 30

(Signed)

D. H. MARSHALL,

Professor of Physics.

QUEEN'S QUARTERLY.

OBSERVATORY REPORT.

Since last report a King micrometer for the Equatorial, and a new diagonal eye-piece and spare web for the transit have been added to the apparatus of the Observatory, from Fauth & Co., Washington. I found it also desirable after their long use to have the object lenses of the Equatorial repolished and took them to Alvan Clark & Son, their makers, for that purpose, and their performance is now all that could be desired.

It is but fair to Messrs. Fauth & Co. to mention that the sidereal clock received from them a few years ago, by a comparison of its daily rate with that of the clocks in the most thoroughly equipped observatories of Europe, has proved itself to be a time-keeper of the most perfect kind.

The time has been duly given to the city and shipping throughout the year. Observations of a general character have been made from time to time, and a weekly class has been held for practical instruction of the senior students.

JAMES WILLIAMSON,

Director of Observatory.

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