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V. P. JOURNAL.

VOL. II.]

SEPTEMBER, 1884.

[No. 3.

WELCOME TO OUR SHORES.

To the Secretary of the B. S. A., Montreal:

ON behalf of the Science Association of Victoria University, we extend a most hearty welcome to the members of the British Science Association on this their first visit to Canadian soil.

As Canadians, we feel honored by the presence of so many illustrious scientists. Our land and people are among the phenomena of nature, and, as existing facts, deserve study and examination on the part of the most able students of science.

In the interests of science, we place our country and ourselves before you for observation. Canada, with her unlimited resources, her forests, minerals, rich agricultural lands, fisheries, insects, birds and animals, presents a fertile field for study. Private and public enterprises, education, religion, and the various nationalities represented here, form a complex subject for investigation. Come and possess, as ye may, this great heritage. Accept our freely bestowed hospitality, and aid us in our attempts at national progress and self-elevation in all that ennobles the human race.

We humbly express the hope that you will become personally acquainted with the vastness of our country and its richness; and that many of you will be tempted—nay, prevailed upon—to take up your abode with us, and become fellow-

citizens with us in developing our country and directing our energies in all departments of scientific research.

Again, welcome to this New World, possessed by the great Anglo-Saxon people, willing co-workers with all nations in the cause of truth.

TO-DAY AND TO-MORROW.

WE build great hopes when the morning sun
 First welcomes our feet to the rosy earth ;
 "To-day," we say, "shall the deed be done,
 That shall crown our lives with enduring worth.

"But the day is long ; let us sit and rest,
 For the clamour of toil the young day mars ;
 The evening becometh labour best,
 With her cool south winds and her gleaming stars."

And, big with the purposes of To-day,
 We scornfully laugh at our fruitless past,
 While the hours go silently gliding away
 As the yester hours, till the day, at last,
 Has slipt from the golden keep of life,
 And the evening comes with its shadows long—
 We have struck no blow in our chosen strife,
 Nor woven a line in the deathless song.

"Ah, the day was dark," we console the heart,
 "We will sleep a little and then arise,
 And To-morrow we'll finish a double part"
 (To-morrow has ever auspicious skies).

Thus day by day, with this flavourous lie,
 With this spectral hope life lures us on ;
 The hours are lost, and the years flit by,
 Till life itself and its hopes are gone.

—A. M. TAYLOR.

THE UNIVERSITY QUESTION.

WE are glad to be able to place before our readers Dr. Sutherland's most excellent article on Higher Education. We are also glad to learn that it is to be printed in tract form. Friends of Old Vic., of Methodism, of Christian morality, secure as many copies of this pamphlet as you can, and circulate them from the Atlantic to the Pacific. But why do we make such an appeal? Because we believe the removal of the university to Toronto, for the purpose of allowing our students to study, say, science, mathematics, and classics at the State university, would be sure death to Old Vic. Who would go to the University of Toronto for the very heart of his course, and then graduate from Victoria? Would one in ten of her present students? We think not. The duty of Methodism, now the largest Protestant Church in the Dominion, is, we think, to most thoroughly equip her own university, and thus prepare herself to take the first place as a moulding influence in the nation. It may be asked, "Can she do it?" Let no man's heart fail him. She raises about \$160,000 annually for missionary purposes. Let it be put squarely before her and she will do the same for education and never feel it. In fact, the more she does along that line the more wealthy will she become. We have but to look about us to become convinced that intelligence leads to wealth. It may be asked, "Would it not be well to have but one university for the province?" Yes, it would be well on this condition, that *all* the others would give up their charters, and that *all* should depend for support on the voluntary contribution of their friends; or on condition that *all* should be helped by the government according to the work done. But we consider it would be foolish in the extreme for the Churches to hand over the direction of one of the greatest works on earth to the State. States have erred. Infidels may find their way to power in the State. They have done it in some States already. They may find their way even to a State university. The thing is conceivable. Are the Churches

to be asked to hand over the teaching of their sons to the care of men whose moral principles may or may not be the most elevated? Is it not the duty of the Churches to act together in securing for the country what they deem best? If the Churches place a thorough plan of instruction before the government must they not respect it? Is it not for the Churches to tell the government what they deem best, rather than throw out hints that they would be glad to hear from the government? Could not the Churches make themselves more strongly felt in the governing of the Dominion? These are questions we would all do well to study. We are glad to see that Dr. Sutherland has spoken out, bravely and wisely, his honest convictions on the most important matter that could be placed before a Church or nation. Why do not the leading men in our university give the Church and the world the benefit of their views on the matter? Surely every man should make his influence felt when the greatest interests of his Church and his country are at stake. What is any man other than what he is in a crisis?

We hope this agitation will but serve to bind the hearts of Victoria graduates to their *alma mater*, and that a great and steady effort will be made to make Victoria University still more efficient in every department. Let our laymen and ministers be a unit, and success must crown their efforts. It cannot be thought that Methodism, which bravely, yes, heroically, sustained her university when she was less able to do so, will now, when God has blessed her with unity and no small measure of wealth, step practically down and out of her position in this regard. The Methodist Church has heart. Do not be afraid of letting her know what Victoria needs; and, unless she has greatly changed, she will do nobly toward the university which has so long had her confidence and her support.

“LET knowledge grow from more to more,
But more of *reverence* in us dwell;
That mind and soul according well
May make one music as before.”

NOTES.

ALBERT COLLEGE.—We are glad to learn that Albert College, though she will cease to teach the Arts course, will be continued as a thorough high grade school. May she have the greatest prosperity and prove a thorough helper of Old Victoria. We shall give a hearty welcome to the undergraduates she will send us in October, and we fondly hope she will send us many matriculants in the years to come. It is the interest of Methodism to prove loyal to her own institutions. Thus can we build ourselves up in everything great and good. Our ministers and influential laymen can do no better work for those among the young who give indications of inherent ability than urge them to prepare at Albert for Victoria University. Those who work for Albert are working for Victoria, and those who are working for Victoria are working for Methodism. If our ministers will but work, we have no doubt many more students will soon crowd our halls. We appeal to our ministers. Send your sons to our own institutions, and urge others to send theirs. Our university is second to none. Her sons are taking positions of honor. Let there be united effort, and success is certain.

VICTORIA COLLEGE.—The following candidates wrote at the matriculation examination lately held in connection with this university:—G. R. Clare, Belleville High School; F. R. Clarke, Colborne High School; Miss J. Ellsworth, Peterboro' Collegiate Institute; G. E. Farrer, Cobourg Collegiate Institute; J. W. Frizzell, Cobourg Collegiate Institute; Clyde Green, Cobourg Collegiate Institute; F. Humphries, Belleville High School; Miss E. Keele, Peterboro' Collegiate Institute; S. Keith, Kingston Collegiate Institute; G. W. Kerby, Cobourg Collegiate Institute; R. M. Lett, Cobourg Collegiate Institute; S. Maybee, Napanee High School; S. N. McAdoo, Hawkesbury High School and Cobourg Collegiate Institute; J. W. McAllister, Cobourg Collegiate Institute; G. F. McCullagh, Cobourg Collegiate In-

stitute: H. McGuire, Cobourg Collegiate Institute; W. T. Norman, Richmond Hill High School; A. B. Osterhout, Cobourg Collegiate Institute. As all matriculation honors, prizes, etc., are awarded at the examination which begins September 22nd, the full and classified lists of this year's matriculants are not published till that time. We congratulate those who have written on the June examination. Among them there are many with whom we are already acquainted, and thus know that they give promise of being an honor to our university. Plod on, boys; in this world nothing succeeds like plod. We hope to hear of many more writing in September, and that the class of '88 will be strong in every sense.

ENERGY and ability are generally crowned with success. Mr. E. Odlum, M.A., one of Old Vic.'s most loyal graduates, has lately been the recipient of several honors. Through the Science Association of Victoria University, he was appointed delegate to the British Science Association which met lately in Montreal, and of which he is a member. Shortly after this honor the Superintendent of the Meteorological Department, Mr. C. Carpmael, placed under Mr. Odlum's management the Observatory at Pembroke. To this is attached a salary of \$180 per annum. During an exploring tour along the line of the C. P. R., and around Lake Nipissing, he was favored by forming an addition to the Geological Survey, which, under Dr. Selwyn, was examining the limestone formation of the Manitou Islands of Lake Nipissing. Here many fine fossils were secured, and no doubt will eventually find their way to the museum of Victoria. A few days after returning to Pembroke a telegram from Mr. H. Abbott, Manager of the C. P. R. construction works, called him to the honorable position of Prospecting Mineralogist. We congratulate Mr. Odlum on his marked success, and fondly pray that each of Old Vic.'s graduates may thus plod and thus succeed. Let us never forget that, as a general rule, the tools fall to the man who can use them.

THE SCHOOL SYSTEM OF ONTARIO.

II.

IN the April number of the V. P. JOURNAL this question was referred to at some length, and condemnation was passed against the present school system in its relation to teachers. We promised to submit a new system, or a plan by which we may secure a better system than that now obtaining. The plan of striving to improve what we have rather than aiming at a complete subversion of all existing organizations, is a wise one, and is our choice.

We must act out our convictions on all state questions, or fail in the discharge of our highest duty. We are a part of the great present, past, and future brotherhood of humanity, and *must* act in relation to the family rather than in the interests of self. Personally it would be a pleasant thing to go quietly on our way rejoicing, and let others strive for change and improvement. But the vast family compact is the most sacred thing out of heaven, and its highest interests demand our earnest and wisest endeavors. The pure-minded, philosophical, and liberal-souled statesman and orator, Burke, says: "Society is indeed a contract. It is to be looked on with reverence, because it is not a partnership in things subservient only to the gross animal existence of a *temporary* and *perishable* nature. It is a partnership in all science, a partnership in all art, a partnership in all virtue, and in all perfection. As the ends of such a partnership cannot be obtained in many generations, it becomes a partnership not only between those who are living, but between those who are living, those who are dead, and those who are to be born. Each contract of each particular state is but a clause in the great primeval contract of eternal society. With this view of society, the *statesman* will approach all legislative work with a deep reverence and holy awe. It is a work of true majesty—that of true reform. And now with a firm belief that the present system of engaging teachers, and of

disengaging them, is degrading we strive to indicate a plan of change :

A. 1st. As a preparatory step, the Ontario Legislature should send a commission or deputation to the United States, Great Britain, Germany, France, Austria, and other countries, for the purpose of obtaining *visual and auricular experience* in their schools, among their teachers, and with their various educational departments.

2nd. The main object to be kept in view should be the relation of the teachers to their governments and engaging corporations.

3rd. The men to compose said deputation—say three in number—should be experienced, highly educated, vigorous teachers—men who are now in the profession and possessed of a large share of good sound sense.

4th. The Minister of Education, or the Legislature, would do well to offer a valuable cash prize to the man submitting the most comprehensive and perfect system by which the teaching profession could be put on a basis of permanence and dignity.

B. 1st. The plan—*finally* adopted—should make provision for placing the profession on the same basis as the Civil Service, or rather should be made a part of the Civil Service of the Province.

2nd. It should provide for a fixed grade of qualifications for teachers—say three grades for the public school.

3rd. A minimum salary should be *fixed* for each grade of \$400, \$500, and \$700 annually.

4th. Salaries should increase according to time of service and qualification of teachers.

5th. Boards of trustees should not have it in their power to unseat a teacher without a just cause. His position is too often taken from him by the changes and whims of a fickle and unreasoning multitude.

6th. For public schools the three grades of qualification should be nearly as at present, and so named *first*, *second*, and *third*.

7th. The third-class teacher should, on passing the examination, attend a model school a given time, and on approval by the proper authorities receive a certificate *for life or good behaviour*. Such graded and salaried teachers are needed, and will always be in demand in poor and backward rural sections, and in the lower departments of graded town and city schools.

8th. The second-class teacher, on passing a suitable examination, and having taught successfully for one year at least, should receive a certificate for life.

9th. The first-class teacher, on passing the examination, and having taught successfully for two years at least, should receive a certificate for life. Such a certificate should qualify the holder for headmastership of any public or model school, or as an assistant in a high school.

10th. Undergraduates of the first and second year of any recognized university should be eligible to teach in the capacity of a third-class teacher without being required to attend a model school.

11th. Undergraduates of the third year should be eligible to teach in the capacity of a second-class teacher.

12th. Undergraduates of the fourth year should enjoy the privileges of first-class teachers.

13th. Graduates should be eligible for the position of headmasters of grammar schools and institutes, also of public school inspectors after an active service of five years.

14th. Honor graduates, and pass graduates holding second year's standing in any post graduate course, should be eligible for high school inspector after having served five years as headmaster in a high school.

The above is not intended to be a detailed or an exhaustive scheme. It forms a groundwork only, and indicates a desirable line of legislation. Teachers throughout Ontario will certainly favor the leading idea, even if they see a better plan of working it out to completion. We are ready for criticism, suggestion, opposition, and *support*. The plan is feasible, and will, in spite of prejudice and opposition, eventually obtain in Ontario.

Then teachers will see a permanence in their calling. They will become *men*, fearless as other professional men, and walk about on God's earth as though they have souls and bodies which they may claim as their own. Dignity, independence, and vitality will be characteristic of the profession. As the present Minister of Education is an active, living, progressive man, we may soon look for some such a move as is forecast in these pages. X.

SHALL OUR HIGHER EDUCATION BE CHRISTIAN OR
INFIDEL?

AT intervals for more than fifty years the question of Higher Education has agitated the thought of this country, and passing events seem to indicate that once more it must be the subject of careful enquiry. Within the next decade—perhaps half that time—important questions affecting the educational policy of the country, especially of Ontario, will have to be settled, and a direction will be given to the currents of scholarship that in after years will be very hard to turn. It is important, therefore, that the currents now set in motion be guided in safe directions, and that the policy adopted be such as will conserve the best interests of the State. The real facts must be brought to light: the prejudice that has enshrouded the question must be dispersed: the principles which are to underlie and guide our educational policy must be discussed, and a safe path marked out, if possible, for the future. In a word, the all-important question of Higher Education must be settled in such wise as shall meet the just demands of the people at large, and bring the advantages of liberal culture, under the best and safest auspices, within reach of the largest number of the young men—and young women, too—of the nation.

Waiving subordinate points and side-issues, the great questions to be settled are these:—

1. Shall Higher Education be entirely secular, or shall the

religious element, in the form of Christian evidences and Christian ethics, be incorporated with the educational system of the country ?

2. Can the work of Higher Education be done most efficiently by several independent universities, each with its own affiliated schools, or by a single university with confederated colleges ?

3. Is it the duty of Government to provide entirely for the Higher Education of the country, or merely to aid and encourage independent universities in providing for it ?

Each of the preceding questions is important ; each is worthy of discussion ; but I shall confine myself, in the present paper, to the first of the three. So far as this aspect of the problem is concerned, we live in perilous times. In some quarters there is not merely a disposition to undervalue the religious element in education, there is a disposition to ignore it altogether,—to separate it utterly from our educational system,—to cast it out as unworthy a place in the *curricula* of our universities. Men sometimes speak of “Science *and* Religion,” or “Culture *and* Religion,” as though they were things entirely separate and distinct ; while some speak of the “conflict” of science and religion, and others try to “reconcile” science and religion, as if they were positively antagonistic. The thought is misleading ; the divorce is unnatural. Culture and religion are not antagonistic ; the one is the completion, or, rather let me say, the one is the soul of the other.

I do not propose to *defend* the religious element in education. With those who understand the question it needs no defence, but at once commends itself by its adaptation to the needs of the human mind. A non-Christian system of education needs defence, and in the near future will require all the arguments that can be mustered in its support. It has been too much the fashion to treat what has been justly called a godless education with great deference, as though it were master of the situation, and could dictate its own terms. I repudiate the concession. A national system of education which excludes the religious element is a national wrong, and I do not hesitate to impeach

it as a standing menace to national freedom and national stability, dangerous alike to the individual and to the State.

I. A NON-CHRISTIAN EDUCATION IS DEFECTIVE.

In the nature of things it must be so, because it omits a vast amount of important truth. Considering the wide range of subjects open for investigation, human life is far too short to master them all; but while we may be compelled to omit some—perhaps many—subjects from the *curricula* of our universities, we should see to it that the most important are included, and if character is to count for anything, there is no subject in the whole range of human studies that compares, in point of importance, with the great truths of God, and duty, and destiny. If life were limited to the few years we spend here, a subject more or less in a course of study might be of little moment: but those who plan for a purely secular education, leave out the tremendous fact of man's immortality, and thus make a huge mistake at the very start. If man were only a superior animal, something might be said in favour of purely secular education: but with an immortal nature to be trained and developed, what can be said for a system which expends its efforts upon one part of man's complex nature, leaving the higher and more important part untouched and uncared for? It is a trite saying that "knowledge is power," but it is a power for good only as it is controlled by religious truth, which fills the mind with the noblest conception of God, of personal responsibility, and of a future state.

The most serious defect in a non-Christian education is that it supplies no adequate force for the development of moral character. If it be said that intellectual culture is sufficient for this purpose, I need only reply in the words of Herbert Spencer—a by no means partial witness—that "the belief in the moralizing effects of intellectual culture, flatly contradicted by facts, is absurd." If it be said that aesthetic culture is a sufficient substitute, I call upon John Ruskin—no mean authority—to reply, and this is his answer: "The period of perfect art is the

period of decline. At the moment when a perfect picture appeared in Venice, a perfect statue in Florence, a perfect fresco in Rome, from that hour forward, probity, industry, and courage were exiled from their walls." And if it be said that our colleges and universities should confine themselves strictly to secular topics, leaving religious truth to the Church and the Sunday-school, I cite Victor Cousin to the stand, and I hear him testify that "any system of school training which sharpens and strengthens the intellectual powers, without at the same time affording a source of restraint and counter-check to their tendency to evil, is a curse rather than a blessing."

II. A NON-CHRISTIAN EDUCATION IS UNTRUE.

The primary object of all true education is to teach the individual mind to *think*; and this ability to think should be made to pervade universal society. If we have labourers their pick-axes and shovels should think; if we have artizans, their spindles and shuttles should think; if we have mechanics, their saws and planes, their anvils and hammers, their mallets and chisels, should think; and more important still, if we have voters their ballots should think. But while it is important that men should think, it is far more important that they should think true thought; and our colleges and universities must largely decide whether the thought of the future shall be false or true.

Now, I maintain that no man can think truly on any important subject who has not learned to think as a Christian, because without this qualification he is as one who omits the chief facts from his data, and the major premise from his argument. Does a man think truly in natural science who sees in all the phenomena of matter only the play of natural forces, and in its combinations only a fortuitous concourse of atoms? Does he think truly in history who never sees God's finger in the destinies of nations, nor hears His footfall in the march of the centuries? Does he think truly in anatomy or physiology, who sees no evidence of Divine wisdom in the human frame, so

"fearfully and wonderfully made?" I trow not. And as he does not think truly who excludes God from his thinking, so neither does he teach truly. He teaches only half-truths at best, and a half-truth is often as pernicious as a positive lie.

III. A NON-CHRISTIAN EDUCATION TENDS TOWARD INFIDELITY AND ATHEISM.

This must be its tendency in the nature of things: this is its tendency as matter of fact. We must remember that education is carried on by a two-fold process,—the knowledge communicated and the impressions produced. The one largely determines what the student shall *know*; the other determines what he shall *become*. Now what are the impressions that will inevitably be left upon the mind of a youth by an education that is purely secular? As a rule, impressions will be that religion is a very secondary matter; that it has no legitimate connection with mental development; that it is out of place in the spheres of philosophy and science, and is antagonistic to the advanced thought of the age. If, under these circumstances, a student retains his belief in the Bible, and his reverence for God and religion, it is not *because* of his education, but *in spite* of it.

Some, I am aware, maintain a contrary opinion; but they overlook most important facts. They seem to take for granted that a human mind is but like a glass vessel in which a certain quantity of something we call "knowledge" is stored, which can be drawn upon at pleasure, but which has no effect upon the texture of the vessel; that whether the contents are healthful food, corrosive acids, or deadly poison, the glass remains uninjured. This is a terrible mistake. Knowledge introduced into, and impressions made upon, the mind do not remain distinct from it. They are woven into the very texture, so to speak, of the mind itself, giving new directions to thought, new colourings to our perceptions of truth, and a new bias to the moral nature. Moreover the years usually spent in college are the very years when the human mind receives its most decisive bent; when teaching, combined with surrounding influences,

will do most to determine what the future character shall be,—the years, in a word, when thought crystallizes into lasting conviction; when a permanent direction is given to moral tendencies: when habits both of thinking and acting receive a bias which is not easily changed.

As a rule, the influence of purely secular colleges has been disastrous upon the thought of those who have been educated in them. I say as a rule, because there are exceptions to this rule as to every other. But the exceptions have been where colleges, entirely secular as regards the *curriculum*, have been manned by Christian professors whose character and influence compensated, to some extent at least, for the absence of religious truth from the course of study. But where this compensating element is not found, the effects are always disastrous. If some reader suggests that my theory is contradicted by facts, I sadly answer, Not so; the facts prove my theory, as they who have given careful attention to the subject know right well. This is the case in the United States, where some prominent State universities have become so notoriously anti-Christian in their influence that I am told, on good authority, it is almost an exception for a student to go through the course without having his religious faith undermined, or at least greatly shaken. In India similar results have happened on a large scale. In that country colleges and a university were established, from which all Christian teaching was rigorously excluded. Western philosophy and science soon upheaved the foundations of Eastern superstition, and heathenism among the students tottered to its fall. But alas! the education which was digging, really though not intentionally, at the foundations of heathenism, put nothing better in its place, and so disastrous have been the results that, within a few years, leaders of thought in India, including persons high in office, have been discussing the advisableness of handing over the State colleges to the Churches, as the only means of saving the country from the leadership of a generation of educated atheists.

IV. A NON-CHRISTIAN EDUCATION IS FRAUGHT WITH PERIL TO
THE STATE.

The foundation of national safety is national virtue, the moral sentiments of the people, rectitude in the private life of the citizen. But moral sentiments and moral rectitude must be sustained by adequate moral forces, and these Christianity alone supplies. To quote the emphatic language of Washington,—“Reason and experience both forbid us to expect that national morality can prevail in exclusion of religious principles.” All history testifies that intellectual culture is no safeguard from moral vileness, ending in national degeneration and decay. Egypt, once in the van of civilization and learning, is to-day “the basest of nations,” and the once mighty empires of Greece and Rome tell the same sad story. Where shall we find such philosophy, such oratory, such art, as in the land that gave to the world a Homer, a Pericles, a Demosthenes, an Aristotle? Where shall we find such jurisprudence, such statesmanship, such eloquence, as in the empire that could boast of a Justinian, a Cæsar, a Cicero, and a Tully? But where are Greece and Rome to-day? They have fallen. Their civilization lacked the conserving element: the salt was without savour, and was cast out to be trodden under feet of men.

Such examples are full of warning. The causes which led to national downfall then are in operation to-day, and history may repeat herself nearer home than we apprehend. If our civilization is to be progressive and permanent; if our institutions are to rest upon solid foundations; if freedom is to

“Broaden slowly down
From precedent to precedent;”

if our liberties are to rest secure in the guardianship of public morality, our colleges and universities, where the leaders of thought are trained, must be permeated through and through with the principles of New Testament Christianity. In the words of De Tocqueville,—“Despotism may govern without religious faith, but liberty cannot.” A lofty morality is the

only sufficient safeguard of the liberties of a free people, but "morality," says Dr. J. P. Newman, "without God as its authoritative reason, is but a social compact, a human stipulation, to be broken at will or enforced against will."

If I were considering the case of a pagan nation, my proposition would be conceded almost without demur. Let us take Japan as an illustration. There a vast nation has suddenly awakened from centuries of intellectual slumber. They have thrown open their gates to Western civilization, and the most marked feature of the awakening is a universal craving for education,—a craving so strong that to satisfy it the Government has organized a system of education embracing more than 50,000 Common Schools, a number of High Schools, Normal Training Schools for both men and women, and an Imperial University, said, by those who know the facts, to be equal in its equipment and in the ability of its professors to Oxford or Cambridge. The most superficial thinker cannot fail to see that these schools and colleges will be mighty factors in moulding the national character, and that they will largely determine what the future of the nation is to be. If now I submit the question,—“Ought Japan to have an education purely secular, or one permeated throughout by Christian truth and Christian influences?” scarce anyone will hesitate to reply, “The hope of Japan is in Christian education.”

If, then, a purely secular education is unsafe for the awakening intellect of a heathen nation, on what principle is it safe for the growing intellect of a professedly Christian nation? unless it be on the supposition that we have advanced so far as to have no further need of God. It is confessed that when laying the foundations of an abiding civilization, an education with the savour of Christian truth is good; but some appear to think that so soon as the nation has got beyond its infancy, the savour can safely be dispensed with. “Be not deceived: God is not mocked. Whatsoever a man”—or a nation—“soweth, that shall he also reap;” and the nation that sows the

wind of a godless education, must reap the whirlwind of a swift and hopeless decay.

V. WHAT IS "RELIGIOUS" EDUCATION ?

Holding, as I do, the views already indicated, it need hardly be said that I plead for religious education in our colleges and universities. But let me not be misunderstood. What is "religious" education? Not *sectarian* education, as some would have us believe; though, for that matter, I would rather have my boy taught by the most pronounced sectarian, provided he were a godly man, than by the most brilliant professor who ruled Christ and the Bible out of his lecture-room. The cry against "sectarian" education has been made to do duty on more than one occasion in the history of this country. Some have used it ignorantly, some thoughtlessly, and some for a purpose,—that is, as a convenient way of exciting prejudice against a movement that gave promise of competing successfully with an educational monopoly, and of placing the advantages of higher culture, under religious auspices, within reach of all. But I plead for religious—not sectarian—education; for there may be quite a difference between the two.

Further, by "religious" I do not mean *theological* education. This is another mistake made by many: they confound religion with theology, and then seem to regard theology as something to be kept distinct from other studies and pursuits; and so they say, let our sons get their education in secular colleges, and then the Churches have their theological schools in which to teach religion to those who are preparing for the Christian ministry. I deprecate the misapprehension, as it is with some; I protest against the misrepresentation, as it is with others. The religious education for which we plead does not mean the study of sectarian theology. What, then, it may be asked, do you mean by religious education? I mean—

1. Colleges and universities under Christian oversight and control.

2. Chairs occupied by Christian professors in all the departments.

3. A *curriculum* which, while providing for the highest intellectual culture, does not overlook the moral nature, but embraces at least these fundamentals of religious truth—Christian evidences and Christian ethics.

VI. SUCH AN EDUCATION IS AN URGENT NEED OF THE TIMES.

I plead for such a system for the sake of our sons. If we knew that a year hence those sons, in crossing a wide and deep river, would be suddenly plunged into its rushing current, the knowledge would change some of our plans, at least, in regard to their training. Not a day would be lost in teaching them to swim, and perhaps, not satisfied with this, we would provide the best life-preservers money could buy, and would have the lads carefully instructed how to use them. The illustration is none too strong. In a few years our boys will be plunged into a sea where they must swim or drown, and where nothing but fixed religious principles will have buoyancy enough to keep their heads above water, and sustain them until they reach the other side. Our sons, as they go forth to life's great battle, must face the same problems and grapple with the same foes that we have had to encounter. Shall we, then, send them forth unprepared—utterly unarmed and defenceless? Oh, surely not! But will an education that is purely secular supply the needed armour of proof? Nay; nothing but "the armour of righteousness on the right hand and on the left" can possibly shield them in the strife. If my statements seem extravagant, listen at least to the words of Professor Huxley, whom one is almost surprised to find on this side of the question—"There must be moral substratum to a child's education to make it valuable, and there is no other source from which this can be obtained at all comparable to the Bible."

You may ask what difference it makes who teaches my boy chemistry, biology, anatomy, astronomy, or the like. It may make a tremendous difference, both in regard to *what* he is

taught and *how* it is taught: for often the tone and spirit of a professor goes farther than the instruction he gives in determining what a student shall become. In that most critical period of life when intellect is fairly awaking; when the youth is just becoming conscious of the mental power that has been slumbering within him: when he longs to explore new and untried regions: when he craves a wider freedom, and regards with suspicion whatever claims authority over his thoughts or actions; when he begins to regard intellectual culture as the highest possible good, and looks up to his professors as incarnations of wisdom, from whose *dieta* there can be no appeal: at such a time the teaching and influence of the lecture-room may make all the difference between moral safety and moral shipwreck.

If, for example, my boy is engaged in the study of biology, does it make no difference whether he hears from his professor's lips that God is the only Author and Giver of life, or is told that life, so far from being a Divine gift, is only a spontaneous generation from lifeless matter? If he is studying the structure and laws of the human frame, does it make no difference whether he is taught to recognize Divine power and wisdom in the marvellous adaptation of means to ends, saying with the Psalmist, "I am fearfully and wonderfully made. . . . Thine eyes did see my substance, yet being unperfect; and in Thy book all my members were written, which in continuance were fashioned when as yet there was none of them;" or, on the other hand, is taught to believe that he is but the product of a blind Force; that he came, by some unlucky accident, from the darkness of the past, and is speeding swiftly toward the deeper darkness beyond? If he is studying the wonders of the starry universe, does it make no difference whether the lectures to which he listens be in the spirit of the Psalmist's confession, "The heavens declare the glory of God, and the firmament showeth His handiwork;" or in the spirit of the French atheist who said, "The heavens declare only the glory of Laplace and Leverrier?" Ah! yes; it does make a differ-

ence,—an incalculable difference,—a difference that can be measured only by celestial diameters.

I plead for religious education for the sake of the nation. Matthew Arnold has told us that the hope of the world is in its sages and saints. In other words, Wisdom and Righteousness are the twin forces to save society from corruption and decay. The remark is good, though not particularly original. The principle was recognized by God, if not by man, far back in human history. Ten righteous men would have saved Sodom; the seven thousand who had not bowed the knee to Baal were the conserving force in Israel; and this consensus of Old Testament teaching is emphasized and confirmed in the New by the declaration of Christ concerning His disciples, "Ye are the salt of the earth."

The future of this nation will depend upon the extent to which all its institutions—social, commercial, political—are permeated by religious principles, and this, in turn, will depend upon the education we give our sons and daughters. He must be blind indeed who sees no necessity for higher and better principles in both political and commercial life. Unless there be improvement in these directions, the future forebodes disaster. Nay, unless a powerful conserving element can be infused, there is no prospect before us but universal corruption and dishonesty. If this be so, it may be said the Churches are to blame. Perhaps so; and they are to blame, if at all, just because they are suffering the education of our young men to become non-Christian—a sure prelude to its becoming anti-Christian. This is where the remedy must be applied: religious principles must be inwoven with the moral fibre of our young men in the process of education, and not be put on as a convenient veneering afterwards.

The issues are far more serious than most persons seem to know. The real question as between the Christian and the infidel in this land is not the inspiration of the Bible, and the thousand and one questions which grow out of that; but it is whether the spirit of our educational system is to be secular or

religious, and whether it is to be controlled by the Christian or by the infidel? Some one may say I am putting this too strongly; that there are numbers of people who are by no means infidels, and even many who claim to be Christians, who think that religion is out of place in school or college. But a moment's reflection will show that such persons, whether consciously or not, are putting themselves on the infidel's platform, and are reasoning along his lines. The only difference is, that while he perceives the logical outcome of his argument, the others do not. He demands a purely secular education; they join with him, though not with the same end in view; but while the methods are alike, the results cannot be widely different. He would have a nation of atheists, made such by their education; they would have a nation of Christians, who are such in spite of their education. He would annihilate all belief in the existence of a personal God—all respect for His character—all reverence for His law; they would retain these things in the church and the home, though joining to exclude them from the college and the school. But the result is the same. Between them both, Christ must seek the shelter of the manger, because there is no room for Him in the inn. He must be relegated to the companionship of the ignorant and the lowly, because they can find no room for Him in the misnamed culture of this age.

VII. HOW CAN SUCH AN EDUCATION BE SECURED?

If we are to have the Christian element recognized in Higher Education, we must have colleges and universities planted upon Christian foundations and under Christian control. In colleges endowed and controlled by the State, the religious element must be ignored. They can take no account of it either in authorizing the *curriculum* or in appointing the professors. But may not the professors in a State college be Christian men? Assuredly they *may* be, but we have no guarantee that they *will* be. Such appointments will be made—unless party considerations intervene—solely on the ground of ability to teach

the required branches, viewed from a purely secular standpoint, and the religious character or views of the candidate cannot be considered at all. Moreover, in the sudden changes which result from party government, it is quite within the possibilities that we may some day have a Minister of Education who would regard religious skepticism as a recommendation rather than an objection, and hence the chair that is filled by a Christian to-day may be filled by an atheist to-morrow.

But how can we have Christian colleges? Only through the Churches. How can they be adequately endowed and sustained? *Chiefly by private liberality.* It is held by some—perhaps by many—that it is the duty of the State to provide every requisite for Higher Education. I question the correctness of the theory, as I do the soundness of the policy. That it is the duty of the State to provide for *primary* education, and even to make it compulsory, is clear, because illiteracy is the prolific parent of vice and crime; but in the matter of Higher Education, which partakes somewhat of the character of a luxury, it may be the duty of the State to aid and encourage it, but not to provide for it entirely. State aid should be an encouragement to private benevolence, not a substitute for it; and grants of public money for Higher Education should be conditioned, both in direction and amount, by the principle of helping those who help themselves.

It is possible that these lines may be read by some who recognize the solemn trust of stewardship, and who sincerely desire so to fulfil the trust that at the last the "well done" of the Master will be theirs. Sometimes, perhaps, you are in doubt as to the best way of investing your Lord's money, so that it may yield the largest returns in glory to God and good to men, because you see that so much that is given in charity, so called, seems to produce no good, or at least no lasting, results. Far be it from me to dissuade you from helping the poor because results seem so small; but I would fain show you "a more excellent way," and it is this: Let a portion of your wealth be given to aid in endowing Christian colleges and uni-

versities, and thus put in operation agencies that will work for the good of thousands long after you have passed to your reward. Ye give your money in daily charity, and ye do well; but the dole of to-day will be spent ere to-morrow, and the effect upon society is *nil*. Ye help to provide refuges for the destitute, and homes for God's suffering poor, and ye do well: but although the suffering inmates are sheltered and comforted, they send no healthful influence abroad, and the grace of your benefaction is unfelt beyond the narrow circle that shared the benefit. Ye leave wealth to your children, and they *may* use it wisely; but, on the other hand, the wealth you laboured to accumulate may be wasted by others in sinful indulgences: the fortune which held in it unmeasured possibilities of blessing may prove a corroding curse, and the fruit that seemed so fair may, like apples of Sodom, turn to caustic ashes on the lip. But he who endows a Chair in a Christian university, like one who digs a well in a desert, unseals a fountain whose perennial waters shall refresh the weary while passing centuries march their rounds. He may die, but his work shall live, and its power to bless shall grow with each revolving sun. He may pass from toil to rest, from labour to reward, but he leaves behind him a long succession of representatives,—Christian teachers who shall send forth generations of men wise in all the wisdom of the schools, and loyal to the heart's core to Christ and His truth; and thus the benefits shall multiply till he who sowed the seed shall reap the harvest with vast and abiding increase.

REV. ALEX. SUTHERLAND, D.D.

“MAN in his frail boat had the rudder placed in his hands, in order that he might not allow himself to be swayed by chance currents, but by the dictates of judgment.”

“WE ought to know what we should doubt, where we should be confident, and where we should submit.”

THE END OF THE WORLD.

A GREAT deal has been said and written ament the end of this earth of ours, and many ancient and modern predictions have gone the round of the papers. The following, however, contains two prophecies that have not been recently received: "In 1880 a marble slab was discovered at Oberremel, on which were inscribed the following lines:

"Quando Marcus Pasclia clabit.
Et Antonis Pentecostem celebrabit
Et Joannus Cristum adorabit
Totue mundus vac clamabit !"

"That is: 'When Easter falls on St. Mark (April 25), and Whitsunday on St. Anthony (June 13), and Corpus Domini on St. John (June 24), then all this world will call for help.' In 1886 these three holidays occur precisely on the dates named. Again, the prophet doctor, Michael Nostradamus, who was born on December 14th, 1503, and died at Salon on July 2, 1566, says:

"Quan Georgius Dieu crucifera,
Que Marc le ressucitera,
Et que Saint-Jean le portera,
La fin du monde arrivera."

"That is: 'When Good Friday falls on St. George (April 23), Easter on St. Mark (April 25), and Corpus Domini on St. John (June 24), then the world will end.' These conditions will be fulfilled in 1886."

It is remarkable that Christendom finds that the above represents an abiding conviction. Most Christians expect that the human race will eventually change its entire relation to the existing state of things. We are told that the two goals are heaven and hell. The time is at hand when the human race will be completely cut off from this probationary state, and be eternally located in happiness or wretchedness. It may be true. There is nothing very unreasonable in the teaching.

The Christian world tells us that nature will pass through

fierce convulsions, and struggle through flaming heat to another state and phase of existence. This is not very unreasonable either.

All scientists, true observers of nature's movements, conclude that the indications point to a vast mundane commotion and change yet to take place. We say "all scientists" because it is necessarily a fact. Christian scientists believe it, for they are taught so to do by the New Testament.

Evolutionists believe it, since the whole of their teaching and theories are in harmony with such a prediction or conclusion. Then, if the Scriptures be true, "the elements will melt with fervent heat;" and if evolution be true, all possible forms of existence, and therefore all possible changes, will yet come into the region of actuality.

Let us for a moment look at the side of this question which is of the utmost importance to mankind. If man will at some time in the near or far-off future be swept from the earth, where will he appear? If he ceases to exist, then he will not appear. But if he continues to exist, as is a fact, then where and how?

Philosophy and *experiment* reveal to men that he is a dual being. This is not strange. "There is a natural body and there is a spiritual body." The human race believes this. All the worshipping nature of man expresses this universal belief, and vainly does any man strive to argue against it.

Where shall he appear? Just where his present life will place him. The *where* will be the exact result of a complex cause. The cause is his whole life act, and the result will be the *where*.

The *when* is of much less importance. However, it is very important. The nearness of the *when* affects very materially the length of time in which a man has to act out the whole *cause* necessary to bring about the desired result, which will be the full determination of the *where*.

How should man act in this matter? His whole endeavor should be in harmony with his most honest convictions of right

action and thought. To work in a line with the progressive movements of his fellowmen, and to oppose all wrong-doing for the sake of right, will place any man on the highest plains of eternal success, glory, and safety.

Perhaps the sternly orthodox Christian will be inclined to object to this liberal putting of the great question, "What must I do to be saved?" If so, it is for the want of close and logical thought. "Prove all things, hold fast that which is good," "Try me and prove me," "If ye love me," "Call upon me in the day of trouble," and hosts of similar passages show plainly the plain and simple principle of experimentation in all spiritual things.

Jesus Christ, the founder of Christianity, says to a weary world, "Come unto me, ye that are weary, and find rest." And surely it is in true accord with the teachings of *natural science* to go to the place of rest for rest when weary.

ESSAY ON WEALTH.

Read before the Science Association of U. V. C. by J. Elliott.

WEALTH may be defined to be that which, when developed by vital energy, tends to sustain and perfect man's body, to develop his intellect, or to elevate his moral character—that is, make him in every sense a really better man. Anything which has in it that intrinsic or inherent value which, when developed, does any or all of these for man, is *well* for him, or *wealth*; but anything which fails to aid in the development of body, mind, and soul, or which is injurious to any part of man's complex nature, is useless or hurtful—the opposite of wealth. It will be seen from what I have said that I recognize two factors in real wealth. These two are: 1st, It must have inherent value; 2nd, That inherent value must be appropriated by the exercise of vital energy in order that to us it may become effectual value or realized wealth. Remove either of these factors—the intrinsic value from the thing, or the power

of appropriation from the man—and the certain result is no wealth. Again, from the simple facts I have stated it is very clear, that though the intrinsic value of any given thing is, and must in the nature of things be fixed, yet effectual value or wealth is not, as a general thing, fixed, but depends entirely for its degree on the power of appropriation which man possesses, and the faithfulness with which he uses that power.

Perhaps a closer investigation of the three principal facts I have stated, and but stated, may not be here deemed out of place. And first, in order that we have wealth proper, there must be intrinsic value in the thing. Though men may deem that which is earnestly coveted, dearly bought, or which gives a morbid pleasure in its possession, wealth, they cannot by that judgment make it so. A Chinaman may intensely desire opium, an Irishman liquor, or any man not marked by greatest common sense tobacco; but any child knows that these things are the direct opposite of wealth to those who consume them, and that in proportion to the quantity consumed. Again, the intrinsic value of anything being granted, its wealth depends on man's power of appropriation. A painting may be most elegant in design and most perfect in execution, but it is no wealth to the man who is color-blind. A book in Latin, Greek, or Hebrew may contain facts of paramount importance to humanity, but it is no wealth to the man who does not understand these languages. Indeed, a book full of wisest counsel, written in plain English, is no wealth to the man who never learnt to read. Further, the degree of wealth actually derived from any good thing, depends on the perfection of the appropriating faculties in the act of assimilation. This is self-evident. No one denies, indeed no one can doubt, that the man whose physical system is in the best order, and consequently can do the best work, receives most nourishment from any given quantity of food. And as it is with the physical so is it with the intellectual and spiritual. The man whose mental powers are at the highest state of development, and then used at highest tension, will, all other things being equal, gain most mental nourishment from any

given quantity of mental food. It is clear, then, that for every atom of intrinsic value there must be a corresponding atom of assimilating capacity; or in case this should fail we have no wealth. And here we have the key to the necessary distinction between men. Whether owing to the design of the Most High or the result of the simple workings of nature, assimilating capacity is not equally distributed throughout our race. Indeed, we find the very greatest variety, from the minimum where, in intellectual ability, man almost joins hands with the ape, to the approximation of the maximum, where man undertakes to solve the greatest problems of life. Hence, suppose every man should do his utmost, without let or hinderance, except the hinderance of unequal capacity; and suppose all to possess that which is of equal intrinsic value, it is evident the man who has most mental and moral power will take most real wealth out of any given thing. Thus we would have inequalities; and how much more so where some are unwise, and make that which is of intrinsic value a curse. "The corruption of the best is the worst." Some men, then, will be wealthy, and others poor, long as the earth keeps her orbit; nor is it, in existing circumstances, unnatural that it should be so. It is unnatural only when those who are unfitted to use wealth by some abnormal freak of fortune possess and abuse it. Against this normal nature has ever protested, and rightly, too.

We have seen that in order to wealth we must have good things, that there must be assimilating power—physical, mental or moral—and that realized wealth must be in exact proportion to this appropriating power. We wish here to add that no matter how much intrinsic value may be in our possession, we can, for ourselves, use but what we can rightly assimilate to our physical, mental, or spiritual nature. One atom more than we can properly digest, whether it be physical, mental, or moral food, is not wealth but positive injury. Bread and beef, milk and honey, may be supplied us in profusion, and we may eat to the proper satisfaction of our nature—more at our peril. Books in abundance may grace our study, but very few can be

assimilated to our minds, and thus become a part of our wealth. From all this we learn that it is our duty to seek what is best for body, mind, and soul; or, in other words, we should use that physical food which will not overwork the digestive organs and will at the same time give most nourishment to the body. We should study those authors and sit at the feet of those teachers who will give us that mental drill which will in the highest degree develop our mental faculties without crushing them by overwork. We should seek that moral instruction which will make us strongest, most honorable men.

But all this may seem strange to those who have been taught to think that wealth should be reckoned by the hundreds or thousands or millions of dollars which a man may possess, or the broad acres and fine buildings he can in a sense call his own. Let us bring these things to the test of reason, cool and clear, and we shall find that those dollars are wealth only in that they may be exchanged for things having intrinsic value, and those broad acres are wealth only in that they, under proper culture, produce what has in it inherent value. And further, of those things the man has at best a limited ownership. He can use no more for himself than is really good for body, mind, and soul, or they become not wealth but worse than poverty, as we have already shown. He cannot waste it without both losing it and hurting his own manhood, and thus becoming less wealthy than the man who has just enough. He is shut up to the fact that he holds what he himself does not need for the benefit of others, and must prove a faithful steward or hurt himself. True, he fancies he can do just what he likes with it; but it is quite evident he cannot with impunity, unless what he wills is right. Before leaving this part of the subject I would say that money is but recognized currency, which may represent either wealth or wealth's opposite. And which of those it does represent in any given case depends entirely on the mind of its possessor. Should he be able to discern between what is good for man and what is hurtful, and should he have moral courage enough to choose the good, then the money represents wealth;

otherwise it represents what is useless or injurious. And as it is with individuals so is it with nations. The nations which spend their money for fireworks act foolishly; those who use their cash to produce cannon, torpedoes, and infernal machines, with which to destroy the property of others, act madly. Indeed, long as there is another foot of territorial standing room, long as there is an acre not yet at its highest state of culture, long as there is anything to be improved, the wealth of one nation does not depend on the downfall or poverty of others, but rather on the development of that which it can call its own.

Having ascertained what wealth really is, we are in a position to take up the question, Should we seek it? Concerning moral and mental wealth there is no dispute. Men are agreed they should be sought. But what of material wealth? I do not think material wealth is a very bad thing after all. When under the direction of a reasonable mind (and such a mind all should possess), material wealth might be one of the greatest instruments for good. However, an over-abundance of material wealth has never proved itself very elevating to either the individual or the nation. Over-abundance, when not under the direction of an upright mind, has been the destruction of most, if not all, the great kingdoms and empires which have ceased to be. The Babylonish was conquered when its rulers were indulging in a drunken revel. And even of the Iron Empire it could be said previous to her fall, "She would sell herself for money." Doubtless much of her decline, decay, and final overthrow may be traced to material wealth abused. Hence the necessity for moral and mental wealth as a basis for the right use of material wealth. Indeed, no nation can rank as a first-class power any more than a man can rank as a first-class man without mental and moral culture. The first great question, then, is, Are we gathering the right thing, the thing which will be really helpful? And what are we doing with that right thing as we gather it? Does the man who piles together gold by the million, and who locks it away, do the right thing? Does that man who grinds the very heart of his employees

that he may, forsooth, gain possession of a few more dollars, do the right thing? To these queries we can give but one answer: for, while every man who has a right to live has a right to use his faculties, and, consequently, to become wealthy no man has a right to withhold from circulation among a people in need one atom for which he has not need, and no man has any right to become what the world terms wealthy through grinding spirit, liberty, and all but life out of those whom he finds beneath him in the social scale. In this, I think, would be found a grand harmonizer of the various ranks of men; for what is all the terrorism of the masses but an abnormal attempt to have justice, which, if we believe in the greatest good to the greatest number, they have in no nation to-day.

But I may be asked, Has a man not a right to pile together all the material wealth he can and place it in the hands of his own descendants? I say, emphatically, Not unless his descendants are qualified to use, not abuse, the wealth he bestows. It is man's duty to place his wealth where it will do the greatest good to the greatest number. That is in the hands of those who have (all other things being equal) most mental and moral culture, and are thereby better qualified to use material wealth for the benefit of the race. If we would have those in whom, by the ties of nature or association, we are deeply interested truly wealthy, it is not so much our duty to give them money as to *qualify, qualify, qualify* for acquiring wealth and for the proper use of it by thorough mental and moral training. This reasoning will apply equally to the individual, the Church, the nation, and the *college society*, too. If any one of them would be wealthy in the highest sense, it must be by thorough qualification. I think with deep satisfaction, gentlemen, of what this society has done along this line in the past. Our brave men have qualified, and hence many of them have become a power. Their lives are an inspiration. But I think we can and will do greater things.

THE SOUND THEORY ; OR, THE WAVE THEORY OF SOUND
AND E. B. GLASS, '82.

IN the April number of *Acta Victoriana*, there is a shot at the long cherished, long taught, and universally accepted theory of sound vibration. Mr. Glass is not in favor of this theory, and is ready to demolish it with his pen. He thinks that the vibratory theory is contradictory.

The question is asked: "*If the air is not moved sufficiently to affect the ear, what does move in and through the air?*" The wave theory of sound teaches that the air is moved *sufficiently* to affect the ear, and that there is no need for anything to "move in and through the air."

Mr. Glass raises another objection, since there is "another contradiction in the wave theory." We quote: "This theory supposes that in *advance* of the spring-plate as it vibrates, the air is condensed, and rarefied *behind it*, the condensation and rarefaction being equal forces. Here the principle of mechanics, that two equal and opposite forces result in no motion tells against the wave theory." The italics are my own. "*It*" refers either to "theory," "advance," "plate," or the "air." If to *theory*, then the gentleman means that there is a rarefaction behind the wave theory; if to *advance*, the air is rarefied behind the advance of the "spring-plate;" if to *air*, the meaning is that the air is rarefied behind itself; but if to *plate*, the rarefaction takes place behind the plate. We assume that Mr. Glass means the last, viz., plate. If not we are at a loss.

But here comes in a question. How does "the principle of mechanics, 'that two equal and opposite forces result in no motion,' tells against the wave theory" come in here? How can a rarefaction moving north from one side of a metal plate keep in check a condensation moving south from the other side of the same metal plate?

To make the question take hold, let us illustrate. "Two locomotives start at the same moment of time, with "equal forces" and in "opposite directions," from opposite sides of a

huge metal plate, a stone wall, or from a layer of intervening air one-millionth of an inch in thickness. How is it that they would not stop each other? Would they not move just as easily and as fast as if there were only one? Put it this way: The writer volunteers to stand on the old alley-board behind the college, with his back to the high board partition, provided that Mr. Glass is willing to stand with his back to the opposite side of the said partition; and at the word go, we shall both make a rush in "opposite directions" and "with equal forces." Would we stick fast? Would the attempt "result in no motion?"

Perhaps another principle of mechanics would begin to show itself. Supposing we did not start with equal forces, then the weaker would move with the stronger!! One would run away with the other! Is it not necessary to have some kind of chain, rope, band, or other fastening, before these principles of mechanics illustrate themselves?

Again, Mr. Glass assumes that there *are* two equal and opposite forces. By this he must mean that a rarefaction travels as fast one way as the condensation does in the opposite direction. Surely the gentleman is mixing his views and understanding of the wave theory with the theory itself, which teaches that the condensation and rarefaction travel in the *same direction*, and at the same speed. "No such thing as a condensation and a rarefaction really can occur under such circumstances." Not when they both travel in the same direction, or when they travel in equal and opposite directions? Which?

Again, for we must go to the end of this article: "An air-tight piston in a tube can produce condensation or rarefaction. *but in free air quite a different thing results.*" "Quite a different thing!" So he says. "That is the air cannot be condensed or rarefied unless put in a tube with an air-tight piston. Let the gentleman kindly tell us how windows are broken miles away from the scene of explosion, or even say how the wind tears down houses and forest oaks?"

Let the writer explain the *modus operandi*: "The atmos

phere merely moves aside, giving way to the more rigid plate, and taking its place behind the body." "Merely" is good. It serves to show that the operation is easily performed without the aid of a condensation. But if not condensed, why does it move, and why move behind the spring if there be no space for it. If there be a space surely this is a rarefaction. But if there be no space, then, when that air which has "merely moved behind" arrives, the space—no, the place where there is no space—is doubly occupied, and in such a case the condensation occurs behind the spring. Of course Mr. G. can easily see how the spring presses against the air without condensing it. That is, air may be pressed without being compressed or condensed. Is there another irresistible principle of mechanics here? What about "pressure on gases?"

"An examination of the wave theory of sound points out inconsistencies at nearly every step." Substitute the word contains for "points out" and then examine the wave theory once more.

Mr. Glass refers to "Wilford Hall's substantial emissions, sonorous discharges, and radiation of attenuated material atoms," and says they are not subject to the same ridicule as the old one, *i.e.*, the wave theory. In deep humility I desire to suggest that Dr. Wilford Hall teaches and reiterates, with telling effect, that the air *can be condensed*, and when condensed may break windows, destroy forests, and hurl men into eternity. That this statement may be fully supported by Dr. Hall's writings, we quote as follows:—

"We have repeatedly shown in editorial articles in *The Microcosm*, as well as in our original treatise on the subject of Sound, in the *Problem of Human Life*, that the breaking of windows miles away from an exploding magazine was in no sense the result of the sound of the explosion, but was simply the effect of a powerfully condensed air-wave driven off in all directions."

TOO LIGHT OR TOO HEAVY.

WE are pleased to receive so many criticisms, favorable and adverse, concerning our journal. The number of such communications show us that there is a living interest in the form, material, and success of our undertaking.

The conflicting views held by the critics teach us nothing unless it is that minds and tastes differ. To illustrate the differing tastes of our readers we shall give a few of their views. They say the articles are too long, too short, too heavy, and too light. The material is not sufficiently varied, and too many subjects are treated in each number. Others say this last number is the best. July number was "prime number one," the appearance is all that is desired, the ideas of the writers are expressed in a chaste and concise form, the spirit is lively and cheerful, the thought is vigorous and fearless, and the effect is elevating and ennobling.

In the midst of so many conflicting and contradictory views, we conclude that the only safe course to pursue is to continue our present plan of doing the best we can in the coming circumstances of journalistic life and enterprise.

We all remember the incident of the old man, his son, and their long-cared companion. Their critics views were something as follows:—

The old man should walk and the boy ride.

The boy should walk and the old man ride.

Both should walk. Both should ride.

The ass should ride; and tried it to the loss of all.

The old gentleman should have consulted his own interest and comfort. His place was the ass's back. We make no attempt at an application.

But while on this subject we desire to intimate to our numerous friends that the pages of our journal are open to all. If, gentlemen, you wish to see any change made, write an article illustrative of the kind you wish to see in print, and forward for insertion.

Some of our able men have as yet sent us little or nothing. Don't be afraid to express your views on the arts, sciences, professions, or other subjects, the elements and nature of which are the constant companions of your daily thoughts.

We are determined to work in the cause of human progress. Our motto is "We must harmonize with fact." Christianity calls for soldiers and co-workers as she marches on to victory. Have you no words of comfort and encouragement for her in her daily struggles? If you have, write it, that the world may read. Have you no pen of power to unveil the deceit and fraud lurking in the high places of the Church, State, and Science? If so, let your burning thoughts express themselves with flaming brightness. Science is divine, and an express manifestation of divinity. Can you not let your years of accumulated knowledge, your long nights of study and days of stern experience speak out plainly on the great thoughts, struggles, and mysteries of human life? Where is your God, your religion, your knowledge, your joy with its source, your remorse and failure with its cause?

Have you no thoughts and strong convictions concerning the future life and success of Victoria University and all other institutions of learning? Do you wait to be led? If all wait for leading who will be the leader? Echo answers, who?

Is there no voice to give utterance to the blasting curse in the form of *our, yes our*, rum traffic? We be as dead men. We listen to the whisperings of ease. We rush into business far beyond our strength and forget our first and second vows. Our legislators make laws to turn our children and friends into drunkards. We are disgusted and ashamed, but move not. And what is true concerning our lethargy in the midst of this soul and body, murder and carnage is true in relation to us in many other respects.

Come over and help us. Write, talk, pray, *feel* and act in harmony with truth, right and Jesus Christ our God-given commander and model.

Can we mourn for the want of material and subjects on

which to write, while Canada in her present state is our land and home? While Europe, Asia, Africa, Australia, and the islands of the sea are scattered over the face of the, gnashed by the teeth of sin, ground down by the heel of tyranny, wounded by the weapons of war, sickened by the contagions of hellish pollution, and lured to destruction by the malicious machinations of depraved and ignorant devil-led men, is there not something for us to do? There is. Let us to work.

EXPERIMENTATION NECESSARY IN ALL THINGS INCLUDING RELIGION.

MEN have sometimes minified reason that they might thereby magnify revelation; but, though the effort has been well meant, it has never been permanently successful. Indeed, no permanent advantage can be gained by the effort to exalt any good thing at the expense of any other good thing. The Bible itself appeals to reason and bases its claim to man's acceptance, reverence, and love, on the fact that it is in accord with reason. But if any person or thing appeals to reason, it implies not that that person or thing is necessarily inferior to reason, but it does imply that it must be in harmony with reason in order its being accepted, or, in other words, that we are not expected to believe any thing which is, to our reason, absurd. One of the greatest Christian heroes, St. Paul says, in his epistle to the Thessalonians, "Prove all things; hold fast that which is good." Now this, certainly, teaches that man has reason, and that he is not blindly to believe anything, but honestly to test everything. There is something elevated and elevating in that plain solid statement, "Prove all things;" so unlike, so very unlike what we are accustomed to see among men. Among men we find many who will willingly believe all things which are strongly asserted by dogmatical theologians, and many who will just as readily believe all hints and suggestions of scientific dreamers, and many who trouble themselves

little concerning either, and less concerning the true and good ; but very few who carry the declamations of the dogmatist, and the dreams of the scientific speculator to the bar of pure reason. Only here and there a man. And, yet, these few men who will dare to examine, test, prove, who will not make their judgment blind, are the greatest benefactors of the human race. Indeed, that any man should say to his fellows, "Believe, but do not prove ; accept, but do not investigate ; admit, but do not test ; trust, but do not think ;" is enough to make us ashamed of our species, for, it is thought—close consecutive thought—the power by which he proves, tests, and examines, which is man's distinguishing characteristic. The fact is every man that breathes has not merely a right to think ; where matters of such importance are involved, he is bound to think. Investigation, close scrutiny, exact testing, has led the world to the advanced position it holds to-day. This is as true in the moral as in the scientific world. The human mind, acting out its right to test all things, has netted the world with railroads, has given us horses of iron with bowels of fire and ribs of steel, and has given us many other things for which our hearts should be truly grateful. But, in the moral world, it has not been idle. It was the human mind endeavoring to test all things that scattered the darkness of the middle ages, and the right of man to use his reason has been at the foundation of all the advancement of a religious nature since then. The history of the Church teaches (if men would but learn) that the Church loses sight of her own interest and saps her very life blood, when she stubbornly clings to past interpretations of Scripture simply because they are old, just as assuredly as stagnation would be caused in the scientific world by a stubborn clinging to past interpretations of nature independent of their reasonableness. The ultimate success of the Church, as of everything, depends on her willingness to test, to abandon that which is found to be useless or hurtful, and to assimilate to herself that which is proved to be of real value. Of course there is a limit beyond which testing is impossible. There are giddy heights our reason

cannot climb, there are depths we cannot sound, there are things which happen, that, to us, are shrouded in mystery. These things we cannot test; they are beyond us. But have we, therefore, to lay aside our reason?" No; never. Reason will, at once, regard the thing as a mystery, and set about testing all possible attitudes toward it; and, in a healthy state, the mind will not feel satisfied till she holds fast the attitude which is best for herself and the human race. At no point in life have we to forsake reason.

I notice, further, that in order to test the truthfulness or goodness of any given thing, we must abandon all preconceived notions concerning it, and approach it, as honest men, seeking the truth. Preconceived notions may color the thing, and thus lead to the most disastrous results. If men study anything, pre-determined what to believe and how to act, it is likely they will be confirmed in their belief and rendered steadfast in their course of action. "What we wish that we believe," is a statement corroborated by almost universal experience. But, if we seek only for the true and good, with minds willing to believe the true, and hearts resolved to live the good, there is reason to hope we shall find the object of our search.

I notice, further, that if we would test all things we must first regard them as not proven, or, in other words, we must take toward them the attitude of doubt. I know that many would find fault with anything in the form of doubt, and there is sometimes something good in such fault finding. There is a doubt which is base and debasing, I refer to the doubt which is cherished because the man loves to doubt; because he does not wish to know what is highest and best, what is purest and most ennobling, what is most helpful to the human race. Such a doubt is anything but praiseworthy. It has a degrading influence and cannot be too strongly censured. But there is another doubt, the doubt cherished by the man who ardently desires to know the true and the good, who as earnestly desires to live the right and who is putting forth persistent effort to find out truth and duty. This man's doubt has faith in it: else, why

the earnest search after the true or the right. Such a doubt is the gateway to the fields of light and, sooner or later, the gateway will open and the light of truth take full possession of the soul. Indeed, one cannot help having more than sympathy; one cannot help having truest esteem for the man who, true to his reason, is thus honestly enquiring after the truth. The mind of every honest man must have great respect for the character painted by Tennyson in answer to the statement, "Doubt is devil born." To this he replies:—

"I know not; one indeed I knew
In many a subtle question versed,
Who touched a jarring lyre at first
But ever strove to make it true:

Perlexed in faith, but pure in deeds
At last, he beat his music out.
There lives more faith in honest doubt,
Believe me, than in half the creeds.

He fought his doubts and gathered strength,
He would not make his judgment blind,
He faced the spectres of the mind
And laid them; thus he came at length

To find a stronger faith his own;
And power was with him in the night,
Which makes the darkness and light,
And dwells not in the light alone.

But in the darkness and cloud,
As over Sinai's peaks of old,
While Israel made their gods of gold,
Altho' the trumpet blew so loud."

It is good to test before reception; it gives firmness and strength to the man; whereas belief without testing places the man in such a position that he may at any time be swept from his anchorage. But we should never forget that proof is as necessary to rejection as it is to reception. It is very unfair to the subject of investigation, and hurtful to our own manhood to reject anything without giving it our candid consideration. It is said there are moons attendant on the planet Jupiter, and

further, that these moons may be seen through a telescope. Now it would be very unfair to deny the existence of these moons and refuse to look through the telescope. It is said God strengthens, comforts, guides, and saves the souls of those who penitently trust in Christ for salvation. Would it not be very unphilosophic to deny that without putting it to the test?

But why test at all? I answer, that we may find out our highest good, and, having found it, that we may bravely dare to hold it fast. It will be seen that I assume that there exists something good after which our minds are searching. We would act foolishly if we wasted our strength in pursuit of the indifferent. What the human mind has ever sought, when in a normal state, is the good of humanity: or the good peculiar to the human race. This is the very heart of the philosophy of Socrates, Aristotle, and Plato, and of every modern philosopher worthy of note. And these men do nothing more than voice the thinking of the human family concerning, and make manifest their longing after, the good they dimly feel must exist somewhere and toward which they stretch lame hands of faith. But what is the good? I answer, the good for anything is that which lifts it from a lower degree of perfection to a higher. That is a plain, broad fact, to the truthfulness of which all that is highest in human nature bears testimony. Universal reason assents to the fact that that which degrades us is bad for us, and that the thing which elevates, ennobles, perfects our nature is good for us. From this it is clear that if we would know what is good for any given thing we must first make ourselves acquainted with its nature. That which is good for the vegetable may not be good for the animal, and that which is good for the animal may not be the most elevating for the man. Looking at man's nature, we find him a combination. On the lower side, that marked by sensation, passion, appetite, we find him linked to the animal: on the higher, that marked by thought, conscience, manly and heroic principle, he is allied to the absolutely good, that is God. What is good for this being, who has a body largely dependent on the earth, and a

mind allied to the Divine? Investigation teaches us that whatever helps or hurts one part of man's complex nature helps or hurts his whole being. Degrade his moral nature and you degrade the mental and physical with it. In any way hurt the physical and the whole man suffers with it. Elevate one part and the whole man is in a measure elevated. They do a great work, then, who seek physical good for man. But they do a greater who seek mental and moral good for him. But what is his highest good? I answer, that which tends to make him a nobler, purer, better man. That which enables him to stand up, manly, true, brave, and heroic, even in the most vicious circumstances. That which enables him to brave and suffer countless ills, and, in the midst of them, to battle for the true and just. This is man's good. I mention, as chief among the outside goods, the Bible. No other thing has done as much for the human race. This is a plain, broad fact, for proof of which we have but to study the history of the nations. There we find that the nations which conform most to the teaching of the Bible are the foremost in every line of progress. I am not ignorant of the fact that there are many tangled labyrinths in the Bible; but, notwithstanding that, the Bible has done more for the world than all the other books in it. The effort to remove the Bible may be justly likened to the effort to clear by fire a country in which there is not a little jungle, but which has, even in the jungle, many an oasis. When the fire has done its work the jungle is gone, but the oases and the fruitful land are gone with it, and we are left to the stern mockery of a desert of ashes on which beats a scorching sun. Then even the jungle would give refreshment and shelter. Should the Bible, and faith in a personal God with it, be removed, the human heart will feel mocked, and, as Agnostics themselves put it, the third generation will have nothing left for mental and moral sustenance but the shadow of a shade. I repeat it, the Bible, through its words of comfort, through its promises, through its manifestation of God's love to man, through its examples of heroic action, especially through the example of Jesus Christ,

has done more for the elevation of the world than all the other books in it.

I notice, further, that faithfulness to our most advanced convictions of duty is one of our chief goods. Looking back, we see that every time we fell below this we hurt ourselves: we carried an element of weakness into our nature and became lowered even in our own estimation. Yes, when we did the weak or wrong act we felt ashamed of ourselves; we felt we were sinking below our highest good. But that is not all. Experience teaches us that every time we played the part of true men we were the better for it; we carried an element of strength into our nature, and never greater than when we did right under adverse circumstances. Moreover, this faithfulness to our highest convictions becomes a great good to those around us. The world does not need cold, cynical, or pharasaic men, who will find fault but put forth no strong hand to help. Indeed, a man professing perfection and declaring that his fellow-beings are a motley mixture, while he puts forth no strong, tender effort to make them better, forcibly reminds one of the man who, in a state of intoxication, said every person was drunk but himself. The world needs men of strong character, who will by their very lives prove an inspiration.

It is our privilege to examine; let us do it. When we find the truth let us live it. Let our motto ever be that of the poet who said:—

“I would do all that best beseems a man;
Who would do less is none.”

—TUCK.

“THIS is true homage to the Mightiest Power, to ask man’s deepest question undismayed by muttered threats that some hysteric sense of wrong or insult will convulse the throne where wisdom reigns supreme.”—*Procter*.

“SUPERSTITION is the death of piety.”—*Pascal*.

DARWIN ON EARTH-WORMS.

(From the *London Quarterly*.)

THIS work,* which Mr. Darwin has produced at the age of seventy-two, is no unworthy culmination, notwithstanding its modest subject and moderate size, of the labors of one of the most remarkable of scientific careers. We have been obliged, on former occasions, to express our dissent from some important hypotheses with which Mr. Darwin's authority is associated, and we still remain convinced of the prematureness, to say no more, of what is commonly, whether with strict justice or not, styled the Darwinian theory of Evolution. But this difference of opinion respecting the conclusions to be drawn from Mr. Darwin's researches is no obstacle to our entertaining the highest admiration for those researches themselves; and we welcome an opportunity, such as the present work affords, for endeavoring to pay a tribute to them. They are marked by a continuity, alike of time and of subject, which is very rarely exhibited, and it would be difficult to say whether they are most distinguished by their industry or by the persistent purpose which pervades them. There is one other trait which is conspicuous in the volume before us, and which adds a particular grace to this single-minded career. Again and again Mr. Darwin refers to the researches of his sons as supplementing and assisting his own; and he seems to have inspired them with his own devotion, and to have enlisted filial sympathy and affection in the promotion of the scientific purposes of his life. It will be a great thing if they carry forward into another generation their father's methods of research and his habits of observation. We are not afraid of seeming fanciful, if we venture to say that science would be deeply benefited if there could be more of this kind of co-operation. It could rarely, of

* *The Formation of Vegetable Mould through the action of Worms, with observations on their Habits.* By Charles Darwin, LL.D., F.R.S. London, 1881.

course, be afforded within the limits of a single family; but observations would be more likely to be successful if, instead of being conducted by one or two men of science, they could more often be carried out by companies, under the command of one skilled director. It needed more than even Mr. Darwin's extraordinary capacity for observation to obtain the results of this book respecting so small a creature as an earth-worm; and in proportion to the complexity of the subject, the necessity for such combination among observers must increase. The same result is, indeed, attained to some extent by the frankness with which men of science communicate their knowledge to each other: but what is needed is not merely the combination of independent researches, but the organization of research. Mr. Darwin has the happiness to have reared a school of observers within his own household, and, though few can follow his example in this respect, it would be well if leading men of science could more often gather similar schools around them.

But we are mainly concerned with the unity and continuity of Mr. Darwin's own labors, which have now extended without interruption over a period of half a century. It was on the 27th of December, 1831, that at the age of twenty-two, just after taking his degree at Cambridge, Mr. Darwin sailed from Devonport on board H.M.S. *Beagle*, upon his famous "Naturalist's Voyage round the World." It is seldom that a greater service has been unconsciously rendered to science and the world than when Captain Fitz Roy, who commanded that expedition, asked that some scientific person might accompany him, and when the Lords of the Admiralty, at the instance of Captain Beaufort, accepted the offer which Mr. Darwin made of his voluntary services. The opportunity thus afforded him was not only the starting-point of his whole scientific career, but sowed in his mind the germs of the main ideas which he has since worked out with such patience and genius. Notwithstanding the long time which has elapsed since the publication of his Journal, it retains all its original instructiveness and interest, and few works are so calculated to give the reader

a conception of the infinite variety and of the inexhaustible marvels of Nature. It exhibits all the closeness and accuracy of observation which have ever distinguished the author, and is marked at the same time by the lucidity and simplicity of style which have contributed so largely to give currency to his speculations. His experience during the five years of that memorable voyage would seem to have contributed in more ways than one to the development of his scientific thought. It gave him, in the first place, a largeness of view which has checked any tendency to specialism, and which has taught him to discern the organic unity of Nature, and to realize the mutual co-operation of her innumerable forces in every part of her manifold productions. Those five years enabled Mr. Darwin to start upon his special researches with a wide survey, and a living personal knowledge, of the whole sphere of natural history and geology; and his work ever since has in a great measure consisted in illustrating the incessant action and reaction of all the realms of Nature. His eye has ever been looking for unity and continuity of life instead of being content to dwell on some distinct and separate field. Doubtless in this respect, as in others, he represents one of the most characteristic features of modern scientific thought. Under various forms, such as the conservation of force, or the convertibility of one kind of energy into another, as of heat into motion, the attention of men has been more and more directed to the organic unity of Nature; and the theory of Evolution itself is but a too sweeping and hasty generalization of this conception. Nothing is more curious than to observe, throughout the history of thought, how universal is the instinct of men to seize upon some large principle, and to insist, as it were, on its dominating the whole sphere of life. It is often a characteristic of even the most powerful inductive minds to leap to some such general truth, and to establish it as a sort of major premiss, which they then apply to all their minor premisses with the unconscious instinct of purely deductive reasoners. A tendency of this nature has in great measure animated Mr.

Darwin's mind throughout his career. It has, in our opinion, overpowered in some of his works the rigid caution he endeavors to practise in drawing conclusions from his observations; but it has had the immense advantage of giving him a clue for what we may call his cross-examination of Nature. It is Plato, we think, who says that if a man is to ask questions with advantage, he must previously have some surmise of the answer of which he is in search; and Mr. Darwin's surmise has evidently been, from the first, that which was suggested to him during the voyage of the *Beagle*.

He tells us, in fact, in the Introduction to his most famous work—that on “The Origin of Species by means of Natural Selection”—that when on board the *Beagle* he was much struck with certain facts in the distribution of the organic beings inhabiting South America, and in the geological relations of the present to the past inhabitants of that continent. “These facts,” he says, “seemed to throw some light on the origin of species—that mystery of mysteries, as it has been called by one of our greatest philosophers.” On his return home it occurred to him, in 1837, “that something might, perhaps, be made out on this question by patiently accumulating and reflecting on all sorts of facts which could possibly have any bearing on it.” After five years' work he allowed himself to speculate on the subject, and drew up some short notes; these he enlarged in 1844 into a sketch of the conclusions which then seem to him probable, and “from that period,” he adds, “to the present day, I have steadily pursued the same object.” This was written in 1859, but it would remain substantially true up to the present time. Even the monograph now before us on Vegetable Mould and Earth-worms has, as we shall see, its bearing on Mr. Darwin's main conception, and has been in great measure inspired by kindred ideas. The same conception is equally conspicuous in the other works which have from time to time borne witness to his extraordinary industry and to his fertility of thought.

(To be continued.)